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PATENT NOTICES

Certificates of Correction for the Week of Mar. 5, 1974

Re. 27,414	3,736,651	3,751,506	3,761,541
3,553,122	3,737,858	3,752,273	3,762,193
3,612,151	3,738,184	3,752,340	3,762,350
3,612,295	3,738,323	3,752,534	3,763,151
3,634,401	3,738,489	3,752,776	3,763,281
3,639,911	3,738,515	3,752,793	3,763,462
3,661,110	3,738,673	3,752,917	3,763,569
3,661,781	3,738,754	3,753,471	3,763,765
3,666,833	3,738,912	3,753,744	3,764,461
3,670,703	3,739,102	3,754,658	3,764,725
3,672,446	3,739,258	3,754,936	3,764,727
3,675,546	3,739,328	3,755,235	3,764,842
3,682,959	3,739,332	3,755,341	3,765,005
3,685,465	3,740,590	3,755,820	3,765,036
3,692,585	3,741,329	3,755,834	3,765,587
3,703,352	3,741,827	3,756,402	3,765,838
3,703,534	3,742,699	3,756,647	3,765,898
3,707,834	3,742,800	3,756,832	3,765,949
3,708,586	3,742,922	3,756,901	3,766,042
3,708,809	3,743,024	3,757,131	3,706,115
3,709,858	3,743,171	3,757,145	3,766,449
3,709,990	3,743,384	3,757,746	3,766,861
3,711,432	3,743,412	3,757,863	3,766,916
3,715,836	3,743,480	3,757,952	3,767,350
3,717,636	3,743,683	3,758,289	3,767,368
3,718,870	3,743,767	3,758,308	3,767,391
3,720,009	3,743,818	3,758,403	3,767,941
3,721,163	3,743,943	3,758,565	3,768,419
3,727,412	3,745,085	3,758,808	3,768,484
3,728,123	3,746,145	3,758,968	3,768,659
3,728,195	3,746,520	3,758,997	3,768,750
3,729,119	3,746,780	3,759,294	3,768,986
3,730,137	3,747,726	3,759,989	3,769,057
3,732,270	3,748,486	3,760,046	3,769,214
3,733,090	3,748,689	3,760,359	3,769,382
3,733,346	3,748,960	3,760,469	3,769,503
3,734,353	3,749,244	3,760,621	3,783,856
3,734,839	3,751,464	3,761,373	

Service by Publication

Eugenia R. Quam

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on December 24, 1968, of an application for patent entitled "Block Polymer Hydrogenation Process," on behalf of the estate of Myron G. Quam, deceased, whose last known address is 1830 Jefferson Street, Concord, California 94521. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor Milton M. Wald without execution by Eugenia R. Quam, the apparent sole heir of said Myron G. Quam. Notice of the filing directed to Eugenia R. Quam at the above noted address has been returned undelivered.

Any action to be taken by the said Eugenia R. Quam in connection with the said application must be taken within one month of the publication of this notice.

WILLIAM FELDMAN,
Acting Assistant Commissioner of Patents for Patent Examining.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 393,207. A portable Ultrasonic Radiometer. Filed Aug. 30, 1973. PC $3/MF $1.45.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C sts. NW., Washington, D.C. 20240

Patent 3,495,411. Water Level Control System. Filed June 28, 1968. Patented Feb. 17, 1970. Not available NTIS.

Patent 3,508,506. Process and Apparatus for Reduction of Unburned Combustible in Fly Ash. Filed June 13, 1968. Patented Apr. 28, 1970. Not available NTIS.

Patent 3,775,096. Production of Niobium and Tantalum. Filed Jan. 15, 1973. Patented Nov. 27, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington Va. 22217

Patent 3,592,692. Apparatus for Battery Cell Connections. Filed Feb. 19, 1970. Patented July 13, 1971. Not available NTIS.

Patent 3,597,685. Semiconductor Electromagnetic Radiation Isolated Thermocouple. Filed Apr. 23, 1969. Patented Aug. 3, 1971. Not available NTIS.

Patent 3,589,505. Bellows Pump. Filed Oct. 24, 1969. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,599,149. Sequence Recognition System. Filed Apr. 9, 1969. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,599,170. Flexible Hermetically Sealed Connector. Filed Aug. 29, 1969. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,601,899. Single Core Solid-State Compass. Filed July 3, 1969. Patented Aug. 31, 1971. Not available NTIS.

Patent 3,602,577. Optical Tunneling Acoustic Surface Wave Light Modulator. Filed Mar. 17, 1970. Patented Aug. 31, 1971. Not available NTIS.

Patent 3,603,838. High Intensity Electron Beam Generator. Filed June 20, 1969. Patented Sept. 7, 1971. Not available NTIS.

Patent 3,607,379. Microelectronic Interconnection Substrate. Filed Jan. 22, 1968. Patented Sept. 21, 1971. Not available NTIS.

Patent 3,608,510. Collapsible Pontoon. Filed Feb. 26, 1969. Patented Sept. 28, 1971. Not available NTIS.

Patent 3,609,499. Electronic Chopper Circuit. Filed Apr. 29, 1969. Patented Sept. 28, 1971. Not available NTIS.

Patent 3,609,571. Sideband Suppression for Broadband Parametric Amplifier. Filed Oct. 27, 1969. Patented Sept. 28, 1971. Not available NTIS.

Patent 3,609,590. Expanded Laser Beam Output. Filed Dec. 11, 1969. Patented Sept. 28, 1971. Not available NTIS.

Patent 3,631,551. Prepackaged Monopropellant Gas Generator Buoyancy System. Filed Sept. 3, 1969. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,631,835. Magnesium Bimetal and System for Flame Spraying Metals on Magnesium Substrate. Filed Feb. 26, 1969. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,631,850. Pressure Transducer Apparatus for Microhemocirculation Studies. Filed Nov. 14, 1969. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,632,519. Aqueous Solutions of Omega-Aminoalkyl Alkylsulfones as Regenerative CO_2 Absorbents. Filed Nov. 10, 1969. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,118. Amplifying Surface Wave Device. Filed July 22, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,155. Pressure-Balanced Electrical Assembly. Filed Apr. 13, 1970. Patented Jan. 4, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP-2, Washington, D.C. 20546

Patent application 398,885. Fiber Modified Polyurethane Foam for Ballistic Protection. Filed Sept. 17, 1973. PC $3/MF $1.45.

Patent application 411,572. Ergometer Calibrator. Filed Oct. 31, 1973. PC $3/MF $1.45.

Patent application 412,379. Anti-Multipath Digital Signal Detector. Filed Nov. 2, 1973. PC $3/MF $1.45.

Patent 3,766,380. Monitoring Atmospheric Pollutants With a Heterodine Radiometer Transmitter-Receiver. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,769,623. Low Loss Dichroic Plate. Patented Oct. 30, 1973. Not available NTIS.

Patent 3,769,689. Method of Making Pressure Tight Seal for Super Alloy. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,770,933. Apparatus for Welding Blades to Rotors. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,771,037. Solid State Controller Three Axes Controller. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,771,040. Regulated DC-to-DC Converter for Voltage Step-Up or Step-Down With Input-Output Isolation. Patented Nov. 6, 1973. Not available NTIS.

Patent 3,771,074. Tunable Cavity Resonator With Ramp Shaped Supports. Patented Nov. 6, 1973. Not available NTIS.

Patents Available for Licensing or Sale

3,237,885. SPACE CRAFT. Jack L. Mohar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,295,265. CIRCULAR MULTI-PURPOSE BUILDING AND ITS ASSEMBLING METHOD. Naoto Hida. Correspondence to: Watanabe Patent Law Office, Koenji Minami 1-29-16, Suginami, Tokyo 166, Japan.

3,474,799. TOOTH SPACE CLEANER USING DENTAL FLOSS LINKS ON HOLDER. Vito P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,533,231. DUAL CONVERSION ISOTHERMAL STEAM POWER PLANT. Lewis S. Lacy, 7326 S. 67th East Ave., Tulsa, Okla., 74133.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2-5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo 100, Japan.

3,741,449. GARMENT HANGER. David D. MacKenzie, 15 Peachtree Ave. NE., Atlanta, Ga., 30305.

3,748,370. SPACER DAMPER FOR CONDUCTORS OF OVERHEAD ELECTRIC LINES. S.A.S. Officine Mecchaniche. Correspondence to Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,754,190. SATURABLE FILTER. Lloyd G. Cross. Correspondence to: Lear Siegler, Inc., 4141 Eastern Ave SE., Grand Rapids, Mich., 49508.

3,757,469. PLANT WATERING AND FERTILIZING DEVICE. Irwin B. Ady, Sharon Acres Road, Forest Hill, Md., 21050.

3,760,396. BOAT AND SWIMMING POOL INTRUSION DETECTOR. Frederick R. Haselton, 1205 Fallsmead Way, Rockville, Md., 20854.

3,763,587. IN-CRANKED AUTOMATIC PISTOL. Dumalag, Capiz, Philippines.

3,763,955. ARRANGEMENT FOR CONTROLLING THE STEERING OF VEHICLES DIRECTED ALONG A PREDETERMINED PATH. Pulsotronic Merten KG, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,766,632. METHOD AND APPARATUS FOR CONNECTING SLEEVES WITH TAPERED INTERNAL THREADS TO PIPES WITH TAPERED EXTERNAL THREADS. Th. Kieserling & Albrecht, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,768,051. MAGNETO-MOTIVE BISTABLE SWITCHING DEVICES. W. H. Kurpanek, Toronto, Ontario, Canada. Correspondence to: Holman & Stern, 2401 15th St. NW., Washington, D.C., 20009.

3,777,655. MEAT FLAVORING SYRINGE. Sheldon E. Ainsworth, P.O. Box 12559, Albuquerque, N. Mex., 87105.

3,790,939. REAL TIME SYNTHETIC RADAR. James Constant, 1603 Danbury Drive, Claremont, Calif., 91711.

The following 2 design patents are being offered by: Elaine G. Vigan, 1932 Weepah Way, Los Angeles, Calif., 90046.

D. 225,657. COMBINED GAME DEVICE AND SAVINGS BANK.

D. 226,928. GAME BOARD.

The following 3 patents are being offered by Louis E. Kopecky, 4th and Downing Sts., Hollister, Mo., 65672.

D. 229,017. HOUSING FOR RAKE FOR FLUFFING CARPETS.

3,740,783. RAKE DEVICE FOR SHAG CARPETS.

3,766,588. DEVICE FOR RAISING THE NAP OF SHAG RUGS.

Rexnord, Inc., is prepared to grant non-exclusive licenses upon reasonable terms under the following patent.

Correspondence should be directed to: A. H. Plyer, 55 E. Monroe, Chicago, Ill., 60603.

2,970,783. COMPOSITE WEARING PARTS FOR CRUSHERS AND THE LIKE.

The following 2 patents are being offered by: Moses Beden, Beden Engineering Co., Inc., 466 Union St., Lynn, Mass., 01901.

3,741,228. VALVE.

3,782,135. COUPLING.

Eastman Kodak Company announces that, in accordance with its policy, nonexclusive licenses upon reasonable terms are available to responsible applicants under the following U.S. patent.

This offer is consistent with the practice of Eastman Kodak Company generally to grant nonexclusive licenses under unexpired U.S. patents issued to Kodak prior to 1969 on photographic inventions and on inventions made in the course of research or development work for the U.S. Government.

Inquiries regarding the availability of such licenses may be addressed to Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,362,774. MOTION PICTURE CAMERA OF THE CARTRIDGE TYPE.

The RCA Corporation offers to grant nonexclusive licenses on reasonable terms and conditions under the following 15 patents.

Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,776,304. CONTROLLABLE HEAT PIPE.

3,776,634. APPARATUS FOR AND METHOD OF REPRODUCING AN ELECTROSTATIC CHARGE PATTERN.

3,776,736. STABILIZED PHOTORESIST COMPOSITION.

3,777,209. NON-THERMIONIC ELECTRON EMISSIVE TUBE COMPRISING A CERAMIC HEATER SUBSTRATE.

3,777,210. ELECTRON GUN AND METHOD OF ASSEMBLY.

3,777,369. METHOD OF MAKING A MAGNETIC RECORDING HEAD.

3,777,700. DAMPING MEANS FOR ULTRASONIC TRANSMITTERS.

3,778,128. GATED HOLOGRAPHIC CODING SYSTEM FOR REDUCING ALIGNMENT REQUIREMENTS.

3,778,815. KEYBOARD ENCODER.

3,780,795. MULTILAYER HEAT SINK.

3,781,570. STORAGE CIRCUIT USING MULTIPLE CONDITION STORAGE ELEMENTS.

3,781,722. DIGITALLY VARIABLE DELAY TIME SYSTEM.

3,781,830. HOLOGRAPHIC MEMORY WITH LIGHT INTENSITY COMPENSATION MEANS.

3,781,870. VOLTAGE TO PULSE WIDTH CONVERTER.

3,781,879. HARMONIC RADAR DETECTING AND RANGING SYSTEM FOR AUTOMOTIVE VEHICLE.

General Electric Company is prepared to grant non-exclusive licenses under the following 72 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following patent should be addressed to: Division Patent Counsel, Space Division, General Electric Company, P.O. Box 8555, Philadelphia, Pa., 19101.

3,736,447. UNIFORM IONIZATION MEANS FOR MHD GENERATORS.

Applications for licenses under the following 2 patents may be addressed to: Division Patent Counsel, Switchgear Equipment Business, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,776,719. METHOD OF PREPARING COPPER FOR USE IN THE ARCING ELECTRODES OF A VACUUM CIRCUIT INTERRUPTER.

3,780,244. GAS BLAST CIRCUIT BREAKER OF THE AXIAL BLAST TYPE.

Applications for licenses under the following 7 patents may be addressed to: General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804. Attention: Patent Counsel.

3,169,173. PUSH-BUTTON SWITCH OPERABLE BY EXTERNAL ACTUATOR.

3,569,639. PUSHBUTTON SWITCH ASSEMBLY WITH MULTIPLE MOMENTARY ACTION.

3,582,593. PUSHBUTTON SWITCH WITH SLIDES, HAVING SCRUB ACTION BETWEEN CONTACTS.

3,749,602. METHOD OF REMOVING HIGH-TEMPERATURE ENAMEL INSULATION FROM ELECTRICALLY CONDUCTIVE WIRE.

3,734,676. ELECTRICALLY ENERGIZABLE CONTROL SYSTEM FOR A FUEL BURNER.

3,737,826. OVEN TEMPERATURE CONTROL SYSTEM AND THERMOSTATIC COMPONENT THEREOF.

3,750,267. METHOD FOR PRODUCING A RESILIENT MOUNTING ARRANGEMENT FOR ROTATING MACHINES.

Applications for licenses under the following 7 patents may be addressed to: Patent Counsel, General Electric Company, Industrial and Power Capacitor Products Department, John Street, Hudson Falls, N.Y., 12839.

3,664,959. DIELECTRIC SOLUTION CONTAINING POLYCARBONATE - POLYDIMETHYLSILOXANE BLOCK COPOLYMER.

3,743,532. COATED SUBSTRATE FORMED FROM PHOTOPOLYMERIZED GAS.

3,754,173. STABILIZED ESTER IMPREGNATED CAPACITOR.

3,772,578. IMPREGNATED CAPACITOR.

3,775,720. CAP-REACTOR POWER GROOVE BALLAST CIRCUIT.

RE. 27,823. IMPREGNATED POLYPROPYLENE FILM IN A SEALED HOUSING.

RE. 27,824. CAPACITOR WITH IMPREGNATED POLYPROPYLENE DIELECTRIC.

Applications for license under the following 11 patents may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky., 40225.

3,740,149. METHOD AND APPARATUS FOR MEASURING SIZE DISTRIBUTION OF PARTICLES USING A THREE-DIMENSIONAL ALTERNATING CURRENT ELECTRIC FIELD.

3,740,553. METHOD AND APPARATUS FOR MEASURING SIZE DISTRIBUTION OF PARTICLES USING A TWO-DIMENSIONAL ALTERNATING CURRENT ELECTRIC FIELD.

3,766,598. HANDLE ASSEMBLY.

3,766,976. INTEGRAL FIN EVAPORATOR.

3,768,399. COMPACTING APPARATUS HAVING MEANS FOR RELEASING A COMPACTED LOAD THEREFROM.

3,768,507. FLOW CONTROL DEVICE.

3,768,742. WASTE FOOD DISPOSER MOUNTING ASSEMBLY.

3,768,771. FLUID CONTROL VALVE WITH IMPROVED DIAPHRAGM.

3,768,883. RACK LEVEL ADJUSTMENT SYSTEM IN A DISHWASHER.

3,776,465. LIQUID SPRAY DEVICE.

3,779,156. TRASH COMPACTOR HAVING MEANS FACILITATING TRASH REMOVAL THEREFROM.

Applications for licenses under the following 44 patents may be addressed to the: Manager, Technology Marketing Operation, General Electric Company, 1 River Road, Schenectady, N.Y., 12345.

2,948,184. CONCAVE GRATING SPECTROGRAPHIC INSTRUMENT.

2,996,408. COPPER PLATING PROCESS AND SOLUTION.

3,075,856. COPPER PLATING PROCESS AND SOLUTION.

3,078,553. SINTERED ALUMINUM COMPOSITION.

3,463,900. ELECTRON BEAM WELDING APPARATUS.

3,466,420. ELECTRON BEAM WELDING APPARATUS.

3,477,636 BALANCING OF GAS PRESSURE FORCES IN MULTI-STAGE REGENERATIVE COMPRESSORS.

3,512,637. STATIC SOLID STATE MODULARIZED ELECTRONIC CONTROL FOR HIGH SPEED CONVEYOR SORTING DEVICE.

3,512,638. HIGH SPEED CONVEYOR SORTING DEVICE.

3,522,167. ELECTROHYDRAULIC STERILIZING APPARATUS.

3,535,711. CUTANEOUS STIMULI SENSOR AND TRANSMISSION NETWORK.

3,541,257. COMMUNICATION RESPONSE UNIT.

3,557,627. APPARATUS FOR COMPENSATING INERTIAL EFFECTS.

3,579,382. SEALED CONTAINER FOR ELEMENTAL SODIUM.

3,580,391. SOLID-STATE PULSED ELECTRONIC CONTROL FOR HIGH SPEED CONVEYOR SORTING DEVICE.

3,585,569. ELECTRICAL CONTACT CLOSURE.

3,600,221. ZINC DIFFUSED COPPER.

3,603,444. HIGH-SPEED SORTING DEVICE.

3,605,285. RANDOM ACCESS AUDIO-VISUAL EDUCATIONAL APPARATUS.

3,616,358. PHOTOSYNTHESIS OF DIHYDROCARBONOXYOXETANES.

3,618,319. MAIN COMBUSTION SYSTEM AND COMBUSTION PROCESS.

3,619,259. PHOTOPOLYMERIZED FILM, COMPOSITE THEREOF, AND METHOD OF FORMING.

3,619,382. PROCESS OF REDUCING METAL COMPOUNDS TO METAL IN A MATRIX.

3,626,306. AUTOMATIC BAUD SYNCHRONIZER.

3,630,770. METHOD FOR FABRICATING LANTHANUM BORIDE CATHODES.

3,631,291. FIELD EMISSION CATHODE WITH METALLIC BORIDE COATING.

3,634,520. NITRATION OF AROMATIC RING-CONTAINING COMPOSITIONS.

3,635,750. PHOTOPOLYMERIZED COPOLYMER FILMS.

3,646,394. ACYCLIC GENERATOR WITH VACUUM ARC COMMUTATOR FOR RAPID GENERATION OF SHORT, HIGH-ENERGY PULSES.

3,647,223. SELECTIVE AUDIO PLAYBACK APPARATUS.

3,649,350. ELECTROLESS COPPER PLATING.

3,650,744. ETCHING METHOD USING PHOTOPOLYMERIZABLE VAPORS AS THE PHOTORESIST.

3,654,377. ELECTRICAL LEADS FOR CRYOGENIC DEVICES.

3,654,390. SYNCHRONIZER FOR SEQUENCE GENERATORS.

3,671,902. SHIELDED INDUCTIVE DEVICE.

3,672,687. AUDIO REPRODUCING APPARATUS FOR RANDOM ACCESS PLAYBACK SYSTEMS.

3,676,220. FACILITATED TRANSPORT LIQUID MEMBRANE.

3,681,976. FREE AND LOOSE OBJECT DETECTION SYSTEM.

3,694,691. SUBLIMATION GETTER PUMP WITH CATHODE TRIGGER MEANS.

3,701,639. SOFT-SOLDERABLE MOLYBDENUM AND TUNGSTEN SURFACES CONTAINING DIFFUSED TIN.

3,715,323. NITRATION OF AROMATIC RING-CONTAINING COMPOSITIONS.

3,724,261. DEVICE FOR MEASURING HEAT RELEASE IN CONTINUOUS COLORIMETER.

3,729,294. ZINC DIFFUSED COPPER.

3,740,055. AUDIO REPRODUCING APPARATUS FOR RANDOM ACCESS PLAYBACK SYSTEMS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 16, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-30-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-17-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-01-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-06-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-11-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-28-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-13-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-20-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	3-08-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-04-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-02-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-21-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	4-30-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-08-73

Expiration of patents: The patents within the range of numbers indicated below expire during March 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,783,468 to 2,786,999, inclusive
Plant Patents..... Numbers 1,575 to 1,585, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MARCH 5, 1974

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T920,001

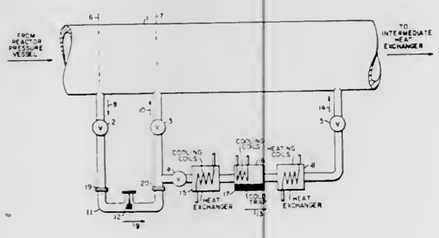
METHOD AND APPARATUS FOR REMOVING IODINE FROM A NUCLEAR REACTOR COOLANT

Martin H. Cooper, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 15, 1972, Ser. No. 263,054

Int. Cl. C01b *7/14;* **G21c** *19/30*
U.S. Cl. 176—37

1 Sheet Drawing. 14 Pages Specification



A method and apparatus for removing iodine-131 and iodine-125 from a liquid sodium reactor coolant. Non-radioactive iodine is dissolved in hot liquid sodium to increase the total iodine concentration. Subsequent precipitation of the iodine in a cold trap removes both the radioactive iodine isotopes as well as the non-radioactive iodine.

T920,002

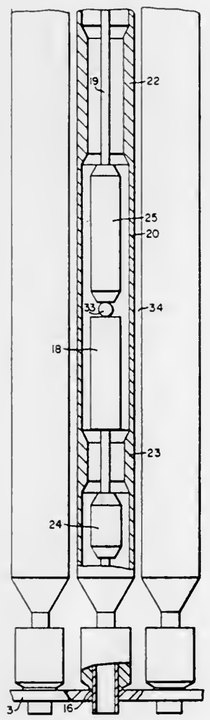
VARIABLE FLOW CONTROL FOR A NUCLEAR REACTOR CONTROL ROD

Richard D. Carleton, Pittsburgh, Pa., and Ajay Bhattacharyya, Vasteras, Sweden, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1972, Ser. No. 283,260

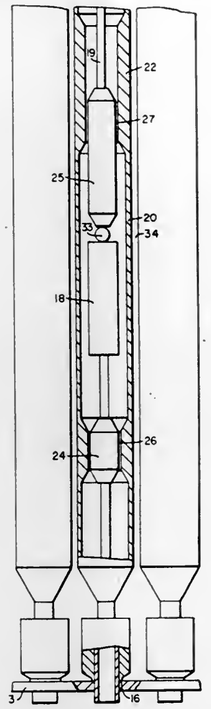
Int. Cl. G21c *7/08*
U.S. Cl. 176—36

3 Sheets Drawing. 12 Pages Specification



A variable flow control for a control rod assembly of a nuclear reactor that depends on turbulent friction through an annulus. The annulus is fomed by a piston attached to the control rod drive shaft and a housing or sleeve fitted to the enclosure housing the control rod. As

the nuclear fuel is burned up and the need exists for increased reactivity, the control rods are withdrawn, which



increases the length of the annulus and decreases the rate of coolant flow through the control rod assembly.

T920,003

ALCOHOLIC COMPOUNDS AS MOLYBDENUM COLLECTOR FROTHERS

William L. Groves, Jr., and Tommie G. Edwards, Ponca City, Okla., and James A. Wingrave, Austin, Tex., assignors to Continental Oil Company, Ponca City, Okla.

Continuation of abandoned application Ser. No. 105,077, Jan. 8, 1971. This application Sept. 29, 1972, Ser. No. 295,091

Int. Cl. B03d *1/02*
U.S. Cl. 209—166

No Drawing. 6 Pages Specification

In froth flotation methods for concentrating molybdenum bearing ore by subjecting an aqueous pulp of said ore to froth flotation; the improvement comprising the use of from about 0.01 to about 0.20 lb. per ton of ore of an alcoholic compound selected from the group consisting of alcohols having the general formula

R—CHOH—R′

wherein R is a hydrogen or an alkyl group containing from 1 to about 7 carbon atoms, R′ is an alkyl group containing from 1 to about 8 carbon atoms and R plus R′ contain from about 4 to about 8 carbon atoms; and alkyl phenyl alcohols containing from about 7 to about 9 carbon atoms as a collector-frother. The alcoholic compounds are shown to be effective in the recovery of molybdenum ores without the use of collectors. In comparisons of alcoholic collector-frothers alone with alcoholic collector-frothers plus conventional collectors it is shown that improved recoveries are achieved with the alcoholic collector-frothers alone.

T920,004

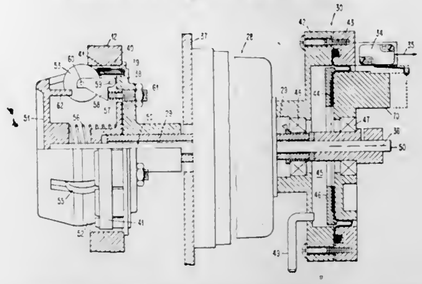
MAGNETIC TAPE UNIT HAVING AN AUTOMATIC REEL LATCH AND MEANS FOR SENSING IMPROPER LOADING OF A TAPE REEL

Everette R. McCully, Northglenn, and William J. Schaffer, Loveland, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,875

Int. Cl. G11b *15/66;* **B65h** *19/02*
U.S. Cl. 242—68.3

3 Sheets Drawing. 22 Pages Specification



A magnetic tape unit includes a source of positive air pressure for use with components such as air bearings and the pneumatic motor of an automatic reel latch.

T920,005

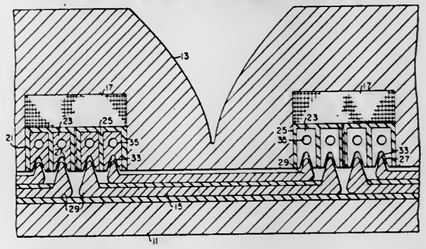
SEGMENTED MAGNET HOMOPOLAR DYNAMOELECTRIC MACHINES HAVING FLUID COOLED LIQUID METAL CURRENT COLLECTING ZONES

Cecil J. Mole, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1973, Ser. No. 338,489

Int. Cl. H02k *31/00*
U.S. Cl. 310—178

2 Sheets Drawing. 15 Pages Specification



A homopolar dynamoelectric machine is constructed with a magnetic field that is broken into segments along the axis of the machine. Liquid metal contacts are utilized to transmit electrical energy between the armature and current collecting members which have ducts for the transmission of cooling fluid located therein. Grouping armature conductors, and appropriately interconnecting the current collecting members to serially relate the voltages induced in the armature conductors in order to increase the magnitude of the output voltage, permits achievement of the desired output characteristics.

T920,006

PACKAGE MAKING METHOD

Lowell L. Schoening, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 149,579, June 3, 1971. This application Apr. 16, 1973, Ser. No. 351,627

Int. Cl. B65b *51/18*
U.S. Cl. 53—39

2 Sheets Drawing. 5 Pages Specification

A method of making a package consisting of a package unit overwrapped in a heat-sealable material having over-

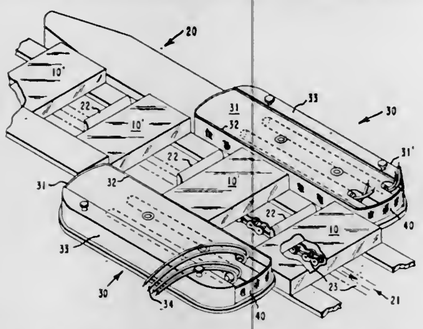
lapping parts on at least one side thereof, such method including the steps of:

positioning a porous belt loosely about a stationary heating means having a sealing plate;

heating the belt;

moving the overwrapped package unit past the sealing plate;

urging, by means of the inherent resiliency and size of the overwrapped package unit and spacings of parts of the apparatus for making the package, the overlapping parts into an abutting relationship with one surface of the belt only after it is heated thereby to start heating substantially immediately such overlapping parts as they are brought into contact with the belt, whereby to bring about a tacky state in the overlapping parts to provide an operative connection between the belt and the overlapping parts so that when such overlapping parts move, they move the belt with them, such belt being substantially free of tension prior to such contact with the overlapping parts;



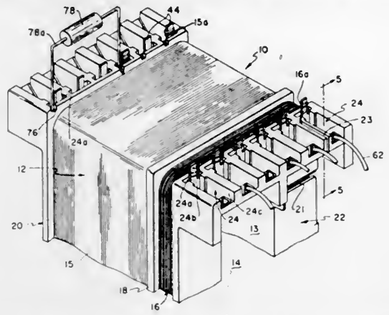
moving the belt only by its contact with the overlapping parts, such moving starting substantially immediately upon such contact;

urging the belt into direct, sliding contact with a surface of the sealing means as the overwrapped package unit is moved therepast, such surface being positioned adjacent the other surface of the belt and out of direct contact with the overlapping parts, and

further heating the overlapping parts as the overwrapped package unit and belt move together past the sealing plate, including passing additional heat through the heated belt and onto the overlapping parts, thereby to seal such overlapping parts together, to form the package.

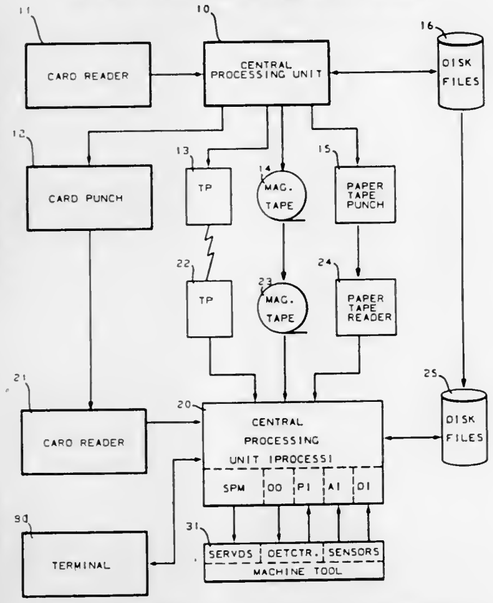
T920,007
BOBBIN ASSEMBLY
Edward J. Cator, Country Road 36, Naples, N.Y. 14512
Filed Apr. 20, 1973, Ser. No. 353,142
Int. Cl. H02h *7/04;* **H01f** *15/10, 27/30*
U.S. Cl. 317—15
1 Sheet Drawing. 10 Pages Specification

A coil bobbin of unitary body construction having a core for winding insulated primary and secondary coil wire between oppositely opposed flanges at each end of the core. The flanges are adapted to receive terminal lugs on a periphery thereof for terminating the wound coil wire and lead-in or lead-out wires. The terminal lugs are electrically conductive and are anchored adjacent the core and laterally spaced along the flange to provide ready automated winding of primary or secondary coils. A terminal lug includes a tang for terminating coil wire and a terminal having a body for receiving a lead wire. The body includes a flexible projection partially blocking passage of an inserted lead wire through the body, located at an acute angle to an axis through the body and being engageable by a lead wire inserted into the body. The flexure of the projection permits the lead wire to be inserted into the body beyond the projection so that the



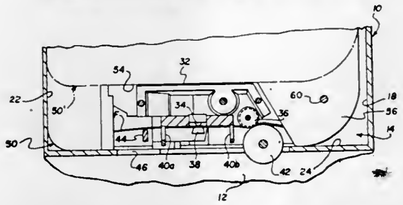
angle and flexure of the projection releasably retains the lead wire in an electrical connection with the terminal lug.

T920,008
DYNAMICALLY MODIFIABLE ADAPTIVE MACHINE TOOL CONTROL SYSTEM AND METHOD
Walter B. Broadwell, Malibu, Richard M. Burkley, Los Angeles, and Royal H. Daw, Sherman Oaks, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of abandoned application Ser. No. 251,727, May 8, 1972. This application Apr. 23, 1973, Ser. No. 353,180
Int. Cl. G06f *15/46*
U.S. Cl. 340—172.5
10 Sheets Drawing. 41 Pages Specification



A system and method for adaptively controlling the operation of machine tools, the system including processing means for supplying control signals to each machine tool. A feedback means supplies feedback signals representing operation factors of the tool to the processing means. Storage means stores a plurality of adaptive control program modules, each arranged to operate the processing means to respond to the feedback to provide differing control parameter instructions. The storage means also stores part programs including operation instructions defining predetermined operations of the machine tool. A part programmer supplies a designation of the part program to be used and also supplies designations of characteristics of the machining, covering such things as the type of material, type of tool and type of cut. The processing means responds in accordance with the method by selecting the designated part program and by decoding the designations of machining characteristics to select one of the adaptive control program modules. The selected part program operation instructions cause the processing means to supply the control signals to the machine tool, the control signals being defined in terms of the defined operations as modified by the control parameter instructions.

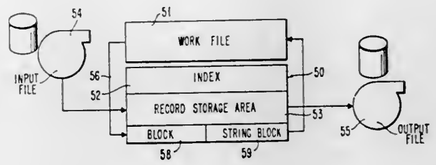
T920,009
CONTROL MEANS FOR A SOUND MOTION PICTURE CAMERA
Gerald J. Kosarko, Pavilion, N.Y. (901 Elmgrove Road, Rochester, N.Y. 14650)
Filed Apr. 30, 1972, Ser. No. 356,005
Int. Cl. G03b *23/02*
U.S. Cl. 352—72
2 Sheets Drawing. 12 Pages Specification



A motion picture camera or the like incorporating a sound system for recording of sound onto film during exposure of film to scene light includes a switch which is closed by a sensor when the sensor detects the proper positioning into the camera of a film cartridge containing sound film. When the switch is closed and the camera is energized to initiate exposure of film frames to scene light, a circuit is completed to sound apparatus in the camera and to a capstan drive for the sound apparatus. In the absence of the sound cartridge, such as when a conventional, non-sound or silent cartridge is positioned in the camera, the switch remains open, thereby de-energizing the sound apparatus and capstan motor to avoid drain on the related battery or power supply. The switch can be in a circuit including a battery, a second switch that is closed when the camera is energized by the operator engaging a trigger mechanism, and an amplifier circuit comprising part of the sound apparatus. The camera disclosed has a motor for the film pull-down mechanism and a separate capstan motor for the sound apparatus. The sensor also closes a third switch to the capstan motor when a sound cartridge is in the camera, and opens the third switch at other times. Also disclosed is a circuit for controlling the speed of the motor for the pull-down mechanism as a function of the size of the loop between that mechanism and the sound capstan.

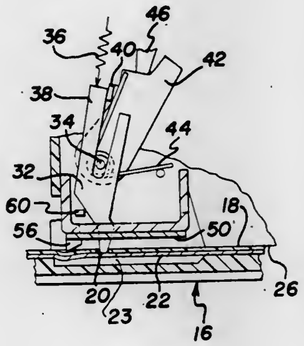
T920,010
SORTING METHOD
Watson M. Conner II, Los Gatos, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 210,893, Dec. 22, 1971. This application May 14, 1973, Ser. No. 359,938
Int. Cl. G06f *9/16*
U.S. Cl. 444—1
2 Sheets Drawing. 22 Pages Specification

A sorting method utilizing a direct access storage device. An initial sort phase combines a replacement-selection sort with building an index containing the location and a key of a record in each string block written from the replacement-selection sort. A final sort phase com-



bines a replacement-selection sort with removal of records to the output file. Other sort strategies can be used in the initial and final phases.

T920,011
FILM MOVEMENT PREVENTING MEANS
James E. Dierks, Rochester, N.Y.
Continuation of abandoned application Ser. No. 316,639, Dec. 19, 1972, which is a continuation of application Ser. No. 217,808, Jan. 14, 1972. This application June 28, 1973, Ser. No. 374,726
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM
1 Sheet Drawing. 7 Pages Specification



A camera receives perforated roll film in a cartridge having a surface across which the film is advanced and a recess in the surface in general alignment with the film perforations. The camera includes a film advance mechanism and means for selectably disabling the film advance mechanism. A film perforation sensing pawl rests against the film surface to fall into a perforation of the advancing film and to be moved thereby against the force of a spring until the sensing pawl reaches a predetermined position whereat the disabling means is activated to disable the film advance mechanism. The side load on the film from the spring force on the sensing pawl tends to push the film backward along the exposure plane, thereby tending to cause undesired film movement during an exposure. A member or dart fixed in the camera projects across the camera's exposure plane in the region of the recess of a received cartridge for depressing the film into the recess to prevent such undesired film movement. The relationship of the dart and the recess permits film advancement in one direction but prevents film movement in the opposed direction.

T920,012
METHOD FOR PRODUCING AN IMPROVED COFFEE FLAVOR

Richard A. Pfluger, Maplewood, Howard J. Bowden, Westwood, and Andrew J. Perla, Nutley, N.J.

Continuation of abandoned application Ser. No. 161,969, July 12, 1971. This application July 11, 1973, Ser. No. 378,088

Int. Cl. A23f *1/08*
U.S. Cl. 426—432
No Drawing. 13 Pages Specification

A method for producing an improved soluble coffee product which comprises splitting the extract draw off stream from a coffee percolation unit into two batches, one batch containing higher quality and higher concentration extract than the second batch containing lower quality and lower concentration extract. The second batch is evaporatively concentrated within a continuous evaporator with a uniform residence time of less than about 30 seconds and added to the first batch. The combined extracts are dried to give a soluble coffee product which does not produce significant off-flavors.

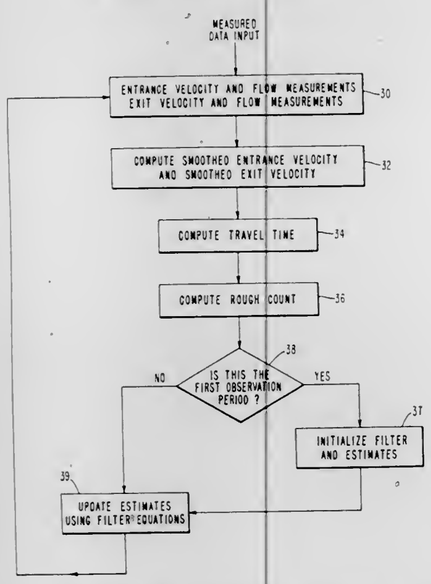
T920,013
METHOD FOR ON-LINE ESTIMATION OF TRAFFIC DENSITY

Denos C. Gazis, Millwood, N.Y., and Charles H. Knapp, Willimentic, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 180,274, Sept. 14, 1971. This application July 16, 1973, Ser. No. 379,673

Int. Cl. G06f *15/48*
U.S. Cl. 444—1
5 Sheets Drawing. 32 Pages Specification

ON LINE SEQUENTIAL ESTIMATION OF TRAFFIC FLOW DENSITY



This is a method for automatically estimating the number of vehicles present on a section of roadway from measurements of speed and vehicle flow at the entrance and exit points of the roadway section. The method comprises the steps of computing rough count estimates of the number of vehicles in said roadway at regular intervals, referred to as observation periods, and then correcting these estimates by a sequential correction scheme which filters out random errors present in the count.

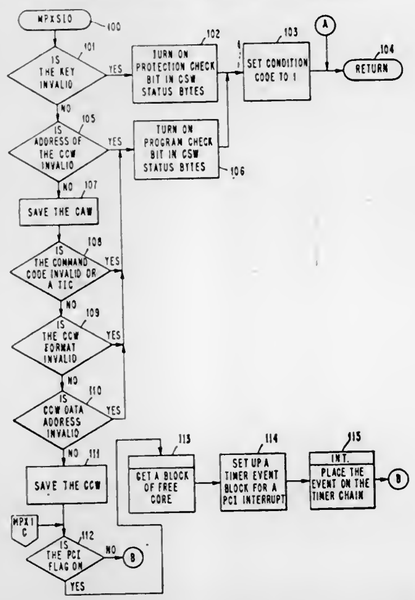
At both the entrance and exit points of the roadway, detector mechanisms monitor the number of passing vehicles and their respective velocities. For each observation period, the input and output velocities are averaged and an estimate of travel time over the roadway is computed. Then, a rough estimate of the number of vehicles in the roadway is computed from an inventory of vehicle arrivals at the input of said roadway and the travel time of exiting vehicles. The rough estimate is then adjusted by means of sequential estimator which utilizes the requirement that the count obtained at the end of two successive observation periods is equal to the number of cars present in the roadway at the prior observation period plus the difference between the number of vehicles entering and exiting the roadway during the present observation.

T920,014
MULTIPLEX CHANNEL SIMULATOR

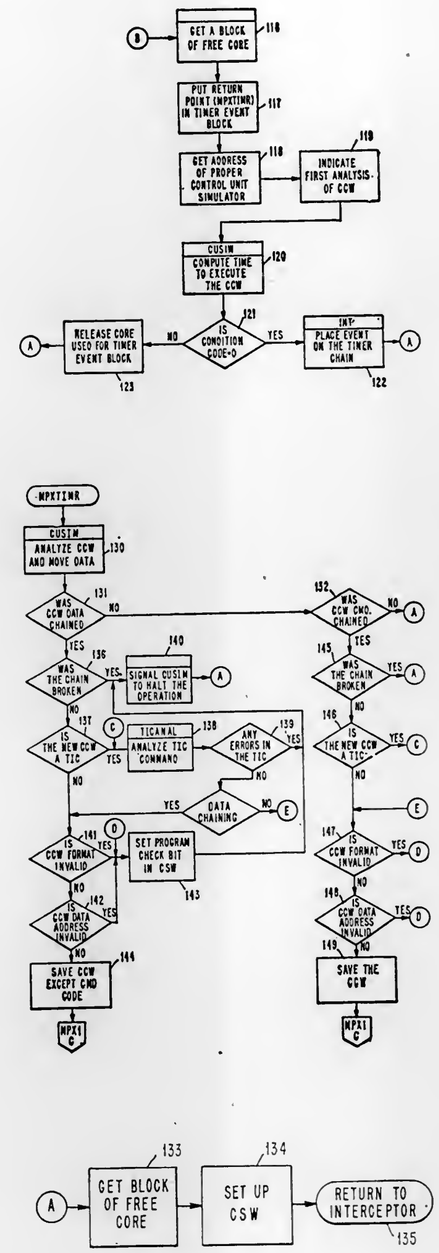
Joanne Kraus, Staatsburg, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

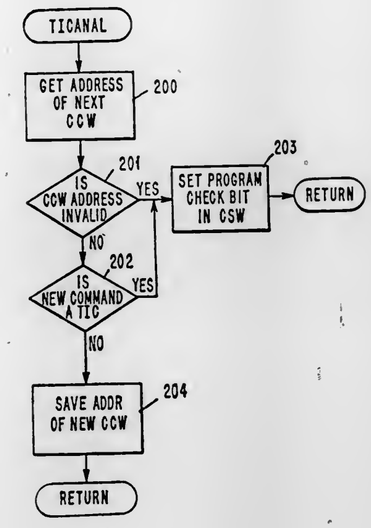
Continuation of abandoned application Ser. No. 284,844, Aug. 30, 1972. This application July 19, 1973, Ser. No. 380,930

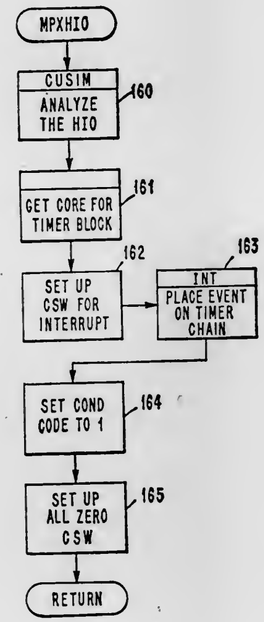
Int. Cl. G06f *9/12*
U.S. Cl. 444—1
6 Sheets Drawing. 18 Pages Specification



This invention is a method of operating a computer to model an IBM System/360 multiplex channel in such great detail that the timing relationships of events in a real channel are substantially maintained in the simulated channel, thus providing a method through which the simulated channel appears to simulated control unit equipment much the same as a real channel would appear to real control unit equipment, and also so that the simulated equipment appears to the control computer much the same as real equipment. With this method, new equipment to be used on an existing System/360 computer, can be simulated in order to ascertain the effect of the new equipment on the efficiency of the computer. Also, with this method, new or rewritten programs for use on yet to be installed equipment can be debugged prior to actual installation by driving the new programs over the simulated channel.



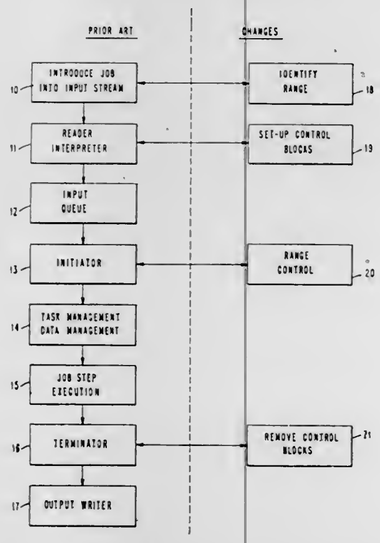




The method is comprised of the steps of intercepting Start I/O (SIO) operations, determining if they are for a simulated device, if so, passing the address of the channel program to the channel modelling procedure, next inspecting the first Channel Command Word (CCW) as to key, address of the CCW, the command code, presence of a Transfer-in-Channel (TIC), the CCW format and the CCW data address. If an invalid condition is found, setting appropriate Channel Status Word (CSW) bits and the condition code for returning to the operating system.

If valid, checking the Program Controlled Interrupt (PCI) flag, obtaining a time estimate of what real equipment might use to execute the CCW, placing that time on a chain of future events, causing an interrupt when that time expires, transferring the data designated by the CCW, and determining if data or command chaining is in effect. If not, setting up a CSW and returning to the operating system. If so, performing validity checks on the next CCW, calculating its estimated time of execution, placing that time on a future events chain, and continuing until the channel program is ended or until an error intervenes.

T920,015
METHOD FOR CONTROLLING USE OF RANGES IN A DATA SET
Glenford J. Myers, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of application Ser. No. 138,053, Apr. 28, 1971. This application Aug. 13, 1973, Ser. No. 387,865
Int. Cl. G06f *9/18*
U.S. Cl. 444—1
4 Sheets Drawing. 19 Pages Specification

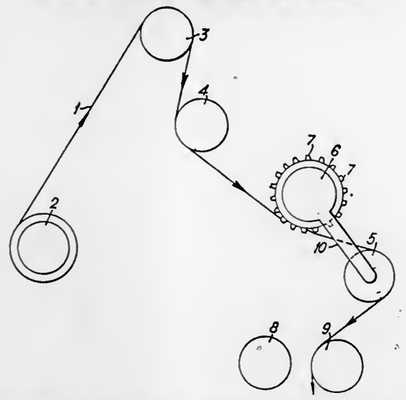


In a data processing system operating in a multiprogramming mode, one or more ranges of data items in a data set, can be used by two or more concurrently operating programs on an exclusive basis or a shared basis. As a job is placed in the input stream of the system, information identifying the ranges and data sets is placed in tables. During job initiation, a central resource table is checked for entries from previously initiated jobs to see if there is any conflicting request. Parameter lists are built and the resources, i.e., the ranges of the data sets, are enqueued upon using the system's supervisory program. If there is no conflict, the resources are allocated. Otherwise, the initiator is placed in a wait state until the resources are freed.

T920,016
MAGNETIC RECORDING MATERIALS
Arthur John Holloway, Bengeo, and Graham George Turner, Sandy, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Aug. 21, 1973, Ser. No. 390,303
Claims priority, application Great Britain, Sept. 1, 1972, 40,672/72
Int. Cl. H01f *10/00*
U.S. Cl. 117—235
No Drawing. 14 Pages Specification

A magnetic recording material, which comprises a molecularly oriented and heat set polyester film base having a coating comprising vinyl chloride polymer particles on one surface and a magnetic coating on the other surface, the vinyl chloride polymer particle coating having a coat weight of 0.01 to 1.4 mg. dm.$^{-2}$. The material is made by coating the surface of the polyester film base with the vinyl chloride polymer particles during or after the orientation and heat setting. Preferably the final coat weight of the vinyl chloride polymer particle coating is from 0.05 to 0.25 mg. dm.$^{-2}$ and the average size of agglomerated vinyl chloride polymer particles in the final coating is from 10 to 15 microns.

T920,017
PERFORATION OF THERMOPLASTIC FILMS
Peter Ralph Billinghurst, East End Green, near Hertford, England, assignor to Imperial Chemical Industries Limited, London, England
Continuation of abandoned application Ser. No. 137,841, Apr. 27, 1971. This application Sept. 7, 1973, Ser. No. 395,171
Claims priority, application Great Britain, May 8, 1970, 22,382/70; Feb. 17, 1971, 4,844/71
Int. Cl. B26f *3/10, 1/24*
U.S. Cl. 83—16
2 Sheets Drawing. 14 Pages Specification



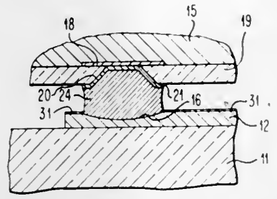
A method of perforating a film of a thermoplastic material comprising passing the film under tension around at least part of the surface of a roller, the surface having a plurality of projections thereon which are arranged in the pattern corresponding to that which is required for the perforations in the film and which are maintained at a temperature sufficient to melt the film, wherein the film is held against the roller solely by virtue of the tension in the film. Apparatus for carrying out this method is also disclosed. The method and apparatus can be used for packaging purposes.

REISSUES

MARCH 5, 1974

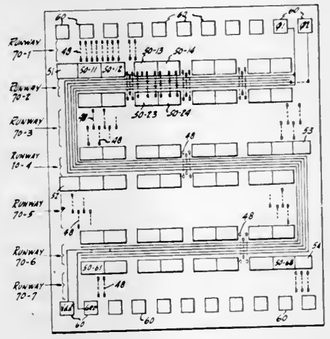
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,934
CIRCUIT STRUCTURE
Seymour Merrin, Fairfield, Conn., and Melvyn D. Silver and Edward M. Suden, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Original No. 3,508,118, dated Apr. 21, 1970, Ser. No. 794,014, Jan. 24, 1969, which is a division of application Ser. No. 513,412, Dec. 13, 1965, now Patent No. 3,436,818. Application for reissue Aug. 12, 1971, Ser. No. 171,403
Int. Cl. H01l *19/00*
U.S. Cl. 317—101 CC **6 Claims**



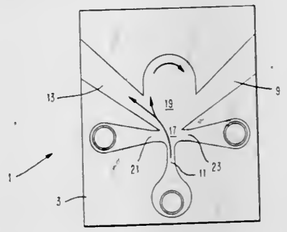
A microminiature circuit structure includes a substrate having a plurality of connecting areas. A microminiature chip device having a face with solder wettable terminal areas is bonded to the substrate by means of a plurality of connectors which establish a unified joint between terminal and connecting areas. The connectors are made of a solder which will only partially wet the connecting areas.

27,935
LSI ARRAY AND STANDARD CELLS
Thomas Richard Mayhew, Langhorne, Pa., assignor to RCA Corporation
Original No. 3,365,707, dated Jan. 23, 1968, Ser. No. 648,449, June 23, 1967. Application for reissue Jan. 10, 1972, Ser. No. 216,530
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **12 Claims**



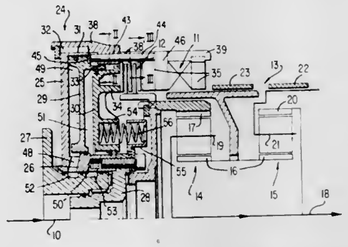
A large scale integrated (LSI) array of standard cells and interconnection scheme is described. The standard cell includes four insulated gate field-effect devices having both committed and uncommitted connecting points. The system designer is given the flexibility of specifying the functional identity of a cell, a group of cells, parts of a cell and various combinations thereof by means of the design connection pattern of the various uncommitted connecting points.

27,936
FLUID DEVICE
Edwin R. Phillips, Rosemont, Pa., assignor to Sperry Rand Corporation, New York, N.Y.
Original No. 3,270,759, dated Sept. 6, 1966, Ser. No. 286,396, June 7, 1963. Application for reissue Mar. 16, 1970, Ser. No. 19,832
Int. Cl. F15c *1/16*
U.S. Cl. 137—81.5 **3 Claims**



The present invention comprises a common mixing chamber from which leads an inlet, a plurality of control inlets, a pair of outlet passages and a vortex chamber. The vortex chamber is disposed in substantial alignment with the inlet and intermediate the pair of outlets. The vortex, due to its dimensions and position maintains the fluid flow at one or the other of said pair of outlet passages.

27,937
FRICTION CLUTCH CONSTRUCTION
Werner R. E. Hensel, Berkheim uber Esslingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Original No. 3,279,573, dated Oct. 18, 1966, Ser. No. 263,489, Mar. 7, 1963. Application for reissue Sept. 5, 1968, Ser. No. 766,361
Claims priority, application Germany, Mar. 10, 1962, D 38,338
Int. Cl. F16d *25/12*
U.S. Cl. 192—87.11 **23 Claims**



Two friction clutches, one nested within the other inside a rotating drum, on the same side of a disc portion supporting the drum.

PLANT PATENTS

GRANTED MARCH 5, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,501
GAZANIA PLANT

Francis C. Tomlinson, Whittier, Calif., assignor to Select Nurseries, Incorporated, Brea, Calif.
Filed Feb. 2, 1972, Ser. No. 223,033
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of Gazania plant substantially as herein shown and described, characterized particularly as to novelty by its large extremely doubled blooms that are predominantly Lemon Yellow, by the fact that said blooms remain fully open during the hours of darkness, and by the fact that the new variety does not produce any seeds.

3,502
PHILODENDRON PLANT

Robert H. McColley, P.O. Box 17126, Orlando, Fla. 32810
Filed Apr. 10, 1972, Ser. No. 242,846
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 **1 Claim**

The disclosure hereof is of a Philodendron plant particularly characterized by the contrasting red and green colors of the leaves in immature and mature state, the dark red color of the sheath covering as the leaf opens, the sheath curling back hanging on to the stem for long periods of time, together with superior disease resistance to bacterial soft rot and shot-gun fungus.

3,503
CHRYSANTHEMUM PLANT

Barrie J. Machin, Chichester, and Paul T. Stone, Roydon, England, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed May 11, 1972, Ser. No. 252,497
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared with the parent cultivar, Yellow Sands, by its more intense golden flower color; more rounded, less pointed petals; less longitudinal petal roll; 5–7 days earlier response; better cushion development; and less compounding of sprays, and 4″–5″ shorter height during high temperature periods.

3,504
LAGERSTROEMIA INDICA

Jacques Desmartis, 15 Avenue Wilson, Bergerac, France
Filed May 22, 1972, Ser. No. 255,871
Claims priority, application France, May 21, 1971, 7119390
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

A *Lagerstroemia indica* variety (Indian lilac) having pink flowers, winter weather resistance to temperatures below —10° C., straight tree-like growth and uniform leaf and heavy uniform blossom distribution.

3,505
APPLE TREE

Francis M. Crites, Wapato, Wash., assignor to Carlton Nursery Company Inc., Dayton, Oreg.
Filed May 30, 1972, Ser. No. 257,550
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree, substantially as shown and described, characterized particularly by its smooth golden, glossy, waxy appearance at maturity and its tendency toward oiliness and excellent keeping qualities in storage, also characterized by its rich, crisp, sweet and aromatic flavor and excellent dessert and culinary qualities.

3,506
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed July 7, 1972, Ser. No. 269,542
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Symphony by its lemon yellow flower color, approximately 2″–3″ less vigor, 2–3 days later response, flowers which are approximately ¼″ smaller in diameter, an average of one less flower per stem, and by its slightly less stem strength.

3,507
APHELANDRA PLANT

Marion R. Mulford, Maitland, Fla., assignor to Norman E. Hickerson, Apopka, Fla.
Filed July 11, 1972, Ser. No. 270,704
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 **1 Claim**

A sport of an *Aphelandra squarrosa* plant characterized by distinctive and attractive leaf color which leaves are much whiter in general appearance.

3,508
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Aug. 11, 1972, Ser. No. 279,815
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright and branched

plant, abundantly bearing fragrant blooms of Cardinal Red whose petal edges often are darker.

3,509
ROSE PLANT

Reimer Kordes, Sparrieshoop, near Elmshorn, Germany, assignor to Jackson & Perkins Co., Medford, Oreg.
Filed Sept. 7, 1972, Ser. No. 287,047
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of excellent, uniform fully branched plant, bright Aureolin Yellow flowers, semi-glossy foliage, heavy petal substance and strong fragrance.

3,510
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Sept. 28, 1972, Ser. No. 292,892
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of a class between hybrid tea and floribunda, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its floribunda type plant but of a general large size; its hybrid tea type and size blooms; its Signal red bud and Mandarin red bloom; its long keeping qualities as a cut flower and its relatively strong resistance to rose powdery mildew.

PATENTS

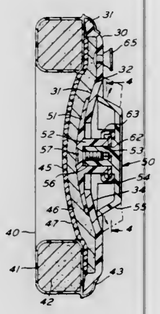
GRANTED MARCH 5, 1974

GENERAL AND MECHANICAL

3,795,014
EAR PROTECTOR

Jack N. Simpson, Sinking Spring; Heinz E. Ruck, Morton, and Charles E. Bowers, Jr., Glenn Mills, all of Pa., assignors to The Fibre-Metal Products Company, Chester, Pa.

Filed May 4, 1972, Ser. No. 250,131
Int. Cl. H04r *1/10*
U.S. Cl. 2—209 4 Claims

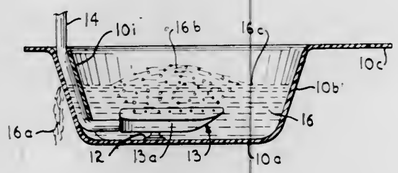


An ear protector wherein a generally flat mounting plate is sized and configured to extend beyond a wearer's ear entirely thereabout and provided centrally with an inwardly depressed region having a through opening. Headband connection means connects to the plate through the opening, while a resiliently compressible endless head engaging formation extends peripherally about the plate and sound attenuating sheet means extend across the plate within the bead.

3,795,015
PORTABLE BIDET

Henry J. Talge, Kansas City, Mo., and Samuel L. McNair, Overland Park, Kans., assignors to Dazey Products Company, Kansas City, Mo.

Filed Oct. 30, 1972, Ser. No. 302,046
Int. Cl. A47k *3/22, 11/08*
U.S. Cl. 4—7 2 Claims

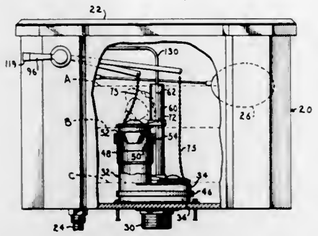


A portable bidet and sitz bath having a basin with a peripheral flange to overlie the top rim of a conventional toilet bowl with the basin fitting within said bowl and having a drainage port near the peripheral flange. A spray head is secured to the bottom of the basin beneath the drainage port by a flexible suction cup which permits the spray head to oscillate from side to side when water is delivered thereto through a flexible coupling. This action creates a rippling crest of water which oscillates to cleanse perineal areas.

3,795,016
TOILET WATER TANK WITH LIGHT AND HEAVY FLUSH CONTROL

Edward A. Eastman, 9726 E. 26th Ter., Independence, Mo. 64052

Filed May 1, 1972, Ser. No. 249,349
Int. Cl. E03d *5/10, 1/22, 1/34, 1/30, 5/02*
U.S. Cl. 4—67 A 6 Claims

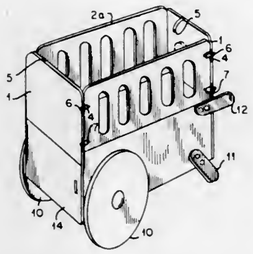


A toilet is provided with light and heavy flush mechanisms to permit conservation of water. Two independent control valves disposed at different water levels within the tank are operable by actuator arms which are coupled with handles disposed externally of the tank in a manner which assures positive operation and economical construction. When the light flush handle is used, only the valve which is disposed higher in the tank is opened and 40 percent of the total water in the tank can be conserved. When the heavy flush handle is used, the lower valve opens draining a larger quantity of water from the tank while simultaneously opening the higher valve to substantially increase the flow rate of water from the tank.

3,795,017
INFANT'S CRIB AND DRESSING TABLE COMBINATION

Herbert K. Saxe, 302 W. 79th St., New York, N.Y. 10024

Filed June 8, 1972, Ser. No. 260,855
Int. Cl. A47d *11/00*; A47b *83/00*
U.S. Cl. 5—2 6 Claims

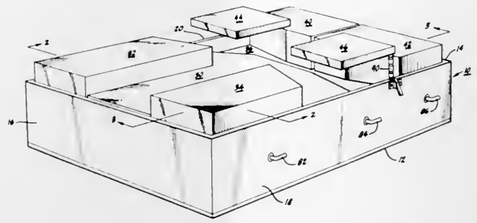


A mobile crib-dressing table combination formed substantially by two respective pairs of side panels and end members fitted together. Of the two side panels, one is fixed and the other is hingedly and pivotally attached at four points to the end members. Access to the interior of the crib is made possible by release of the upper two hinge members and urging the side panel to and away from the crib about lower pivot pins. Conversion of the crib to a dressing table is readily possible by release of the lower two hinge members and pivoting of the side panel about upper pivot pins into the crib interior. To insure a positive fit, grooves are provided in the end members to engage the upper pivot pins of the side panel. Normal position of the crib is achieved by reversing the above steps. The infant on the dressing table is enclosed on three sides to provide relative safety for the child. A pair of wheels provided at one end together with suitable stop means and handles, permit movement and positioning of the crib from room to room.

3,795,018
ADJUSTABLE BED

Charley H. Broaded, P.O. Box 1011, Costa Mesa, Calif. 92627

Continuation-in-part of Ser. No. 148,110, May 28, 1971, abandoned. This application May 29, 1973, Ser. No. 364,225
Int. Cl. A47c *21/00*; A61g *13/00*
U.S. Cl. 5—68 11 Claims

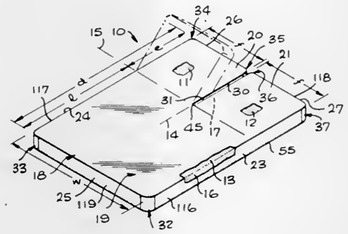


A bed having a plurality of independently adjustable, resilient, horizontal, body-supporting surfaces that can be vertically positioned to provide a sleeping surface for supporting a person in a sleeping position so that the spine is maintained in substantially linear alignment for a variety of sleeping positions and localized body pressure and fatigue reduced. The sleeping surface includes a stationary lower-torso support, a pair of vertically adjustable leg supports, a vertically adjustable upper-torso support, a vertically adjustable head support, and a pair of vertically adjustable arm supports.

3,795,019
BED SHEET OR OTHER BED COVERING HAVING TWO HEAD PORTIONS

Restituto R. Fragas, 7035 Templeton St., Huntington Park, Calif. 90255

Filed Apr. 19, 1971, Ser. No. 135,057
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 C 5 Claims

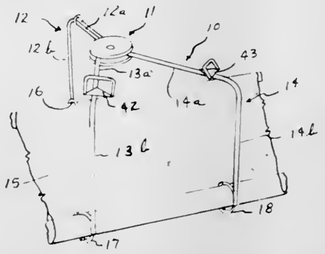


A sheet or other covering for a mattress, box spring, or the like, with the covering having a main portion which extends across the entire width of the bed toward its foot end, and having two narrower head portions for covering two separately elevatable halves or sections of the mattress or spring at its head end.

3,795,020
PORTABLE, FOLDING TRAY RETAINER AND STAND (MULTIPURPOSE)

Hans B. Bartholomew, and Maureen A. Hunt, both of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 23, 1972, Ser. No. 256,067
Int. Cl. A47b *23/00*
U.S. Cl. 5—332 9 Claims

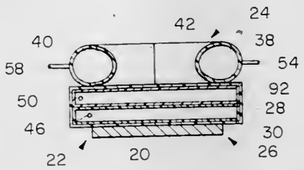


A portable litter tray holder and stand including a central discoid member, a mounting arm having a horizontal portion rigidly attached to the central member and a vertical-stand portion attached in upright relation to one side of the litter; and a pair of extension arms each having a horizontal portion pivotally attached to the central member and extending over the litter to terminate in a vertical-stand portion attached in upright relation to the opposite side of the litter.

3,795,021
HEAD POSITIONING PILLOW

Vincent E. Moniot, 5919 Hanna Ave., Woodland Hills, Calif. 91364

Filed Nov. 18, 1971, Ser. No. 200,086
Int. Cl. A47c *27/08, 7/14*
U.S. Cl. 5—341 11 Claims



A pillow for the headrest section of a chair wherein the pillow is divided into four inflatable sections, a human head is adapted to come into contact with each section, by controlling the inflating of each section the position of the human head can be controlled.

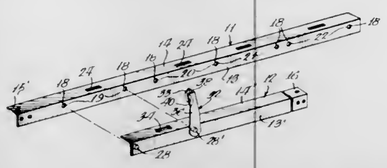
3,795,022
ADJUSTABLE BED RAIL MEMBER HAVING LOCKING ARM

George M. Harris, Chicago, Ill., assignor to Harris-Hub Company Inc., Harvey, Ill.

Filed Mar. 9, 1973, Ser. No. 339,871
Int. Cl. A47c *19/04*
U.S. Cl. 5—181 13 Claims

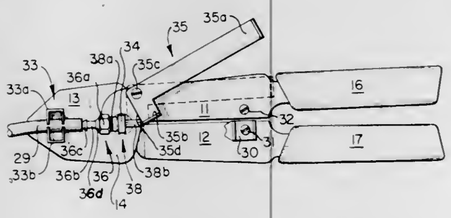
An improved adjustable cross frame member for use in a bed frame having side frame members and another such adjustable cross frame member, and including first and second elongate L-shaped elements having mutually perpendicular legs. The first element is provided with a plurality of pairs of longitudinally spaced position-defining round openings in one

leg, and longitudinally elongated slots on the other leg each located between each pair of the round openings. The second elongate element is provided with a pair of rivets, longitudinally spaced to match the spacing of the round openings and matching the round openings in diameter so that upon bringing the rivet pair into registration with one of the round opening pairs corresponding to the desired position and positioning



the elements in leg-abutting engagement, the rivets engage that opening pair. The second element also includes an arm pivoted on the one leg of the second element and carrying a cam portion. When the elements are in leg-abutting engagement, the cam portion is inserted through an access slot in the other leg of the second element and into engagement with a slot on the other leg of the first element to lock the elements in the selected position of adjustment.

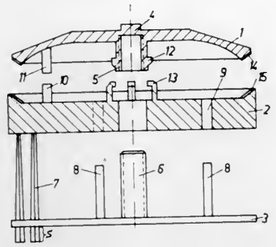
3,795,023
COMBINATION CUTTING, STRIPPING AND SWAGING TOOL
Vito Miragliotta, 1184 S. 1000, East, Clearfield, Utah 84015
Filed Dec. 26, 1972, Ser. No. 318,116
Int. Cl. H02g *1/12*; **B25f** *1/00*
U.S. Cl. 7—5.5 **5 Claims**



A hand operated tool including a pliers type handle operating opposing jaws to which are connected saw like stripping blades for cutting and stripping portions of a coaxial cable, which opposing jaws have adjustable stop means associated therewith for controlling the distance between the stripping blade edges. An arrangement for inserting a coaxial fitting onto the prepared end of a section of coaxial cable is included as part of the tool and comprises a cable holder, operated by movement of the tools opposing jaws, and a fitting coupler, with which a fitting is inserted into the outer covering of the end of a section of coaxial cable, which fitting coupler is operated by a lever pivotally connected to one of the tools pliers type handles.

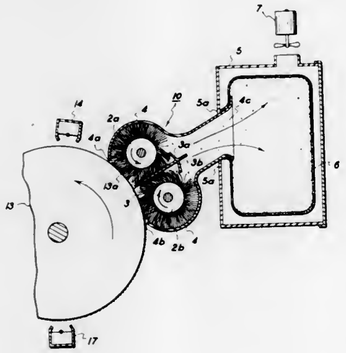
3,795,024
BRUSH HAVING ADJUSTABLE HARDNESS
Georg Weihrauch, Aschbach, Germany, assignor to Coronet-Werke Heinrich Schlerf GmbH, Odenw, Germany
Filed Mar. 27, 1972, Ser. No. 238,496
Claims priority, application Germany, Mar. 25, 1971, 2114533
Int. Cl. A46b *17/06, 9/08*
U.S. Cl. 15—169 **12 Claims**

Brush having adjustable hardness includes a bristle plate, a perforated disc member and a cover member located adjacent the bristle plate at opposite sides thereof, means for adjusting the perforated disc member in position relative to the bristle plate, the adjusting means including an externally threaded



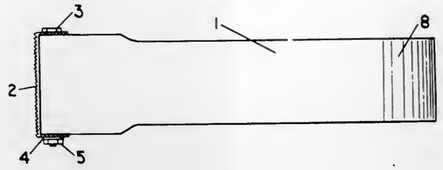
pin and an internally threaded hollow shaft substantially centrally located on one of the members, respectively, and threadedly engageable with one another through a substantially central opening formed in the bristle plate.

3,795,025
ELECTROPHOTOGRAPHIC PHOTORECEPTOR CLEANING APPARATUS
Katsumi Sadamitsu, Iwatsuki, Japan, assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 21, 1972, Ser. No. 308,637
Int. Cl. G03g *15/00*
U.S. Cl. 15—256.52 **10 Claims**



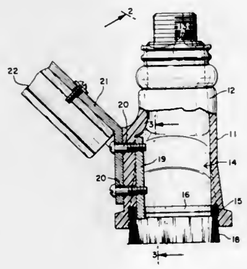
Photoreceptor cleaning apparatus in an electrophotographic apparatus including a pair of rotating brushes closely enclosed within a brush box and engaging the photosensitive drum. The lower, and first engaged, brush rotates in the same direction as the drum surface. The upper, and second engaged, brush rotates in the opposite direction. An integral planer guide plate and brush flicking member is positioned between and separates the brushes and extends away from the drum. Opposite sides of this guide plate are closely engaged by the brushes. The residual toner on the surface of the drum is swept off away from the drum and along the guide plate towards the center of the brush box and into an appropriate filter.

3,795,026
SAW-TOOTHED SCRAPER
Francis John Kazamek, and Kenneth James Kazamek, both of 11696 Lafayette Dr., Parma Heights, Ohio 44130
Filed Mar. 30, 1971, Ser. No. 129,355
Int. Cl. B44d *3/16*
U.S. Cl. 15—236 R **1 Claim**



The invention relates in general to a materials removal device and more particularly to hand-held scraper devices.

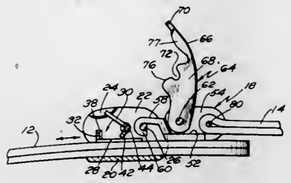
3,795,027
VACUUM NOZZLE FOR CLEANING UNDERWATER SURFACES
Albert W. Lindberg, Jr., 179 W. Fifth St., Bayonne, N.J. 07002
Filed Oct. 25, 1972, Ser. No. 300,691
Int. Cl. A47l *9/06*
U.S. Cl. 15—398 **3 Claims**



A vacuum nozzle for cleaning underwater surfaces comprising a housing having a centrally-disposed intake channel opening into a hose coupling integally formed therewith. A plurality of brush bristles are secured in a U-shaped, resilient frame which is mounted in a seat or groove disposed in the bottom of the channel of the housing so as to extend outwardly therefrom. An elongated, rigid mounting member, disposed inside the channel, overlaps and engages the ends of the brush bristle mounting frame, and is fastened to a handle mounting member which engages the outside of the nozzle housing. The resilient mounting frame secures both the brush and the handle mounting member on the nozzle housing.

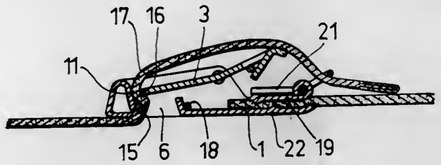
3,795,028
CLASP CONSTRUCTION FOR BRACELET
Irving Weiss, New York, N.Y., assignor to Kestenman Bros., Mfg. Co., Providence, R.I., a part interest
Filed Dec. 27, 1971, Ser. No. 212,549
Int. Cl. A44b *11/25*
U.S. Cl. 24—78 **4 Claims**

A clasp construction for use in adjustably interconnecting the free ends of a bracelet on the wrist of a wearer, including a clamp assembly that receives one of the free ends of the bracelet therein in slidable, adjustable relation and a coupling assembly that is secured to the other free end of the bracelet,



the coupling assembly including a coupling member that engages the clamp assembly for removably mounting the bracelet on the wrist of the wearer.

3,795,029
BUCKLE FOR PLANE BELTS, PREFERABLY TEXTILE BELTS
Karl Arne Norman, S-790 20 Grycksbo, Falun, Sweden
Filed Aug. 8, 1972, Ser. No. 278,835
Int. Cl. A44b *11/12*
U.S. Cl. 24—191 **2 Claims**

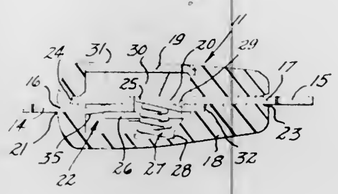


A sheet metal buckle having one end adapted to be attached to one end of a textile belt, is provided with a spring-loaded tongue pivotally mounted on the buckle and adapted to engage an integral transverse portion of the buckle located at its other end for clamping the belt therebetween. The transverse portion is formed by bending part of the sheet metal to provide a forward portion which is directed upwardly away from the bottom of the buckle and inclined inwards toward the buckle and which is thereafter bent downward and inwards toward the buckle to provide a first surface, and by bending a further part of the buckle to provide a rearward portion which is directed upwards relative to the bottom member and which terminates in a second surface forming a stop adjacent said first surface at a position below the clamping end of the spring loaded tongue.

3,795,030
BUCKLE
Gerald A. Yates, Birmingham, and Arnold M. Stephens, Jr., Mount Clemens, both of Mich., assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Mar. 21, 1972, Ser. No. 236,702
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 AL **10 Claims**

A buckle with a wrap-around or encircling housing for safety belts into which housing are opposedly inserted two similar tongue pieces, one of which becomes fixed in its relation to the housing and the other of which is selectively removable therefrom. The fixed tongue plate retains a spring and a latch against which the spring presses and the latch includes a latch lug which extends through the fixed tongue plate. The spring and latch are in a cavity in the housing and the cavity opens outward transverse of the plane position of the tongue plates. The second of the tongue plates is insertable in the housing in slidable relation over the fixed tongue plate and is guided by buttressing in the housing so that on entry the latch is depressed until the latch opening in the second tongue

plate registers with the latch opening in the fixed tongue plate. Upon registration, the latch lug pops through the latch opening in the second tongue plate and withdrawal is prevented. A push plate having legs astraddle the tongue plates is provided in the cavity of the housing and the legs impinge on the latch



element. Manual depression of the push plate depresses the latch and releases the upper of the tongue plates for removal from its slot. Reinforcing means integral with the tongue plates provide added strengthening against torsional or twisting movement as between the two tongue plates under stress.

3,795,031

PROCESS FOR THE CONTINUOUS SHRINKAGE OF RANDOM WEBS

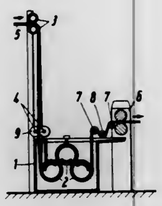
Heinz Fleissner, Egelsbach, Germany, assignor to Vepa AG, Basel, Switzerland

Division of Ser. No. 880,350, Nov. 26, 1969, Pat. No. 3,713,219. This application Nov. 13, 1970, Ser. No. 89,438

Claims priority, application Germany, Nov. 28, 1968, 1811380; Aug. 4, 1969, 1939993

Int. Cl. D06c *29/00*

U.S. Cl. 26—18.6 **8 Claims**



A process for the shrinkage of random webs which includes the steps of drawing-in a web of textile material to be treated, freely guiding the web of textile material over a distance which is at least equal to the width of the untreated web of textile material and which is substantially vertical, pleating the width of the web of textile material to form a wave-like fleece, conveying the pleated wave-like fleece over the conveying surface of at least one sieve means and passing a heated fluid processing medium through the conveying surface and through said fleece and thereafter removing the treated fleece from the conveying surface of said sieve means. Drawing-in the web is effected to provide overfeeding in the length of the web onto the seive means.

3,795,032

METHOD FOR MAKING A CENTER GEAR CRANKSHAFT

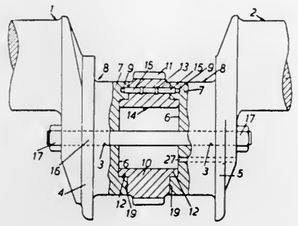
William F. Stewart; John B. Whittingham, both of Petersborough, and Geoffrey R. Perkins, Bourne, all of England, assignors to Perkins Engines Limited, Petersborough, England

Filed Jan. 12, 1972, Ser. No. 217,128

Claims priority, application Great Britain, Jan. 19, 1971, 2452/71

Int. Cl. B21k *1/08*

U.S. Cl. 29—6 **6 Claims**



Method of constructing a crankshaft incorporating a timing driving wheel includes forming a crankshaft having a crank disposed on opposite sides of a main bearing region, machining and treating the bearing surfaces of the crankshaft, preparing a machined cylindrical datum area on the surface of said main bearing region, cutting through said datum area to separate the crankshaft into two portions, locating a machined and treated timing wheel between the severed ends of said portions, accurately aligning the driving wheel in co-axial relationship with the parts of said datum area on each of said portions, and welding the resulting assembly together by a local welding method.

3,795,033

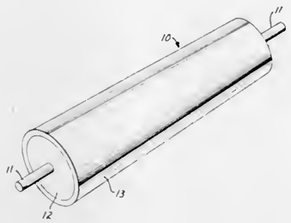
FIXING PROCESS

Charles A. Donnelly, South St. Paul, Minn., and James F. Sanders, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 867,176, Oct. 17, 1969, Pat. No. 3,669,707. This application Feb. 3, 1972, Ser. No. 223,104

Int. Cl. B21b *31/08*

U.S. Cl. 29—132 **3 Claims**



Particulate thermoplastic toner is fixed on a receptor surface by directly contacting the toner with a silicone elastomer surface while the toner is in a fused state responsive to the adhesive nature of the silicone elastomer and to the adhesive nature of the receptor to provide for the substantially complete retention of the toner on the receptor surface in a fixed condition. Preferably, the silicone elastomer is free of high surface energy fillers and, most preferably, is both free of high surface energy fillers and contains low surface energy fillers blended therein.

3,795,034

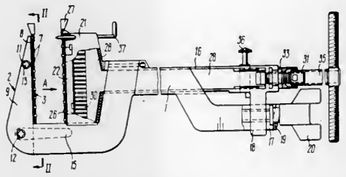
SURGICAL INSTRUMENT FOR SUTURING TISSUES AND ORGANS WITH METAL STAPLES

Alexei Alexeevich Strekopytov; Tatyana Andreevna Strekopytova, both of ulitsa Vsevaloda Vishnevskogo, 10, kv. 67; Tamara Pavlovna Androsova, Beskudnckovo ulitsa Dubninskaya, 10, korpus 3, all of Moscow, U.S.S.R., and Pavel Iosifovich Androsov, deceased, late of ulitsa Sergeya Eizenshteina, 2, kv. 267, Moscow, U.S.S.R. (by Maria Nikiforovna Androsova, administratrix)

Filed May 9, 1972, Ser. No. 251,696

Int. Cl. B23q *7/10*

U.S. Cl. 29—212 D **2 Claims**



A surgical instrument for suturing tissues and organs with metal staples incorporates a supporting body which at one of its ends carries a supporting jaw which has a flat area on which three parallel rows of depressions are provided, adapted for the ends of the staple legs to bend, two of said three rows serving for applying a double-stitch suture to all the layers of the tissue being sutured, the remaining row is for the application of a single-stitch suture to the upper layer of that tissue. Part of the supporting jaw carrying said one row of depressions is made detachable. The instrument has a staple body, having a hollow head into which is inserted a staple magazine, and staple ejectors for the staples to be driven out therefrom, as well as actuators for an independent motion of the staple ejectors and the staple body. The instrument is capable if application of both a double-stitch suture with subsequent invagination thereof and the application of a single-stitch suture, and a single-stitch suture alone.

3,795,035

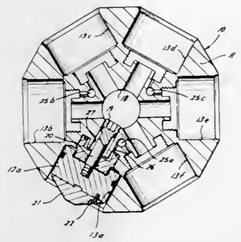
MECHANISMS FOR SWAGING THE ENDS OF PIPES

Ivo C. Pogonowski, Houston, Tex., assignor to Texaco, Inc., New York, N.Y.

Filed Apr. 26, 1972, Ser. No. 247,584

Int. Cl. B23p *19/00, 19/04*

U.S. Cl. 29—200 B **10 Claims**



One device for swaging one vertical smaller tubular member internally of a larger tubular member comprises a cylindrical swage block for loosely fitting in the large tubular member and resting on the upper edge of the inner smaller tubular member. A plurality (preferably six) pistons and cylinders are suspended from the swage block a precise distance below the upper edge and actuatable radially from the longitudinal axis of the smaller tubular member for deforming the upper edge portion thereof against the larger tubular member for providing more working space internally of the tubular members. A modification comprises a plurality of seven axially spaced apart, parallel layers of swaging pistons and cylinders suspended from the swage block.

3,795,036

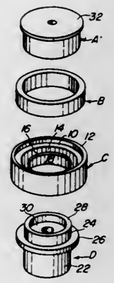
DIE-SET COMBINATION FOR MAKING PIN-BACK BADGES

Malcolm J. Roebuck, Box 618, LaSalle, Ill. 61301

Filed Jan. 2, 1973, Ser. No. 320,441

Int. Cl. B23p *11/00*

U.S. Cl. 29—243.52 **1 Claim**



A combination of mutually interfitting die and press-block elements adapted for manual use and operation with each other to produce a finished and permanent assembly of the separate components of a pin-back button or badge.

3,795,037

ELECTRICAL CONNECTOR DEVICES

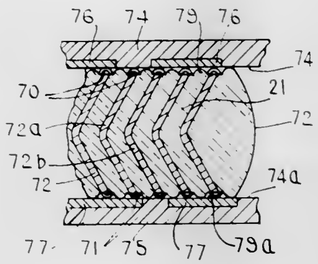
Willem Luttmer, Romiley, England, assignor to International Computers Limited, London, England

Division of Ser. No. 135,674, April 20, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 311,602

Claims priority, application Great Britain, May 5, 1970, 21609/70; Sept. 23, 1970, 45196/70

Int. Cl. H01r *43/00*

U.S. Cl. 29—628 **2 Claims**

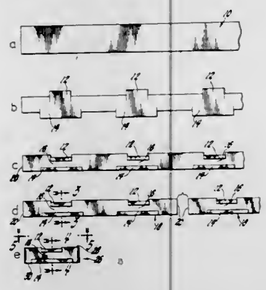


An electrical connector comprises a plurality of elongated flexible conductors embedded in, and extending between surface of, a block of elastomeric insulating material.

3,795,038
METHOD OF MANUFACTURING MOUNTING PADS FOR ENERGY ABSORBING STEERING COLUMN INSTALLATIONS

Richard R. Brezinski, Saginaw, and Lyle H. Durkee, Hemlock, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1973, Ser. No. 342,045
Int. Cl. B23p *17/00*
U.S. Cl. 29—417 **3 Claims**

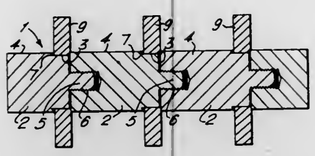


A method of manufacturing mounting pads for energy absorbing steering columns from a flat continuous ribbon of plastically deformable stock, as for example cold rolled steel, the method including the steps of forming a plurality of lugs along each edge of the ribbon at predetermined intervals along the length thereof, bending the lugs at right angles to the plane of the ribbon to define thereon a plurality of channel sections, severing the ribbon at predetermined intervals to define a plurality of pad blanks each including a pair of channel sections, and bending the blanks at right angles to the plane of the ribbon to define closed polygons each having a pair of opposite sides on which are disposed respective ones of the pair of channel sections, each channel section opening outwardly with respect to the interior of the closed polygon.

3,795,039
METHOD OF MAKING AN ELECTROLYTIC CONDUCTIVITY CELL

Roger Eric Earl, Clifton, England, assignor to L. T. H. Electronics Limited, Bedfordshire, England

Filed Feb. 29, 1972, Ser. No. 230,308
Claims priority, application Great Britain, Mar. 10, 1971, 6470/71
Int. Cl. G01n *27/00*
U.S. Cl. 29—592 **8 Claims**

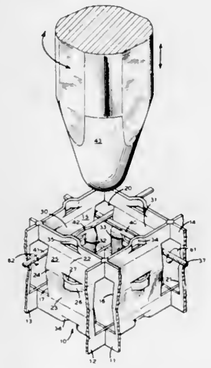


A method of making electrolytic conductivity cells and a mandrel therefor in which the mandrel comprises a plurality of rod like sections each having at one end thereof a reduced diameter portion and a threaded stud for engaging a threaded recess in an adjacent section so that all the sections can be screwed together providing recesses along the length of the mandrel each formed by a reduced diameter portion of one section and an abutting end of normal diameter of an adjacent section. The step between the normal and reduced diameter portions of each section being undercut to provide a cutting edge. The method comprises slipping over the reduced diameter portion of each section a carbon graphite ring electrode, screwing together all the sections so that the electrodes are clamped in the recess, introducing the assembly into a mould, introducing plastics material in the mould to set and form the body of the cell and then applying pressure to one end of the mandrel to cause the cutting edges to shear off that portion of each electrode held in a recess thus leaving a smooth bore through the cell body. An alternative form of construction provides a mandrel having sections each with an internal peripheral recess at one end to hold an electrode against an abutting end of an adjacent section, moulding the cell body as above and then applying pressure to the mandrel to shear off the outer periphery of each electrode to form a smooth outer surface for the cell body.

3,795,040
METHOD OF INSERTING FUEL RODS INTO INDIVIDUAL CELLS IN A FUEL ELEMENT GRID

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,383
Int. Cl. B23p *19/04*
U.S. Cl. 29—433 **1 Claim**



An illustrative embodiment of the invention provides a fuel element assembly technique that facilitates the insertion of a fuel rod into a cell which is formed by a resilient grid structure. Initially, a cam is introduced into the cell. The inserted cam is rotated to deflect the grid surfaces that comprise the cell walls. This deflection prevents a leaf-spring mounted detent formed in the grid surface from extending into the path of the fuel rod. A key with a dimension that generally matches the deflected grid is inserted into the cell in order to engage the temporarily bowed grid surface. The inserted cam is rotated back to the initial orientation relative to the cell configuration and is withdrawn from the grid structure. The deflecting key lodged against the bowed grid surface, however, sustains the deflection in order to enable the fuel rod to be inserted into the cell without being abraded by the detent. After fuel rod insertion, the matching dimension portion of the deflecting key is disengaged from the grid surface and the key is withdrawn from the cell to release the leaf spring and allow the detent to clutch the fuel rod.

3,795,041
PROCESS FOR THE PRODUCTION OF METAL-CERAMIC BOND

Hans-Walter Hennicke, Clausthal-Zellerfeld, and Hermann-Walter Grunling, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

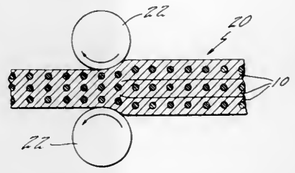
Filed Sept. 13, 1971, Ser. No. 180,090
Claims priority, application Germany, Sept. 24, 1970, 2047056
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.9 **6 Claims**

A metal ceramic bond wherein the ceramic portion and the metal part, which is alloyed with an active metal in the bonding zone or which contains the bonding zone in the form of an interpolated formed member that is adapted to the bonding surface, is kept below the melting point, in a vacuum, and under pressure of 5 to 50 kp/mm², for a period up to 25 hours. The metallic bonding zone, preferably, consists of a binary alloy with an active metal content of 0.05 to 15 atom-percent and the ceramic part is preferably sintered corrundum or sapphire (Al_2O_3). The base metal used for the binary alloy is copper, silver, nickel or iron. The method may be used advantageously, for example, in the production of electron tubes and semiconductor components.

3,795,042
METHOD FOR PRODUCING COMPOSITE MATERIALS

Kenneth G. Kreider, Glastonbury, and Karl M. Prewo, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 22, 1972, Ser. No. 282,818
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.3 **5 Claims**

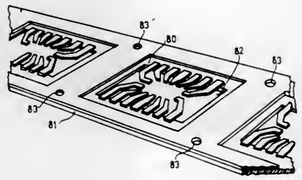


A method for continuously manufacturing in air high strength metal matrix composites reinforced with a plurality of parallel layers of unidirectional filaments comprising positioning a plurality of filament reinforced aluminum matrix monolayer tapes in a stack, pressing the stack between at least one pair of rollers heated to a predetermined temperature at pressures of approximately 100–10,000 psi to reduce its thickness and cause densification, said temperature being lower than the liquidus temperature of the aluminum matrix but being sufficiently high, in combination with the pressure, to cause bonding of the aluminum matrix of each tape to the filaments embedded therewithin and to contiguous portions of the adjacent tapes.

3,795,043
METHOD FOR OBTAINING BEAM LEAD CONNECTIONS FOR INTEGRATED CIRCUITS

Franco Forlani, Monza, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Nov. 2, 1971, Ser. No. 196,442
Claims priority, application Italy, Nov. 5, 1970, 31333/70
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **7 Claims**



A process for obtaining beam leads for connecting integrated circuit chips to an external circuit substrate, wherein aluminum beam leads are formed and directly and simultaneously bonded to aluminum pads on the chips while continuously being supported.

3,795,044
METHOD OF CONTACTING A SEMICONDUCTOR BODY HAVING A PLURALITY OF ELECTRODES UTILIZING SHEET METAL ELECTRIC LEADS

Hanns-Heinz Peltz, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

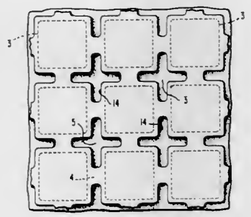
Filed July 22, 1971, Ser. No. 164,999
Claims priority, application Germany, July 29, 1970, 2037666
Int. Cl. B01j *17/00*
U.S. Cl. 29—591 **3 Claims**

In a method of contacting a semiconductor body provided with several electrodes, utilizing a plurality of sheet metal electric leads, the thickness or width of the sheet metal is reduced at the ends of the tongue-like electric sheet metal leads with respect to the parts thereof bordering a common holder frame therefor. The ends of the leads are directly connected to the electrodes of the semiconductor body provided therefor.

3,795,045
METHOD OF FABRICATING SEMICONDUCTOR DEVICES TO FACILITATE EARLY ELECTRICAL TESTING

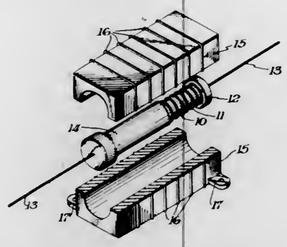
Guy Dumas, Paris, France, assignor to Silec-Semi-Conducteurs, Paris, France

Filed Feb. 11, 1971, Ser. No. 114,452
Claims priority, application France, Aug. 4, 1970, 70.28767
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **3 Claims**



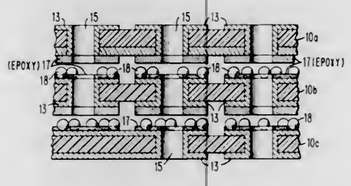
A method of fabricating semiconductor devices to facilitate electrical testing at an early stage and before final assembly to heat sinks and the like. A metallic layer is deposited over one surface of a semiconductor wafer having a previously formed internal junction or junctions. The other surface of the wafer is then coated with a chemically impervious protective layer in a grid pattern, and the exposed semiconductive material is chemically cut down to the metallic layer to form islands of junction devices separated by grooves. The grooves are next filled with a protective substance to cover the exposed junctions and the devices are electrically tested. The devices are then separated by mechanically cutting through the grooves and metallic layer, and the acceptable ones are mounted on their final supports or heat sinks.

3,795,046
METHOD OF MAKING A HEAT SINKED RESISTOR
George A. Shirn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Continuation-in-part of Ser. No. 104,621, Jan. 7, 1971, abandoned. This application Apr. 5, 1972, Ser. No. 241,420
Int. Cl. H01c *3/00, 5/00, 17/00*
U.S. Cl. 29—618 4 Claims



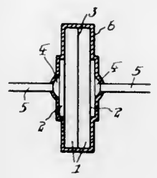
A ceramic core has selected resistance alloys wound thereon, and is covered by a vitreous-enamel insulating layer, and finally by a relatively thick metallic outer covering that is bonded to the vitreous-enamel layer. The metallic outer covering can be applied by pouring molten metal over the vitreous-enamel covered resistor that has been preheated. The resultant electrical resistor is designed for the utmost stability under extreme operating conditions, and has a power rating that is increased over five-fold from the power rating without the metal outer layer.

3,795,047
ELECTRICAL INTERCONNECT STRUCTURING FOR LAMINATE ASSEMBLIES AND FABRICATING METHODS THEREFOR
Oscar R. Abolafia, Endicott; John A. Lau, Johnson City; Franklin F. M. Lee, Endwell, and Catherine R. Watson, Binghamton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 15, 1972, Ser. No. 263,089
Int. Cl. H05k *3/36*
U.S. Cl. 29—625 11 Claims



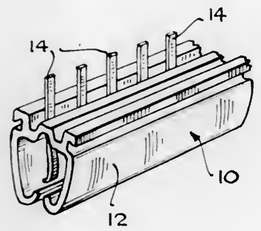
This is a structuring technique for fabricating a multilayer circuit assembly by laminating subassemblies and joining the conductive elements from one subassembly to another both electrically and mechanically by application of a metal powder epoxy (MPE) process at each joint interface. Adjacent conductive surfaces are interconnected by first applying a thin layer of B-stage epoxy to the circuit areas of one conductive surface. Uniformly spherical metal particulate powder is then sprinkled over the entire surface. After moderate heating the powder particulate will remain only on the epoxied areas. The other surface is uniformly covered with B-stage epoxy. The two surfaces so pretreated are then laminated together in an alignment fixture under both pressure and heat. The metal particles, which are spherical and equal sized, and harder than both of the conductive surfaces, are able to penetrate the epoxy layers and into contact with the metallic conductive surfaces during the heating and pressure process. The epoxy is cured with a resultant interconnection that is electrically good and mechanically strong.

3,795,048
METHOD FOR MANUFACTURING NON-LINEAR RESISTORS
Kan-ichi Tachibana; Michihiro Nishioka, and Mikiya Ono, all of Kitakyushu, Japan, assignors to Mitsubishi Mining & Cement Company, Ltd., Tokyo, Japan
Filed Jan. 26, 1973, Ser. No. 327,177
Claims priority, application Japan, Feb. 16, 1972, 47-16305
Int. Cl. H01c *1/14, 17/00*
U.S. Cl. 29—621 2 Claims



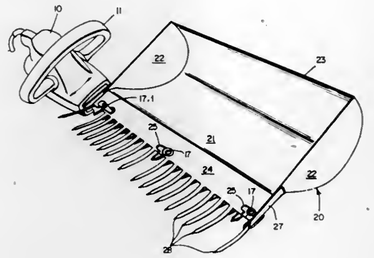
A method for manufacturing non-linear resistors comprising superposing several sintered wafers and applying silver electrodes to opposite surfaces of the sintered wafers superposed respectively is disclosed. The sintered wafer, consisting essentially of iron oxide and copper oxide has negative resistance and also possesses such thermister constant B°K and specific resistance $R_0K\Omega$ at 273°K as satisfy the relation $B \times R_0 \leqq 10^4 K\Omega \cdot °K$. The non-linear resistors manufactured by this method, based on utilization of the property of the contact surfaces between the sintered wafers superposed, have remarkably stable volt-amphere characteristics and are inexpensive in cost.

3,795,049
METHOD OF MAKING A PRINTED CIRCUIT EDGE CONNECTOR
Carl J. Steigerwald, Wauconda, Ill., assignor to TRW Inc., Cleveland, Ohio
Filed Feb. 22, 1972, Ser. No. 228,099
Int. Cl. H02g *15/00*
U.S. Cl. 29—629 9 Claims



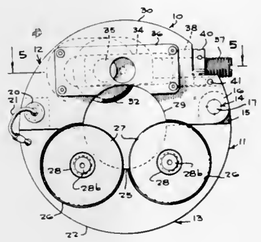
A method and device defining a printed circuit edge connector wherein extruded plastic insulator bodies are utilized in forming the connector and the contact elements associated with the edge connector are inserted in or molded in the edge connector during formation thereof.

3,795,050
TRIMMER CATCH BOX
Albert L. Latsha, 460 Colfax Rd., Havertown, Pa. 19083
Filed Oct. 11, 1972, Ser. No. 296,522
Int. Cl. B26b *19/48*
U.S. Cl. 30—132 10 Claims



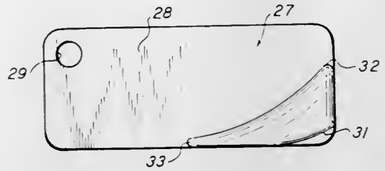
This application discloses a trimmer catch box which can be readily attached to a power driven hedge trimmer of either a single edge or double edge type instantly without attaching tools; which provides guide tines or fingers disposed at an angle to the cutter plane for efficient cutting; and which provides a catch box bottom disposed at an angle to the cutter plane for effective reception and retention of clippings and guidance of the trimmer when the cutting plane is vertical, horizontal, or inclined.

3,795,051
TANGENTIAL FEED PIPE CUTTER
William C. Feamster, III, 311 Saunders Dr., Portsmouth, Va. 23701
Filed July 11, 1972, Ser. No. 270,707
Int. Cl. B23d *21/08*
U.S. Cl. 30—101 14 Claims



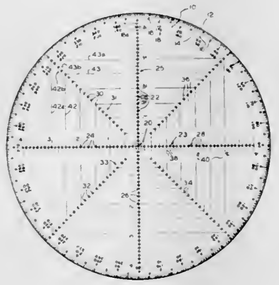
A tangential feed pipe cutter capable of cutting pipe in restricted spaces, formed of two semi-circular annular body segments hinged together to form a ring for encircling the pipe to be cut. Two pairs of rollers journaled in one of the segments engage the pipe at two roller contact points at circumferentially spaced locations on the pipe surface and a cutting wheel or blade for contacting the pipe at a contact point opposite the midregion between the rollers is slidable in the other segment and adjusted by a feed screw and feed nut along a rectilinear path paralleling a line connecting the two roller contact points.

3,795,052
SELF-SHAPING DENTAL MATRIX
Llewellyn L. Mowery, 1214 Central, Redlands, Calif. 92373
Filed June 5, 1972, Ser. No. 259,460
Int. Cl. A61c *5/12*
U.S. Cl. 32—63 3 Claims



A thin flexible sheet insertable uprightly between teeth has a small hole at one end for receiving a pulling instrument and a compound tapering wedge at the opposite end for holding the sheet between teeth. The wedge is shaped such that it not only fixes the matrix between teeth but imparts a bend to the matrix sheet to partly surround the tooth being worked on.

3,795,053
COMBINATION DRAFTING INSTRUMENT
Dennis A. Burke, 3104 N.E. 48th Ave., Portland, Oreg. 97213
Filed Mar. 10, 1972, Ser. No. 233,652
Int. Cl. B43l *13/00*
U.S. Cl. 33—1 B 6 Claims



A one-piece combination drafting instrument combines features of a protractor, compass, ruler and triangle. The instrument comprises a thin, flat, circular, transparent disc with its peripheral edge subdivided into degrees by radial degree marking lines, degree marking holes at 5° intervals just inwardly of the peripheral edge and degree indicia at 10° intervals. The disc is subdivided into 45° segments by straight rows of guide holes radiating from a center guide hole along various diameters of the disc. A primary pair of such diameters, extending perpendicular to one another, is subdivided into units of length by dimension marking lines. At least some of such lines extend through the guide holes along such diameters. Some of these marking lines are also identified by dimensional indicia which proceed progressively outwardly in increasing order from a zero reference point at the center guide hole. Pairs of sight guide lines extend at right angles to one another from the guide holes provided along a secondary pair of diameters spaced 45° from the primary diameters. The sight guide lines are aligned with the lineal dimension marking lines and guide holes along the primary diameters. The sight guide lines together define a series of concentric squares symmetrical about the center guide hole.

3,795,054

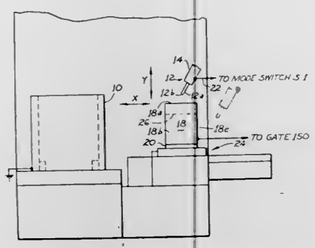
METHOD AND APPARATUS FOR CALIBRATING THE POSITION OF A TOOL AND FOR GAUGING THE DIMENSION OF A WORKPIECE

John M. Kinney, Cortland, Ohio, assignor to The American Welding & Manufacturing Company, Warren, Ohio

Division of Ser. No. 63,620, Aug. 13, 1970, Pat. No. 3,641,849, which is a continuation-in-part of Ser. No. 776,389, Nov. 18, 1968, abandoned. This application Sept. 21, 1971, Ser. No. 182,504

Int. Cl. G05b *19/18*; **G01b** *7/02*

U.S. Cl. 33—174 PC **8 Claims**



In a machine tool, a calibration and gauging system comprising drive means for moving a tool or inspection probe to a commanded position which is beyond a calibration position. The calibration and gauging system also includes circuitry for developing a transfer signal when the tool or inspection probe has arrived at the commanded position and a "false" transfer signal when the tool or probe has arrived at the calibration position. The transfer signals initiate the next sequence of the machine tool program.

3,795,055

APPARATUS FOR DIMENSIONAL TESTING OF NOMINALLY CYLINDRICAL WORKPIECES

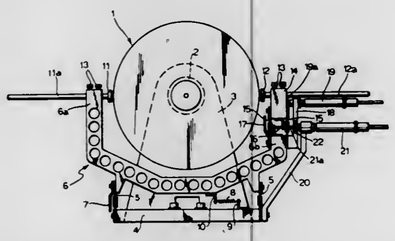
Matteo Zucco, Turin, Italy, assignor to Fiat Societa Per Azioni, Turin, Italy

Filed May 25, 1972, Ser. No. 256,854

Claims priority, application Italy, May 28, 1971, 68817 A/71

Int. Cl. G01b *5/08, 5/20*

U.S. Cl. 33—174 Q **1 Claim**



This invention provides a testing apparatus for nominally cylindrical workpieces enabling errors of both form and concentricity of a workpiece to be assessed, independently of workpiece diameter, while also checking the diameter itself. The workpiece is rotated about a longitudinal axis through at least 180° and two adjustable feelers are maintained in contact with diametrically opposite points on the surface of the workpiece, one feeler being carried by one arm of a forked support while the other feeler is carried by an block capable of lateral displacement relative to the other fork arm, both the forked support and the block being displaceable linearly in a lateral direction by virtue of ligament supports. A transducer responsive to workpiece diameter is carried by the forked support and bears against a reference point in the ligament support for the block which does not exhibit any lateral shifting upon change in workpiece diameter.

3,795,056

TRACK CORRECTION CONTROL

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed Jan. 19, 1970, Ser. No. 3,763

Claims priority, application Austria, Jan. 22, 1969, 645/69

Int. Cl. B61k *9/08*

U.S. Cl. 33—287 **33 Claims**

A mobile track laying machine arranged to move in a working direction from a newly laid corrected to a newly laid uncorrected track section corrects the position of the track at a track correction station. The track correction is controlled by a reference system which includes a reference associated with a track rail. The reference extends in a direction opposite the working direction towards the track correction station between two end points spaced from each other along the track one in the old track section and the other in the uncorrected newly laid track section, and means is provided to position the reference solely in dependence on the position of the track in the old track section.

3,795,057

FLUIDIZED BED PROCESS

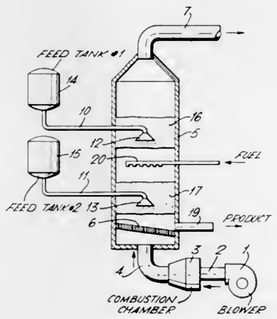
John Peter Fanaritis, Warren, Pa., assignor to Struthers Scientific and International Corporation, New York, N.Y.

Filed June 6, 1972, Ser. No. 260,149

Claims priority, application Great Britain, June 18, 1971, 28755/71

Int. Cl. F26b *3/08, 17/10*

U.S. Cl. 34—10 **1 Claim**



In a fluidized bed dryer or reactor in which particles are aggregated or coated to form granules, a two stage granulation process is provided in two vertically separated fluidized beds in a single chamber. In a drying process, heat may be added between the fluidized beds.

3,795,058

GRID FOR FLUIDIZED BED APPARATUS

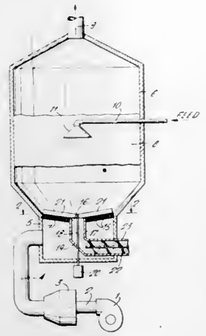
Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Scientific and International Corporation, New York, N.Y.

Filed June 6, 1972, Ser. No. 260,146

Claims priority, application Great Britain, June 6, 1971, 28757/71

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 D **1 Claim**



A flat conical grid at the bottom of a container for forming a fluidized bed therein contains a central opening for granules removal and has a rotary scraper on the upper surface of the grid driven by a shaft extending through the central opening.

3,795,059

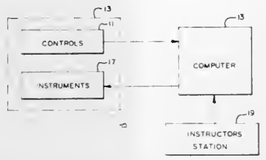
TRAINING SIMULATOR WITH NOVEL MALFUNCTION INSERTION

Victor Faconti, Jr., Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,668

Int. Cl. G09b *9/08*; **B64g** *7/00*

U.S. Cl. 35—12 D **5 Claims**



This specification discloses an automatic malfunction insertion system for a flight simulator wherein the operating conditions under which each aircraft malfunction is likely to occur are stored and compared with actual simulator conditions. Out of the most likely malfunctions as determined by the comparison one is randomly selected for insertion in the simulator, and means are provided to cycle through all possible malfunction before repeating any one malfunction.

3,795,060

DRYER CONSTRUCTION

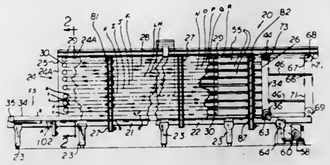
David Jaffa, Fairlawn, and Sandor Szarka, Hawthorne, both of N.J., assignors to Precision Screen Machines Inc., Hawthorne, N.J.

Filed Dec. 6, 1972, Ser. No. 312,787

Int. Cl. F26b *19/00*

U.S. Cl. 34—203 **12 Claims**

This disclosure is directed to a dryer construction having a heating tunnel in which there is disposed an endless conveyor including a series of connected work supporting trays. The conveyor and connected work supporting trays are conveyed through the tunnel in an endless serpentine manner to traverse a series of passes through the heating tunnel in a manner whereby the trays are always maintained in a substantially horizontal face-up position. Lifters or transfer means are provided adjacent the ends of each pass to co-act with the movement of the conveyor means to horizontally lift the respective



work support trays between adjacent passes. The arrangement is such that the work support trays are disposed to travel in an endless path within the tunnel in a manner whereby the loading and/or unloading of the workpieces upon the respective trays can be expedited without interruption of the moving conveyor means.

ERRATUM

For Class 35—12 D see:
Patent No. 3,795,059

3,795,061

TRAINING INJECTOR

Stanley J. Sarnoff, and George B. Calkins, both of Bethesda, Md., assignors to Survival Technology, Inc., Bethesda, Md.

Filed Mar. 21, 1973, Ser. No. 343,276

Int. Cl. G09b *23/28*

U.S. Cl. 35—17 **4 Claims**

A training injector for use in learning to administer medication to one's self or another, said injector having a blunt prod which is spring projected to simulate the action of the needle in an automatic injector.

3,795,062

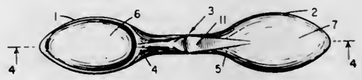
CHILD'S HAND TRAINER

Thomas Lamb, 42 Mariomi Rd., New Canaan, Conn. 06840

Filed Sept. 20, 1972, Ser. No. 290,439

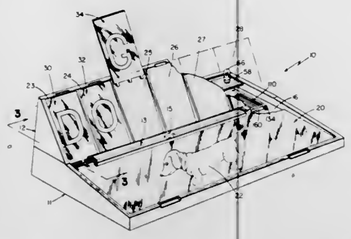
Int. Cl. A63b *23/00*

U.S. Cl. 35—29 E **4 Claims**



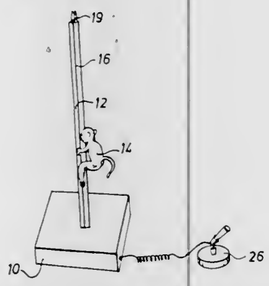
A child's hand trainer designed to teach infants and children at an early age to use fingers and hands intelligently and usefully when handling objects comprises two symmetrical, oppositely disposed, reversely oriented implements such as spoons or forks joined together by a tetrahedral structure providing triangular surfaces which provide natural gripping surfaces for the child's thumb and fingers.

3,795,063
CARD SELECTION SYSTEM
Roy A. Nelson, Acton, Mass., assignor to Spellbinder, Inc., Boston, Mass.
Filed Feb. 28, 1973, Ser. No. 336,751
Int. Cl. G09b *5/02*
U.S. Cl. 35—35 D **7 Claims**



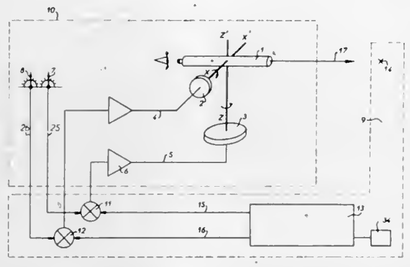
A card selection system comprises a control card and an element card, each having visible indicia, one card having a coded array of apertures and the other having a coded array of cooperating protrusions. The one card is received in a base with its coded array of apertures aligned with a plurality of resilient electrical contacts and receives the other card with its coded array of protrusions directed toward the contacts; the protrusions move certain of the contacts with respect to conducting means on the base, and the apertures cooperate to permit motion of those contacts with respect to the conducting means. An electric current is thereby conditioned through the conducting means to indicate the selection of an element card having an array coincidently coded with a control card coded array.

3,795,064
THERAPEUTIC TOY
Christopher Temple Sims-Williams, London, England, assignor to Alfred George Moore, Hounslow, England
Filed Oct. 12, 1972, Ser. No. 296,924
Claims priority, application Great Britain, Oct. 14, 1971, 47,860/71
Int. Cl. G09b *19/04*
U.S. Cl. 35—35 C **9 Claims**



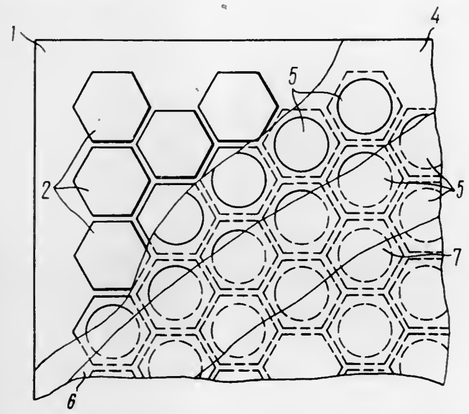
A toy particularly useful for speech therapy and including visual display means actuated in response to sounds produced into a microphone. In one form the visual display is a monkey which is suspended on a vertical pillar by a thread passing over pulleys or by magnets attracted to other magnets mounted for movement within the pillar. The microphone is connected to an electrical circuit adapted to drive an electric motor in a forward direction thereby raising the monkey up the pillar when an acceptable sound is produced. The circuit is adjustable to redefine an acceptable sound and may be adapted to lower the monkey immediately an acceptable sound ceases or after a preset delay.

3,795,065
DEVICE FOR INTRODUCING IN REAL TARGET OBSERVATION SYSTEMS APPARENT MOTION CHARACTERISTICS QUITE DIFFERENT FROM THE REAL CHARACTERISTICS
Pierre-Camille Aubert, Viroflay, and Michel Poesy, Hatenay-Malabry, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed July 11, 1972, Ser. No. 270,739
Claims priority, application France, July 23, 1971, 71.26977
Int. Cl. G09b *9/00*
U.S. Cl. 35—25 **11 Claims**



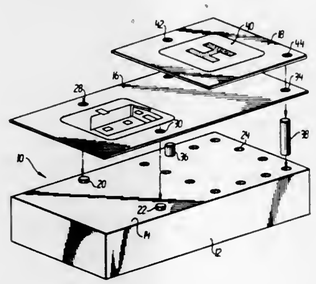
The present invention relates to a target animator and more particularly to a command mixer operating on a weapon system which substantially includes a sighting telescope movable in elevation and in azimuth responsively to command signals emitted by the aimer, a first input of said mixer receiving said commands and a second input thereof being provided to receive disrupting signals designed to selectively simulate varied movements of a target which may be towed or parachuted or even motionless.

3,795,066
GRAPHIC ANSWER INPUT DEVICE FOR A TEACHING MACHINE
Igor Rafailovich Tarnopolsky, ulitsa Zarodshaya 33, kv. 27., and Gennady Vasilievich Akimtsev, ulitsa Furmanova, 23, both of Frunze, U.S.S.R.
Filed Sept. 22, 1971, Ser. No. 182,658
Claims priority, application U.S.S.R., Sept. 22, 1970, 1472767
Int. Cl. G09b *5/00*
U.S. Cl. 35—48 R **1 Claim**



A graphic answer input device for a teaching machine of a sandwich structure comprising four elements placed one above another, namely a board with contacts electrically connected to the logical unit of the machine, a perforated card with holes, a current-carrying plate and a problem blank for the student to plot the required drawing on, the heads of the contacts being rectilinear polyhedrons in shape, which makes it possible to have the number of holes in the perforated card equal to that of contacts on the contact-bearing board and, hence, to increase the resolution of the input device as a whole.

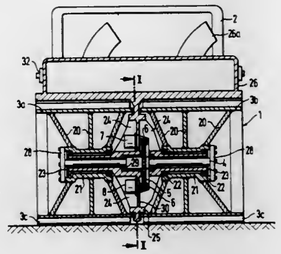
3,795,067
EDUCATIONAL APPARATUS
Harold Weinstein, 1820 Avenue V, Brooklyn, N.Y. 11229
Filed Oct. 16, 1972, Ser. No. 297,615
Int. Cl. G09b *3/02*
U.S. Cl. 35—9 D **3 Claims**



Educational apparatus including a block having a planar surface formed with a square array of holes therein. A card having indicia representing an educational problem is positioned on the planar surface and fixed thereto by a pair of pins inserted through a pair of holes in the card in registration with two of the holes in the square array on the planar surface of the block. Positioning of the pins fixes a code for choosing the correct answer to the problem displayed on the card. An answer to the problem is chosen by selecting an answer card having appropriate indicia thereon from the plurality of cards and superimposing the answer card on the problem card. The answer card selected, if correct, will have a pair of holes which register with the pins extending through the problem card to establish and immediately visually indicate to the student the correctness of the selection of his answer. If the holes on the answer card are not in registration with the pins, the student will have an indication of an incorrect answer and must select another answer card until registration is accomplished. The problem and answer cards are transparent so that their positioning on the planar surface of the block may be interchanged with the result that the answer card may become a problem card and the problem card the answer card, respectively.

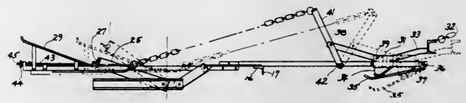
3,795,068
SNOW PLOW
Gustav Brunner, Hausern, Germany, assignor to Firma Ing. Alfred Schmidt, Schwarzwald, Germany
Filed Feb. 23, 1972, Ser. No. 228,592
Claims priority, application Germany, Sept. 21, 1971, 2147001
Int. Cl. E01h *5/00*
U.S. Cl. 37—43 D **3 Claims**

A snow plow has snow propeller drum structure driven by hydraulic motor means disposed inside this propeller drum structure. Advantageously, several hydraulic motors drive two



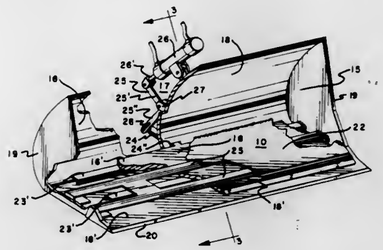
symmetrical sections of a drum by a common gear and shaft means within the drum structure.

3,795,069
PORTABLE TRAIL GROOMING DEVICE
Stanley O. Cheney, West Springfield, N.H. 03284
Filed July 5, 1972, Ser. No. 269,119
Int. Cl. E01h *5/00*
U.S. Cl. 37—48 **4 Claims**



This Trail Groomer is designed to adapt itself to the trail condition, and automatically reduces the load on the towing vehicle whenever the groomer meets high resistance such as iced snow cover or very heavy snow fall. The unloading of the groomer is accomplished by tilting the main beam upwards to lift a fixed blade, and pulling a lifting wedge which responds to excessive draw-bar pull under a movable blade to reduce some of the load of snow.

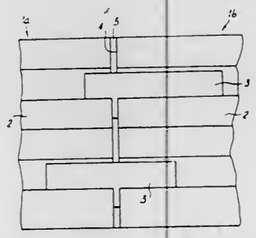
3,795,070
MULTIPURPOSE BUCKET FOR HEAVY-DUTY CONSTRUCTION EQUIPMENT
Orville P. Bronson, 5209 Targee Space No. 14, Boise, Idaho 83705, and Bruce L. Crabtree, Sr., P.O. Box 423, Snohomish, Wash. 98290
Continuation-in-part of Ser. No. 234,355, March 13, 1972, abandoned. This application Mar. 12, 1973, Ser. No. 340,623
Int. Cl. E02f *3/76*
U.S. Cl. 37—117.5 **4 Claims**



The multipurpose bucket for loaders, mounted on suitably actuated, commonly known, lift arms and being tilted by actuator cylinders mounted to the arms and to the bucket, comprises a bowl; an extendible bottom which is slidable forwardly

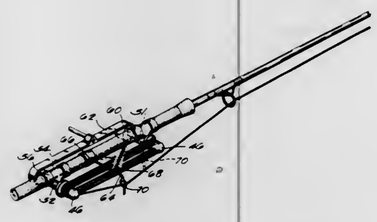
and rearwardly with respect to said bowl, and being connected at the rearwardmost terminal end by a connector bar; and an actuator assembly including a bell crank upstandingly, pivotally mounted at its vertex to the rearwardmost terminal side of the bowl, an actuator cylinder mounted in alignment with and over the bell crank to the rearwardmost side of the bowl and pivotally mounted by its piston to the upper arm portion of the bell crank, the lower arm portion of the bell crank being pivotally secured to the connector bar.

3,795,071
PLANNING BOARD
Heinz R. Wagner, Kapfsteig 16, 8032, Zurich, Switzerland
Filed Oct. 13, 1971, Ser. No. 188,822
Claims priority, application Switzerland, Oct. 19, 1970, 15363/70
Int. Cl. G09f *9/00*
U.S. Cl. 40—63 R **3 Claims**



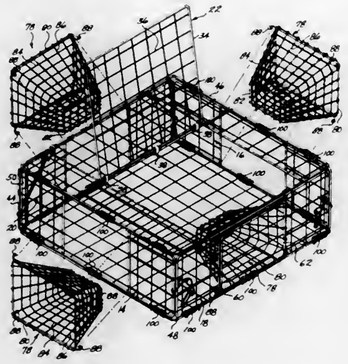
A planning board comprising a base plate adapted to be detachably secured to a support, the base plate being provided with a number of rows of clamping strips. At one end or edge of the planning board which extends transverse to the direction in which the clamping strips extend there is provided a recess means which extends over the entire length of this edge, and such recess means penetrates through the clamping strips and extends at least up to the region of the base plate.

3,795,072
FISHING REEL
Thomas D. Sherman, 711 Daisy Ln., Fox Point, Wis. 53217
Filed Feb. 12, 1973, Ser. No. 332,051
Int. Cl. A01k *89/00*
U.S. Cl. 43—25 **11 Claims**



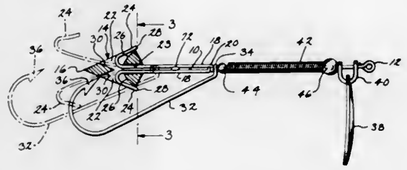
A fishing reel includes two spaced spools with the line stored on the spools in the form of elongated loops which encircle both spools. When casting, the spools do not rotate and the elongated loops slip from the spools in the manner of a spinning reel. The line is retrieved and wound on the spools by a belt arranged around pulleys or drive wheels on both spools with a handle connected to the belt for rotation of the belt. In one embodiment, the reel frame is pivotally mounted to the rod to position the spool axes parallel to the rod for casting and at right angles to the rod for rewinding the line.

3,795,073
COLLAPSIBLE TRAP FOR CRABS AND THE LIKE
Robert J. Olsen, Seattle, Wash., assignor to Northwest Wire Works, Inc., Seattle, Wash.
Filed Mar. 23, 1972, Ser. No. 237,384
Int. Cl. A01k *69/08*
U.S. Cl. 43—105 **9 Claims**



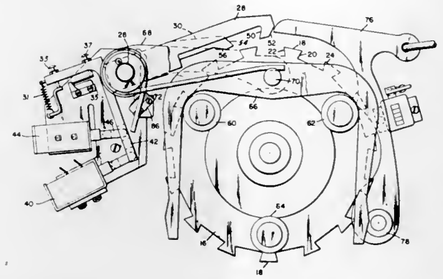
Two opposite sides of a rectangular trap are hinge connected to both the top and bottom of the trap. The remaining two sides are hinge connected to only the bottom and are adapted to be folded inwardly into a position flat against the bottom. Then, the top and one of the double hinged sides are folded downwardly onto the bottom and the remaining double hinged side. A framed tunnel opening is provided in each side for receiving a removable rigid wire tunnel.

3,795,074
NATURAL BAIT HOLDER
John F. Mantel, 2728B N. Fratney St., Milwaukee, Wis. 53212
Filed May 24, 1973, Ser. No. 363,688
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.2 **10 Claims**



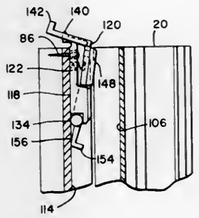
A straight wire shank has an eye formed on one end for attachment to a fishing line and has a pointed, grooved guide member attached to the other end for pierceable insertion into a worm, such as a night crawler, minnow, or other natural bait, or certain types of simulated natural bait of soft material. A pair of bait-securing wires are slideably attached to the wire shank and slideably extend through the grooves in the grooved guide member. The ends of the bait-securing wires are hook-shaped to engage the interior of the bait and hold it in position, but are substantially confined in the guide member during insertion so as not to interfere with insertion into the bait. The grooved guide member has camming surfaces which engage the bait-securing wires and spread the hook-shaped ends of the wires apart in response to forces which would normally tend to strip the bait from the holder, thereby holding the bait more firmly in position in response to such bait stripping forces. The hook-shaped ends of the bait-securing wires may be barbed to catch fish or alternately a separate barbed hook may be attached to the shank adjacent to the bait-securing wires for catching fish.

3,795,075
CONTROLLABLE TURNSTILE
Walter Joseph Orzechowski, Grenada Hills, Calif., assignor to Western Data Products, Inc., Los Angeles, Calif.
Filed Mar. 15, 1972, Ser. No. 234,711
Int. Cl. E06b *11/08*
U.S. Cl. 49—46 **2 Claims**



This invention describes a controllable turnstile for allowing metered movement in either of two directions. A cogwheel assembly is located on the same shaft as a turnstile and is controlled by a pair of separately operated pawls. A push pawl prevents counterclockwise rotation, but allows clockwise rotation whereas a pull pawl prevents clockwise rotation, but allows counterclockwise rotation. Each pawl is biased by a spring into an undetented position and is normally held in a detented position by the application of power to a pair of separately controllable solenoids. In the absence of power both pawls are released and the turnstile is free wheeling in either direction.

3,795,076
WINDOW STRUCTURE
Richard N. Anderson, Owensboro, Ky., assignor to V. E. Anderson Mfg. Co., Owensboro, Ky.
Continuation-in-part of Ser. No. 36,303, June 22, 1970. This application Mar. 8, 1971, Ser. No. 121,985
Claims priority, application Australia, Sept. 9, 1970, 19708
Int. Cl. E05d *15/52*
U.S. Cl. 49—192 **13 Claims**

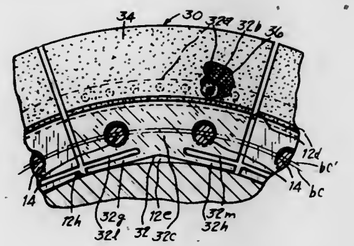


Universal window structure for use as a single-hung window, a hopper window, or a right or left-hand glider window and having a box frame and at least one movable sash is disclosed.

An improved mull cover for securing a plurality of the universal window structures together, sash guide and tilt release structure for permitting tilting of the movable sash out of the plane of the window structure, and sash guide and pivot structure for the movable sash are also disclosed, together with an improved sash balance shoe, improved locking structure for the movable sash, improved glazing structure, improved weather stripping, structure for maintaining the weathertightness of the window structure during high winds, and a combination screen retainer and movable sash seal. The window structure of the invention may be installed from the inside of a window opening by means of unique installation clips and can be installed from the exterior of a window opening in conjunction with a unique installation bracket. Trim extensions are also provided with the window structure for finishing a window opening in which the window structure is installed.

The window structure of the invention has provision for weepage installed as a single-hung hopper or as a right or left-hand glider window. The movable sash of the window structure of the invention is separated from the frame thereof and guiding and spacing means to eliminate metal-to-metal engagement between the movable sash and the window frame are provided whereby the window structure is particularly quiet in operation.

3,795,077
SEGMENTAL CUT-OFF GRINDING WHEEL
Robert W. Bosma, Whitinsville, and George H. Pettee, Sterling; both of Mass., assignors to Norton Company, Worcester, Mass.
Filed Dec. 4, 1972, Ser. No. 311,467
Int. Cl. B24d *5/06, 5/08*
U.S. Cl. 51—206.5 **17 Claims**

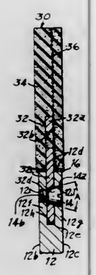


A high speed segmental cut-off grinding wheel has a reusable drive center with either one or a plurality of angularly spaced narrow segment aligning grooves of predetermined radial depth in its circumferential surface and a plurality of identical interchangeable, replaceable and detachable composite abrasive segments equally spaced around the center. Each abrasive segment has a segment support member, including resilient members extending into the aligning groove, engaging the center, and displacing the segment radially outward into a precise position and engagement with a plurality of quickly and easily removable segment locating and retaining members, each with a locking groove therein, inserted into axially aligned mating apertures in the center and extending through non-aligned locating apertures in the displaced segment support member. Sufficiently displacing each abrasive segment inwardly relative to the center deflects and preloads the resilient members and aligns the previously non-aligned locating apertures with the axially aligned apertures in the center for either inserting or removing the locating and retaining member to replace a segment. The resilient members bias the released composite abrasive segment outwardly with sufficient force to maintain the segment support member engaged with precision locating surfaces within the locking grooves of the locating and retaining members and thereby prevent axial displacement of the segment locating and retaining members.

3,795,078
SEGMENTAL CUT-OFF WHEEL
Loring Coes, Jr., Princeton, Mass., assignor to Norton Company, Worcester, Mass.
Filed Nov. 1, 1972, Ser. No. 302,662
Int. Cl. B24d *5/06, 5/08*
U.S. Cl. 51—206.5 **10 Claims**

A relatively large high speed thin segmental cut-off grinding wheel has a reusable drive center with a peripheral segment

aligning groove between axially spaced opposed side flange portions and equally spaced identical groups of precision tapered locating holes, in at least one of the side flanges. Identical interchangeable, replaceable and detachable composite reinforced abrasive segments are equally spaced around, precisely located, and clamped between the side flanges of the center. Each abrasive segment comprises, a thin non abrasive segment support member including a plurality of precision segment locating holes therein precisely aligned with a group of the tapered locating holes in the side flange portion

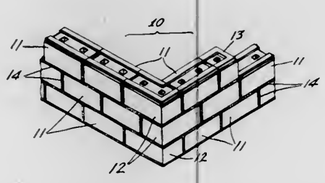


by a plurality of easily removable and insertable mating tapered segment locating and retaining members extending axially therethrough and threaded into either the opposite side flange portion or into a tapered nut within an opposite tapered hole in the opposite side flange of the center. Resilient members may be compressed in the space between the inner surface of the abrasive segments and the circumferential surface of the center for maintaining the segment in tension and/or compensate for any irregularities or non mating contours in the adjacent surfaces.

3,795,079
BUILDING STRUCTURE AND METHOD OF ERECTING SAME

Michael L. Klem, 6244 Brous Ave., Philadelphia, Pa. 19049

Filed May 20, 1970, Ser. No. 38,943
Int. Cl. E04b *2/20*
U.S. Cl. 52—437 **2 Claims**

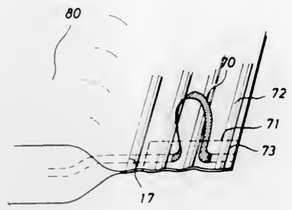


A structure having the overall appearance of conventional brick construction is erected from a series of building elements each of which has a peripheral channel and transverse vents connecting top and bottom portions of the channel to enable a bonding agent to be flowed downwardly through the vents and into passageways formed by the channels between the elements when they are laid one upon the other with their channels in registry with one another. The elements are provided with recesses in their side faces for receiving strips of decorative mortar which provide the illusion of mortar-joints and which are applied after the structure has been erected. Three forms of building elements are disclosed: a course element for the walls of the structure, a corner element for its corners, and an edge element for framing apertures in the structure.

3,795,080
METHOD FOR PACKAGING

Albert Emiel Smolderen, Aartselaar, and Joseph Marie Cappuyns, Berchem, both of Belgium, assignors to Afga-Gevaert N.V., Mortsel, Belgium

Filed Oct. 26, 1971, Ser. No. 192,021
Claims priority, application Great Britain, Oct. 26, 1970, 50,835/70
Int. Cl. B65b *61/18*
U.S. Cl. 53—14 **4 Claims**

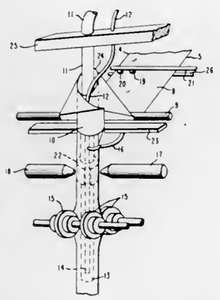


Hermetically sealed package for photographic sheet materials provided with one or two tearstrips which extend at the end of the package in the form of a loop. In order to facilitate the opening of the package in the dark a small part of the package is scored in the corners where the tearstrip extends, so that it can easily be torn off whereupon a sufficiently long extremity of the tearstrip is freed to open the package without difficulty.

3,795,081
PROCESS FOR CONTINUOUSLY FORMING COMPARTMENTED PACKAGES

Theodore E. Brown, Jr., Mickleton, N.J., and Frank M. Willis, Hedgesville, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 2, 1972, Ser. No. 303,054
Int. Cl. B65b *9/12*
U.S. Cl. 53—28 **6 Claims**

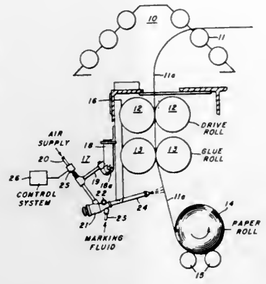


A series of multi-compartmented packages is produced continuously by forming a web of film, e.g., biaxially oriented, heat-set polyethylene terephthalate, into a continuously advancing convoluted tube having a partially single-ply and partially double-ply wall, sealing the inner to the outer ply so as to form at least two linear junctures, one adjacent the inner edge and one adjacent the outer edge of the web, thereby forming at least two adjacent compartments with the inner ply common to two compartments, feeding different fluent materials to the different compartments, constricting the loaded tube at spaced intervals and applying a pair of encircling closure means to the constricted areas, and severing the tube between the pair of closure means.

3,795,082
PAPER ROLL CODING DEVICE

Lawrence A. Brenner, Westchester, and Andrew Lopuski, Pottstown, both of Pa., assignors to Beloit Corporation, Beloit, Wis.

Filed May 4, 1972, Ser. No. 250,159
Int. Cl. B65b *61.26*
U.S. Cl. 53—131 **9 Claims**

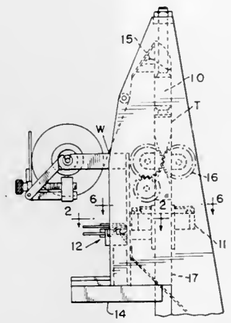


A device for color coding the wrapper of a paper roll to permit easy identification of wrapped paper rolls. Automatic color coding means are disposed for marking the wrapper as it is being fed to and around the paper roll. The automatic color coding means comprises spray means for a marking fluid closely spaced between the wrapper feed device and the paper roll to be wrapped, with the spray means being actuated to apply a stripe of perdetermined color marking fluid to the wrapper.

3,795,083
WRAPAROUND CLOSURE CLIP APPLYING MECHANISM

Roy Earl Wells, Haqoketa, Iowa, assignor to The Kartridge Pak Co., Davenport, Iowa

Filed June 6, 1972, Ser. No. 260,198
Int. Cl. B65b *51/04*
U.S. Cl. 53—138 A **10 Claims**

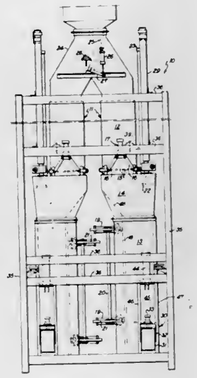


A closure clip forming and applying mechanism which is adapted to be incorporated in a packaging machine of the type which feeds materials to be packaged into a continuous tube of relatively thin pliable packing film and which has a reciprocating head in which there are movable plates for constricting the tube at axially spaced intervals and for applying to the constricted portion of the tube pairs of spaced closure clips which are formed into a U-shape on an associated anvil and delivered to the reciprocating head, with the latter including clip applying punch members and cooperating means to tilt the U-shaped clips as they are delivered to the head and thereafter to wrap the legs around the constricted tube material so that the ends lap each other.

3,795,084
PACKAGING APPARATUS

Charles D. Richardson, Muncie, Ind.; Robert J. Corsentino, Jr., Temple, and Oliver M. Gould, Belton, both of Tex., assignors to Richardson Service Division, Muncie, Ind.

Filed Aug. 15, 1972, Ser. No. 280,924
Int. Cl. B65b *1/32, 63/02*
U.S. Cl. 53—59 W **23 Claims**



A packaging apparatus for fibrous material comprises at least two vertically disposed housings that are laterally spaced with respect to each other. Each housing has a weighing chamber that is disposed above a compressing chamber with a guide passageway fixedly disposed therebetween. A diverting chamber is adapted to deliver material directly to a preselected one of said housings. Material is directed from a supply through the weighing chamber into the compressing chamber where it is compressed to a desired shape and size. The compressing chamber includes a vertically disposed movable wall which is laterally displaced a preselected distance across the width of the housing. A plunger means is disposed above and vertically movable into and out of the compressing chamber to compress material disposed therein. Features of the apparatus include a continuous package making operation used in conjunction with the packaging apparatus, a simplified control mechanism and a novel air supply system.

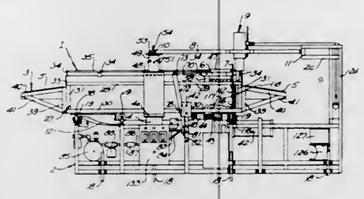
3,795,085
DEVICE FOR THE EVACUATION, CLIPPING AND TRIMMING OF BAG-LIKE PACKAGES

L. George Andre, Cincinnati, Ohio; Wayne R. Barthalomew, and Paul W. Worline, both of Oak Ridge, Tenn., assignors to Acraloc Corporation, Oak Ridge, Tenn. and Rheem Manufacturing Company, New York, N.Y., part interest to each

Filed Jan. 20, 1972, Ser. No. 219,415
Int. Cl. B65b *31/06*
U.S. Cl. 53—112 B **29 Claims**

A device for the evacuation, clipping and trimming of product containing, bag-like packages comprising a rotatable assembly having a circular table portion, a plurality of radially oriented evacuation nozzles and clamping means for each nozzle for sealingly affixing a product containing bag-like package thereon. The device has circumferentially arranged about the rotating assembly a bag insertion position having clamp closing means, vacuum initiating means, vacuum terminating means, means to clip the bag-like package and to trim the excess end therefrom, clamp releasing means, means to divert

the package from the table portion of the rotating assembly to further processing equipment and means to dispose of the ex-



cess bag end. Finally, means are provided to rotate the assembly and each of its nozzle and clamping means through the above noted positions.

3,795,086

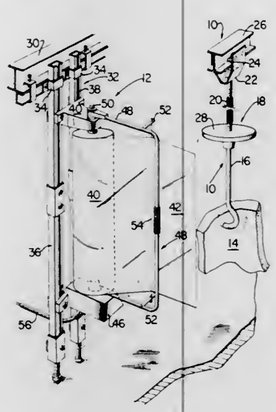
APPARATUS FOR WRAPPING MEAT

Reinhard Calhoun Hiss, Crystal Lake, Ill., assignor to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 77,064, Oct. 1, 1970, abandoned. This application Aug. 30, 1972, Ser. No. 284,900

Int. Cl. B65b *11/04*

U.S. Cl. 53—390 **1 Claim**



A method for wrapping meat, particularly freshly slaughtered carcass, comprises supporting the carcass upon a rotatable member adjacent a roll supply of a plastic film, engaging a portion of the film on the carcass and rotating the support for the carcass so as to cause the film to wrap around the carcass. The apparatus for the method includes an overhead trolley or rail having a supporting hook which permits the carcass to be moved into association with a supporting bracket which mounts a roll supply of a plastic film for rotation about a substantially vertical axis. The carcass is positioned directly adjacent the roll supply of the film and it is a simple manner to peel off a forward portion of the film and engage it on the carcass and then to rotate the carcass to remove a sufficient quantity of the film from the roll supply to completely wrap the carcass. Associated with the reel supply is a cutting knife or heating wire for severing the plastic after a sufficient quantity has been fed. The plastic advantageously comprises a vinyl chloride polymer of a type which possesses a high oxygen permeability rate and which allows the cut surface of the wrapped carcass to maintain its bloom and also a moisture vapor transmission rate which is sufficiently low to prevent dehydration or moisture loss.

3,795,087

REMOVAL OF HYDROGEN FROM LIQUID SODIUM

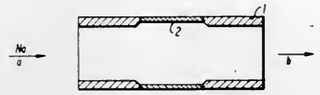
Hisashi Kamei, Tokyo, and Masayoshi Ohno, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi and Nippon Atomic Industry Group Co., Tokyo, both of, Japan, part interest to each

Filed July 30, 1971, Ser. No. 167,851

Claims priority, application Japan, Aug. 3, 1970, 45/67604

Int. Cl. B01d *53/22*

U.S. Cl. 55—16 **1 Claim**



Hydrogen is separated from a fluid, particularly molten sodium, by use of a hydrogen selective semi-permeable membrane. A method is provided whereby the membrane is constructed so as to replace a portion of a pipe for containing said molten sodium. In a second embodiment, the method is disclosed whereby a tank for containing said molten sodium, is provided with a hollow tube at least partly constructed with said membrane.

3,795,088

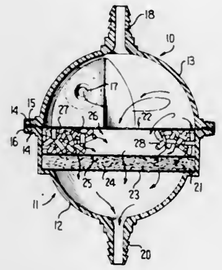
DEGASSING PARTICULATE MATTER AND OIL FILTER DEVICE

William G. Esmond, 537 Stamford Rd., Baltimore, Md. 21229

Filed Mar. 3, 1972, Ser. No. 231,691

Int. Cl. B01d *19/00*

U.S. Cl. 55—206 **9 Claims**



This disclosure relates to a device for the removal of gases, particulate matter and oil from a liquid, and more particularly for the removal of bubbles from blood after the treatment thereof in an artificial body device such as an artificial kidney or artificial lung. The device operates primarily on the principle of laminar flow of the blood through and material having an affinity for the liquid or blood whereby gases or bubbles entrapped therein will be caused to be released. The flow is one wherein the liquid, such as blood, will in no way be damaged.

3,795,089

WET SCRUBBER FOR AIR PURIFYING SYSTEMS

Karl Reither, Troisdorf/Spich, Germany, assignor to Kunststoffetechnik G.m.b.H. & Co. KG, Troisdorf, Germany

Filed Jan. 21, 1972, Ser. No. 221,458

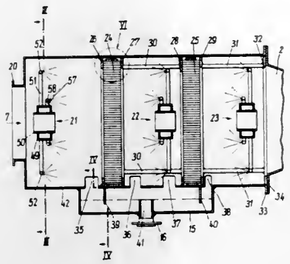
Claims priority, application Germany, Feb. 10, 1971, 7104981

Int. Cl. B01d *47/06*

U.S. Cl. 55—227 **36 Claims**

A wet scrubber for an air purifying system comprising a housing having an inlet and an outlet for gas flow through the housing. The scrubber includes wetting means in the form of a plurality of jet banks mounted in the housing for wetting the

gas flowing through the housing with a liquid purging agent. The jet banks are mounted in the housing for installation and removal transversely of the longitudinal axis of the housing.



One or more packings are mounted in the housing and are retained therein in such a manner that the packings can be installed and removed in an axial or longitudinal direction with respect to the housing when the jet banks are moved.

3,795,090

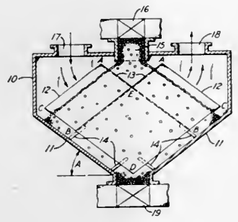
FLUID FILTER CONSTRUCTION

Herbert L. Barnebey, Columbus, Ohio, assignor to Barnebey-Cheney Co., Columbus, Ohio

Filed Aug. 25, 1972, Ser. No. 283,783

Int. Cl. B01d *53/04*

U.S. Cl. 55—387 **2 Claims**



This disclosure pertains to the construction of assemblies of granular material filled adsorbers or filters for fluids using modular components readily standardized to facilitate assembly of a variety of filter unit sizes and in diverse patterns from stock manufactured parts. The adsorbent filled panels are between air-space panels which are modular components of this invention. The other modular components include a hopper shaped housing and supporting and spacing means for assembling the air-space modules inside the housing. The filter is completed by filling the hopper, between the air-space modules, with granular adsorbent or other filtering medium.

3,795,091

MEANS FOR SEPARATING FLUIDS

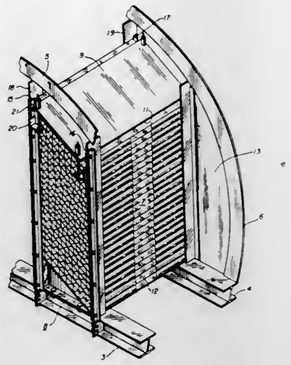
David M. Rennie, London, England, assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,884

Int. Cl. B01d *45/08*

U.S. Cl. 55—440 **4 Claims**

Parallel plates between which fluids are passed for phase separation are assembled into modular cells vertically extended within the limits established by the size of the vessel in which the cells are mounted. The plates are vertically stacked and mounted at the predetermined angle required for efficient



function. A sufficient number of the cells are mounted adjacent each other to provide the desired volume capacity throughput for the vessel in which the cells are mounted.

3,795,092

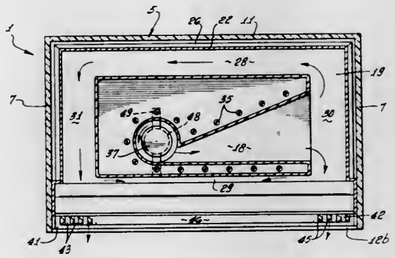
AIR FILTERING APPARATUS FOR ALLERGY SUFFERERS

Arthur G. Schwartz, 1119 Smyrna Ct., Sunnyvale, Calif. 94087, and Robert J. Deffeyes, 1330 Carolina, Graham, Tex. 76046

Filed Sept. 2, 1971, Ser. No. 177,283

Int. Cl. B01d *46/54*

U.S. Cl. 55—473 **8 Claims**



An overbed filter unit incorporating a blower and an absolute filter capable of removing 99 percent and more of micron and greater size particles of dust and pollen from blower air with quiet, through the use of a continuous plenum extending circumferentially about the air blower to convey blower air at reduced velocity to the filter.

3,795,093

APPARATUS FOR CLEANING THE AIR FROM A SPRAY PAINTING CHAMBER

Rainer Gerhard, Stiegefled, Germany, and Sture Axberg, Vaxjo, Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

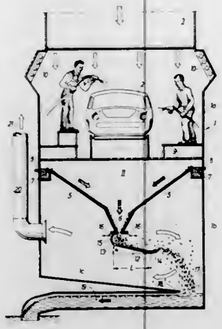
Filed Apr. 27, 1972, Ser. No. 237,272

Int. Cl. B01d *47/10*

U.S. Cl. 55—238 **3 Claims**

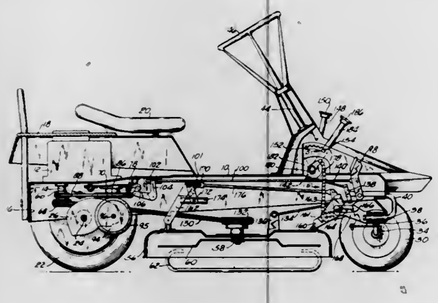
A method and arrangement for cleaning wetted air from spray painting chambers equipped with venturi, discharge

opening by deflecting softly laterally mixture of air and water for separating by centrifugal force action enclosed particles



and then causing flow of mixture to pass laminar for preventing new mixture.

3,795,094
RIDING MOWER
Ignatius J. Mollen, Brillion; Phillip E. Koerper; Albert G. Turner, both of Brookfield, and David S. Dewhurst, Wauwatosa, all of Wis., assignors to Ariens Company, Brillon, Wis.
Filed Oct. 30, 1972, Ser. No. 302,176
Int. Cl. A01d *35/26*
U.S. Cl. 56—11.1 **13 Claims**

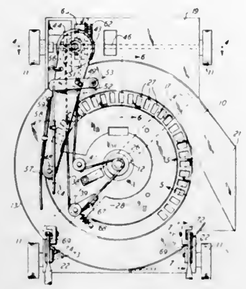


A wheeled frame with tilting front axle has rack and pinion steering gear. A rear mounted prime mover with vertical shaft has separate pulleys for driving the vehicle through a friction disk rate changer and for driving the shaft of the centrally mounted mower.

The mower is bodily movable fore and aft for tightening the drive belt or relaxing it to interrupt the drive to the mower. The pan which houses the rotary mower can be adjusted vertically and can move vertically independently of adjustment without interfering with, or being affected by, the clutching fore and aft movement.

3,795,095
VENTED ROTARY LAWN MOWER
Donald G. Erickson, Racine, and Vernon R. Kaufman, Cedarburg, both of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.
Filed Jan. 17, 1973, Ser. No. 324,298
Int. Cl. A01d *55/18*
U.S. Cl. 56—320.2 **11 Claims**

A vented rotary lawn mower having wheels for ground supporting the mower and having a handle for guiding the mower. The mower has a deck or housing which encloses a cutter blade, and the deck or housing has a plurality of air vents which permit air to enter the top of the deck or housing and to pass downwardly to the location of the cutter blade, and thereby introduce air into the housing and assist in the flow of



air through the housing and out the exhaust. The mower is shown to be power propelled, and it has a drive which is under the control of the operator for driving the ground wheels. Also, the mower handle is pivoted on the mower housing in a manner and at a point to effect easy and efficient guiding of the mower through the handle.

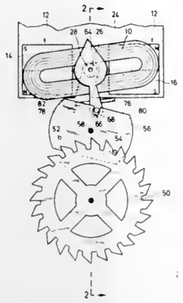
3,795,096
PRODUCT AND PROCESS
Samuel A. Dunwoody, Jr., Martinsville, Va., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.
Filed Sept. 5, 1972, Ser. No. 286,134
Int. Cl. D02g *3/34*
U.S. Cl. 57—144 **10 Claims**

A slub yarn product is prepared by a process in which a core strand is advanced through a series of false-twisting devices so as to form rotating standing waves ahead of each false-twister and simultaneously feeding yarns to the advancing core at the rotating waves to form a wrapped layer extending all along the core. Slubs are provided by feeding a sliver of discontinuous fibers to the core at a rate which causes the sliver to be intermittently caught in the advancing core and broken into separated portions which become part of the wrapped core. Slubs can also be produced by intermittently advancing the core strand through the wrapping operation to provide a wrapped layer of varying thickness. Slub size and spacing may be random or substantially uniform. The slubs are generally 15 to 35% greater in cross-sectional area than nonslubbed portions, 2 to 5.5 inches long, and spaced 8 to 30 inches between slubs.

3,795,097
STEPPING MOTOR FOR TIMEPIECES
Heinz Meitinger, Mutlangen, Germany, assignor to Timex Corporation, Waterbuty, Conn.
Filed Jan. 19, 1972, Ser. No. 219,102
Int. Cl. C04c *3/00*
U.S. Cl. 58—23 D **8 Claims**

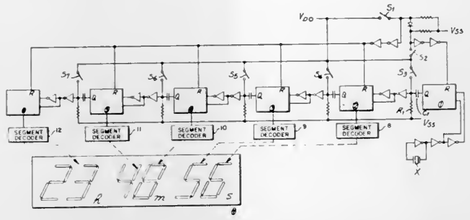
A stepping motor for timepieces comprising a movable coil means which is intermittently activated by electrical drive means to move between two extreme positions and an escapement member engaging the coil means to transmit the step-by-step movement to an escapement wheel. The coil means and

escapement member are poised so that radial accelerations that may affect the rotation of the coil means are eliminated



by the compensating movement of the escapement member. The resultant low moment of inertia for the coil results in low power consumption and a highly efficient motor.

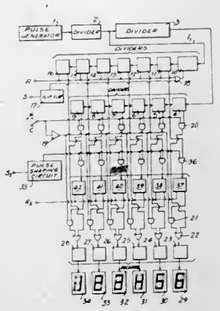
3,795,098
TIME CORRECTION DEVICE FOR DIGITAL INDICATION ELECTRONIC WATCH
Kinji Fujita, 10616, Takagi, Shimosuwa-machi, Suwa-gun, Nagano-ken, Shimosuwa, Japan
Filed Dec. 2, 1971, Ser. No. 204,064
Claims priority, application Japan, Dec. 3, 1970, 45/106454
Int. Cl. G04b *27/00*
U.S. Cl. 58—85.5 **3 Claims**



A digital indication electronic wristwatch having a liquid crystal display panel driven by the output of a standard oscillator through frequency divider circuitry. Time regulation is provided by means of a first switch for resetting the entire frequency dividing circuit and a second switch for individually resetting that portion of the frequency divider circuit whose output corresponds to a 1-second or 1-minute signal. If desired, further swiches may be provided for individually resetting those portions of the frequency divider circuit whose output corresponds respectively to the 10-second, 10-minute or 1-hour signal.

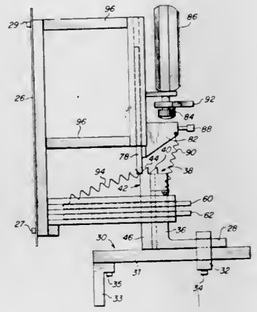
3,795,099
ELECTRONIC TIMEPIECE HAVING A CHRONOGRAPH MECHANISM
Yuki Tsuruishi, 3-5,3-chome, Owa, Nagano-ken, Suwa, Japan
Filed Feb. 4, 1972, Ser. No. 223,665
Claims priority, application Japan, Feb. 18, 1971, 46/7158
Int. Cl. G04b *19/00*
U.S. Cl. 58—23 R **15 Claims**

An electronic timepiece having a pulse generator for generating a high frequency time standard signal and a first divider for dividing the time standard signal into low frequency timing signals. A second chronograph divider divides the time standard signal of said pulse generator starting at a first time and ending at a second time independent of the operation of said first divider to produce chronograph timing signals. A digital display means is provided for selectively digitally dis-



playing the present time represented by said first divider timing signals or elapsed time represented by said second divider chronograph timing signals.

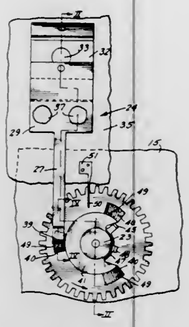
3,795,100
TIMING DEVICE
Curtis K. Baird, Sr., 313 Red Acre Rd., Stow, Mass. 01775
Filed Dec. 22, 1972, Ser. No. 317,613
Int. Cl. G07c *1/00*
U.S. Cl. 58—145 R **7 Claims**



A timing device is disclosed which has particular application in determining the linear feed rate of a tool, e.g. a drill. An adjustable, linearly movable spindle attached to the feed rate indicator is positioned in contact with the tool or tool holder so that it will move at the same linear speed as the tool. Timing means, such as a stopwatch, are provided to measure the elapsed time that it takes the spindle to traverse a predetermined linear distance while it is in contact with the tool.

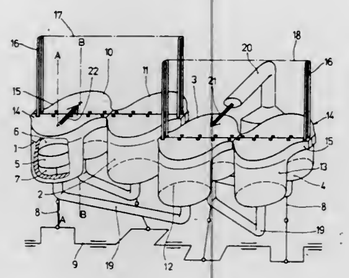
A unique arrangement of three slide members and two cams is used to start and stop the timing means at the beginning and end, respectively, of the predetermined linear distance. Two cam members, mounted in a vertically parallel relationship but having their activating faces offset in the vertical direction by said predetermined distance, are attached to the spindle. Two slide members mounted to slidably reciprocate in a vertical direction are attached to the cams so as to form an integral unit. As the integral unit is depressed, the cam faces engage a horizontal slide which activates and deactivates the stopwatch. Each of the slides and cams are spring biased so that they return to their original positions after operation.

3,795,101
ELECTRICAL CONTACT ARRANGEMENT WITH SELF CLEANING CONTACT POINTS
Emil J. Niznik, Lake Geneva, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Dec. 8, 1971, Ser. No. 206,050
Int. Cl. G04b *3/00*
U.S. Cl. 58—41 B **3 Claims**



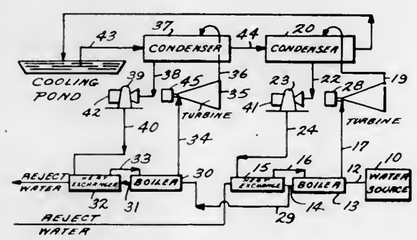
An electromechanical rewind device for clock mechanism, in which a rewind motor switch is automatically opened at the end of each spring winding cycle by the thrusting into separating relation between spring contacts of a wedge segment drivingly coupled with the rewind gear associated with the power spring, and when the spring is to be again wound, a spring-motivated coupling functions to release the contact-separating wedge from the switch for closing of the switch to repeat the rewind cycle. To prevent unwinding of the power spring when battery power is insufficient for proper winding, a spring finger extends into the path of the contact-separating wedge; the strength of the spring finger is so gauged that the force exerted by the power spring will not enable the wedge to pass it, but the force exerted by the rewind motor will do so.

3,795,102
DOUBLE ACTING, RECIPROCATING HOT GAS, EXTERNAL COMBUSTION CYLINDER-PISTON ENGINE
Eckhard Tusche, Augsburg, Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Augsburg, Germany
Filed Mar. 29, 1973, Ser. No. 346,107
Claims priority, application Germany, Apr. 8, 1972, 2217078
Int. Cl. F03g *7/06*; **F25b** *9/00*
U.S. Cl. 60—24 **14 Claims**



To provide a compact engine construction in which the operating piston-cylinder units and the associated regenerator, condenser and re-heater units are located closely adjacent, with gas connections of minimum length, the cylinder units are combined into one aligned row forming the longitudinal axis of the engine. The regenerator and condenser units for each of the cylinders are placed in common housings, preferably also of cylindrical shape and size similar to and not less than that of the cylinders such that the central axis of the cylinders and the central axis of the common housings paired therewith are placed in planes perpendicular to the longitudinal axis of the machine. The hot gas connection means are all placed in planes which are perpendicular to the machine axis and the cold gas connection means are inclined at an angle to the plane perpendicular to the machine axis. The re-heaters are preferably formed as a wall of tubes extending in a plane parallel to the longitudinal axis of the machine, the cylinders, as well as the cylindrical housings for the regenerator and condensers being formed with similar manifolds connecting to the re-heater tube wall.

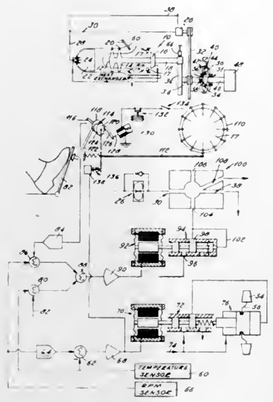
3,795,103
DUAL FLUID CYCLE
James Hilbert Anderson, 1615 Hillock Ln., York, Pa. 17403
Filed Sept. 30, 1971, Ser. No. 185,243
Int. Cl. F01k *25/06*
U.S. Cl. 60—651 **7 Claims**



Power is extracted from a stream of hot fluid, such as geothermal water, by passing the stream in heat exchange relationship with a working fluid to vaporize the latter, expanding the vapor through a turbine, and condensing the vapor in a conventional Rankine cycle. Additional power is obtained in a second Rankine cycle by employing a portion of the hot fluid after heat exchange with the working fluid to vaporize a second working fluid having a lower boiling point and higher vapor density than the first fluid. Isobutane and R-22 ($CHClF_2$) may be employed as the first and second working fluids, respectively.

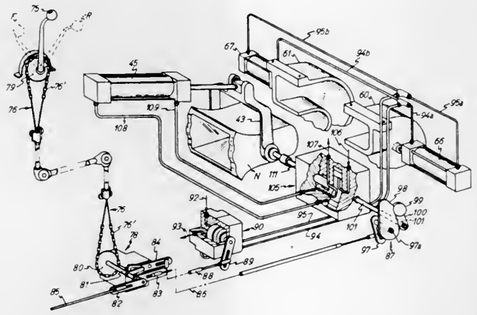
3,795,104
GAS TURBINE CONTROL SYSTEM
Arthur P. McLean, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 3, 1972, Ser. No. 303,585
Int. Cl. F02c *9/10*
U.S. Cl. 60—39.27 **12 Claims**

A simple, low cost control system for a single shaft gas turbine engine in which steady state operation is controlled by movement of the stator vanes of a torque converter fixed to the compressor shaft, to load or unload the shaft; accelerations are controlled by controlling fuel flow as a function of engine temperatures and speeds; and engine starting and idle



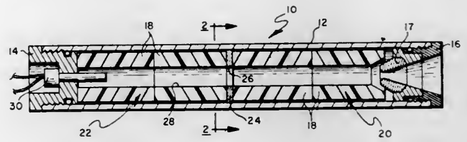
speed operations, as well as overtemperature operations are controlled by opening or closing a nozzle constituted by variable angle compressor inlet guide vanes.

3,795,105
CONTROL APPARATUS FOR HYDRAULIC JET PROPULSION WATER BORNE CRAFT
George R. Aschauer, Racine, Wis., assignor to Twin Disc, Incorporated, Racine, Wis.
Filed May 2, 1972, Ser. No. 249,565
Int. Cl. F02k *1/20*
U.S. Cl. 60—221 **4 Claims**



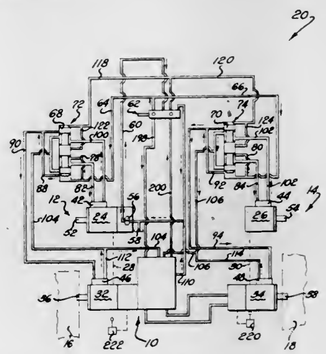
Control apparatus for a hydraulic jet propulsion water borne craft of the type having a variable area nozzle, thrust reversing means for the nozzle, steering valves, and a power plant such as an internal combustion engine for driving the water pump means that creates the water pressure. The apparatus includes a single operators lever which controls the engine speed and also includes programming means, also controlled by the lever, which controls the area of the nozzle in relationship to the engine speed.

3,795,106
BAFFLED SOLID PROPELLANT MOTOR
Charles C. Cherry, McGregor, and William G. Haymes, Waco, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed July 7, 1972, Ser. No. 269,905
Int. Cl. F02k *9/04*
U.S. Cl. 60—255 **1 Claim**



One or more baffle plates are positioned along the axial length of a solid propellant motor, positioned in a direction transverse to the axis of the motor. Each disc has an aperture therein so that combustion products can pass therethrough; the primary function of the baffle is to alter the destructive characteristics of the pressure waves resultant from the combustion process to break up any axial modes of oscillation.

3,795,107
HYDROSTATIC TRANSMISSION AND CONTROL SYSTEM
Harold R. Ward, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Sept. 1, 1972, Ser. No. 285,729
Int. Cl. F16h *39/46*
U.S. Cl. 60—395 **28 Claims**



An improved straight tracking and steering control system is utilized to control the operation of a pair of hydrostatic transmissions having variable displacement pump and motor units which drive tracks of a vehicle. The control system includes a pair of variable displacement pumps which are associated with the hydrostatic transmission motor units. If one of the tracks of the vehicle should tend to accelerate relative to the other track of the vehicle, the hydrostatic transmission motor unit which drives the accelerating track will also increase the operating speed and output of the associated control pump. This increased fluid output is detected by a comparator which effects a variation in the displacement of the pump and/or motor units of the accelerating hydrostatic transmission to equalize the output speeds of the hydrostatic transmissions. Steering of the vehicle is effected by decreasing the displacement of one of the control pumps relative to the other control pump. For example, to turn the vehicle toward the left, the displacement of the control pump associated with the right hand track and hydrostatic transmission is decreased. The comparator will then sense the relatively high output from the

left hand control pump and effect a reduction in the output speed of the left hand hydrostatic transmission.

3,795,108

PRESSURE FLUID DRIVE SYSTEMS FOR MINE INSTALLATIONS

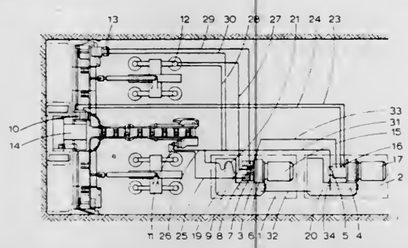
Wolfgang Schwandt; Werner Mennekes, both of Altlunen; Heinz Weinhold, Gelsenkirchen, and Walter Weirich, Dortmund, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Wethmar near Lunen, Westfalia, Germany

Filed Feb. 4, 1972, Ser. No. 223,422

Claims priority, application Germany, Feb. 11, 1971, P 21 06 444.8

Int. Cl. F15b *15/18;* **F16h** *39/02*

U.S. Cl. 60—484 **4 Claims**



A pressure fluid drive system for supplying pressure fluid to a number of different hydraulically-operated appliances in a mine working. The system employs two hydraulically interconnected pump units each having one or more pumps providing a plurality of pressure fluid outlets and a vessel containing a supply of pressure fluid for the pumps. Each of the outlets from the pumps is available for independently driving one of the appliances. One of the units has an additional pump used to circulate pressure fluid between the vessels of the pump units; the vessels of the units being directly interconnected via a conduit. Each pump unit has a device for cooling the fluid in the vessel and there is also provided a device for removing air from the fluid returned to the vessel of one of the units.

3,795,109

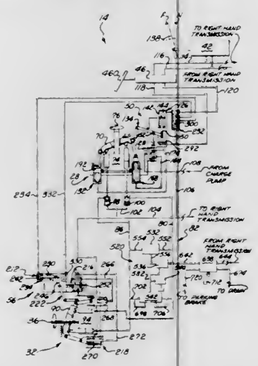
HYDROSTATIC TRANSMISSION DRIVE SYSTEM

Edward J. Bojas, and Harold R. Ward, both of Marshall, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 28, 1972, Ser. No. 248,685

Int. Cl. F16h *39/46*

U.S. Cl. 60—490 **32 Claims**



An improved drive system includes a pair of hydrostatic transmissions which are driven by a common engine or prime mover and are drivingly connected with different tracks of a vehicle. The input or output speed ratios of the hydrostatic transmissions are simultaneously varied by operating a single speed control valve to port control fluid pressure to pressure responsive secondary or control motors in pump and motor actuators of the hydrostatic transmissions. A separate steering control valve is associated with each of the hydrostatic transmissions. The pump actuators each include a primary or swashplate motor which is operable to vary the effective displacement of a pump unit of the associated hydrostatic transmission. To effect operation of a swashplate motor, the associated secondary motor is operated to actuate a pilot valve from a null position and port fluid under pressure to the swashplate motor. When the swashplate motor has been operated to an extent corresponding to the extent of operation of the associated secondary motor, a floating link feedback assembly returns the pilot valve to its null position to interrupt operation of the swashplate motor. Shuttle type selector valves port control fluid pressure to the secondary motor actuators. The motor actuators are generally similar in construction to the pump actuators and each includes a secondary motor which operates a pilot valve to port fluid under pressure to a swashplate motor. Pressure regulator assemblies for the hydrostatic loops of the two hydrostatic transmissions contain pressure relief valves. The pressure relief valves have a valve member which is acted upon tending to move it in an opening direction by the fluid pressure in the hydrostatic loop of the associated transmission and is acted upon by a spring and a control pressure tending to urge the valve member in a closing direction. A master relief or pilot valve is opened when the pressure in one of the hydrostatic loops exceeds a predetermined pressure. Opening of the pilot stage relief valve reduces the force urging the relief valve member closed so that it can open and maintain the pressure at a predetermined level in the associated hydrostatic loop. Operation of a parking brake for the vehicle disengages the master relief valve and limits the pressure at which the pilot relief valve opens.

3,795,110

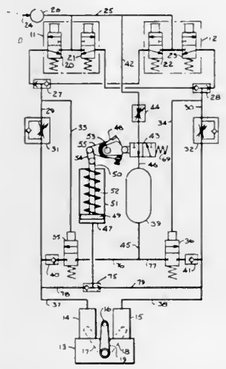
MULTIPLE-STATION FLUID CONTROL CIRCUIT

Jack R. Kobelt, 611 Oak St., Vancouver 13, British Columbia, Canada

Filed Dec. 7, 1972, Ser. No. 312,963

Int. Cl. F15b *1/02n*

U.S. Cl. 60—413 **9 Claims**



This disclosure pertains to a fluid control circuit which provides remote control of a device or servo-mechanism from more than one operator station. A control circuit having a pressurized fluid source, a system of control valves, a plurality of control stations, and a controlled device, includes as essential elements a pressure proportional linear actuator, a time-delay cam assembly, and a volumetric accumulator. The time-delay cam assembly is mounted on an oscillating shaft which is actuated by the proportional linear actuator. A cam portion is

pivotally mounted on the shaft, a cam actuator portion is secured to the shaft whereby the shaft and cam actuator may be oscillated through a predetermined angle by the proportional linear actuator while the cam remains in a fixed pivotal position. Once the cam actuator contacts the cam, the latter is impelled in the oscillatory direction experienced by the shaft and cam actuator. Hence, the cam in its fixed position holds a fluid control valve in one position during a predetermined time-delay and in another position subsequent to actuation by the cam actuator. Therefore, irrespective of either length or variation in distance of each control station from the controlled device, fluid from the accumulator is employed to actuate the device with uniform timing from either station and upon actuation the accumulator is exhausted thereby returning full control of the device to the control stations.

3,795,111

TANDEM MASTER CYLINDER

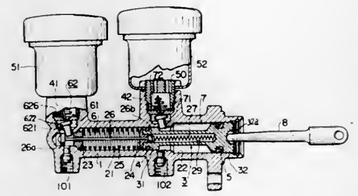
Tetsuo Haraikawa, Funabashi, Japan, assignor to Tokico Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Sept. 29, 1972, Ser. No. 293,740

Claims priority, application Japan, Sept. 29, 1971, 46-76366

Int. Cl. F15b *7/08*

U.S. Cl. 60—581 **1 Claim**



This invention relates to a tandem master cylinder adapted for use in the hydraulic braking system of a powered and wheeled vehicle.

More specifically, the invention concerns with such master cylinder assembly having a stepped bore cylinder and a corresponding stepped hydraulic piston slidably arranged therein. This type piston is provided with a valve acting member, preferably an elongated valve rod for actuation of at least the foremost valve mechanism so as to interrupt the normally established hydraulic communication between a related liquid reservoir and a related hydraulic chamber. In the conventional master cylinder, this valve rod is made rigidly with the main piston which causes a substantially elongated axial length of the cylinder assembly. According to the present invention, said valve rod is arranged to move telescopically relative to the main piston, so as shorten the axial length of the cylinder.

3,795,112

HOT GAS CYLINDER-PISTON APPARATUS

Hans Aupor, Mannheim; Gunter Reuchlein, Gersthofen; Hans-Joachim Kanzler, Viernheim, and Eckhard Tusche, Gersthofen, all of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.), Augsburg and Mortorenwerke Mannheim AG, Mannheim, both of, Germany

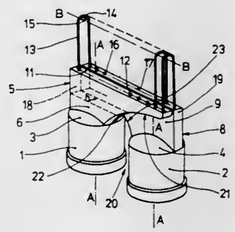
Filed Dec. 22, 1972, Ser. No. 317,778

Claims priority, application Germany, Dec. 24, 1971, 2164522

Int. Cl. F01k *25/08;* **F03g** *7/06*

U.S. Cl. 60—526 **17 Claims**

An operating cylinder and a regenerator cylinder are located adjacent each other, each cylinder having a manifold extending therefrom; a group of staggered U-shaped heating tubes connect the manifolds, the manifolds being arranged in planes which partly overlap, the legs of the U-shaped tubes being connected to wall portions of the parallel manifolds which are adjacently located, and so placed that the bends of the U-shaped tubes are positioned in planes which are parallel to the planes which include the manifolds; preferably, the widths of the manifolds change as a function of distance from



the associated respective cylinder, the change being proportional to the change in flow of gases through the remaining portion of the manifold after gases have been drawn off from the preceding portion of the manifold by U-shaped tubes located in the preceding portions, the manifolds preferably being mirror images of each other, and of streamlined configuration.

3,795,113

METHOD AND APPARATUS FOR CONSOLIDATING SOILS AND IMPROVING THE BASE BEARING FOR FOUNDATION STRUCTURES

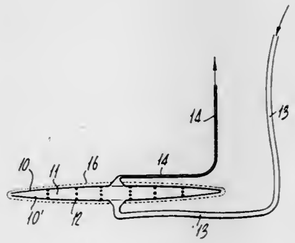
Wolf Chitis, Corso Vittorio Emanuele 167/c, Napoli, Italy

Filed Apr. 19, 1972, Ser. No. 245,568

Claims priority, application Italy, Nov. 8, 1971, 40441 A/71; Dec. 3, 1971, 40445 A/71

Int. Cl. E02d *3/12*

U.S. Cl. 61—50 **7 Claims**

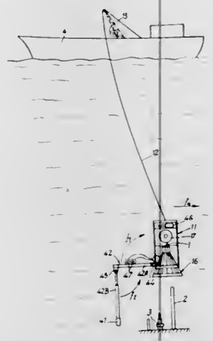


A method for consolidating soils and foundation structures. Under the zone to be consolidated, a hollow impermeable rigid wall pressure cell or chamber is inserted, this cell communicating with the outside by means of an injection conduit and a vent conduit, then over said chamber or cell erecting the foundation structures (piles, walls, etc.), next injecting through the injection conduit a pressure binder mixture within the chamber previously introduced into the soil, then closing the vent conduit and continuing to inject pressure binder mixture until destroying the impermeability of said chamber and enabling a tamping or stuffing up of the neighbouring soil, then closing also the injection conduit and maintaining it at closed condition until the binder mixter injected into the soil has set, and finally washing or scavenging in site the pressure cell, whereupon the injection operation of the pressure binder mixture into the cell can be repeated also for many times by following the same method and through the same device above described.

3,795,114
PROCESS AND INSTALLATION FOR THE CONNECTION OF A CABLE OR FLEXIBLE PIPE TO AN UNDERWATER GUIDE COLUMN

Bertrand De Cremiers, Neuilly s/Seine, and Georges Chateau, Chatenay Malabry, both of France, assignors to Societe Anonyme Engins Matra, Velizy, France

Filed Jan. 11, 1973, Ser. No. 322,697
Claims priority, application France, Jan. 26, 1972, 7202542
Int. Cl. E21b *23/00*; **F16l** *1/00*
U.S. Cl. 61—69 **15 Claims**



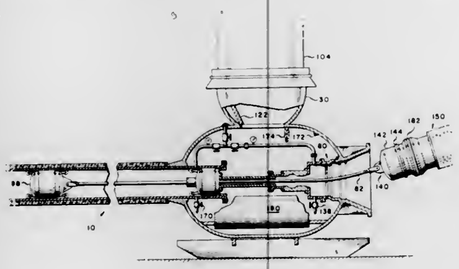
This invention concerns a submerged installation for the connection of a guide cable or flexible hydraulic pipe to an underwater well-head guide column, from a floating structure.

The invention comprises a process and equipment for laying the cable or flexible pipe, stored in a drum inside a module with a guide cone, which is lowered near the guide column and propelled into its final position by propulsion gear controlled from the floating structure on the basis of locating signals transmitted by detectors on the module.

3,795,115
METHOD AND APPARATUS FOR JOINING SUBSEA PIPELINES

Arthur John Bergquist, Houston, Tex.; Roy E. Blaby, New Westminster, British Columbia, and John W. Hopkins, North Burnaby, British Columbia, both of Canada, assignors to Lockheed Petroleum Services, Ltd., New Westminster, British Columbia, Canada

Filed Sept. 5, 1972, Ser. No. 286,597
Int. Cl. F16l *1/00, 31/00*
U.S. Cl. 61—72.3 **11 Claims**

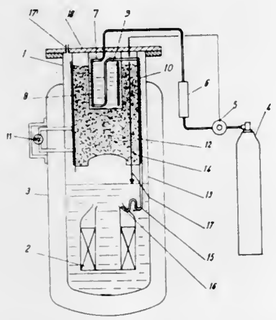


A method and apparatus for underwater laying and joining of pipeline segments, especially where such segments lie at depths of several hundred feet. The individual segments consist of a pipestring permanently attached to a joint chamber at one end. When submerged, the joint chamber is kept at atmospheric pressure and is utilized by personnel operating within it to bring a segment on the surface into proximity with the submerged segment and to join the two segments. A manned atmospheric pressure capsule operating from a surface vessel is used to reach the submerged chamber and to support the various operations conducted in the chamber.

3,795,116
METHOD AND APPARATUS FOR SUPERCOOLING OF ELECTRICAL DEVICES

Pierre H. Burnier, St. Julien en Genevois, and Daniel D. Bricout, Maurepas/Trappes, both of France, assignors to Societe Generale de Constructions Electriques Et Mecaniques (Alsthom), Paris, France

Filed Mar. 25, 1971, Ser. No. 127,945
Claims priority, application France, Mar. 31, 1970, 70/11562
Int. Cl. F25d
U.S. Cl. 62—56 **19 Claims**



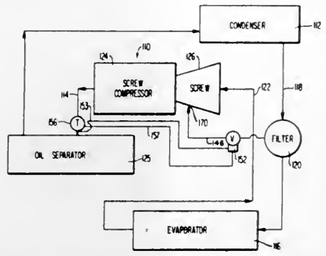
To improve efficiency and space factor, compressed gas at ambient temperature is supplied to the inside of a housing which contains electrical apparatus to be operated at cryogenic temperature, the gas being expanded and supercooled inside the housing, with possible additional cooling stages located therein; heat exchangers, in the form of heat exchange shields are located within the housing intermediate the housing walls and the electrical devices to be supercooled. Typical electric devices are superconductive coils, cables and the like, the cooling fluid being conducted, if desired, through hollow portions of the devices.

3,795,117
INJECTION COOLING OF SCREW COMPRESSORS

Harold W. Moody, Jr., Farmington, and Clark B. Hamilton, Hartford, both of Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Sept. 1, 1972, Ser. No. 285,695
Int. Cl. F25b *1/00*
U.S. Cl. 62—197 **29 Claims**

A liquid injection expansion valve permits liquid refrigerant at high pressure, bled from the condenser, to be injected into the working chamber between the screws and intermediate of the suction and discharge sides of a helical rotary screw compressor for cooling the refrigerant working fluid and the captured oil. A solenoid valve limits bleeding of liquid refrigerant from the condenser at high compressor loads. A thermostat sensing the temperature of the screw compressor discharge, modulates the liquid injection expansion valve downstream of the liquid injection solenoid valve. A compressor unloader slide valve may port oil and the liquid refrigerant into the working chamber. The condenser may be positioned at a height considerably above that of the screw compressor to increase the head of the bled liquid refrigerant to a pressure higher than the screw compressor discharge pressure. System oil pressure may be supplied to a fluid pressure operated, direct acting, on-off control valve upstream of the liquid injection expansion valve and within the bleed line, under control

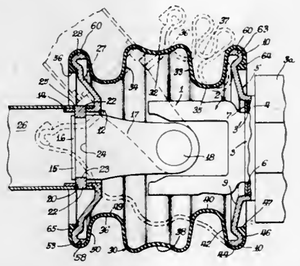


of a solenoid valve which is responsive to the temperature of the oil leaving the oil pump, where such temperature is proportional to compressor loading.

3,795,118
KNUCKLE SHIELD

Elmer M. Kesl, and Ronald F. Zitko, both of Downers Grove, Ill., assignors to International Harvester Company, Chicago, Ill.

Filed June 19, 1972, Ser. No. 263,827
Int. Cl. F16d *3/84*
U.S. Cl. 64—32 F **11 Claims**



A flexible shield for a universal joint or knuckle made of elastomer material having stretchable end portions which are adapted to be stretch fitted over disk-like end supports which are rotatably mounted on the ends of the knuckle. The shield is a tubular structure and has an annular central body portion and folds at opposite ends of the body portion and the folds are connected to end portions which are shaped as annuli each having an internal annular groove receiving the periphery of the respective support with a sphincteral grip. At least one disk-like support may be optionally formed with a cam-edged slot to facilitate application of the annulus onto the support.

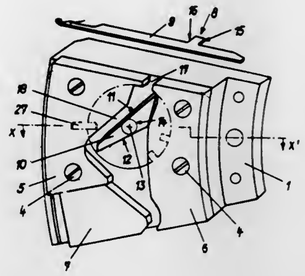
In the embodiments of the invention the folds and body portion are of stepped diameters so that in compression they intercollate.

3,795,119
CAM DEVICE FOR CONTROLLING THE NEEDLES OR KNITTING ACCESSORIES OF CIRCULAR KNITTING-MACHINE

Norbert Bourgeois, Troyes, France, assignor to Etudes Et Bonneterie S.A., Lausanne, Switzerland

Filed Nov. 12, 1971, Ser. No. 198,132
Claims priority, application Switzerland, Nov. 26, 1971, 17522/71
Int. Cl. D04b *15/32*
U.S. Cl. 66—20 **7 Claims**

A control cam in the cam-box of a circular knitting machine comprises a support disk with a prismatic cam body pivotally mounted and axially movable in a space defined between counter cams for the passage of needle butts. The prismatic body has two active cam faces of unequal length located on opposite sides of the pivoting axis. The cam body is spring

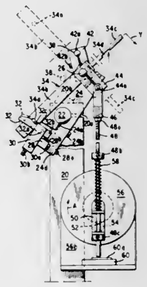


urged towards an operative position, notches in the support disk defining three selectable angular positions of the cam body in which the active faces cooperate with the counter cams to provide tracks for guiding the needle butts to knitting, looping or tucking, and non-knitting positions respectively.

3,795,120
STOP MOTION APPARATUS FOR KNITTING MACHINES

Nathan Levin, 416 Highgate Dr., Trenton, N.J. 08618

Filed Oct. 16, 1972, Ser. No. 297,677
Int. Cl. D04b *35/12, 27/12*
U.S. Cl. 66—163 **10 Claims**



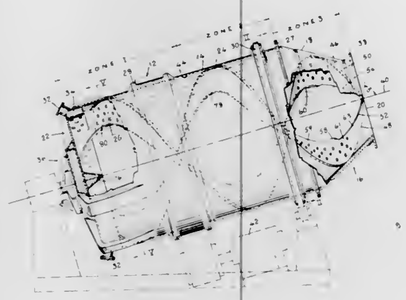
Stop motion apparatus for use with knitting machines wherein an electric motor is used to automatically re-set the stop motion after the same has been tripped by excessive tension in yarn controlled thereby, the tripping of the stop motion apparatus acting to automatically start the motor which then acts to automatically re-set the stop motion apparatus and to stop itself during a cycle of a single revolution of its output shaft, providing the stop motion apparatus has been re-set during such single revolution. If the stop motion apparatus is not re-set during the first of such cycle of operation of the motor, it will continue to operate to try to re-set the stop motion apparatus and to stop itself during each of successive ones of such cycles of operation of the motor.

3,795,121

HELICAL SHELF FOR ROTARY INCLINED PROCESSING TANK

Fred D. Cressman, Waterloo, Ontario, Canada, assignor to Canada Barrels & Kegs, Limited, Waterloo, Ontario, Canada

Filed Feb. 26, 1973, Ser. No. 335,713
Claims priority, application Canada, Mar. 10, 1972, 136764
Int. Cl. C14c *15/00*
U.S. Cl. 69—30 **19 Claims**



A pair of helically shaped flat shelves each having a first rearward curving lip along a portion of its inner edge located in a generally cylindrical rotatable processing tank, such as a hide processing tank, with an axis of rotation inclined to the horizontal. Rotation of the tank about the axis of rotation causes the shelves to move thereby producing improved circulation of the hides in suspension in processing fluid in the tank. The circulating motion of the hides is down the walls of the tank along the shelves towards the rear and up the central portion of the tank towards the front. In addition to this improved circulation, the hides are also lifted up the walls by the motion of the shelves and dropped back into the processing fluid, thereby subjecting the hides to improved "scudding" action. This lifting and dropping action is dependent upon lips which curve from the inner edge of the shelves towards the rear of the tank. The degree of lifting action is also determined by the pitch of the shelves as well as the angle of inclination of the axis of rotation, and therefore the pitch of the shelves is varied in three different zones along the length of the tank to produce different lifting action in each zone. The junctions of the shelves with the rear end of the tank are filled to form smooth sloping surfaces and a deflection barrier provided across the rear end of the tank between the junctions to provide improved circulation of the hides in the tank. The shelves may also each have a second forward curving lip extending a second portion of its inner edge through a truncated cone shaped body portion leading to a front opening. Processed hides may be removed from the tank by reversing the direction of rotation of the tank. The hides are retained on the shelves by the second curved lips as they are carried forwardly along the shelves to the front opening.

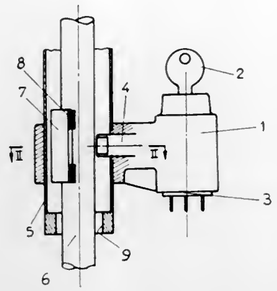
3,795,122

STEERING-SHAFT LOCK FOR AUTOMOTIVE VEHICLES

Paul Lipschutz, Croissy-sur-Seine, France, assignor to Societe d'Exploitation des Brevets Neiman, Neuilly S/Seine, France

Filed Apr. 3, 1972, Ser. No. 240,409
Claims priority, application France, Apr. 13, 1971, 7112876
Int. Cl. B60r *25/02*
U.S. Cl. 70—182 **6 Claims**

In an automotive vehicle, a lock for a steering shaft surrounded by a steering-column tube formed endwise with an inner restriction and carrying said lock which comprises a lock-bolt radially movable through a hole provided in the tube to engage in the extended locking position a stop dog secured



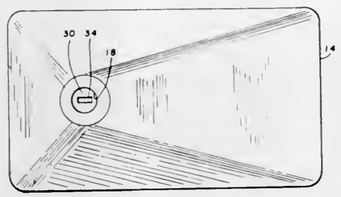
to said shaft and having a radial size such that the maximum diametral dimension of said shaft and dog assembly is smaller than the diameter of said inner restriction of said tube.

3,795,123

ROTARY LOCK PROTECTION MEMBER

Henry R. Stiffel, 170 Demarest Ave., River Vale, N.J. 07675

Filed Dec. 20, 1972, Ser. No. 316,705
Int. Cl. E05b *15/16*
U.S. Cl. 70—417 **7 Claims**



This invention pertains to rotary locks and their protection when said locks are used with vaults or enclosures for coin collecting systems such as parking meters. The door or heavy wall of the vault or enclosure in which the lock is mounted for releasing or securing the vault is counterbored for retention of a rotatable shouldered plug of hardened metal. In and through the plug is a passageway for the receiving and passing of a key. The plug in its mounted condition has its exterior face flush or substantially flush with the outer surface of the vault member in which it is mounted.

3,795,124

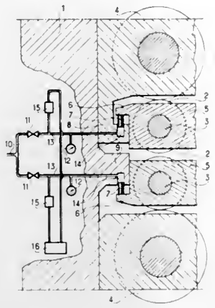
METHOD OF DETECTING AND COMPENSATING FOR DEFECTS ON ROLLING MILL ROLLS AND MEANS FOR APPLYING THIS METHOD

Lucien Diolot, Neuilly-sur-Seine, France, assignor to Societe Nouvelle Spidem, Paris, France

Continuation of Ser. No. 152,722, June 14, 1971. This application May 7, 1973, Ser. No. 357,645
Claims priority, application France, June 12, 1970, 70.21796
Int. Cl. B21b *37/08*
U.S. Cl. 72—20 **6 Claims**

Method and device for detecting and compensating defects in rolling mill cylinders, characterized in that the fluctuations

of the idle pressure of the fluid contained in the hydraulic jacks arranged between shoulders fast with the working



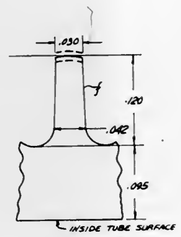
chocks of the machine and the corresponding upright of the latter, are picked up, recorded and then restored during normal operation, with a view to controlling the compensation.

3,795,125

HIGH-FIN INTEGRAL FINNED TUBE OF HEAT-RESISTING ALLOYS, AND MULTI-PASS PROCESS FOR MAKING THE SAME

David D. Laing, Plymouth, and John W. Issott, Dearborn Heights, both of Mich., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 27, 1972, Ser. No. 221,358
Int. Cl. B21h *3/12*
U.S. Cl. 72—69 **11 Claims**



Rolling of high-fin integral finned tube from stainless steel or other difficult to form material, in two operations with an annealing step between rolling operations. Each rolling operation quickly forms narrow helical grooves to displace metal into wide helical ribs or rib portions, followed by more gradual widening and deepening of the grooves with additional metal displacement, and lateral application of pressure to the ribs to form it to required fin shape.

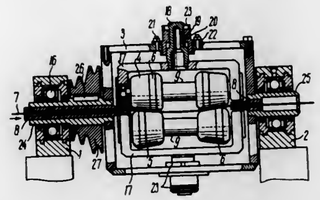
3,795,126

STRAIGHTENING INSTALLATION FOR ELONGATED CIRCULAR ARTICLES

Jury Lukich Semenenko, ulitsa Gogolya, 1, kv. 30; Nikolai Vasilievich Tumanov, ulitsa Simferopolskaya, 19, kv. 5, and Leonid Mikhailovich Varava, prospekt Gagarina, 161, kv. 23, all of Dnepropetrovsk, U.S.S.R.

Filed June 10, 1971, Ser. No. 151,711
Int. Cl. B21f *1/02*
U.S. Cl. 72—78 **2 Claims**

The straightening installation is provided with straightening rolls and centering rollers with the straightening rolls having contact surfaces for contacting the work between which cylindrical grooves are formed for enabling the straightening rolls



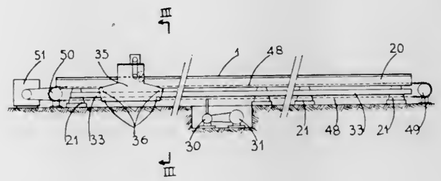
to be moved together until defining a minimum clearance therebetween. Disposed in these grooves are centering rollers having a radius less than the depth of the grooves.

3,795,127

METHOD AND APPARATUS FOR PRODUCING LONG FLAT METAL STRIP FROM A COILED METAL STRIP WITH UNIFORM STRAIGHT EDGES TO A HIGH DEGREE OF PRECISION

Andre Demus, Imphy, France, assignor to Creusot-Loire, Paris, France

Filed June 19, 1972, Ser. No. 263,949
Claims priority, application France, Aug. 11, 1971, 71.29342
Int. Cl. B21d *43/28*
U.S. Cl. 72—294 **5 Claims**



A method and apparatus for producing long flat metal strip from a coiled metal strip so that the flat metal strip has uniform straight edges to a high degree of precision. The uncoiled strip is straightened by traction to a degree slightly beyond its elastic limit, laid flat unclamped on a bench, then immobilized on the bench and the edges trimmed by mobile shears movable on a longitudinal guide member lying parallel to the axis of the bench and the metal strip thereon.

3,795,128

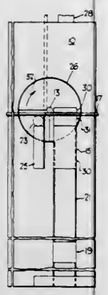
BENDING

Ronald Edward Benton, 61, St. Alban's Rd., Cheam, England

Filed Dec. 22, 1971, Ser. No. 210,927
Claims priority, application Great Britain, Dec. 23, 1970, 61297/70
Int. Cl. B21d *7/04*
U.S. Cl. 72—306 **14 Claims**

In bending a workpiece, the workpiece is located in a first position and bent with two inner bends by movement of

respective bending members, then relative movement is effected between the workpiece and the members to a second

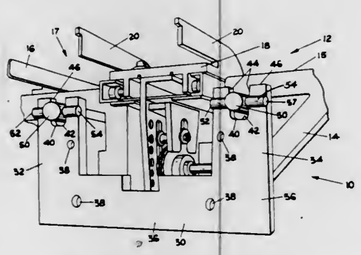


position of the workpiece relative to the members and the workpiece is bent again with two outer bends by respective movements of the same two members.

3,795,129
METHOD OF FORGING SINTERED ARTICLES OF HIGH DENSITY
Saburo Goto, 49-Banchi, Shichiku Kamiumenoki-cho, Kita-ku, Kyoto, Japan
Filed Jan. 21, 1972, Ser. No. 219,652
Claims priority, application Japan, Oct. 7, 1971, 46-78909
Int. Cl. B21j *1/06*
U.S. Cl. 72—342 **3 Claims**

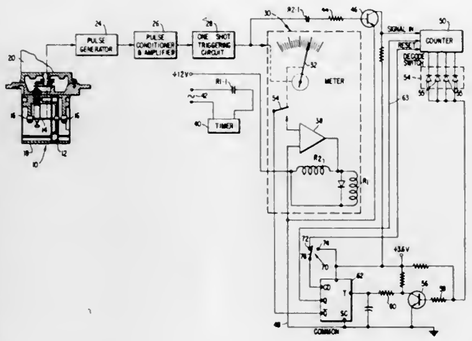
A method of forging sintered articles of high density characterized in that pre-shaped powdery articles are heated to a temperature of 1120°–1200°C and then are forged by a tool, which is pre-warmed to 80°–120°C and maintained at such pre-warming temperature, at a tool speed of 7–10m/second. The articles thus forged are rapidly separated from the tool through the medium of an ejector provided on the forging machine.

3,795,130
MOUNTING DEVICE FOR PORTABLE LOADERS
Donald L. Hufford, Charlevoix, Mich., assignor to Hufford Idustries, Inc., Charlevoix, Mich.
Filed Nov. 8, 1971, Ser. No. 196,622
Int. Cl. B21d *43/00*
U.S. Cl. 74—419 **8 Claims**



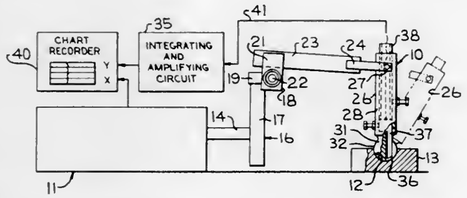
A novel portable material handling device for attachment to a die press in which a pair of mounting bars extend longitudinally from the device to detachably interlock with a mounting bracket affixed to the die. The bracket includes a pair of elongated slots open at the top to permit insertion of the bars therein. The bars include a pair of laterally projecting ears which are positioned behind the bracket to prevent unintentional end-wise removal of the bars and device. A third bar extends intermediate and below the others for bearing on the outer surface of the bracket to anchor and level the device for cantilever support to the press. An alternative form mounting bars provides a notch opening downwardly for catching over the bracket.

3,795,131
SPIN TESTING APPARATUS FOR TURBINE-TYPE FLOW METERS
Zane A. Wade, and William F. Kolash, both of Du Bois, Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Mar. 17, 1971, Ser. No. 125,178
Int. Cl. G01f *25/00*; **G01m** *19/00*
U.S. Cl. 73—3 **21 Claims**



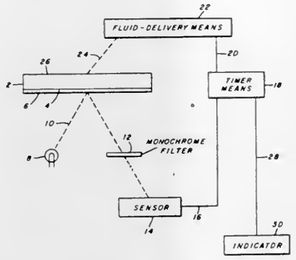
An apparatus for measuring a performance-indicating parameter in a fluid flow turbine meter spin test in which the turbine meter rotor and other operative rotatable parts of the turbine meter are selectively accelerated and then allowed to coast so that the rate of the rotor rotational speed is dependent upon accuracy-impairing mechanical friction which resists rotation of the turbine meter rotor. The measured performance-indicating parameter is comparable with a reference parameter to determine if an increase has occurred in the mechanical friction which is developed by the operative meter parts under test. The measured performance indicating parameter may be the time required by the coasting turbine meter rotor to decay from one pre-selected speed to a lower pre-selected speed, or it may be the change in decaying rotor speed that occurs in a pre-selected time period.

3,795,132
CURVED SURFACE FINISH ANALYZER
Paul T. Huling, Plainfield, and John J. Janes, Jr., Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed May 30, 1972, Ser. No. 257,654
Int. Cl. G01b *5/28*
U.S. Cl. 73—105 **6 Claims**



An analyzer for measuring the finish of an arcuate surface of manufactured objects, test specimens, or the like includes a movable carrier for supporting a stylus which is moved along the curved surface to sense surface irregularities. A guide portion of the carrier, adjacent the stylus, has a curvature conforming with that of the arcuate surface to be tested and rides thereon to position and guide the stylus along the arcuate surface during movement of the carrier relative thereto. This avoids a need for complex mechanism heretofore used to guide the stylus along a curved predetermined reference path.

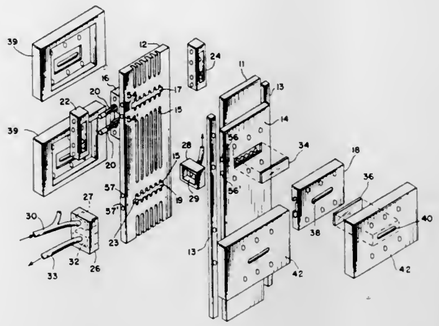
3,795,133
THICKNESS MEASURING METHOD AND APPARATUS
James L. Fergason, Kent, and Thomas B. Harsch, Stow, both of Ohio, assignors to International Liquid Xtal Company, Cleveland, Ohio
Continuation-in-part of Ser. No. 132,060, April 7, 1971, abandoned. This application Feb. 15, 1972, Ser. No. 226,468
Int. Cl. G01n *25/00*
U.S. Cl. 73—15 R **12 Claims**



Method for measuring thickness by the use of a thermal wave and cholesteric liquid crystals to detect the thermal wave. The thickness of a body (or portion of a body) is determined by covering one surface of the body with a liquid-crystal material and by abruptly changing the temperature of a medium in contact with an opposite surface of the body. The liquid crystal material has a color play temperature range, meaning that the wavelength of maximum light scattering of the liquid-crystal material will vary over a range of temperatures. By measuring the time elapse between the change in temperature of the medium on one side of the body and the occurrence of scattered light of a specific wavelength from the liquid-crystal material on the other side of the body, its thickness can be very accurately determined, taking into account the thermal diffusivity of the body. The invention is particularly adapted for, by no means limited to, use in detecting the thickness of the walls of hollow bodies, such as turbine blades.

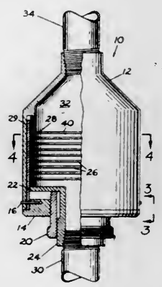
3,795,134
ANTI-BUCKLING FATIGUE TEST ASSEMBLY
Fred E. Eichenbrenner, Hampton, and Leland A. Imig, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Mar. 30, 1972, Ser. No. 239,575
Int. Cl. G01n *3/18*
U.S. Cl. 73—15.6 **8 Claims**

An anti-buckling fatigue test assembly is disclosed for holding a metal specimen which is subjected to compression and to rapid cyclical heating and cooling while permitting visual observation. In an illustrative embodiment of this invention, the anti-buckling fatigue test apparatus includes first and second guide members between which the metal specimen is disposed and fixedly held, a heating assembly comprising a suitable heating source such as a quartz lamp and a reflecting assembly directing the heat onto the specimen, and a cooling assembly for directing a suitable cooling fluid such as air onto the specimen. Further, the guide members each have a passage to permit the heat to be directed therethrough onto the specimen. Significantly, an opening is provided in the reflecting assembly to permit visual inspection of that region of the specimen adjacent to the opening onto which the heat is directed. It is understood that suitable optical or photographic devices may record the effects upon the tested portion of the



specimen resulting from the successive heating and cooling. In an illustrative embodiment of this invention, more than one heating assembly and cooling assembly are disposed upon the guide members so that simultaneous tests are performed at two different test locations of the specimen.

3,795,135
SAMPLER OF AIR-BORNE PARTICLES
Ariel A. Andersen, Provo, Utah, assignor to 2000, Inc., Salt Lake City, Utah
Continuation of Ser. No. 23,105, March 19, 1970, abandoned. This application Nov. 7, 1972, Ser. No. 304,323
Int. Cl. G01n *15/06*
U.S. Cl. 73—28 **3 Claims**

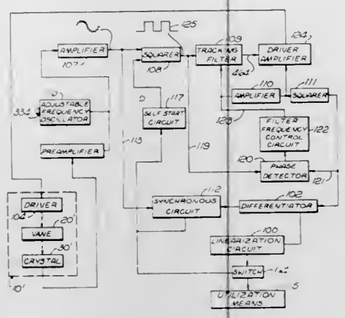


An apparatus adapted to extract minute particles from a gas and deposit them on surface means for inspection and analysis and comprises a plurality of stacked perforated discs held firmly in position by retainer means and spaced apart by ring means, and air inlet and outlet means, vacuum pump attachment means for attaching a vacuum pump to draw air or other gases through the device, with the perforations in the discs in alternating positions in relation to the perforations next below and above. The apparatus of this invention is so constructed as to be easily assembled and disassembled and inexpensive to manufacture.

3,795,136
VIBRATION DENSITOMETER APPARATUS

Gerald Lance Schiatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 289,770
Int. Cl. G01m *9/10*
U.S. Cl. 73—32 4 Claims

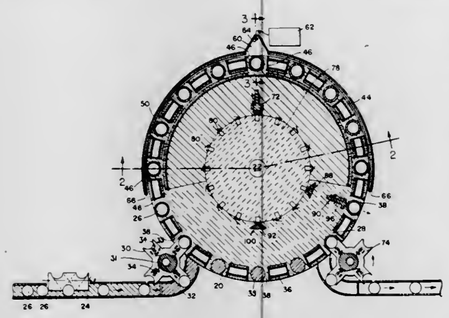


A preamplifier for a vibration densitometer for connection from a piezoelectric crystal and including a differential amplifier having a negative feedback capacitor. Noise discrimination is unexpectedly increased tenfold. The densitometer is also less temperature sensitive. A voltage divider having a tap is employed to set the noninverting input of the amplifier at a desired fixed D.C. reference level. A negative feedback resistor prevents amplifier drif. A bypass capacitor connected in parallel with one leg of the voltage divider references one A.C. output lead to ground.

3,795,137
LEAK DETECTION APPARATUS FOR AEROSOL CONTAINERS

Mei-Kuo Lo; Gary R. Thompson, and Erwin Sheppard, all of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Sept. 12, 1972, Ser. No. 288,461
Int. Cl. G01m *3/24*
U.S. Cl. 73—45.4 17 Claims

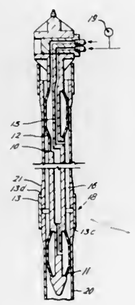


An apparatus for detecting leaks in pressurized containers in a production line environment by means of ultrasonic noise detection, a preferred embodiment comprising a rotatable table having a peripheral area adjacent to a conveyor line and having portions covered by damping material, blocks peripherally spaced on the peripheral portion of the table to define spaces for carrying containers, the blocks having side walls of acoustic-absorbing material and end walls comprising acoustic barrier material, shield means forming a tunnel through which a peripheral portion, including the blocks, passes, the shield means comprising acoustic barrier material, the shield means also including extension portions adjacent to either surface of the table and comprising acoustic-absorbing material on the inside surfaces, at least one detection chamber defined within the tunnel, ultrasonic noise detector means within the chamber, means to feed cans seriatim through the chamber and means to reject containers in response to leaks detected therein.

3,795,138
METHOD OF STAGE INTERNAL PRESSURE TESTING CONNECTIONS BETWEEN TUBULAR MEMBERS

Malvern M. Hasha, 111 Acacia St., Lafayette, La. 70501

Filed Mar. 25, 1971, Ser. No. 127,953
Int. Cl. G01m *3/28*
U.S. Cl. 73—46 13 Claims



Connections between tubular bodies or members are tested by making the connection up to a desired or predetermined amount, the connection is sealed off by positioning seal means internally of the tubular members, and a suitable fluid medium is positioned between the seal means at an initial pressure substantially below the pressure which the connection will encounter during use, and any decay or falloff in pressure from this amount is noted or measured as an indication of a leak or other malfunction in the connection.

In another embodiment, after the connection has been only partially made up a predetermined amount until a primary or initial seal is established in the connection, internal pressure then is initially applied in an amount less than that at which movement of the connection and tubular members occurs (generally, this pressure is substantially below the pressure which the connection will encounter during use), and any falloff or decay in pressure from this amount is determined as an indication of a leak or malfunction in the connection. If the connection does not leak at this pressure, it is increased in sequential amounts or increments to at least or greater than the pressure to which the connection will be subjected in use.

In another embodiment, the connection is made up to the recommended full makeup torque; the connection is sealed off internal of the tubular member; and internally pressure is applied in sequential increments as above described to test the connection.

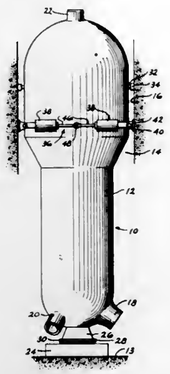
In another embodiment, the connection may be backed off from its fully made up position, but retained in a relationship which should establish the primary or initial seal therein, and while in this partially made up position, the connection is again subjected to internal pressure testing in sequential increments as above described.

The above tests may be conducted while the connection is not in tension; they may be conducted with the connection in tension; or they may be conducted when the connection is out of tension and then placed in tension.

3,795,139
SNUBBER SEAL LEAKAGE TEST CIRCUIT

Daniel Anthony Peck, South Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,379
Int. Cl. G01m *3/00, 3/22*
U.S. Cl. 73—40.5 R 5 Claims

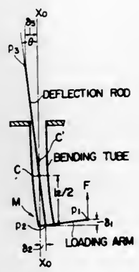


The hydraulic system of shock suppressor apparatus for vapor generators utilized in nuclear power plants is provided with integrated fluid circuitry that permits testing for leakage across internal piston seals to be conducted in situ. The fluid circuitry, together with appropriate valving, is operative to hold the piston members of the shock suppressor apparatus in place while testing is conducted and to impart fluid pressures to the system that simulate maximum piston loadings. Sight glass or other detection apparatus is utilized to determine the presence of a leak.

3,795,140
FORCE RESPONSIVE DEVICE

Tadashi Nishihara, Tokyo, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,674
Claims priority, application Japan, Dec. 29, 1971, 46-2918
Int. Cl. G01l *1/26*
U.S. Cl. 73—141 A 18 Claims

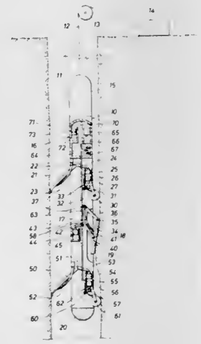


A force responsive device such as a differential pressure transmitter or a buoyancy transmitter including a force-displacement transducer comprised of a bending tube and a deflection rod. The bending tube is mounted with one of its ends securely fixed to a mounting support and its other end free. The deflection rod extends into the tube with one of its ends fastened to the free end of the tube. The rod's other end extends out of the fixed end of the tube. When subjected to a lateral input force, the free end of the tube bends, thereby displacing or deflecting the free end of the deflection rod. The rod deflection is directly related to the lateral input force applied. Therefore, measurement of that input force in terms of rod deflection can be made. The force responsive device of the present invention also includes a suitably long transverse loading arm member mounted on the free end of the bending tube extending laterally away from the bending tube axis. This arrangement permits measurement of an input force applied to the transverse load arm member and directed parallel to the bending tube axis.

3,795,141
WELL LOGGING PROBES

Jean Planche, L'Hay-les-Roses, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 23, 1972, Ser. No. 256,107
Claims priority, application France, May 24, 1971, 71.18636
Int. Cl. E21b *49/00*
U.S. Cl. 73—151 15 Claims



In the representative embodiment of the invention disclosed herein, an elongated wall-engaging pad carrying one or more formation-investigating devices is operatively mounted along one side of a well logging tool and arranged for tilting about an axis perpendicular to a plane of movement including the longitudinal axes of the tool body and the pad as the pad is urged against an adjacent borehole wall. To insure that the pad member is free to tilt as may be required for following irregular borehole walls, forwardly-urged positioning members are uniquely arranged on the tool above and below the pad for spatially positioning that side of the tool away from the adjacent borehole wall. One or more rearwardly-urged positioning members are also arranged on the opposite side of the tool and adapted to be pressed against the opposite borehole wall with only sufficient force to retain the spaced positioning members engaged with the adjacent borehole wall above and below the pad member.

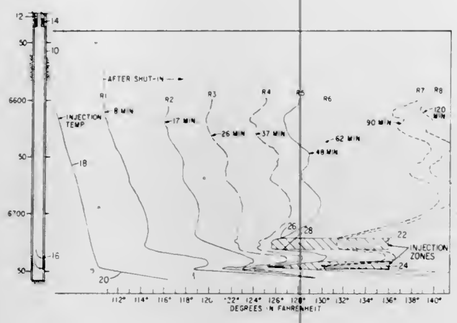
3,795,142
TEMPERATURE WELL LOGGING

Robert C. Smith, Inola, and Roger J. Steffensen, Tulsa, both of Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed June 27, 1972, Ser. No. 266,770
Int. Cl. E21b *47/06*
U.S. Cl. 73—154 2 Claims

This concerns a method of determining vertical locations of intervals receiving injection of a fluid in an injection or production well drilled through a subsurface formation. Fluid, having a bottomhole temperature at least about 5° different from the fluid normally injected or produced through the well, is injected for a period of time, e.g., about 3 – 6, or occa-

sionally 24 hours. As soon as injection is stopped, a series of time-spaced temperature logs are run in the well bore;



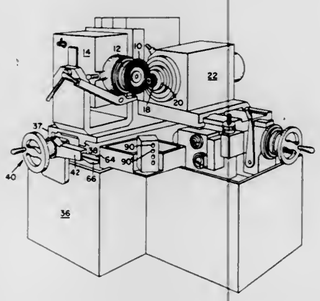
preferably at intervals of not over 30 minutes. Temperature anomalies appearing in the logs indicate the injection zone or zones.

3,795,143

MACHINE FOR RUNNING TOGETHER BEVEL OR HYPOID GEARS TO DETERMINE OPTIMUM RUNNING POSITION OF ONE GEAR RELATIVE TO ANOTHER

Thomas A. Deprez, and Frank M. Whalley, both of Rochester, N.Y., assignors to Gleason Works, S.A., Baudour, Belgium

Filed Sept. 13, 1972, Ser. No. 288,636
Int. Cl. G01m *13/02*
U.S. Cl. 73—162 **10 Claims**



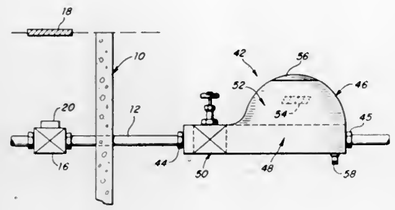
A gear testing machine is provided with a manual adjustment means for adjusting position of one gear of a pair relative to another gear of the pair while the gears are running together in meshing engagement. The manual adjustment means includes a safety feature which prevents running engagement of the pair of gears unless the operator of the machine has each hand in place on control switches which must be simultaneously actuated before the machine can be started.

3,795,144

TAMPER-PROOF WATER METER

Ralph R. Marchesi, 881 Main St., Winchester, Mass. 01890

Filed Feb. 17, 1972, Ser. No. 227,091
Int. Cl. G01f *1/00*
U.S. Cl. 73—201 **9 Claims**



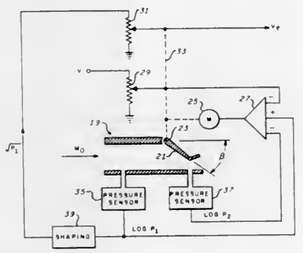
A tamper-proof plumbing arrangement for a water meter in an establishment for preventing the owner of the establishment from reversing or bypassing the water meter. The water meter has the internal shut-off valve for the establishment as an integral part of the meter such that the water meter cannot be removed while the shut off valve is closed. The water meter has a main housing which houses both the water meter and the shut off valve, and has a small, unbreakable window at the top of the meter to allow the meter to be read. The small Plexiglass window prevents the gauge reading from being altered by the customer.

3,795,145

VARIABLE THROAT VENTURI AIRSPEED SENSOR

Harry Miller, Scottsdale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 23, 1972, Ser. No. 237,425
Int. Cl. G01b *1/00;* **G01p** *5/16*
U.S. Cl. 73—213 **10 Claims**



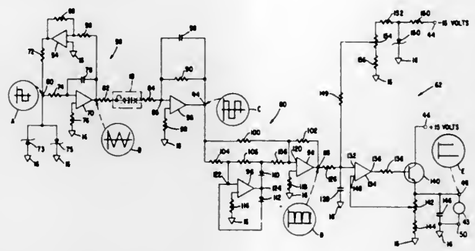
An airspeed sensor utilizes a venturi in which the throat area is adjustable. The fluid pressures in the inlet region and the throat region are measured. The throat area of the duct is programmed by a servo as a function of the pressure ratio between inlet and throat so as to cause the pressure ratio to be a function of the Mach number of the airflow at the entrance to the venturi. An output signal representing the equivalent airspeed is taken from a potentiometer which is energized through a shaping circuit from the inlet region pressure sensor. The setting of the potentiometer is adjusted in accordance with the setting of the variable throat mechanism of the venturi.

3,795,146

REFERENCE SIGNAL DIFFERENTIATING CAPACITIVE FLUID LEVEL GAUGE

Francis B. Wilson, Wauconda, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed May 12, 1972, Ser. No. 252,796
Int. Cl. G01f *23/26;* **G01r** *27/26*
U.S. Cl. 73—304 C **3 Claims**



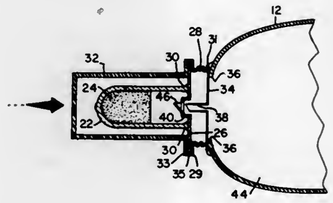
An open loop capacitance-type level gauge that utilizes a triangular reference voltage, a differentiator means including a capacitor probe, an absolute value amplifier, and a utilization means for providing a linear voltage directly proportional to the level of fluid contained in a vessel is disclosed.

3,795,147

ATMOSPHERE DETECTOR FOR HELICOPTER BLADES

Carl L. Peterson, Gloucester, and James D. Korumpas, Salem, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Feb. 2, 1972, Ser. No. 222,793
Int. Cl. G01m *3/14*
U.S. Cl. 73—49.3 **7 Claims**



An atmosphere detector for providing a visual indication of the presence or absence of a crack in a helicopter blade. The detector comprises a glass bulb having an internal coating of barium and mounted in sealed communication with the interior of the hollow blade, which is filled with nitrogen at a pressure different from atmospheric. The barium coating changes color in the presence of a sufficient amount of oxygen, thereby indicating an air leak.

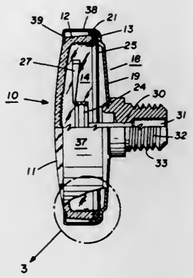
3,795,148

PRESSURE VENTING INSTRUMENT CASING ASSEMBLY

Ronald Joseph Luich, Bridgeport, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 23, 1973, Ser. No. 325,986
Int. Cl. G01p *1/02;* **G01l** *7/04*
U.S. Cl. 73—431 **10 Claims**

An instrument casing assembly for pressure gauges and the like providing controlled venting to atmosphere in the event of internal overpressure buildup. A cylindrical cup-shaped window or crystal representing the front side is received axially inter-fitting within the open face of a cup-shaped casing representing the rear side. Axially positioned between opposing surfaces of the window and casing is a resilient gasket by which a seal can be effected thereat. For maintaining the seal there is provided an annular collar ring resiliently biasing the



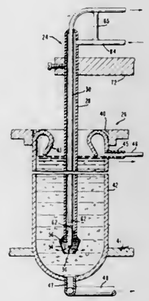
window and casing axially toward each other and against the gasket. In the event of an internal overpressure buildup, increasing pressure acting against the inside window surface forces separation thereof from the gasket in opposition to the biasing force of the collar.

3,795,149

METHOD AND APPARATUS FOR SUPPLYING SAMPLES FOR AUTOMATED ANALYSIS

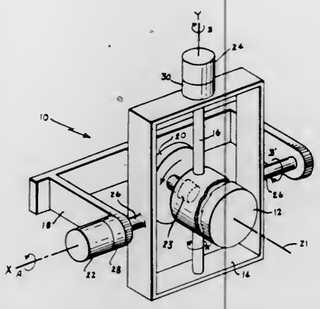
William H. Gillette, Deer Park, N.Y.; William J. C. McCandless, Ringwood, N.J., and Kent M. Negersmith, Carmel, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 15, 1971, Ser. No. 189,673
Int. Cl. G01r *1/12*
U.S. Cl. 73—423 A **13 Claims**



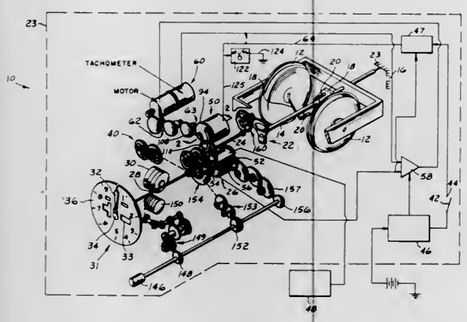
Liquid from a liquid sample container is flowed in automated analysis apparatus into a filter-equipped inlet end of a probe while the latter is immersed in the liquid, for transport of the sample to automated analysis. The probe is subsequently removed from the container and immersed in the liquid of a wash receptacle. Prior to immersion in another liquid sample, a fluid, other than sample, is flushed through the aforementioned filter in a reverse direction to cleanse it of particulate matter, the flushing being in timed relation to the movements of the probe.

3,795,150
SYSTEM FOR RAPIDLY POSITIONING GIMBALED OBJECTS
Homer D. Eckhardt, Lincoln, Mass., assignor to The United States of America as represened by the Air Force, Washington, D.C.
Filed Dec. 13, 1972, Ser. No. 314,622
Int. Cl. G01c *19/00*
U.S. Cl. 74—5.4 **7 Claims**



A system for rapidly positioning gimbaled objects utilizing a rotating mass stabilization technique in conjunction with a brake and motor at each gimbal trunnion. With the alternate activation and energizing of a preselected motor and brake, the gimbaled object can be rapidly positioned with a minimum of torque.

3,795,151
ELECTROMAGNETIC COUPLING FOR AN ALTIMETER
Lynn C. Jehly, and Carl E. Johanson, both of Davenport, Iowa, assignors to The Bendix Corporation, South Bend, Ind.
Filed Aug. 18, 1972, Ser. No. 281,893
Int. Cl. G01l *7/14*
U.S. Cl. 73—387 **10 Claims**

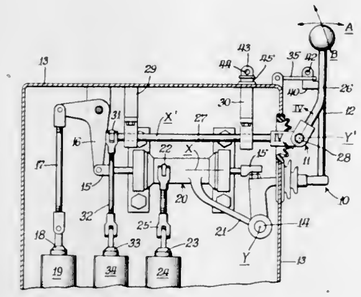


A synchronizer for coupling a corrective servo mechanism to a pneumatic altitude sensor in an aircraft to provide a display with a positive pressure altitude indication. The synchronizer has a first rotor retained on a shaft with gear teeth that are positively engaged with the servomotor. The synchronizer has a second rotor concentric to said first rotor with gear teeth that positively engage the altitude sensor. A coil in the synchronizer is energized and lines of magnetic flux developed which pass through poles in the first and second rotor. An altitude computing device connected to the altitude sensor computes an electrical error signal which activates the servomotor. With the servomotor activated the first rotor is moved. The magnetic attraction between the poles correspondingly causes the second rotor to move and exert a modifying force on the output from the altitude sensor to establish the true pressure altitude output for operating an indicator.

ERRATUM

For Class 74—5.4 see:
Patent No. 3,795,150

3,795,152
DUAL LEVER CONTROL
Trevor G. Campbell, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 17, 1972, Ser. No. 281,515
Int. Cl. G05g *13/02*
U.S. Cl. 74—471 R **12 Claims**

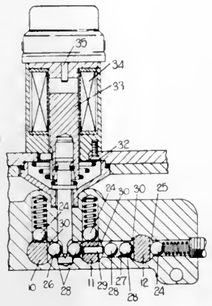


First and second handles are movably mounted on a stationary support. The first handle is connected to the control elements of first and second control valves whereas the second handle is connected to the control element of a third control valve. Movement of the first handle in a first direction will reciprocate the first control element whereas movement of the second handle in such direction is non-functional. Movement of the first and second handles in the second, transverse direction will simultaneously reciprocate the second and third elements, respectively. A pivoted latch selectively locks the two handles in their neutral conditions of operation and the second handle is frictionally held in a selected position by a pair of rubber bushings.

3,795,153
GEAR CHANGE MECHANISM
Alec Harry Seilly, North Wembley, England, assignor to C. A. V. Limited, Birmingham, England
Filed May 12, 1972, Ser. No. 252,741
Claims priority, application Great Britain, May 14, 1971, 15036/71
Int. Cl. F16h *5/06;* **G05g** *5/06*
U.S. Cl. 74—335 **11 Claims**

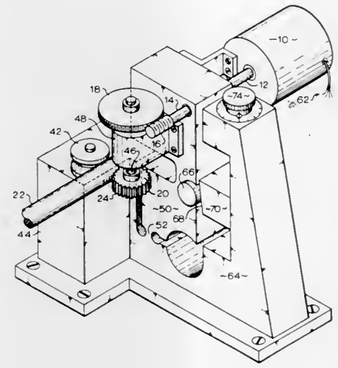
A gear change mechanism for a multi ratio gearbox includes selector bars movable axially one at a time to effect engagement of a particular ratio of the gearbox, each bar having a groove with which can co-operate a plurality of balls to

prevent movement of two of the bars from the neutral position when the other bar is in a ratio selecting position. There is also



provided a spring loaded locking member movable between a pair of balls and which when operative arrests movement of the bars at the neutral positions.

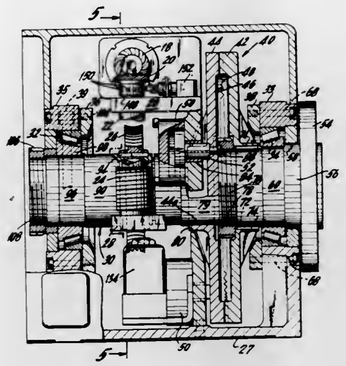
3,795,154
CALIBRATABLE CONTROL
Lincoln Stoddard Magor, Galt, Ontario, Canada, assignor to Mimik Limited, Galt, Ontario, Canada
Filed Sept. 11, 1972, Ser. No. 287,915
Claims priority, application Great Britain, Sept. 13, 1971, 42486/71
Int. Cl. F16h *1/04, 1/16, 35/06*
U.S. Cl. 74—422 **5 Claims**



A rod for servo mechanism is converted to a rack by moving longitudinally to be cut by the teeth of a harder toothed gear.

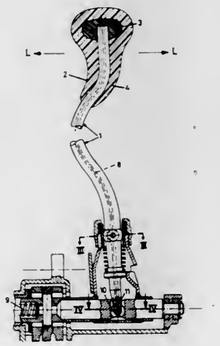
3,795,155
ANGULAR INDEXING APPARATUS FOR A MACHINE TOOL
Robert B. Price, Delanson; Richard N. Hosterman, Elnora, and William G. Cook, Schenectady, all of N.Y., assignors to Numicon, Inc., Delanson, N.Y.
Filed Oct. 22, 1971, Ser. No. 191,938
Int. Cl. B23b *29/32*
U.S. Cl. 74—826 **16 Claims**

The angular indexing apparatus of the present invention is comprised of a multiple tooth face gear coupling pair, one section of which is rigidly secured to the spindle that supports the workpiece and the other section of which is axially slidable on the spindle, both into and out of engagement with the first, rotatable but non-axially movable section of the coupling. The spindle is rigidly supported by opposed bearings and cannot move in the axial direction. The spindle therefore is only capa-



ble of rotary motion. The indexing accuracy of the present invention is a function only of the grinding accuracy of the teeth formed on the opposed transverse surfaces of the coupling sections.

3,795,156
SHIFTING LEVER FOR THE TRANSMISSION OF MOTOR VEHICLES
Wilhelm Neuscheler, Spitzholzstr. 113, 7032 Sindelfingen, Germany
Filed Dec. 15, 1971, Ser. No. 208,241
Claims priority, application Germany, Dec. 23, 1970, 2063371
Int. Cl. G05g *1/06*
U.S. Cl. 74—523 **5 Claims**



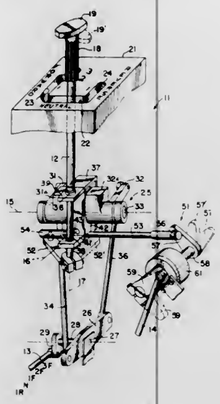
A shifting lever for a motor vehicle transmission which essentially consists of an elastic synthetic material and is reinforced by at least one insert of spring steel.

3,795,157

COMBINED TRANSMISSION GEAR SELECTOR AND ENGINE SPEED CONTROL

Trevor G. Campbell, Peoria, and Monte Chamberlain, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 21, 1972, Ser. No. 282,138
Int. Cl. B60k *23/00*; G05g *9/12*
U.S. Cl. 74—879 3 Claims



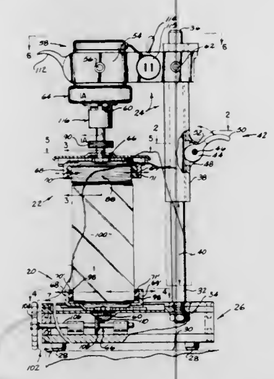
A hand-operated control assembly for accomplishing both transmission gear selection and engine speed control through a single control member or lever, gear selection being accomplished by pivotal movement of the lever and engine speed regulation being accomplished by rotation of the lever about its own axis. With the control lever being preferably movable in a conventional U-shaped pattern for gear selection, a relatively simple and novel interconnection is provided for coupling the single control lever with a transmission control selector rod and an engine speed control rod.

3,795,158

JAR LID REMOVER

Robert Y. Morita, 1268 Lyaman Pl., Los Angeles, Calif. 90029

Filed Dec. 7, 1972, Ser. No. 312,578
Int. Cl. B67b *7/18*
U.S. Cl. 81—3.32 9 Claims



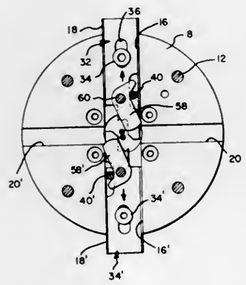
A jar lid remover for relatively unscrewing and separating threadedly engaged jar lids and jars and comprising a jar base clamp adjustable into clamping relationship with respect to the base of a jar and a jar lid clamp adjustably positioned directly above the jar base clamp for vertical adjustment to accommodate jars of different heights and arranged to be controllably clamped on the periphery of a threaded jar lid and then to be power-driven in a jar-lid unscrewing direction and with the jar lid clamp means being of a type such that the forcible motorized application of lid-unscrewing torque actually increases the extent of the clamping engagement of the clamp means on the lid so as to positively prevent any torsional slippage during a jar lid unscrewing operation. In one preferred form, the jar base clamp means may be of the same type as that disclosed in connection with the jar lid engaging clamp means — that is, arranged to provide amplified clamp-engaging force as a result of the torque produced during a jar lid unscrewing operation.

3,795,159

INSULATION STRIPPER FOR TWISTING WIRE PAIR

Charles Dale Steiner, Harrisburg, and Earl William, Annville, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 20, 1972, Ser. No. 290,611
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 6 Claims



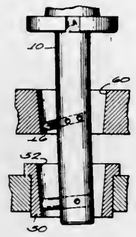
Apparatus for stripping insulation from the end portions of the wires of a twisted pair of wires has insulation stripping blades for cutting into the insulation of the wires. A pair of wire orienting members, mounted adjacent to the stripping blades, engage the twisted pair prior to cutting of the insulation and orient the pair properly with respect to the cutting edges. The stripping blades and the orienting fingers are mounted in a rotatable head which untwists the end portions of the twisted pair.

3,795,160

GUIDING MEANS FOR BORING BARS

Kasimir Janiszewski, 11908 W. Loomis Rd., Franklin, Wis. 53132

Filed Sept. 29, 1972, Ser. No. 293,604
Int. Cl. B23b *41/06*
U.S. Cl. 82—1.4 5 Claims



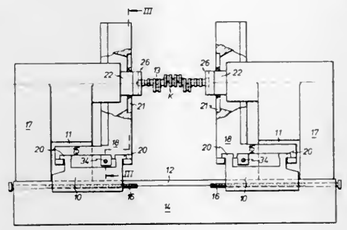
Apparatus for boring holes with a rotatable boring bar includes a guide tool or element located at the free end of the boring bar and projecting in the same direction as the boring tool. A hardened bushing concentrically aligned with the boring bar engages and guides the guide tool to prevent deflection of the working tool during use. The hardened bushing and guide tool enable the boring tool to provide a hole with a uniform radius.

3,795,161

TOOL MACHINE FOR MACHINING CRANKSHAFTS

Hermann Berbalk, Goppingen, Germany, assignor to Gebruder Boehringer Gesellschaft mit Beschrankter Haftung, Goppingen, Germany

Filed Feb. 21, 1973, Ser. No. 334,226
Claims priority, application Germany, Feb. 29, 1972, 2209622
Int. Cl. B23b *5/18, 5/00*
U.S. Cl. 82—9 4 Claims



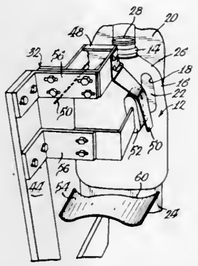
The present invention relates to a tool machine of a known type in which a crankshaft is machined by a rotary annular tool having internal cutting edss located on a circle through which the crankshaft extends. The ends of the crankshaft are held by chucks mounted on columns carried by the bed of the machine. A slide on this bed movable in a direction parallel to the crankshaft carries the tool holder which is movable on the slide to a cutting position in which said circle is located in a tangential relationship to the pin of the crankshaft being cut and to a loading and unloading position in which said circle is brought to co-axial relationship with the chucks. When the tool holder is in this position, it may be moved by the slide to a position close to one of the columns in which the tool surrounds a substantially cylindrical projection on the column carrying the chuck. In this position the tool and the tool holder are located laterally of the workpiece permitting the same to be easily released from the chucks and unloaded from the machine which may then be charged with the next crankshaft.

3,795,162

METHOD AND APPARATUS FOR TRIMMING PLASTIC BOTTLES

Ben E. Jaeger, 204 S. Brodge St., Yorkville, Ill. 60560

Filed Feb. 5, 1973, Ser. No. 321,157
Int. Cl. B29c *17/10*
U.S. Cl. 83—23 21 Claims



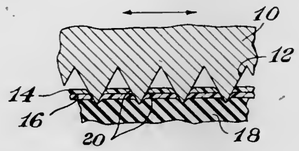
Bottles or other containers formed by blow molding are trimmed to remove the flashings at the bottom, top, and in the handle opening. The bottles are supported in an upright position and are rapidly trimmed while hot and pliable by a swinging arm having cutting tools that conform to and skim the contour of the bottle. The cutting tools have curved or tapered surfaces relative to the plane of the flashings that engage the flashings from one side and curl them away from the bottle in a one step operation.

3,795,163

METHOD OF SELECTIVELY CUTTING AND PERFORATING SUPERPOSED PANELS OF MATERIAL

William A. Armstrong, Elyria, and James M. Stefancin, Parma, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 16, 1971, Ser. No. 208,799
Int. Cl. B26f *1/24*; B26d *3/00*
U.S. Cl. 83—30 20 Claims



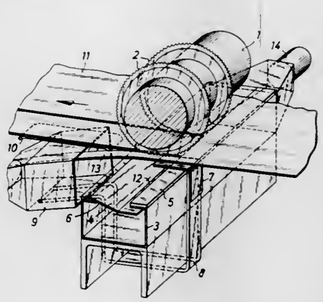
The present invention discloses a method of perforating a first layer or panel of material, while selectively slitting a second layer underlying and in face to face contact with said first layer, and without requiring separation of said layers. Such a method is practiced using a saw-tooth blade which is pressed through both said layers, followed by stroking the blade to sever the underlying layer, while the upper layer is caused to slide with and accompanying the stroke of the blade, leaving the same intact, with with a line of perforations superposed with the aforesaid cut. The indicated method has utility particularly as regards fabricating certain end to end connected bag structures from continuous lengths of flattened tubular film.

3,795,164

DEVICE FOR STRAIGHT-LINE SLITTING AND CUTTING OF CORRUGATED PAPER

Rudolf Schneider, Hamburg, Germany, assignor to General Corrugated Machinery, Lubeck, Germany

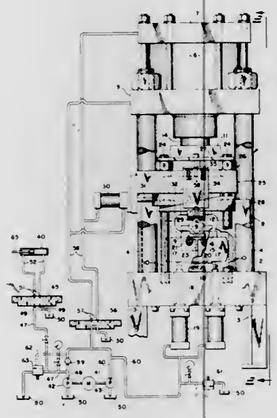
Filed June 8, 1972, Ser. No. 260,845
Claims priority, application Germany, June 19, 1971, 7123640
Int. Cl. B26d *1/20*
U.S. Cl. 83—349 3 Claims



A device for cutting corrugated paper including one or more disc-like knives fixed to a rotatable shaft. The circumference of each knife enters a groove in a table over which the paper travels with the paper held on the table by connection of

the groove to a suction device. Very small clearance is provided between the rear edge of the groove, which edge is reinforced by a plastic strip, and the circumference of each knife to obtain a positive cutting action.

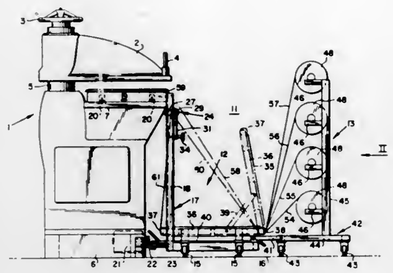
3,795,165
HYDRAULIC SHEARING MACHINE
Heinrich Moelbert, Hamburg, N.Y., assignor to Advanced Machine Design Company, North Olmsted, Ohio
Filed Jan. 18, 1973, Ser. No. 324,872
Int. Cl. B26d *5/12, 7/04*
U.S. Cl. 83—378 **17 Claims**



A hydraulic shearing machine of the type wherein opposite sides of longitudinally adjacent sections of a length of bar stock and the like are engaged respectively between a fixed knife and a hold down member and between a movable knife and yieldable back support member characterized in that the movable knife, the hold down member, and the back support member are hydraulically actuated from the same fluid pressure source to shear the bar between said sections while the latter are maintained in parallel relation by the hold down and back support forces which are proportionately related to the variable shearing forces encountered during the shearing of the bar and the variable shear forces encountered in the shearing of bars of different sizes and materials, the magnitude of the fluid pressure from said source being variable automatically in accordance with the shearing resistance imposed by the particular bar being sheared. The machine herein is further characterized in that a back gage member is also hydraulically actuated by the low pressure-high volume or the high pressure-low volume pump of a dual pump system, said system providing for rapid traverse of the hold down and knife actuators toward and away from the bar and for high pressure actuation by the high pressure-low volume pump of the system upon engagement of the hold down member and movable knife with longitudinally adjacent sections of the bar.

3,795,166
APPARATUS FOR PROCESSING SHEET MATERIAL
Karl Brand, am Stich 2, 4125 Riehen, Switzerland
Filed Feb. 15, 1972, Ser. No. 226,612
Claims priority, application Switzerland, Feb. 24, 1971, 2688/71
Int. Cl. B65h *17/5*
U.S. Cl. 83—409 **7 Claims**

Apparatus for processing sheet material, comprising cutting means to cut the sheet material and which comprise an elongated longitudinally extending bed on which the material is supported during cutting, material supplying means which reciprocate relatively to the cutting means in a longitudinal direction, driving means for feeding the sheet material towards the cutting means, deflecting and guiding means for



passing the material towards the cutting means, and a carrier for supporting rolls of sheet material to be processed, the carrier being movable with the material supplying means.

3,795,167
PLATE TRIMMING SHEARS
Gunter Karl Fries, Neunkirchen-Saar, and Ernst-Gunther Oberhauser, Rohrbach-Saar, both of Germany, assignors to Moeller & Neumann GmbH, Ingbert/Saar, Germany
Filed May 5, 1972, Ser. No. 250,699
Claims priority, application Germany, May 8, 1971, 2122855
Int. Cl. B26d *11/00*
U.S. Cl. 83—514 **4 Claims**

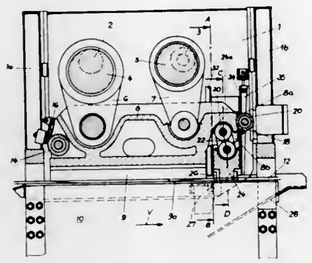
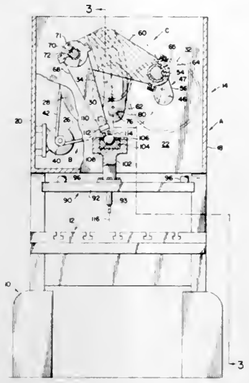


Plate trimming shears especially for heavy plates include cutter blades one of which receives a rocking movement so as to perform a rolling cut and a cross cutter is provided for chopping off the waste strip trimmed from the plate, the cross cutter being supported in its own guide and functionally connected to the support carrying the moving cutter blade so that the cross cutter executes a linear chopping cut with an operating movement derived from the moving cutter support.

3,795,168
LOW-IMPACT FOUR-BAR PRESS
Sheldon A. Spachner, Havertown; John G. Lose, Lansdowne, and Martin Friedland, Flourtown, all of Pa., assignors to Gulf & Western Industrial Products Company, Salem, Ohio
Filed Jan. 4, 1973, Ser. No. 321,009
Int. Cl. B26d *5/08*
U.S. Cl. 83—617 **36 Claims**

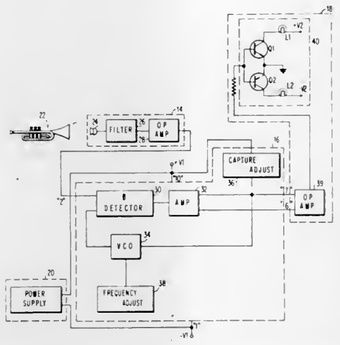
A low-impact four-bar press is provided having a drive mechanism which will cause the press slide to move relatively slowly throughout a metal working portion of the press stroke

and relatively rapidly on the return and advance portions of the stroke. The drive arrangement includes a linkage system comprised of a first link pivotally connected between the press slide and a second link which is connected to a driven crank. A third, lazy or constraining link is pivotally connected at one



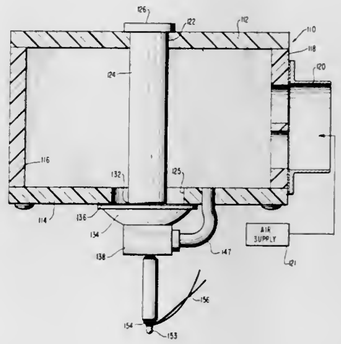
end thereof to the second link and at the other end thereof to the press frame at a point between the crank axis and the path of the slide. The arrangement of the several links is such as to provide desirable kinematic and dynamic characteristics by developing a particular coupler curve at the pivot point between the first and second links.

3,795,169
ELECTRONIC DEVICE EMPLOYING A PHASE LOCKED LOOP FOR TUNING MUSICAL INSTRUMENTS
Donald K. Belcher, Olathe, Kans., assignor to Signa-Signer, Inc., Fairfax, Va.
Filed May 31, 1973, Ser. No. 365,785
Int. Cl. G10g *7/02*
U.S. Cl. 84—454 **10 Claims**



An electronic tuner is used to indicate when a musical instrument is tuned above or below a desired given frequency. The disclosed eletronic tuner includes the following elements in series: an audio frequency microphone, a band pass filter selected to the frequency range desired, a preamplifier, a phase locked loop with associated power supply for detecting when the incoming frequency is above or below the desired frequency, an output amplifier, and a push-pull complementary transistor output means for driving a pair of lamps in such a fashion as to indicate whether the incoming frequency is above or below the desired frequency. Frequency discrimination is performed by the phase locked loop which is adjusted to a normal B^b concert frequency of 466.2 Hz. The discriminating range of the phase locked loop may be varied according to the requirements of the instrument.

3,795,170
CHEST VALVE FOR PIPE ORGANS
Paul A. Klann, P.O. Box 2398, Waynesboro, Va. 22981
Continuation-in-part of Ser. No. 152,304, June 11, 1971, abandoned. This application Dec. 29, 1972, Ser. No. 319,813
Int. Cl. G10b *3/10*
U.S. Cl. 84—339 **4 Claims**

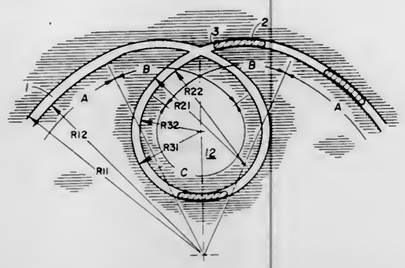


The outlet opening of the air chest is provided with a sleeve for supporting the organ pipe externally of the chest and which acts as a valve seat for the flexible resilient diaphragm of the chest valve. The diaphragm forms one wall of an auxiliary chamber located beneath the sleeve. An electro-magnetic valve controls the communication of the auxiliary chamber to the atmosphere or the air under pressure in the chest. When the auxiliary chamber is in communication with the interior of the air chest the pressures on opposite sides of the diaphragm are equalized around the sleeve and the pressure differential between the atmospheric pressure in the sleeve and the air under pressure in the auxiliary chamber maintains the diaphragm in sealing engagement with the sleeve. When the auxiliary chamber is in communication with the atmosphere, the pressure differential acting on the diaphragm will move the diaphragm away from the sleeve allowing air under pressure to escape from the chest through the sleeve to the pipe of the organ. The chest valve is preferably mounted on the underside of the air chest externally thereof with the diaphragm exposed to the interior of the chest for cooperation with the sleeve.

3,795,171
GUIDING UNIT FOR BRAIDING SPOOLS IN BRAIDING MACHINES
Reiner Strangfeld, Oldenburg, Germany, assignor to August Herzog Maschinenfabrik, Oldenburg, Germany
Filed May 28, 1971, Ser. No. 147,972
Int. Cl. D04c *3/22*
U.S. Cl. 87—50 **5 Claims**

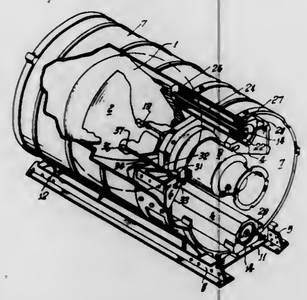
The guide groove-engaging portion of a shuttle for a braiding machine is constructed so that both surface portions thereof engaging the walls of the groove are in surface contact with these walls at the point where groove portions cross one another to form a loop, while end portions of this shuttle element are convex portions merging with these surface portions. The guide groove itself is of different width and curvature in

its various portions. In general, it has a large radius and is relatively wide. In the loops it has considerably smaller radius but



it is slightly wider. At the crossing point it has an intermediate radius, but in order to secure the surface contact already mentioned, at this point it has a minimum width.

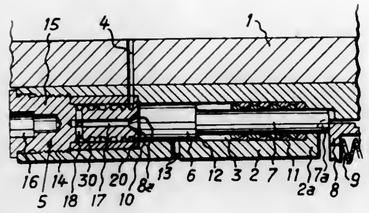
3,795,172
APPARATUS FOR RAPIDLY ACCELERATING AND CUSHIONABLY DECELERATING A PISTON-LIKE MEMBER
Wilbur B. Reed, Cambell, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 5, 1972, Ser. No. 285,961
Int. Cl. F41f *5/02*
U.S. Cl. 89—1.5 R **10 Claims**



By way of illustration, the apparatus may be used to launch rather heavy, spherical objects from a travelling space vehicle. In this event, the piston cradles the sphere and is driven by a high-thrust, short duration-time rocket motor. At launching velocity snubber assemblies arrest the piston with a minimum of recoil. The snubbers include rods secured to the piston for free travel with it until launching velocity is reached. At that point, the rods engage snubber pistons which are arrested by honeycomb cylinders.

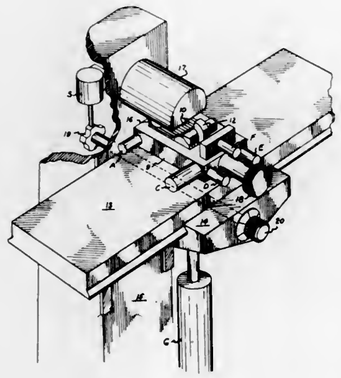
3,795,173
CASCADE THROTTLE
Pierre Freymond, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland
Filed Dec. 18, 1972, Ser. No. 316,377
Claims priority, application Switzerland, Jan. 7, 1972, 261/72
Int. Cl. F41d *5/08*
U.S. Cl. 89—193 **4 Claims**

A cascade throttle having a sleeve within which there are provided a number of hollow compartments or spaces bounded by partition or intermediate walls. Recesses are arranged at the intermediate walls and these recesses establish flow connections between neighboring hollow compartments. The recesses of neighboring intermediate walls and which are arranged between the sleeve member and the intermediate walls are situated diametrically opposite one another. The



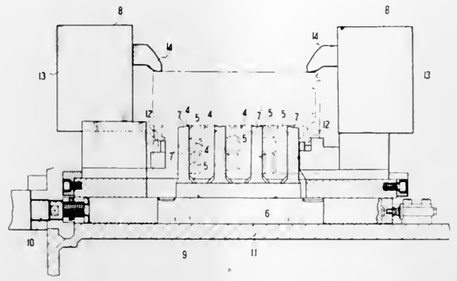
recesses at the intermediate wall form between the latter and the wall of the sleeve member a respective gap having the shape of a circular ring sector. Each hollow compartment is subdivided into a number of sectors by a substantially star-shaped web, and the sectors are connected with one another by throttle locations formed by the tips of the star-shaped web.

3,795,174
MACHINE FOR CUTTING MULTIPLE KEYS
Roy N. Oliver, 148 Ellen Dr., and Roy C. Spain, P.O. Box 1668, both of Salem, Va. 24153
Filed Apr. 6, 1972, Ser. No. 241,507
Int. Cl. B23c *3/35*
U.S. Cl. 90—13.05 **6 Claims**



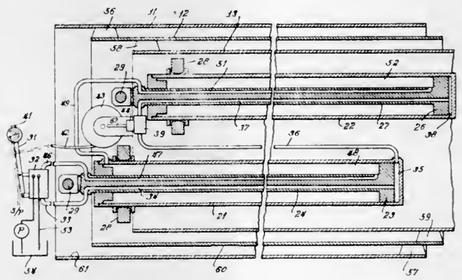
A machine for cutting notches or bits in a plurality of keys, or key blanks, at different levels and varying angles to the axes of the keys, the keys being detachably clamped in parallel positions slidably movable with respect to one another by a rocker plate operating upon the tips of the keys whereby a cutting wheel moved transversely across the keys at a predetermined distance from the tips of said keys makes an identical notch in each said key regardless of the angle of desired key notch being cut.

3,795,175
AUTOMATIC DEBURRING PROCESS
Saichi Numao, and Yukio Yoneyama, both of Tochigi, Japan, assignors to Yorozu Jidosha Kogyo Kabushiki Kaisha, Kanagawa-ken, Japan
Filed June 1, 1972, Ser. No. 258,581
Claims priority, application Japan, Feb. 8, 1972, 47-13753
Int. Cl. B23d *1/08, 1/24*
U.S. Cl. 90—24 A **9 Claims**



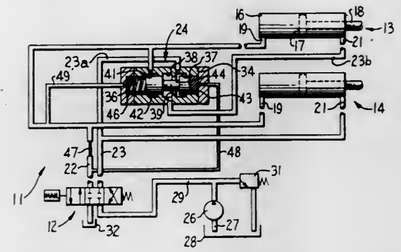
An automatic deburring process for the burrs produced within the bore of the cylinder block of an automotive engine, and an apparatus therefor, which consists in that a cutting edge shaped to register with the sectional shape of crank case section of the cylinder block is moved in the axial direction of said section, that is, in the direction of the crank shaft housed in said section, for cutting burrs on the internal wall surface of said section off from its base.

3,795,176
BOOM-CROWD CYLINDERS WITH SELECTIVE SEQUENCING BY SOLENOID VALVE
William J. Lado, Rome, N.Y., assignor to Pettibone Corporation, Chicago, Ill.
Filed Oct. 26, 1971, Ser. No. 192,106
Int. Cl. F15b *11/18*
U.S. Cl. 91—167 **1 Claim**



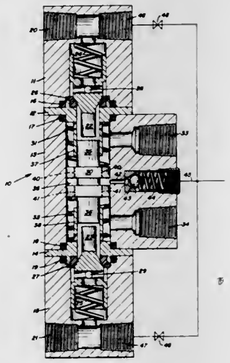
A three-part boom for a crane or the like has the usual pair of hydraulic cylinders, one for the forward boom section and one for the intermediate boom section. Fluid connections for the forward cylinder is through the rear piston rod and cylinder so as to use no hose reel. Extension of the forward section only when desired is achieved by a solenoid valve between cylinders, the electric cord for which requires only a small reel.

3,795,177
FLUID MOTOR CONTROL CIRCUIT PROVIDING SELECTIVE FAST MOTION
John R. Cryder, Joliet, and Allan L. Freedy, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 4, 1971, Ser. No. 195,635
Int. Cl. F15b *11/16, 13/02*
U.S. Cl. 91—411 R **6 Claims**



A system having a manually operated control valve for directing pressurized fluid to a pair of fluid motors while receiving fluid discharged therefrom also has a fast motion valve for causing the motors to outrun the fluid supplied through the control valve by returning a portion of the discharged fluid directly to the motors. The circuit shifts to provide fast motion on detecting a predetermined flow rate between the control valve and the motors. As the operator can modulate this flow rate, the fast motion is always subject to operator control. To assure operator control under all conditions, the fast motion valve is spring biased to the unoperated position and return of a portion of the motor discharge flow to the control valve is a necessary condition for operation of the fast motion valve. The system is further arranged to prohibit fast motion, under any condition, during reversed motion of the motors.

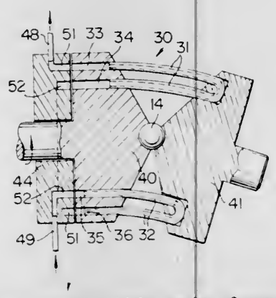
3,795,178
HYDRAULIC ACTUATOR HOLDING SYSTEM
Richard M. Roche, P.O. Box 74, North Rose, N.Y. 14516
Filed Sept. 11, 1972, Ser. No. 287,650
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—420 **10 Claims**



The invention improves on a locking valve for holding a hydraulic actuator in place. The locking valve has a pair of check valves and a shuttle piston movable hydraulically between the check valves for opening the check valves in response to an upstream directional valve for moving the ac-

tuator, and the improvement is a central opening in the shuttle piston communicating with a return line, bleed holes communicating with both faces of the shuttle piston and the central opening, and centering springs for the shuttle piston. The valve then locks against back pressure from the hydraulic actuator and also allows any positive leakage from upstream to bleed through the shuttle piston and back through the return line without building up a pressure that can eventually open the valve. The system also includes a loading valve arrangement for maintaining pressure on the hydraulic actuator.

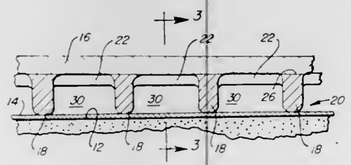
3,795,179
AXIAL PISTON ROTARY APPARATUS
Patrick Picker, Sherbrooke, Quebec, Canada, assignor to Universite de Sherbrooke, Sherbrooke, Quebec, Canada
Filed May 23, 1972, Ser. No. 256,170
Claims priority, application Canada, May 15, 1972, 142187
Int. Cl. F01b *13/04*
U.S. Cl. 91—500 **19 Claims**



Axial piston pumps in which a series of pumping cells are mounted in a bent-axis holding structure, and in which each pumping cell has two cylinders and associated piston heads; the piston heads of each pumping cell are interconnected to one another so that liquid can flow from one cylinder to the other via the piston heads; liquid flow is controlled by means of one or more valve plates.

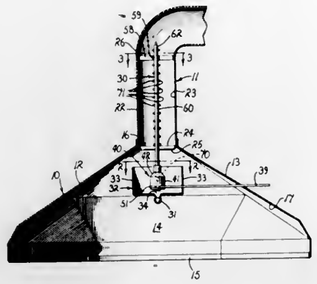
The piston heads can be lengths of flexible tubing with the extremities closely fitting within axial bores in two facing barrels or, if it is desired to use only one valve plate, the lengths of tubing are bent in a U-shaped configuration and both extremities extend into the same barrel. In the latter case, the pumping cells can be duplicated but disposed in the opposite direction thus providing a twin pump.

3,795,180
PLASTIC NET DECK SURFACE AND DRAINAGE UNIT
Ronald L. Larsen, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.
Filed Feb. 26, 1969, Ser. No. 810,078. The portion of the term of this patent subsequent to May 5, 1990, has been disclaimed.
Int. Cl. E01c *11/24*
U.S. Cl. 94—33 **10 Claims**



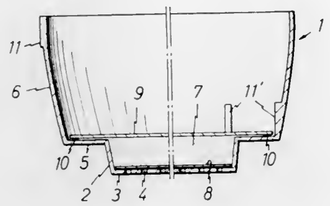
A net, preferably an extruded plastic net, is used to provide a raised surface and drainage means for a sloped deck such as a ball field, patio, and the like.

3,795,181
FLUE CLEANING DEVICE
Richard L. Lawson, Sanger, Calif., assignor to Flue Cleaners Inc., Fresno, Calif.
Filed Nov. 5, 1971, Ser. No. 196,119
Int. Cl. F23j *11/00, 3/02*
U.S. Cl. 98—115 K **4 Claims**



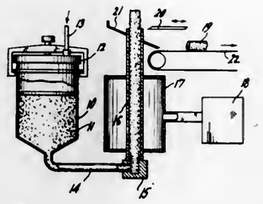
A flue cleaning device adapted to be mounted in the interior of a flue having a fluid housing with a turbine mounted for rotational movement therein; a spray tube having a plurality of discharge jets disposed in spaced relation along the length thereof mounted on the turbine and extended axially of the flue; a receiving tray mounted below the fluid housing in vertical alignment with the flue; and a source of cleaning solution under pressure in operable connection to the fluid housing so that upon activation of the device, cleaning solution is forced into the fluid housing to drive the turbine and associated spray tube rotationally within the flue to discharge the solution under pressure from the discharge jets and against the interior of the flue in a uniform spray pattern to clean the flue and the solution and residue from the cleaning is gravitationally deposited in the receiving tray.

3,795,182
COFFEE FILTER
Pierre Emile Van Damme, 34 Schendelbeckhofstraat, Alost, Belgium
Filed July 3, 1972, Ser. No. 268,813
Claims priority, application Belgium, Jan. 31, 1972, 113427
Int. Cl. B01d *23/02*
U.S. Cl. 99—306 **8 Claims**



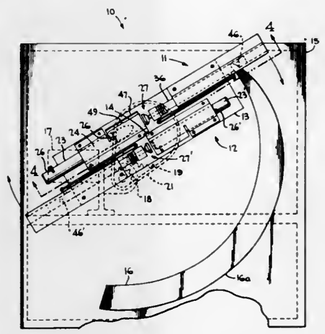
A coffee filter with a receptacle which is dimensioned to hold a predetermined amount of ground coffee. The coffee receptacle has a flat peripheral top flange which supports a filtering cover sheet extending over the central opening of the coffee receptacle. The cover sheet is sealed to the flange in a zone spaced from the central opening so that it is free to be deformed outwardly under the pressure of the infused coffee in the receptacle. The cover sheet is sealed to the flange either by a bonding seam or a retaining ring, and means is provided to protect the cover sheet when a series of such filters are stacked. A peripheral wall extends upwardly from the top receptacle flange to define a water container.

3,795,183
APPARATUS FOR MAKING CAKES
Howard Roth, Bronx; Robert F. Schiffmann, Brooklyn; Harold B. Kaufman, Jr., New York, and John H. Moyer, Garden City, all of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 836,385, June 25, 1969, abandoned. This application June 28, 1971, Ser. No. 157,232
Int. Cl. A21b *5/00, 2/00*
U.S. Cl. 99—353 **15 Claims**



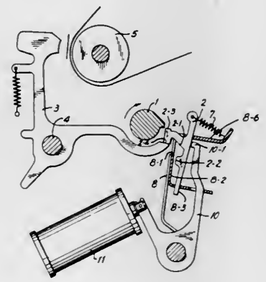
Cake is continuously baked without the use of baking pans by the extrusion of batter into a shaped baking chamber disposed in a microwave cavity. The product is moved through the baking chamber by maintaining the batter under pressure, by the use of conveyors, or by a reciprocating piston. In one embodiment, a filled cake product is produced by continuously and concurrently extruding a confectionery material into a cavity formed in the cake product during the baking process.

3,795,184
NUTCRACKER APPARATUS
Henry Haywood Turner, 2702 Techwood Dr., Columbus, Ga. 31906
Filed June 14, 1972, Ser. No. 262,674
Int. Cl. A23n *5/02*
U.S. Cl. 99—577 **12 Claims**



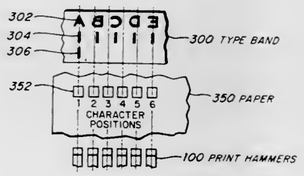
A power driven percussion apparatus for cracking a nut between two sockets axially aligned on a base rotating in a substantially vertical plane, one socket of relatively small mass serving as an impact member and having a short cracking stroke being driven by a hammer moving under the pull of a tension means stretched through a cam action, and the other of relatively great mass serving as an anvil and moving in response to a variation in the relationship of its aligned track to the earth's gravitational field so as to alternately approach the impact member to produce a clamping engagement of a nut to be cracked between the sockets and to move away from the impact member to allow the cracked nut to fall from between the sockets, the parts being moved by cam action and by gravity and so spaced and positioned with respect to the rotating base as to insure proper sequence and effectiveness in positioning, cracking and the discharging of a nut.

3,795,185
COMPACT FLYING PRINTER
Tadayaoshi Shimodaira, Suwa, and Yoshifumi Gomi, Chino, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki, Tokyo, Japan
Filed Feb. 24, 1971, Ser. No. 118,427
Claims priority, application Japan, Feb. 27, 1970, 45-16451
Int. Cl. B41j *5/22*
U.S. Cl. 101—93 C **6 Claims**



A compact flying printer having a continuously rotating print drum and ratchet wheel, a trigger lever positionable to be struck by a tooth of said ratchet wheel and a hammer lever driven by said trigger lever and provided with a print hammer at its end. The trigger lever is formed with a linear guide portion for regulating the motion thereof and an energy transmitting portion projected for transmitting energy from said ratchet wheel to said hammer lever.

3,795,186
HIGH SPEED PRINTER
Robert H. Curtiss, Wayland; Derek J. Gardiner, Sudbury, and Seldan A. Lazarow, Framingham, all of Mass., assignors to Nortec Computer Devices, Inc., Ashland, Mass.
Filed Nov. 14, 1969, Ser. No. 876,770
Int. Cl. B41j *7/12*
U.S. Cl. 101—93 C **18 Claims**

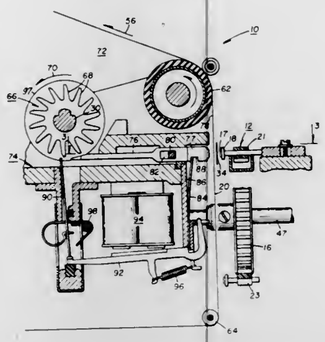


A high speed line printer having a number of sets of hammers; one hammer for each character position defining a line of print, which coact with a moving type band. Each hammer time shares one of a number of drive circuits with others of the hammers in a set. A line may be printed in the time that a type font on the band moves past any particular character position.

3,795,187
IMPELLERS FOR IMPACT PRINTERS

Egon S. Babler, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed July 3, 1972, Ser. No. 268,236
Int. Cl. B41j 5/08
U.S. Cl. 101—93 C 15 Claims

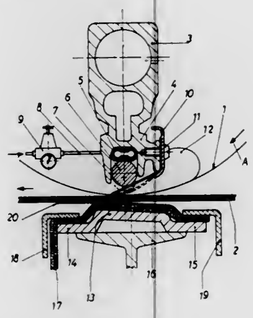


A plurality of self-restoring equally spaced apart print hammers selectively are driven lineally toward a printing position by continuously rotating impellers having equiangularly spaced radial impelling elements. Each impeller is effective through the agency of an interponent, which is selectively elevated into the path of associated impelling elements upon latching of the armature of an electromagnet, for transmitting impeller force to a corresponding print hammer. A plurality of dies, which are conveyed past the hammers for printing, are aligned axially of an endless conveyor in equally spaced relationship different from the spacing of said hammers. The impelling elements of each impeller are angularly offset from corresponding impelling elements of adjoining impellers in accordance with and for accommodation of the spacing difference.

3,795,188
FLUID PRESSURE BIASED SQUEEGEE BLADE AND COUNTER PRESSURE TABLE THEREFOR

Adolfo Giani, Bergamo, Italy, assignor to Reggiani S.P.A., Bergano, Italy

Filed Mar. 7, 1972, Ser. No. 232,593
Claims priority, application Italy, Mar. 12, 1971, 21677 A/71
Int. Cl. B41f 15/08, 15/24
U.S. Cl. 101—119 6 Claims

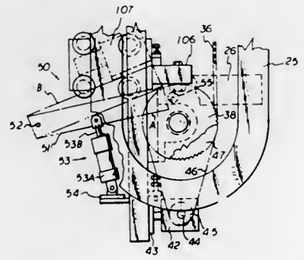


Printing apparatus for printing machines of the type having cylindrical screens and an endless carrying belt is disclosed which comprises a squeegeeing device consisting of an elastic membrane expansible by means of a pressurized fluid (such as air), said membrane being associated with an equalizing bar placed between the said membrane and a blade made of a flexible and elastic material acting on the internal surface of the screen with an acute incidence angle, said squeegeeing device being opposed to a counterpressure table inclined with respect to said endless carrying belt, said counterpressure table being provided with a lining consisting of layers of soft and yielding material and of an anti-frictional thin plate. The zone of contact between said endless carrying belt and said counterpressure table is placed downstream of the contact zone between the endless carrying belt and said screen. The said counterpressure table forms with the horizontal plane tangent to said screen an angle between 3° and 6°.

3,795,189
SCREEN PRINTING MACHINE WITH OVAL RAIL FOR INDEXING PALLETS

David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machines Inc., Hawthorne, N.J.

Filed Sept. 28, 1972, Ser. No. 292,860
Int. Cl. B41l 13/16; B41f 15/10
U.S. Cl. 101—123 12 Claims



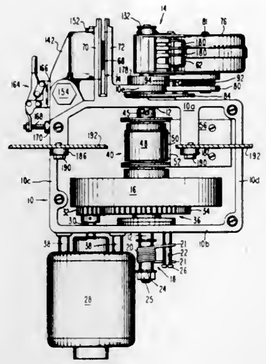
This disclosure is directed to a screen printing machine having an oval track or rail about which a series of pallets supporting a work piece are indexed from station to station. The arrangement is such that the pallets travelling about the oval rail are always disposed or maintained in a common plane. A printing head assembly having one or more color stations is operatively associated for movement into and out of printing relationship with one or more of the pallets as the pallets are indexed and maintained in a common plane.

3,795,190
ENDORSING APPARATUS

Harry L. Wallace, Garden City, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 835,145, June 20, 1969, abandoned. This application May 4, 1972, Ser. No. 250,194
Int. Cl. B41f 7/22
U.S. Cl. 101—233 14 Claims

This invention relates generally to printing apparatus and more particularly to a document or bank check endorser apparatus for printing on documents moving at high speeds in which the operating parts are combined into a self-contained, unitary assembly designed for installation as a unit in larger data processing equipment and also designed when installed for convenient access to the parts thereof for maintenance purposes. The self-contained, unitary document endorser comprises a printing assembly including a print head releasably secured to one end of a rotatable shaft and a cooperating chute gate assembly forming part of the document transport path, and further comprises an electric motor for continuously driving a fly wheel, a clutch for coupling the fly wheel to the shaft for intermittently rotating the latter and the print head, and a brake device for quickly retarding rotation of the print head upon disengagement of the clutch. The endorser is installed as a unit in supporting structure preferably with the shaft in vertical position and the head at the upper end thereof in accessible detachable for printing on documents successively fed thereby. Included in the chute gate assembly is an impression roller or platen capable of fine adjustment for equalizing the printing pressure

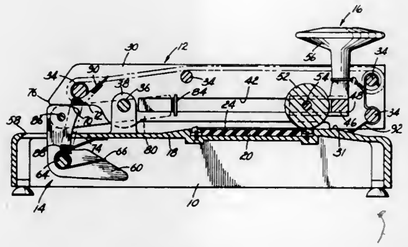


on the documents fed thereby. Both the cabinet and the endorser unit are cooperatively designed so that the latter may be installed in either of two positions on opposite sides of the document transport path such that with slight modification of the unit for either position it is capable of printing on the front or the reverse sides of documents conveyed along the path.

3,795,191
LATCHING MECHANISM FOR PRINTING MACHINES

John P. Miller, Chardon; Arthur W. Oatess, Cleveland, and Bryce G. Thornton, Mentor, all of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Nov. 20, 1972, Ser. No. 308,070
Int. Cl. B41f 3/20
U.S. Cl. 101—269 4 Claims

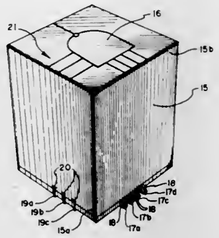


A printing machine which has a bed for supporting printing devices and a form to be imprinted, includes a print head pivotally mounted on a base for movement between an open position and a selected closed position. A carriage supporting a platen is mounted on the print head and the carriage is movable in a path from a home position across the bed to an actuated position to perform a printing stroke, and back to the home position in readiness for a subsequent printing operation. Means is provided for sensing the thickness of the form to be imprinted, and a latching mechanism is provided for latching the print head in closed position, which in fact is a position selected from an infinite number of possible positions within a range as determined by the sensed thickness of the form. The print head is held in the selected closed position during a printing stroke and is restored to its open position prior to return of the carriage to the home position.

3,795,192
SYMBOL STAMP

Bruce W. Robertson, 7342 South 1540 East, Salt Lake City, Utah

Filed Dec. 26, 1972, Ser. No. 318,548
Int. Cl. B41k 1/06, 1/56
U.S. Cl. 101—368 1 Claim

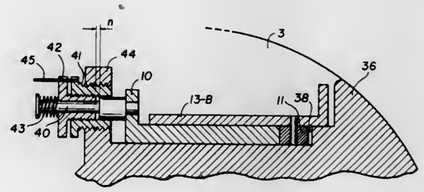


An ink stamp useful in producing technical and informational drawings. The stamp consists of a backing member, which an operator holds to use the stamp, and a printing face. A symbol that includes connector lines whose ends are marked by indicia proximate to the edges of the backing member, is formed in relief on the printing face, and the indicia identifying the ends of the connector lines are scribed so as to be easily viewed from above the stamp or from the side thereof.

3,795,193
DEVICE FOR RAPIDLY AND PRECISELY MOUNTING FLEXIBLE PRINTING PLATES

Hans Johne; Gunter Schumann; Arnfried Jehring, and Kurt Reichenberger, all of Radebeul, Germany, assignors to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrostungen, Leipzig, Germany

Filed Apr. 30, 1971, Ser. No. 139,067
Int. Cl. B41f 29/04
U.S. Cl. 101—415.1 9 Claims



Two clamping rails are mounted in a printing cylinder and at least one of these rails is slidable in directions transverse of the axis of the cylinder. For sliding this rail into proper position, an eccentric disc is suitably turned in the center of the cylinder. The motion of the disc is transmitted to the clamping rail by suitable linkage subject to intermediate spring action and subject to a force acting between the two rails, biasing them apart.

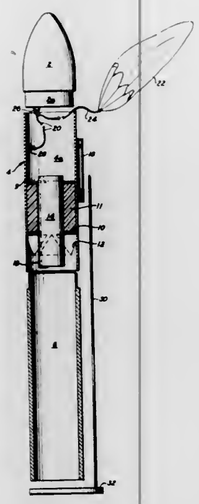
3,795,194
MODEL ROCKET

William T. Kendrick, 2546 Chain Bridge Rd., Apt. 5-3, Vienna, Va. 22180

Filed Jan. 3, 1972, Ser. No. 214,698
Int. Cl. C06d 1/04
U.S. Cl. 102—34.1 4 Claims

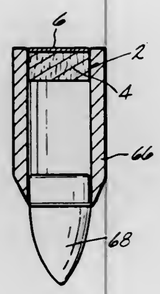
A model air rocket assembly includes a finless cylindrical body of substantially uniform diameter. The assembly comprises a nose cone, an intermediate canister tube and a lower

body tube. The engine is positioned in an engine tube held concentrically within the canister tube. The engine tube extends down to approximately the lower edge of the canister



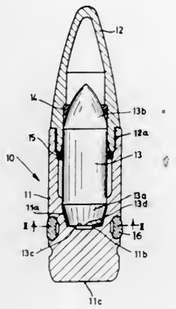
tube and openings are arranged around the lower portion of the canister tube to admit air which augments the engine thrust through the body tube and provides aerodynamic stability.

3,795,195
ELECTRICAL INITIATOR
Charles G. Irish, Jr., Sylvan Ln., Cheshire, Conn. 06410; Joseph W. Silva, Foote Hill Rd., Northford, Conn. 06472, and Raymond I. Cowles, Ansonia Rd., Woodbridge, Conn. 06525
Division of Ser. No. 4,480, Jan. 21, 1970, abandoned. This application Sept. 5, 1972, Ser. No. 286,383
Int. Cl. F42b *9/00*
U.S. Cl. 102—38 — 3 Claims



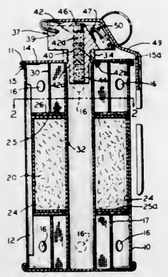
An initiator having a body of nitrocellulose material having a surface characterized by thin fibres or thin webs with a film of a conductive material adhered to said surface.

3,795,196
PROJECTILE WITH A LOOSE HARD CORE
Hans Hillenbrand, Mullheim, Germany, assignor to Mauser-Merke Aktiengesellschaft, Oberndorf/Neckar, Germany
Continuation of Ser. No. 99,929, Dec. 21, 1970, abandoned. This application Dec. 27, 1972, Ser. No. 318,997
Int. Cl. F42b *11/22, 13/04*
U.S. Cl. 102—52 — 10 Claims



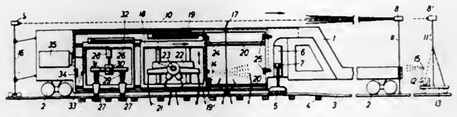
In a projectile with a loose hard core therein the core is provided at its lower end face with at least one unevenness, such as a notch, a groove, a tooth or the like, so that upon firing the projectile the inner face at the bottom wall of the hollow body in which the core is loosely arranged, but secured against longitudinal displacement, will come into pressure engagement with said unevenness and will establish a coupling connection between the core and the hollow body so that the twisting movement of said body will be transmitted to said core.

3,795,197
TEAR GAS GRENADE
Michael K. Levenson, 2591 Queenston Rd., Cleveland Heights, Ohio 44118
Filed July 27, 1972, Ser. No. 275,509
Int. Cl. F42b *27/06*
U.S. Cl. 102—65 — 7 Claims



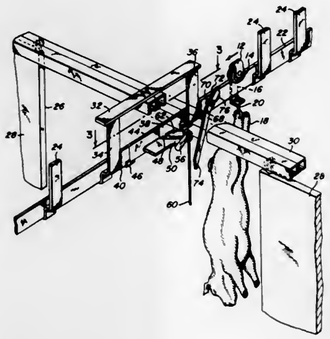
A tear gas grenade including a canister and a top crimped to the canister so as to leave a marginal safety pressure relief opening. Emission holes are provided in the canister adjacent opposite ends thereof. A tubular charge pellet is supported in the canister spaced from opposite ends thereof. Igniter tubes are provided adjacent inner and outer combustion surfaces of the pellet. Igniter washers are provided on end combustion surfaces of the pellet. The grenade elements are arranged to provide maximum dissemination of the gas with safety and such that the gas has a minimal tendency to diffuse after emission.

3,795,198
MOBILE TRACK TAMPER FOR CONTINUOUSLY CORRECTING A TRACK POSITION
Franz Plasser, and Josef Theurer, both of Johannesgasse A1010, Vienna, Austria
Division of Ser. No. 48,127, June 22, 1970, Pat. No. 3,687,081. This application July 14, 1972, Ser. No. 271,926
Claims priority, application Austria, July 24, 1969, A 7175/69
Int. Cl. E01b *27/17*
U.S. Cl. 104—12 — 41 Claims



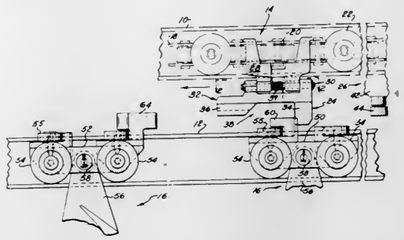
In track leveling and/or lining with a continuously advancing track tamper, the tamping tools are continuously moved relative to the continuously advancing machine frame in synchronization with the machine advance in such a manner that the tamping tools are held in respective cribs while they tamp the ballast.

3,795,199
TRACK GATE STRUCTURE
Raymond A. Herzog, Cincinnati, Ohio, assignor to The Cincinnati Butcher's Supply Company, Cincinnati, Ohio
Filed Aug. 10, 1971, Ser. No. 170,603
Int. Cl. B61b *3/00*
U.S. Cl. 104—100 — 18 Claims



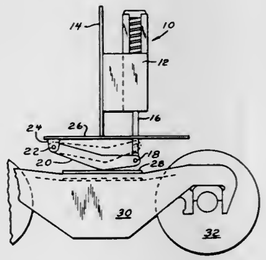
The track gate structure comprises an obliquely movable track section durably supported for movement to operative and inoperative positions, the purpose being to selectively interrupt continuity of an overhead conveyor track which passes through a doorway, so that closure means for the doorway may be moved to a fully closed position without interference from the conveyor track; said structure including simple and reliable safety means automatically operative to preclude accidental derailment of a conveyor trolley at the movable track section.

3,795,200
FREE AND POWER CONVEYOR SYSTEM
George R. Pipes, South Euclid; James D. Peppers, Wickliffe, and Wayne T. Mormile, Mayfield Heights, all of Ohio, assignors to Eaton Corporation, Cleveland, Ohio
Filed Apr. 5, 1972, Ser. No. 241,116
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S — 6 Claims



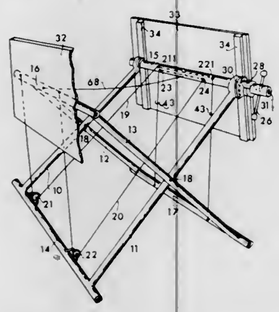
A conveyor system having pusher assemblies on a driven chain supported above a carrier track along which carriers are propelled with each carrier having a front trolley having a push lug and a rear trolley having a release camming lug. The pusher assemblies include a pivotedly supported front pusher dog assembly and a pivotally supported rear pusher dog assembly with the front pusher dog assembly including a forwardly projecting release blade for releasing the pusher dog from driving engagement with the push lug on the carrier. Provision is also made for accumulation of carriers, batch reentry of carriers, carrier switchout and control of the carriers when traversing inclines.

3,795,201
RAILWAY CAR ROLL DAMPENING FRICTION DEVICE
Carl E. Tack, 157 Linden St., Elmhurst, Ill. 60126
Continuation-in-part of Ser. No. 6,473, Jan. 28, 1970, Pat. No. 3,731,638. This application Jan. 5, 1973, Ser. No. 321,236
Int. Cl. B61f *5/14, 5/24*; F16c *17/04*
U.S. Cl. 105—199 A — 7 Claims



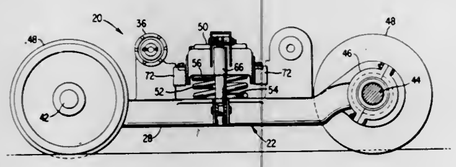
An energy-absorber for swaying motion between the body and side-frame portions of a railroad car has a housing and a fulcrum adapted for mounting on the same portion of the car and has a lever pivoted on the fulcrum and adapted for sliding engagement with the other portion of the car. The housing contains a friction shoe having inclined wedging surfaces at its opposite ends and inner and outer wedge members having inclined surfaces mating with those of the shoe. The drive rod of the energy-absorber is pivoted to the operating lever and has an abutment engaging the outer wedge and has a compression spring around its inner end engaging the inner wedge. A spring of greater capacity in the housing produces friction increasing with the insertion of the rod and the shoe into the housing. Structure for providing maintenance-free operation over long periods of use is described.

3,795,202
FREIGHT BRACE
Per U. Johansson, Ronninge, Sweden, assignor to Firma Unoma Johansson & Co., Uno-Johansson, Ronninge, Sweden
Filed Aug. 14, 1972, Ser. No. 280,143
Claims priority, application Sweden, Sept. 14, 1971, 11647/71
Int. Cl. B60p *7/14*; **B61d** *45/00*
U.S. Cl. 105—369 S **11 Claims**



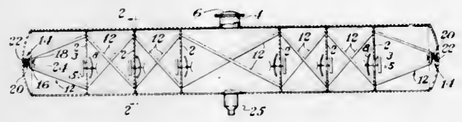
A freight brace including first and second brace members having long pieces which intersect each other and are pivotally connected at their points of intersection in a scissors like manner, each brace further including parallel horizontal upper and lower cross pieces. At least one and preferably a plurality of flexible elongated elements such as wires or tapes extend from the lower cross piece of the first frame up to the upper cross piece of the second frame from which the elements are redirected to the lower cross piece of the second frame and then upwardly to the upper cross piece of the first frame. These elements permit expansion of the frame and the slack therein is taken up as the frame contracts in size. Each frame has associated therewith a wall member preferably mounted on the outer side of the upper cross piece of each frame, these wall members being vertically adjustable and adapted to be urged against the freight being braced by the present apparatus.

3,795,203
ROLL DAMPENING RAILWAY TRUCKS
Gustav B. Sundby, Atchison, Kans., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Aug. 5, 1971, Ser. No. 169,254
Int. Cl. B61f *3/08, 5/24, 5/36*
U.S. Cl. 105—182 R **9 Claims**



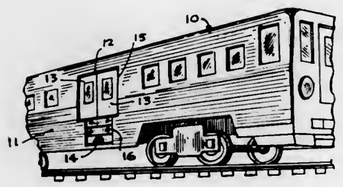
Railway trucks including frame sections consisting of a side frame and a transom extending transversely therefrom; spherical bearings connecting the frame sections for relative movement about an axis extending diagonally of the truck; wheel and axle assemblies connected to the side frames by pivoted journal arms; air bellows between the journal arms and side frames for adjusting the height of the side frames relative to the rails on which the truck is riding; a bolster supported from the side frames by bolster spring assemblies; lateral and vertical shock absorbers connected between the bolster and the truck frame sections; and snubbers for limiting longitudinal and lateral movement of the bolster relative to the truck frame sections.

3,795,204
INHIBITION OF END-TO-END SLOSHING, LONGITUDINAL OF THE DIRECTION OF MOVEMENT, WITHIN CONFINED BODIES OF LIQUID IN TRANSIT
Wilson J. Waguespack, 3226 Hwy. 36, Freeport, Tex. 77541
Filed June 12, 1972, Ser. No. 262,059
Int. Cl. B61d *5/00*
U.S. Cl. 105—358 **10 Claims**



The invention is a method, and apparatus specifically designed to carry out the method, of lessening and substantially eliminating the sloshing and surging within bodies of confined liquid in transit as in a railway tank car.

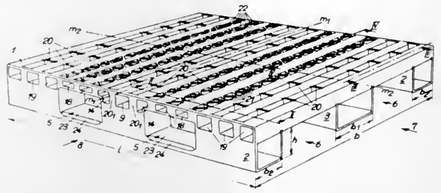
3,795,205
DOOR SYSTEM FOR A RAILWAY CAR
Ralph A. Gritchen, Park Forest; Kristupas Daugirdas, Wilmette; Bruno Masiokas, Chicago, and Richard H. Townsend, Glenview, all of Ill., assignors to V.A.C. Industries, Inc., Chicago, Ill.
Filed Aug. 28, 1972, Ser. No. 283,990
Int. Cl. B61d *19/00*
U.S. Cl. 105—450 **13 Claims**



A door system for a railway passenger car which accommodates both high and low level boarding platforms includes a sliding upper door for both high and low level boarding, a segmented lower door immediately below the upper door for low level boarding, and a staircase connecting the floor of the car to the lower door opening. The staircase is covered by a segmented sliding floor panel during high level boarding, and the sliding floor panel and lower door are retracted to fully enclosed positions under the staircase during low level boarding.

3,795,206
PLASTIC PALETTE
Georg Utz, Bremgarten, Switzerland, assignor to Georg Utz AG, Bremgarten, Switzerland
Filed Feb. 1, 1973, Ser. No. 328,803
Claims priority, application Switzerland, Feb. 16, 1972, 2222/72
Int. Cl. B65d *19/04*
U.S. Cl. 108—51 **3 Claims**

A molded plastic cargo handling palette comprises a plurality of relatively small, parallel box channels 9, 14, 18, 19 interconnected by straight and angled webs 20, 21. Below these upper channels and transverse thereto are three relatively large support channels 2, 3 each having two spaced reinforcing boxes 4 extending through them and aligned between adjacent support channels. The resulting palette is structurally strong and can accommodate fork lift prongs from either side.

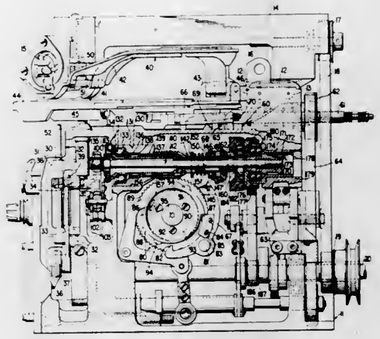


3,795,207
MECHANISM FOR LATERALLY VIBRATING THE NEEDLE OF A ZIGZAG SEWING MACHINE
Gunter Tolle, 752 Bruchal 4/ Wendelinusstr. 15, Bruchsal, Germany
Filed Feb. 16, 1973, Ser. No. 333,259
Claims priority, application Germany, May 6, 1972, 2222370
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 R **2 Claims**

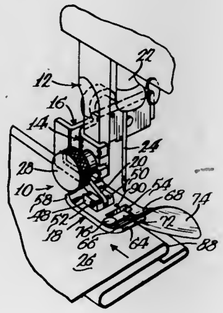
A mechanism for positively jogging a needle bar gate laterally from a rotary actuator within the constricted space of a sewing machine frame. An arm extending from the needle bar gate and an arm of a lever in the machine frame which is rocked by the rotary actuator are interconnected and both arms are flexible only in one common plane to accommodate differences in the arcuate paths of motion thereof, the arms being otherwise rigid to transmit lateral jogging motion in a positive manner to the needle bar gate.

3,795,208
NEEDLE VIBRATING CONTROL MECHANISM FOR BUTTONHOLE SEWING MACHINES
Gunter Tolle, 752 Bruchsal 4/ Wendelinusstr. 15, Bruchsal, Germany
Filed Feb. 16, 1973, Ser. No. 333,257
Claims priority, application Germany, Apr. 8, 1972, 2217000
Int. Cl. D05b *3/06*
U.S. Cl. 112—158 B **7 Claims**

A mechanism for controlling the different zigzag stitches required along the sides and at the ends of a stitched buttonhole which may be operated at high speed and accommodated readily in the severely limited space available within the sewing machine frame. A primary crank mechanism provides the reciprocatory motion required for the zigzag side stitches along each side of the buttonhole. A sleeve in which the primary crank mechanism is journaled eccentrically provides a secondary crank mechanism which may also be rotated to augment the reciprocatory motion provided by the primary crank thus to produce the barring stitches at each end of the buttonhole. The sleeve may be stopped in positions angularly spaced one half revolution apart after each barring operation so as to locate the side stitches on opposite sides of the buttonhole.



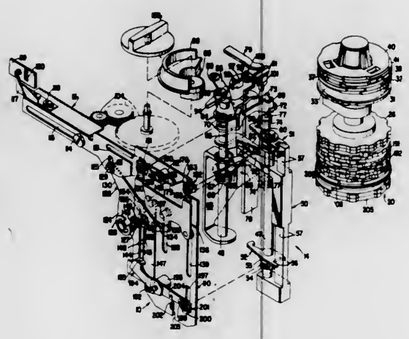
3,795,209
BLINDSTITCH FOOT ATTACHMENT FOR SEWING MACHINES
Orville Keith Smith, 4118 Woodland Ave., Western Springs, Ill. 60558
Filed Aug. 10, 1972, Ser. No. 279,505
Int. Cl. D05b *35/00*
U.S. Cl. 112—140 **2 Claims**



An improved blindstitch foot attachment for use with a zigzag sewing machine of the type having a built-in blindstitch, the foot attachment comprising a connecting element or shank which attaches to the presser bar of a zigzag sewing machine and supports a blindstitch foot by adjustable means which permits lateral adjustment of the position of the foot relative to the presser bar, the foot comprising a body portion having a pair of forwardly extending upwardly curved arms separated by a longitudinal slit and having a needle opening

located at the rear of the slit in communication therewith, and a guide member having a curved guide wall for directing material into a proper position for blindstitching, the guide member being attached to the foot body portion so that the inner end of the guide wall is disposed and supported in the longitudinal slit.

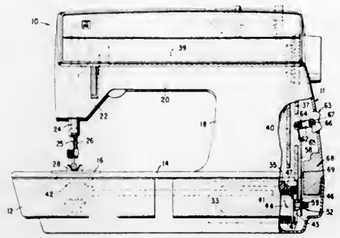
3,795,210
CAM SELECTION MODULE
Kenneth D. Adams, Madison; Robert Bradus, Linden, and Joseph J. Winar, Roselle, all of N.J., assignors to The Singer Company, New York, N.Y.
Filed Apr. 26, 1973, Ser. No. 354,409
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 D **11 Claims**



A cam selection module for the positioning of five cam followers, used for controlling needle position, needle field and feed motion, which effects the positioning of the followers over four distinct modes of sewing machine operation by manipulation of a first control means. The first control means operates directly on a first cam follower for tracking pattern cams to determine needle position over a first portion of its operating range. Over a second portion of its operating range, the first control means actuates a second control means which positions a second cam follower for tracking feed cams to determine feed motion while also positioning the first cam follower, resulting in cam controlled feed patterns. Over a third portion of its operating range, the first control means actuates a third control means for positioning a third cam follower to track a pattern cam surface of a replaceable cam, or a fifth cam follower ganged with the third cam follower to track a needle position cam of a closed pattern unit mounted adjacent the replacement cam. Concurrently, the first control means actuates a fourth control means for positioning a fourth cam follower to track a feed cam surface of either the closed pattern unit or the replaceable cam. Provision is made to place the cam followers in ineffective positions when not in use.

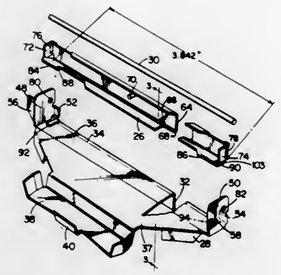
3,795,211
REMOTELY ACTIVATED POWER SWITCH FOR SEWING MACHINES
Robert G. Greulich, Cranford; John W. Casner, Elizabeth, and John A. Urciola, South Bound Brook, all of N.J., assignors to The Singer Company, New York, N.Y.
Filed May 7, 1973, Ser. No. 358,239
Int. Cl. D05b *69/10*
U.S. Cl. 112—219 A **6 Claims**

A position selector means located on the standard of a sewing machine and coupled by a pitman means to an electrical power switch mounted on an insulated motor housing carried by the base of a sewing machine is disclosed. The power switch is connected in an electrical path adapted to couple the



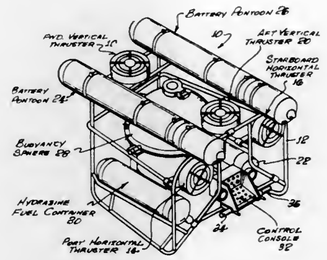
electrical power source to the drive motor, and the position selector and pitman means are insulated from this electrical path.

3,795,212
METHOD FOR FABRICATING A FLUID SPREADER
Earl R. Thoenen, Newburyport, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 133,905, April 14, 1971, abandoned. This application Jan. 2, 1973, Ser. No. 320,584
Int. Cl. B21d *53/36*
U.S. Cl. 113—116 R **3 Claims**



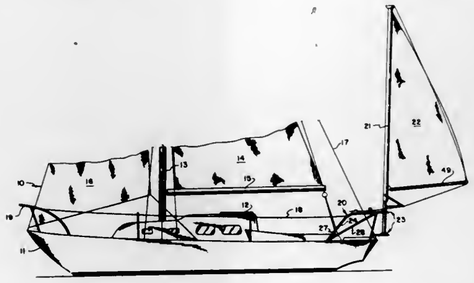
A method of fabricating a fluid spreader for use in a camera of the self-developing type to effect the spreading of a processing fluid in a layer between a pair of superposed sheet materials as they progressively pass through the apparatus. A first spreader element is formed of sheet metal and includes a flat sheet-contacting facing surface and a canted platform extending in advance thereof. A second spreader element is formed of sheet metal and includes an arcuate sheet-contacting facing surface and a pair of wrap-around collars comprising extensions of that sheet metal structure curled back in the direction of its arcuate facing surface. In manufacturing the latter mentioned spreader element, the wrap-around collars are formed subsequent to the development of its arcuate sheet-contacting facing surface and are adapted to engage respective longitudinal edges of the sheet materials and bias them toward the aforementioned platform to preclude fluid escaping from between the edges of the sheet materials.

3,795,213
DIVER OPERATED PROPULSION SYSTEM FOR AN UNDERWATER VEHICLE
Alvah T. Strickland, Kailua, Hawaii, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 1, 1971, Ser. No. 185,642
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 A **5 Claims**



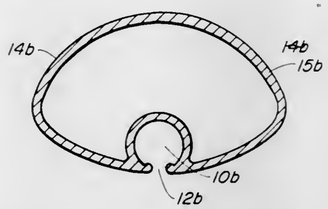
A diver operated propulsion system for an underwater vehicle including: two pair of reversible thrusters, one pair of thrusters being mounted on the vehicle starboard and port for forward and reverse horizontal thrust and the other pair of thrusters being mounted on the vehicle forward and aft for up and down vertical thrust; a pair of elongated handle bar type of handgrips which are mounted on the vehicle port and starboard with their longitudinal axes aligned athwart the vehicle for rotation about their longitudinal axes, and pivotal up and down movements in a vertical plane; and actuators interconnecting the handgrips and the thrusters for actuating the port and starboard thrusters forward and reverse when the grips are rotated in opposite directions respectively, and actuating the forward and aft thrusters up and down when the grips are pivoted up and down respectively. With such an arrangement, a diver can utilize instinctive hand movements to maneuver the underwater vehicle forward, backward, up, down, and about vertical and pitch axes by simply selectively operating the pair of handgrips.

3,795,214
APPARATUS FOR PROVIDING A SAILBOAT WITH AN AUXILIARY STERN MAST AND SAIL
Thomas E. Sweeney, 95 Hartley Ave., Princeton, N.J. 08540
Filed Mar. 23, 1973, Ser. No. 344,438
Int. Cl. B63b *35/00*
U.S. Cl. 114—39 **9 Claims**



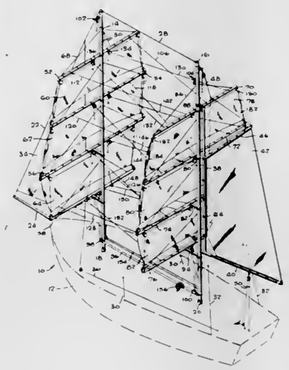
An apparatus for providing a sailboat which does not have a conventional stern mast and sail but which has a stern railing with an auxiliary stern mast and sail. Reinforcing members are provided for reinforcing the stern railing and connecting members can be connected to the stern railing for connecting the auxiliary stern mast to the stern railing. The apparatus permits a conventional sloop to be maintained with sloop rig for competitive purposes and yet to be readily converted into a yawl with its inherent superior cruising characteristics.

3,795,215
MAST STRUCTURE
Frank W. Butler, 3807 Weatherly Cir., Westlake Village, Calif. 91324
Filed Apr. 24, 1972, Ser. No. 247,135
Int. Cl. B63b *15/00*
U.S. Cl. 114—90 **5 Claims**



Herein described is a sailboat mast which is elongated to carry a sail thereon. The mast in the cross-section view is shaped having a transverse section thinner than the longitudinal section. It is positionable in the sailboat with the thicker longitudinal section being positioned on the port and starboard side of the sailboat, and with the thinner transverse portion of the cross-section positioned fore and aft of the sailboat. The sail track is positionable on the mast in the section towards the aft part centered in the substantially center of the thinner portion of the mast.

3,795,216
SQUARE-RIGGED SAILBOAT
Donald E. MacPherson, 6161 E. Pima St., Tucson, Ariz. 85712
Filed Mar. 27, 1972, Ser. No. 238,248
Int. Cl. B63h *9/10*
U.S. Cl. 114—39 **19 Claims**



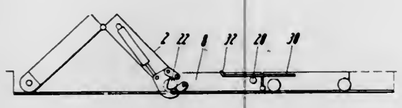
Square-rigged sailboat having yardarms carrying square-rigged sails, preferably on two masts, interconnected with a single line which the sailor can operate to regulate the angle of the yardarms with respect to the fore and aft axis of the boat, in accordance with wind direction, and having the square-rigged sails interconnected with another line so that all of the square-rigged sails can be furled up to their respective yardarms by operation of the second line.

3,795,217

HATCH COVER HAVING PAIRS OF FOLDING COVERS

Peter Kloess, Klugkiststrasse 3, and Rudolf Stefan Spillmann, Groninger Strasse 19, both of 28 Bremen, Germany

Filed Aug. 3, 1972, Ser. No. 277,583
Claims priority, application Germany, Aug. 4, 1971, 2139020
Int. Cl. B63b *19/20*
U.S. Cl. 114—202 20 Claims



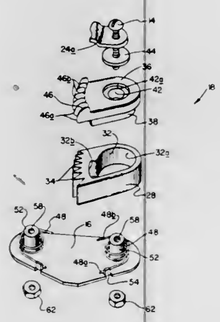
A hatch cover of the kind in which at least two pairs of hinged covers are connected together for articulation, one end cover being articulated to an end of the hatch so that the covers are foldable in a zig-zig manner from a closed position in which they lie flat on the sill of the hatch to a fully open position in which they are folded together and extend upright from the sill. Adjacent pairs of covers are articulated by a drive mechanism including a crank engaged by an actuating piston and a link pivotally connected at one end to the crank and to one of two adjacent covers and at the other end to the other of the adjacent covers to allow the covers to be swivelled through an included angle of 180°. The lever arm of the crank between the line of action of the piston and the point of articulation of the crank with said one cover is shorter than the lever arm between the point of articulation of the crank with said one cover and a second link by which the crank is connected to the other cover in the fully extended positions of the covers, thereby enabling the pair of covers nearer to the end of the hatch to which the end cover is articulated to be fully folded while the next pair of covers is held fully open.

3,795,218

CAM CLEAT

Carl Alan Merry, Planting Island, Mass., assignor to Schaefer Marine Products, New Bedford, Mass.

Filed Mar. 15, 1973, Ser. No. 341,678
Int. Cl. B63b *21/04*
U.S. Cl. 114—218 5 Claims



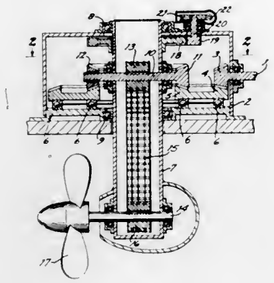
A cam cleat for retaining a sheet on a sailboat has cams in the form of toothed shells which provide the main working surfaces of the cams. A rigid plastic insert is fitted into each shell. Each insert is formed with specially shaped entry teeth which enable the sheet to wedge between the cams and open them to receive the sheet when the sheet is moving in a preferred direction.

3,795,219

MARINE PROPULSION AND STEERING APPARATUS

Earl A. Peterson, 4111 Chestnut Ave., Long Beach, Calif. 91748

Continuation-in-part of Ser. No. 30,763, April 22, 1970, abandoned. This application Aug. 25, 1971, Ser. No. 174,916
Int. Cl. B63h *25/42*
U.S. Cl. 115—35 8 Claims



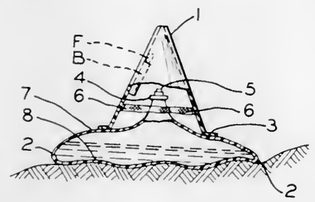
Propulsion and steering apparatus for a marine vessel providing for 360° rotation of the propulsion unit about its vertical axis. The propulsion drive shaft is coupled to a parallel, double pinion gear by a chain drive, the double pinion and propulsion shaft being in fixed relation with respect to each other. The double pinion gear is engaged by a receiving circular rack gear rotatable about the vertical axis of the chain drive, the receiving rack gear being driven by a power source. The propulsion shaft, chain drive and double gear shaft are disposed within a vertical housing, the total vertical housing being rotatable through 360° of arc.

3,795,220

LIQUID BALLASTED TEMPORARY TRAFFIC MARKER

Robert W. Hengesbach, 7886 Munson Rd., Mentor, Ohio 44060

Filed Apr. 12, 1972, Ser. No. 243,391
Int. Cl. E01f
U.S. Cl. 116—63 P 12 Claims



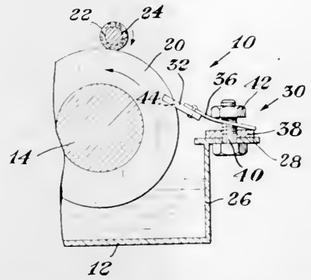
An open bottom light weight indicator shell of easily deformable material is elastically supported on a bag of tough, imperforate, impervious, relatively limp or readily flexible material. The bag is fluid tight and partially filled with a quantity of anti-freeze liquid ballast. When the ballasted bag rests on a supporting surface, the bottom of the bag conforms to contour thereof yet supports the indicator shell in generally upright position and returns the shell to upright position if the shell is deflected by extraneous forces. The bag is readily completely collapsible and so large relative to the indicator that, when less than two thirds filled, it supports the indicator properly. The excess capacity can accommodate the surging liquid ballast displaced from portions of the bag run over and collapsed temporarily by a vehicle wheel. The bag retains the ballast so that it returns to the portion from which displaced and restores the bag and marker to the original functioning condition. Due to the low profile and collapsibility, the bag does not interpose appreciable frontal resistance to the passage of a vehicle wheel thereover. The shell is hollow and light and has translucent walls. A small electric bulb, flash button, and pen type dry batteries are mounted in the shell for illumination. They are of such limited size that they cannot be a hazard if struck by a passing vehicle.

3,795,221

APPLICATOR FOR CONTROLLABLY APPLYING A LIQUID DEPOSIT TO VARIOUS WORKPIECES

Laddie L. Michael, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 7, 1972, Ser. No. 232,436
Int. Cl. B05g *1/08*
U.S. Cl. 118—261 3 Claims



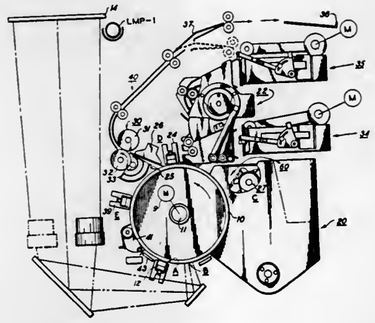
In an applicator for controllably applying a liquid substance such as glue to a workpiece, there is provided a pickup roll, a reservoir for supplying such roll, means for retaining the workpiece in momentary or moving association with such roll for transfer of the liquid substance thereto, a doctor blade including a shoe element for continuously wiping the roll, a resilient arm such as a leaf spring attached to the shoe, and means for deformably biasing such arm to control the pressure of the shoe against the roll. The blade assembly is compact, is readily adjustable for application of a changeable but constant force to the shoe, and is insensitive to "freezing up" or other impairment such as by spillage or gradual depositing of such substance thereon.

3,795,222

DEVELOPMENT ELECTRODE SYSTEM

Don B. Jugle, Penfield, and Robert L. Thompson, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 21, 1972, Ser. No. 282,204
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 1 Claim



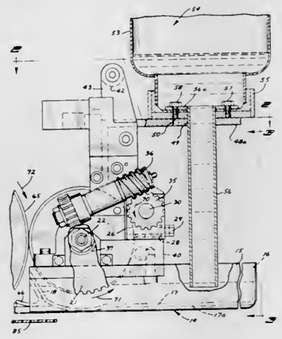
A development apparatus of the type in which a latent electrostatic image is moved in an uphill direction for development by cascading multi-component developer materials over the image surface and in which an improved electrode is used to both clean the background of the image and effect a wider toner concentration latitude. The electrode is positioned in parallel relation to the moving image surface and is connected to a first source of electrical potential of a polarity similar to the polarity of the image and a second source of electrical potential of a polarity opposite of the polarity of the image by a switching device. The switching device applies the first and second potentials to the electrode in alternating fashion according to whether the image is being developed or not developed, respectively.

3,795,223

OVERHEAD GLUE POT APPARATUS

Paul G. Prestegaard, 201 Westwood Dr., Minneapolis, Minn. 55416

Filed Apr. 7, 1972, Ser. No. 242,106
Int. Cl. B85c *1/08*
U.S. Cl. 118—262 16 Claims



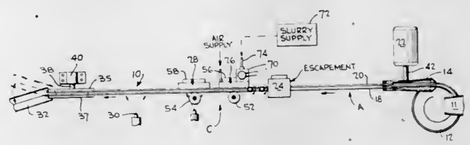
For being used with a machine that applies glue to a container, a container portion and the like, an overhead glue pot assembly that includes side frame members dependingly mounting a glue pan, and mounting a pick up roll to pick up glue from the pan, a premeter bar to strip off excess glue off the pick up roll, and a metering roll, a string trough for catching glue falling from the nip area of the transfer and pick up rolls, and a bracket having a spout receiving slot whereby the glue container that has an elongated slot can be tilted from a near horizontal condition with the spout in the glue in the pan to a seated position on the bracket that the spout extends vertically. The string trough extends further forwardly of the glue pan than the front wall.

3,795,224

COATING APPARATUS

Robert E. Batson, Newington; Girard S. Haviland, West Hartford, both of Conn., and David Matchett, West Springfield, Mass., assignors to Loctite Corporation, Newington, Conn.

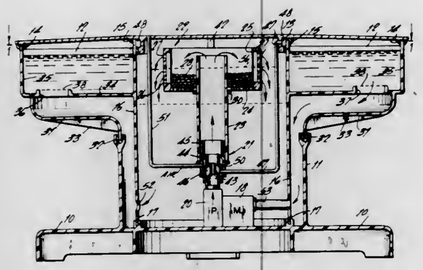
Filed Feb. 14, 1972, Ser. No. 226,130
Int. Cl. B05b *7/24*
U.S. Cl. 118—308 16 Claims



Substantially parallel conveyor elements are spaced apart for reception between them of the threaded shanks of

fasteners, the heads of which are jointly supported on the elements. Throughout the article receiving portion of the conveyor, these elements are sufficiently spaced apart for free reception between them of the fastener shanks and to permit relative movement of the fasteners along the conveyor by an escapement mechanism to effect uniform spacing of the fasteners. Subsequently, the elements are urged toward each other and in gripping engagement with the shanks so that movement of one conveyor element relative to the other positively rotates the shanks and carries them in rolling engagement with the surface of a stationary applicator from which the coating material is transferred to the shanks. Subsequently, the shanks are carried with their applied coatings in operative engagement with the surface of a stationary smoothing device which also controls the coating thickness. By continuously moistening the surface of the smoothing device with a suitable liquid, adherence of the coating to such surface is prevented. After departure of th articles from the smoothing device and before their discharge from the conveyor, the applied coatings are sprayed with a suitable firming or hardening agent to minimize smearing or damaging of the applied coatings before same are fully cured.

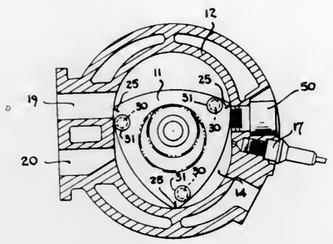
3,795,225
ENCLOSED FISHBOWL
William M. Ogui, 1210 Stratford Ave., Apt. 9B, Bronx, N.Y. 10472
Filed Mar. 16, 1973, Ser. No. 341,894
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **9 Claims**



An ornamental fish bowl closed on all sides and including a water pump with an aspirator for circulating the water and adding small air bubbles to it. The water is directed through an aspirator and a filter for removing suspended solids, then through a first screen to an annular space where the fish are confined. A second screen permits water to be drawn from the annular space and directed to the entrance pipe of the water pump.

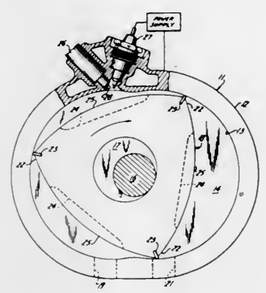
3,795,226
ACOUSTICAL SUPPRESSION OF DETONATION WAVES IN ROTARY INTERNAL COMBUSTION ENGINE
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406
Filed June 19, 1972, Ser. No. 264,275
Int. Cl. F026 *55/02*
U.S. Cl. 123—8.01 **7 Claims**

Appropriately responsive acoustic cavity structures are provided along the surfaces of the rotor or the walls of the combustion chamber, or both, of a rotary internal combustion engine. These cavities are dimensioned and positioned to



acoustically attenuate sound waves developed in connection with gas vibrations at the detonation frequencies.

3,795,227
ROTARY COMBUSTION ENGINE WITH IMPROVED FIRING SYSTEM
Charles Jones, Hillsdale, N.J., assignor to Curtis-Wright Corporation, Wood-Ridge, N.J.
Filed Oct. 24, 1972, Ser. No. 299,811
Int. Cl. F02b *53/10, 53/12*
U.S. Cl. 123—8.09 **10 Claims**

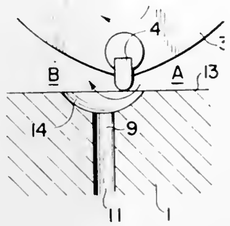


A rotary engine with fuel injection into the combustion chamber, wherein the positive electrode of the spark plug strikes a spark directly to the injector nozzle as the negative electrode during the period of fuel injection, thus producing positive ignition even during very lean operation, and also reducing spark plug fouling.

3,795,228
NOZZLE FOR ROTARY PISTON ENGINE
Hiroshi Shimizu, Hiroshima, Japan, assignor to Toyo Kogyo Company Limited, Hiroshima, Japan
Filed Dec. 22, 1971, Ser. No. 210,949
Claims priority, application Japan, Dec. 22, 1970, 45-130358; Dec. 22, 1970, 45-130359; Dec. 23, 1970, 45-130348; Dec. 23, 1970, 45-130349
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.01 **20 Claims**

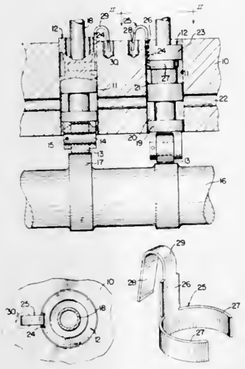
In a rotary piston engine, there is provided a system for purifying the exhaust gas to reduce NOx (nitrogen oxide) in the exhaust gas by recirculating the exhaust or combustion gas into an intake mixture or a system for purifying the exhaust gas to reduce unburned components such as CO, HC, etc. in

the exhaust gas by supplying secondary air to the exhaust or combustion gas, and an outlet nozzle for the combustion gas



or a supply nozzle for secondary air are adapted to open in the exhausting stroke chamber. Means are provided for preventing sludge from accumulating upon or adhering to the nozzles.

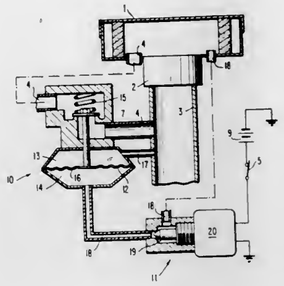
3,795,229
ENGINE VALVE LIFTER GUIDE
Robert L. Weber, Lacon, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Dec. 26, 1972, Ser. No. 318,518
Int. Cl. F01l *1/14*; **F16h** *53/06*
U.S. Cl. 123—90.5 **8 Claims**



A roller-type valve lifter is mounted in an internal combustion engine to reciprocate a push rod in response to rotation of an engine driven cam shaft. A guide and anti-rotation device for the valve lifter comprises a vertically-disposed leg which seats in a slot formed on the valve lifter and a pair of cylindrically shaped arms, extending horizontally from opposite edges of the leg, which seat in a circumferential groove also formed on the valve lifter. A hook, connected to an upper end of the leg by a reverse bend, seats in a bore formed in the cylinder block.

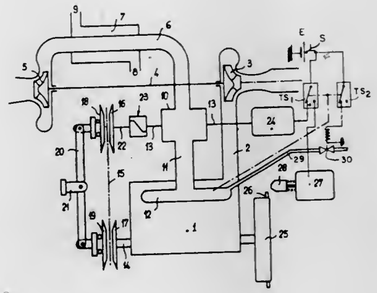
3,795,230
PRIMARY AIR SUPPLY FOR AN INTERNAL COMBUSTION ENGINE
Shigetake Yoshimura, Hiroshima, Japan, assignor to Toyo Kogyo Company Limited, Hiroshima-ken, Japan
Continuation of Ser. No. 147,580, May 27, 1971, abandoned. This application Mar. 27, 1973, Ser. No. 346,492
Int. Cl. F02d *31/00*
U.S. Cl. 123—97 B **6 Claims**

In a primary air supply for an internal combustion engine, when an ignition switch is shut off, the primary air supply means supplies optimum primary air to the inlet system in order to prevent afterburning which normally occurs when



shutting off said ignition switch after continuous operation of the engine.

3,795,231
COLD STARTING DEVICES FOR DIESEL ENGINES WITH COMPENSATED SUPERCHARGING
Maurice G. Brille, Suresnes, France, assignor to Societe Anonyme De Vehicyles Industriels Et D'Equipements Mecaniques Saviem, Suresnes, France
Filed May 12, 1972, Ser. No. 252,572
Claims priority, application France, May 25, 1971, 71.18883
Int. Cl. F02b *37/06*
U.S. Cl. 123—119 CB **1 Claim**



This device comprises a separate electromotor coupled to the driving shaft of a volumetric supercharger for correcting the turbo compressor supercharging of the Diesel engine; clutch means are interposed between this shaft and a variable-speed transmission comprising extensible pulleys, said electromotor driving said shaft directly only when starting the engine by very cold weather so that this shaft revolves faster than the extensible pulley driving the shaft under normal operating conditions.

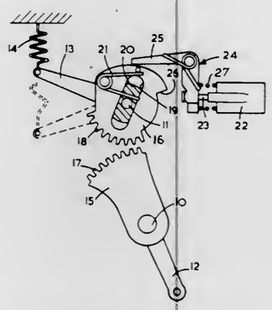
A solenoid operated valve inserted in a pipe connecting the induction manifold of the engine to free atmosphere is adapted, when said electrometer starts in cold weather conditions, to open and vent the manifold to the free atmosphere in conjunction with the energization of the starter motor of the engine and to close before the deenergization of the starter motor.

3,795,232

FUEL PUMPING APPARATUS

Colen John Charles Snook, Dorking, England, assignor to Simm Motor Units Ltd., London, England

Filed June 15, 1972, Ser. No. 263,097
Claims priority, application Great Britain, June 17, 1971, 28354/71
Int. Cl. F02m 63/00
U.S. Cl. 123—139 AZ 9 Claims



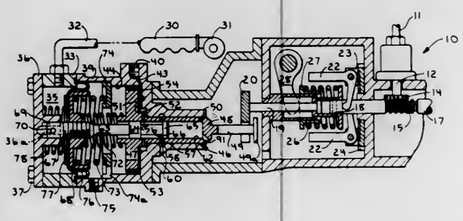
A fuel pumping apparatus for an internal combustion engine includes a stop control member and a speed control member. Interengageable means is provided on the members respectively whereby movement of the speed control member can move the stop control member to a position to supply fuel to the engine, the engagement of the members being determined by an electro-magnetic means and a latch member being provided to retain the stop control member in a position to supply fuel to the engine until the electro-magnetic means is de-energised.

3,795,233

FUEL-AIR RATIO CONTROL FOR SUPERCHARGED ENGINES

Donald R. Crews, Peoria, and Larry A. Larson, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 19, 1972, Ser. No. 254,852
Int. Cl. F02d 1/06
U.S. Cl. 123—140 R 13 Claims



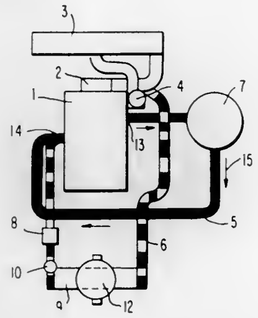
A fuel-air ratio control device for a super-charged engine having a governor means connected to a fuel-adjusting member and a supercharger for supplying air through an intake manifold. The control device is directly engageable with the fuel-adjusting member and is responsive to intake manifold air pressure and to engine oil pressure. The device is inoperative to restrain the adjusting member during start-up of the engine and remains so until such time as a predetermined intake manifold pressure is attained at which time the control device moves to a position which permits the metering of engine oil therethrough to permit normal governor operation and proportional increases of fuel with air pressure increases. The control device is automatically shiftable to a position which blocks the metering of engine oil therethrough and which provides a hydraulic lock and positive connection between the control device and the fuel adjusting member to preclude any undesired increase of fuel supply.

3,795,234

MOTOR VEHICLE WITH FUEL HEATING SYSTEM INDEPENDENT OF ENGINE

Albert Stolz, Pfrondorf, Germany, assignor to Daimler-Benz AG., Stuttgart, Germany

Filed June 23, 1971, Ser. No. 157,391
Claims priority, application Germany, Sept. 29, 1970, 2032018
Int. Cl. F02n 17/04
U.S. Cl. 123—142.5 R 16 Claims



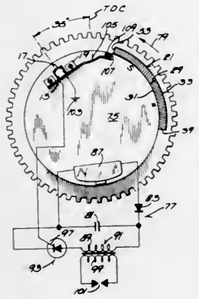
A motor vehicle with a water-cooled engine and an engine-independent fuel heater which is connected with the water circulation and the electrical power supply of the vehicle; the fuel heater includes two water circulations connected with the engine and in communication with each other, whereby the fuel heater equipped with a pump is arranged in one circulation and the heat-exchanger which is adapted to be connected or disconnected by means of a feeler, is arranged in the other circulation.

3,795,235

BREAKLESS IGNITION SYSTEM WITH MEANS FOR PREVENTING REVERSE ENGINE OPERATION

James A. Donohue, Milwaukee, and Harry S. Shore, Menomonee Falls, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 16, 1971, Ser. No. 208,802
Int. Cl. F02p 1/00
U.S. Cl. 123—148 E 11 Claims



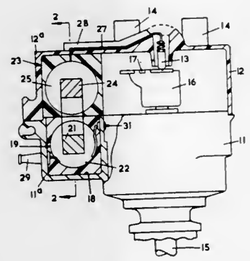
Disclosed herein is a breakerless ignition circuit for an internal combustion engine, which circuit includes trigger switch means, means for periodically conditioning the ignition circuit to obtain spark production in response to operation of the switch means, means for operating the switch means subsequent to previous conditioning of the ignition circuit by the periodic conditioning means, and in response to engine rotation in one direction when the piston is located relative to top dead center so as to obtain continued engine rotation in the one direction, and means for operating the switch means subsequent to previous conditioning of the ignition circuit by the periodic conditioning means and in response to engine rotation in the opposite rotative direction and when the piston is located so far in advance of top dead center so as to preclude continued engine rotation in the opposite direction. Also disclosed are means for preventing reconditioning or recharging of the ignition circuit for subsequent spark firing operation until well after the piston has passed top dead center so as to insure prevention of continued engine operation in the opposite direction.

3,795,236

IGNITION DISTRIBUTOR

Norman Alfred Jukes, Walsall, and Derek Robert Grainger, Kidderminster, both of England, assignors to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Jan. 15, 1973, Ser. No. 323,393
Claims priority, application Great Britain, Jan. 14, 1972, 1834/72
Int. Cl. F02p 7/00; H01f 17/06
U.S. Cl. 123—148 D 10 Claims



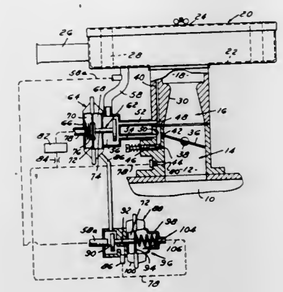
An ignition distributor for an internal combustion engine spark ignition system includes a hollow casing closed at one end by a detachable insulating cap. A rotatable shaft is supported by the casing and carries a rotor arm which co-operates with high tension electrodes carried by the cap. Within the enclosure defined by the casing and the cap is an ignition coil including two separable parts. A first part of the coil includes a first core component and the coil primary winding and the second coil part includes a second core component and the coiled secondary winding. The two ignition coil parts are located in position relative to one another to constitute an ignition coil by the distributor cap and the casing.

3,795,237

CARBURETOR ANTI-DIESELING AND DECELERATION CONTROL

Ronald T. Denton, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 3, 1971, Ser. No. 204,527
Int. Cl. F02m 7/06; F02d 31/00; F02m 7/00
U.S. Cl. 123—198 D 9 Claims



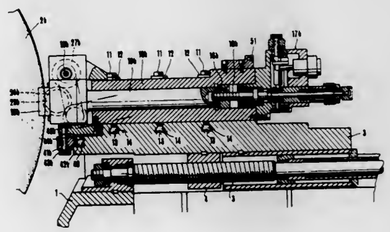
The carburetor air/fuel idle system mixture channel has an air port that is normally closed by a manifold vacuum sensitive valve; during either engine deceleration or shutdown operations, the air valve is opened to bleed the vacuum signal on the idle system fuel jet, to terminate idle system fuel, air flowing through the idle system air/fuel mixture channel to the engine cylinders.

3,795,238

ROTARY DRESSING APPARATUS

Hiroshi Ota, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed May 22, 1972, Ser. No. 255,273
Claims priority, application Japan, May 31, 1971, 46-45604
Int. Cl. B24b 53/14
U.S. Cl. 125—11 CD 6 Claims



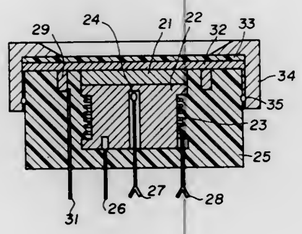
A rotary dressing apparatus of increased rigidity for a multi-wheel grinding machine is provided. A plurality of diamond rolls are carried at the forward end of slides each fitted in a dresser body. A table is disposed on a grinding wheel carriage rotatably supporting a plurality of grinding wheels and is connected with a feed unit for sliding movement in a direction perpendicular to the axis of the grinding wheels. The table is formed with at least two T-shaped grooves extending parallel to the axis of the grinding wheels, and pivot support blocks are mounted in one of the grooves and support pivot pins with their axes perpendicular to both the direction of the sliding movement of the table and the axis of the grinding wheels. Dresser bodies are placed on the table for angular movement about the respective pivot pins, and are normally fixed to the table by T-nuts received in the other groove and bolts threadably engaging therewith.

3,795,239

ELECTROCHEMICAL ELECTRODE WITH HEATING MEANS

Patrick Eberhard, Basel; Konrad Hammacher, Kaiseraugst, and Wolfgang Mindt, Therwill, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sept. 2, 1971, Ser. No. 177,231
Claims priority, application Switzerland, Oct. 1, 1970, 14544/70
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 E 8 Claims



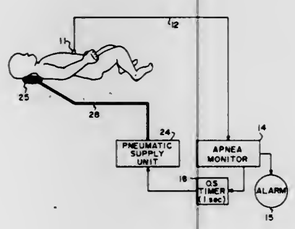
An electrode arrangement for application to a body surface for bloodless measurement in connection with the concentration or the partial pressure of a gas in the blood comprising a sensor unit having a face member for body contact, and a heating unit coupled to the sensor unit for transmitting to said face member a thermal condition for thermal stimulation of the local blood circulation. In a further embodiment, the sensor unit includes at the face member a cover membrane permeable for a gas to be measured.

3,795,240

RESPIRATORY DISTRESS STIMULATOR SYSTEM

Ulrich Anton Frank, Yardley, Pa., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 29, 1972, Ser. No. 239,264
Int. Cl. A61b *5/08*
U.S. Cl. 128—2 R 7 Claims



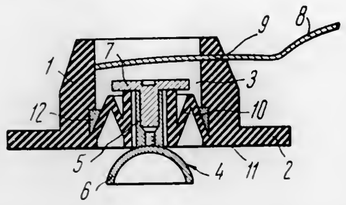
A patient care system for monitoring respiratory distress problems and providing therapeutic treatment comprising, a sensor for generating patient derived respiratory activity signals, detecting an apnea episode from the signals, and providing in response to a detected apnea episode, stimulation of the patient by a momentary inflation of a pneumatic means adapted for placement under the patient to raise the patient and induce loss of equilibrium for startling the patient into a natural respiration pattern.

3,795,241

ELECTRODE FOR RECORDING BIOELECTRICAL PROPERTIES

Igor Fedorovich Golovko, Profsojuznaya ul., 3, korpus 3, kv. 67, Moscow, U.S.S.R.

Filed May 4, 1972, Ser. No. 250,168
Claims priority, application U.S.S.R., May 13, 1971, 1660558
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E 2 Claims



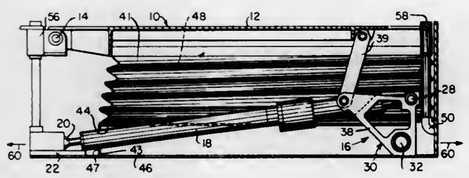
An electrode for recording bioelectrical properties is disclosed, the electrode comprising a housing having a flange which serves to fix the electrode to a surface of a biological object, the housing has an internal cavity accommodating a contact member which is mounted in said cavity for vertical movement by means of a membrane provided with annular undulations.

3,795,242

APPARATUS FOR APPLYING HYDRAULIC PULSATION

Donald C. Lerch, and John M. Colman, both of Lexington, Mass., assignors to Medical Innovations, Inc., Waltham, Mass.

Filed Oct. 24, 1972, Ser. No. 300,291
Int. Cl. A61h *7/00*
U.S. Cl. 128—64 13 Claims



An improved external pressure circulatory assist device of the type comprising a mechanical means for transmitting a pressure pulse to a liquid-filled blanket wrapped about a patient's legs, the pulse being in synchronization with the heartbeat of the patient. A novel feature of the invention is that wherein air disturbed by the pulsing mechanism is isolated from the gas atmosphere in the vicinity of the aforesaid blanket and is vented to atmosphere, thereby improving the control of the pressure wave imparted by the circulatory assist action when negative pressure is being used in the immediate environment of the blanket.

3,795,243

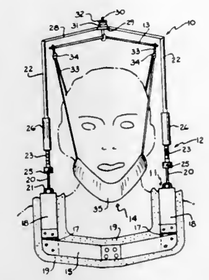
AMBULATORY TRACTION DEVICE FOR CERVICAL PROBLEMS

Joseph R. L. Miller, Box 162 R.D. 2, Canastota, N.Y. 13032

Filed Jan. 29, 1973, Ser. No. 327,565
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 3 Claims

A traction device is supported on padded cross members across the upper chest and back connected by arches over the

shoulders. An inverted U-shaped assembly is secured to the arches at one end and extends to its transverse crosspiece above and closely spaced from the head. A sling support member is pendantly secured to the center of the crosspiece by means including a swivel. A sling is secured to either end of its support and includes a first flexible member passing beneath the chin and a second flexible member passing behind



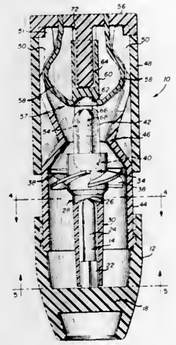
the head adjacent the nape of the neck. The inverted U-shaped assembly includes telescoping, substantially vertical members at either side with adjustable spring means for biasing the crosspiece upward and the swiveled connection to the sling support includes screw-and-nut means for varying the upward bias of the base portion. The connection of the ends of the U-shaped assembly to the arches may include means for adjustably inclining the assembly forwardly or backwardly.

3,795,244

INHALATION DEVICE

Ronald G. Lax, Palo Alto, and Allen K. Herd, Cupertino, both of Calif., assignors to Syntex Corporation, Panama, Panama

Filed Feb. 2, 1973, Ser. No. 329,060
Int. Cl. A61m *15/00, 15/06*
U.S. Cl. 128—266 21 Claims



An inhalation device having means to engage the free end of a powdered medicament-holding capsule as the capsule is pierced to provide outlet ports for the powdered medicament held therein. Such engagement ensures that the capsule is completely seated in the rotary member on which it is supported and thus ensures that the outlet ports are positioned at the desired locations adjacent the shoulder of the capsule. Additionally, such engagement enables the piercing operation to be conducted in any orientation of the inhalation device. The rotary member, which supports the capsule during inhalation, is itself supported by a shaft having a polygon shaped base having n sides. The rotary member has a hollow sleeve which fits over the shaft, the sleeve having a polygon shaped inner surface having at least $n + 1$ sides. During inhalation which causes the rotary member to spin about the supporting shaft, contact of the adjacent polygon shaped surfaces with each other positively causes the walls of the capsule to undergo repeated changes or radial acceleration whereby the powdered medicament is dispersed from the capsule.

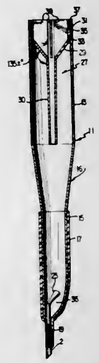
3,795,245

SPLASH-PROOF LEAK-PROOF SYRINGE-TYPE CRYOSURGICAL INSTRUMENT

Robert E. Allen, Jr., Laurel, and Richard A. Morel, Camp Springs, both of Md., assignors to The Du-Al Company, Laurel, Md.

Filed Apr. 29, 1971, Ser. No. 138,686
Int. Cl. A61b *17/36*; A61f *7/00*
U.S. Cl. 128—303.1 12 Claims

A generally tubular splash-proof leak-proof syringe-type cryosurgical instrument formed of merging chambers is described. The generally tubular instrument is shaped in the silhouette of a finger tip at the end of a lower chamber. The lower chamber is surrounded by a thermal insulating layer and supports a thermal conducting probe that communicates between the interior of the instrument and the exterior thereof. A generally funnel-shaped member having internal ribs is mounted in the upper end of the instrument. The internal ribs support the space the base of an actuator-insertion cap from the funnel-shaped member so that an escape-port passageway is provided. The actuator-insertion cap has an



outwardly extending transfer tube somewhat longer than the longitudinal length of the funnel-shaped member, and is attachable to a canister of refrigerant fluid. The actuator-insertion cap assists the passage of the fluid through the funnel-shaped member into the interior of the housing. That is, the actuator-insertion cap is adapted to cause the canister to emit a cryogenic liquid refrigerant which flows through the transfer tube portion of the cap iunto the interior of the housing when the tube is inserted into the instrument along the longitudinal axis of the funnel-shaped member. The interior air that is displaced by the liquid refrigerant, as well as the evaporating gas of the liquid refrigerant entering the instrument escape via the escape-port passageway.

3,795,246

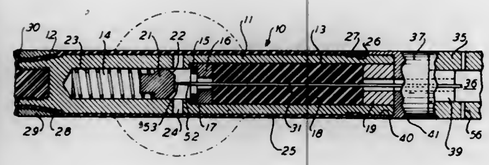
VENOCCLUSION DEVICE

John F. Sturgeon, Glens Falls, N.Y., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jan. 26, 1973, Ser. No. 326,647
Int. Cl. A61b *17/12*; A61m *25/02*
U.S. Cl. 128—325 10 Claims

A device designed to be implanted in a blood vessel such as the inferior vena cava, as a substitute for a tying or clamping operation on such vessel, the device being inserted in deflated condition through a simple incision, moved to the desired location, inflated to engage securely the wall of the vessel and then detached from the inserting means. The device comprises

a generally cylindrical core body containing one or more one-way valves and having around its outer surface an inflatable balloon, the device being initially mounted on and inserted by



an elongated catheter traversed by a needle through which inflation fluid is fed to the balloon; withdrawal of the needle after inflation permits the valve or valves to close and simultaneously separates the device from the catheter.

3,795,247
PASSIVE PACER REFRACTORY CIRCUIT
Sherwood S. Thaler, Lexington, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Oct. 27, 1972, Ser. No. 301,395
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 P **1 Claim**

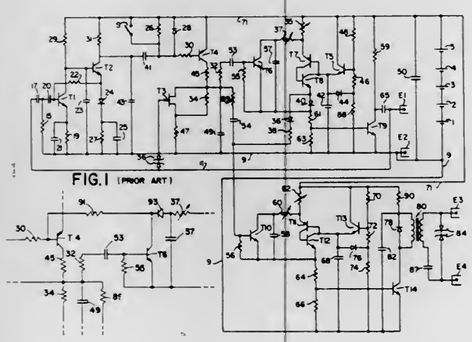
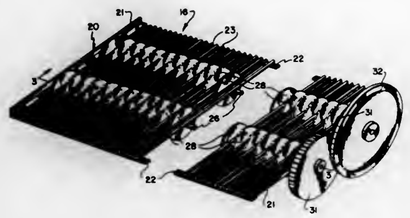


FIG. 1 (PRIOR ART)

There is disclosed an implantable pacer having a one-shot multivibrator refractory circuit which does not require the use of any active elements other than those normally found in an implantable pacer. The last stage of the heartbeat detector and amplifier is capacitively coupled to the base of the discharging transistor which is in parallel with the conventional timing capacitor. Positive resistive feedback is provided between the collector of the discharging transistor and the input terminal of the last stage of the amplifier. While the last stage of the amplifier and the discharging transistor both perform their usual functions, together they also function as a one-shot multivibrator refractory circuit.

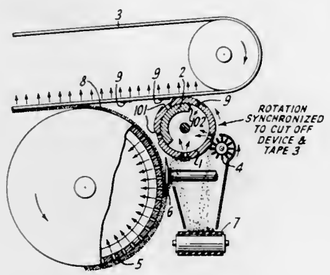
3,795,248
PEANUT COMBINE STEMMER SAWS
William R. Long, Tarboro, N.C., assignor to Long Mfg. N.C. Inc., Tarboro, N.C.
Filed Oct. 2, 1972, Ser. No. 293,885
Int. Cl. A01d *29/00*
U.S. Cl. 130—30 C **3 Claims**

Apparatus mounted on a peanut combine for removing stems, dirt and trash from peanuts after the peanuts have been removed from the vines. The apparatus includes a stemmer saw section having a plurality of stemmer saws rotatably



mounted between pairs of spaced rods to remove stems from the peanuts and permit foreign material to be discharged from the combine.

3,795,249
METHOD AND APPARATUS FOR INCREASING THE DENSITY OF TOBACCO IN PREDETERMINED SECTIONS OF A TOBACCO BRAID
Athos Cristiani, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.
Continuation of Ser. No. 91,999, Nov. 23, 1970, abandoned.
This application Sept. 11, 1972, Ser. No. 287,786
Int. Cl. A24c *05/18*
U.S. Cl. 131—84 C **6 Claims**



In a cigarette making machine forming a continuous cigarette rod from a braid of cut tobacco, short sections or increments of cut tobacco are periodically added to and held by a pneumatic tape prior to the receipt by the pneumatic tape of the trimmed braid of cut tobacco from a pneumatic braid forming wheel. The increments of cut tobacco are added onto the tape in synchronism with the movement of the tape and the cigarette rod cut off device so that the center line of each of the increments coincides substantially with the line where the cigarette rod will be cut to form a single cigarette.

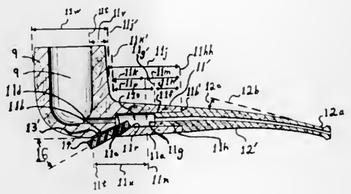
3,795,250
PROCESS FOR MAKING A RECONSTITUTED TOBACCO COMPOSITION
Howard Martin Halter, Norwalk, Conn., assignor to AMF Incorporated, White Plains, N.Y.
Division of Ser. No. 844,652, July 24, 1969, Pat. No. 3,625,225. This application Aug. 11, 1971, Ser. No. 170,950
Int. Cl. A24b *3/14*
U.S. Cl. 131—140 C **4 Claims**

A process for manufacturing reconstituted tobacco composition wherein a slurry is created from a solvent, such as water, finely divided tobacco and non-solvent ingredients consisting of ethylhydroxyethyl cellulose and a calcuim or magnesium carbonate. The ethylhydroxyethyl cellulose employed has a gel temperature between 32° and 38°C, an ethoxyl D.S. of 1.2 to 1.6 and a hydroxyethyl M.S. of 0.5 to 1.2. The slurry

is mixed and shaped at a temperature below the gellation temperature of the ethylhydroxyethyl cellulose. The ethylhydroxyethyl cellulose added constitutes between 3–15 percent by weight (dry basis) of the reconstituted tobacco composition and in this concentration it provides for improved "burn" characteristics of the composition.

3,795,251
DRY SMOKING PIPE
John J. Lamberti, Hotel Breslin, Broadway at 29th St., New York, N.Y. 10001
Continuation-in-part of Ser. Nos. 130,976, April 5, 1971, abandoned, and Ser. No. 215,796, Jan. 6, 1972, abandoned. This application Apr. 14, 1972, Ser. No. 244,194
Int. Cl. A24f *01/06*
U.S. Cl. 131—203 **3 Claims**

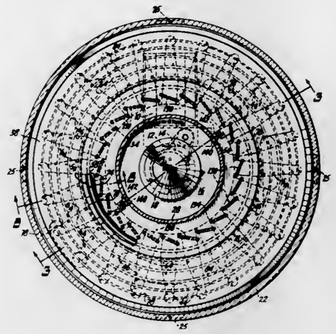
A smoking pipe in a preferred embodiment having a substantially straight and unobstructed shank passage from the stem end thereof to the pipe bowl interior, with an intermittent cylindrically shaped unobstructed chamber with the stem mouth-piece angled downwardly such as to bring about a drainage of liquids within the stem and shank passage toward the bowl of the passage such that the liquids become trapped in the chamber, the reservoir including along its base section a liquid-drainage outlet reservoir port to a linear drainage unob-



structed passage angling downwardly from the stem-bowl passage at an angle ranging from ten to eighty degrees and having snugly mounted therein an absorbent plug such as rolled paper or card-board of a firmness and length such that it is insertable through the passage to or into the chamber and extends out of the pipe base at the drainage outlet port, the port end of the plug around the annular sides thereof having an annular or tubular rubberized casing defining openings at opposite ends of the casing in which the end of the plug is mounted.

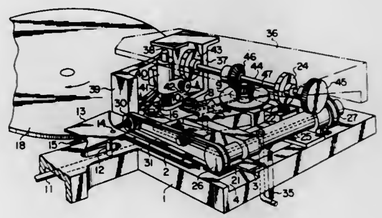
3,795,252
CENTRIFUGAL COIN SORTER
Thomas J. Black, Arlington, Va., assignor to Werner F. Westermann, Falls Church, Va.
Filed Nov. 20, 1972, Ser. No. 307,808
Int. Cl. G07d *3/06*
U.S. Cl. 133—3 A **14 Claims**

A whirling horizontal disc receives bulk coins of random denomination, near its center, and centrifugal force causes the coins to slide outwardly on the disc. A stationary shear ring lets only a single layer of coins move under it into the entrance ends of radial channels on the disc where they are arrested against an annular barrier shoulder. A single stationary cam adjacent the shoulder lifts an edge of only one coin in each channel entrance to clear the shoulder and permits only one coin to enter each channel by centrifugal force at each revolution of the disc. The channels define outwardly tapered coin paths so that the coins will be stopped at radial positions determined by their diameter or denomination and they are then discharged at a fixed station where coins of the same denomination are counted and accumulated in a receiver until a predetermined number have been accumulated. A gate then deflects coins of that denomination to a second receiver and



the counting process is repeated. Means are provided for preventing centrifugal and other forces acting on the coins at said shoulder to cause them to pile up upon each other.

3,795,253
ADJUSTABLE COIN GUIDE IN COIN PROCESSING APPARATUS
Yoshihiro Hatanaka; Hirokuni Matono, and Hidenori Kawazoe, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji-shi, Japan
Filed Apr. 18, 1973, Ser. No. 352,308
Claims priority, application Japan, Apr. 21, 1972, 47-40105
Int. Cl. G07d *3/00*
U.S. Cl. 133—3 A **3 Claims**

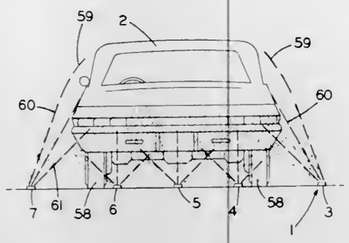


A coin guide is mounted above the circumference of a rotary disk of a coin processing apparatus in order to ensure that the coins which have been centrifugally sent thereto are fed one by one onto a passageway extending radially outward of the rotary disk. The position of the coin guide relative to the rotary disk is adjustable in accordance with the thickness of each of the coins of a specified denomination by means of a knob which permits simultaneous adjustment of the width and the height of the passageway in accordance with the diameter and the thickness of each of the coins.

3,795,254
SALT REMOVAL SPRAY DEVICE
Nelson K. Blosser, P.O. Box 327, Bergholz, Ohio 43908
Filed Sept. 20, 1972, Ser. No. 290,465
Int. Cl. B60s *3/04*
U.S. Cl. 134—123 **4 Claims**

A device for spraying water against a vehicle to remove harmful salt and chemicals deposited on the vehicle during use. A plurality of parallel spaced conduits rest on a surface beneath the vehicle and extend longitudinally therewith. The conduits are connected to a water header which in turn is connected to a supply of water. A pair of these conduits are located along the outer sides of the vehicle and a plurality of these conduits are located underneath the vehicle between the

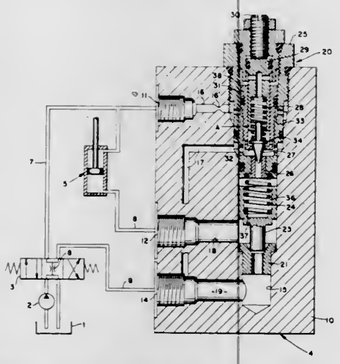
front and rear wheels. A plurality of spray holes are formed in the upper portions of the outer conduits at various angles for spraying water against the sides of the vehicle at various



heights. A plurality of spray holes are formed in the upper portions of the inner conduits at various angles for spraying water in various directions against the underside portions of the vehicle.

3,795,255
LOAD CONTROL AND HOLDING VALVE
Thomas J. Malott, Mentor, and Hugh J. Stacey, Willoughby, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Jan. 10, 1972, Ser. No. 216,569
Int. Cl. F15b *13/042*
U.S. Cl. 137—102 **12 Claims**

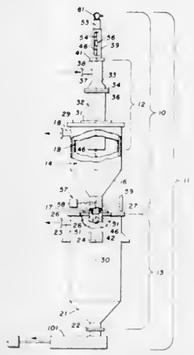
A load control and holding valve adapted to be installed between a directional control valve and a fluid motor to control flow of fluid therethrough to and from the motor, said valve being characterized in that a main valve member therein functions in the manner of a check valve member to permit flow of fluid under pressure from the directional control valve to the fluid motor as when a load thereon is being raised and functions in the manner of a pilot operated relief valve member to support a load on the fluid motor against downward drifting as when the directional control valve is in neutral "off" position except in the case of load inertia pressure, shock pressure, or thermal expansion pressure of magnitude sufficient to open a pilot relief valve member in said



valve thus to effect opening of the main valve to relieve such excess pressure. The valve herein is further characterized in that when it is desired to open the main valve member to permit return flow therethrough from the fluid motor to the directional control valve a piston in the valve exposed to pilot pressure in the pressurized side of the motor is effective to open the pilot relief valve member thus to permit opening of the main valve member for such return flow. In the event of reduction of pressure in the pressurized side of the motor as by a negative load thereon, the decreased pressure acting on the piston will permit reclosing or throttling of the pilot valve member with consequent closing or throttling of the main valve member, thus to prevent cavitation of the motor.

3,795,256
TANK WITH INTEGRAL REMOTELY CONTROLLED POWER ACTUATED BOTTOM VALVE
Robert E. Gordon, Monson, Mass., assignor to Monsanto Company, St. Louis, Mo.
Filed Jan. 8, 1973, Ser. No. 321,503
Int. Cl. F16k *21/18*
U.S. Cl. 137—386 **11 Claims**

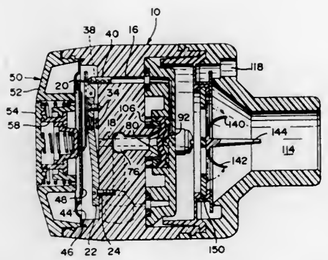
A tank and integral valve assembly suitable for storing and controlling the transfer of viscous fluids. The assembly utilizes a vessel in which is constructed a plug-type valve assembly located so as to regulate rate of egress of viscous fluid from the



bottom of the vessel. An actuator assembly on the top side of the vessel controls reciprocal valve plug movements. The actuator is responsive to a level sensor coupled thereto through a controller assembly.

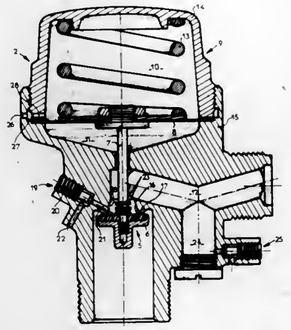
3,795,257
DEMAND VALVE ASSEMBLY FOR USE WITH BREATHING OR RESUSCITATION EQUIPMENT
Donald C. Fabish, Anaheim, and Robert M. Hamilton, Brea, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Mar. 27, 1972, Ser. No. 238,502
Int. Cl. F16k *15/14, 31/385*
U.S. Cl. 137—491 **16 Claims**

A demand valve assembly for use with breathing or resuscitation equipment is disclosed. The valve assembly includes a first main valve controlling flow of pressurized gas, either oxygen or an air mixture, to the assembly and a second



inhalation-exhalation valve controlling flow of the pressurized gas and the exhausted gas to and from a mask on the patient. A positive pressure button assembly provides for accurate pressure settings with only slight button travel.

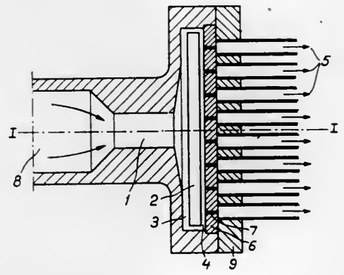
3,795,258
APPARATUS FOR DISTRIBUTING GAS UNDER PRESSURE
Jacques Iung, Pontarlier, France, assignor to Gurtner S.A., Paris, France
Filed May 16, 1973, Ser. No. 360,917
Claims priority, application France, May 18, 1972, 72.17879
Int. Cl. F16k *21/00*
U.S. Cl. 137—505.35 **5 Claims**



Apparatus for distributing gas stored under pressure such as propane or butane.

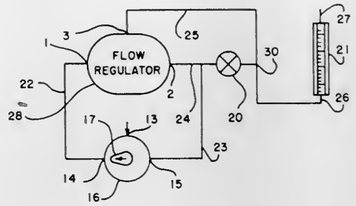
The apparatus comprising, a pressure-reducing valve mounted between the source of said stored gas and the distributing network, a draining device is provided downstream of said pressure-reducing valve in proximity of the seat of said valve in view to permit positive elimination of the deposits tending to be formed at this level in the pressure-reducing device.

3,795,259
DEVICE FOR EVENLY MIXING AND DISTRIBUTING A GAS AND LIQUID MIXTURE
Tore Brandin, and Bo Frejd, both of Norrkoping, Sweden, assignors to Stal Refrigeration AB, Norrkoping, Sweden
Filed July 7, 1972, Ser. No. 269,833
Int. Cl. F16l *41/00;* **F17d** *1/00*
U.S. Cl. 137—561 A **7 Claims**



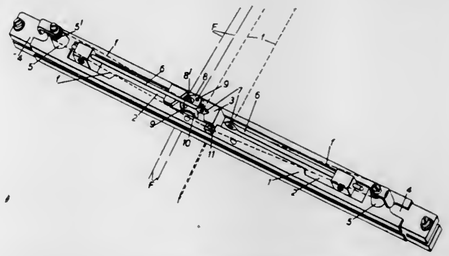
A device in which a gas and liquid mixture is introduced into a distribution chamber through an inlet opening at one side thereof the opposite side being in communication with a plurality of tubes for receiving the gas and liquid mixture; a baffle in said distribution chamber extending substantially perpendicularly to the direction of flow of the gas and liquid mixture forming a narrow passageway in which the mixture flows radially outwards along the inlet opening side and radially inwards along the tube side.

3,795,260
THREE WAY VALVE FOR FLOW REGULATOR CONNECTED TO MOISTURE ANALYZER
Gustav Bergson, Cedarbrook Hill Apts. B-117, Wyncote, Pa. 19095
Filed Sept. 27, 1972, Ser. No. 297,133
Int. Cl. G05d *16/06*
U.S. Cl. 137—599 **1 Claim**



A three way valve having ports No. 1, No. 2 and No. 3 is connected to a flow regulator for a moisture analyzer. Port No. 1 is the inlet port for gas. Port No. 2 is connected to the inlet of the flow regulator. Port No. 3 is connected to the outlet of the flow regulator before a needle valve which connects to the moisture analyzer. The three way valve has two positions. In one position it is connected from port No. 1 to port No. 2 and port No. 3 is closed. In the other position it is connected from port No. 1 to port No. 3 and port No. 2 is closed.

3,795,261
SELVEDGES FORMING APPARATUS
Giuseppe Serturini, Gorno, Italy, assignor to Somet Societa'-Meccanica Tessile S.p.A., Provincial Valseriana, Italy
Filed June 21, 1972, Ser. No. 264,918
Claims priority, application Italy, June 21, 1971, 26138/71
Int. Cl. D03d *47/40*
U.S. Cl. 139—54 **7 Claims**

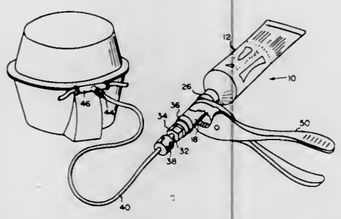


A device for carrying out slotted leno healds in the making of selvedges in looms having a movable slide which carries pivoted in it a small plate adapted to cooperate with means in the frame of the device for obtaining a sure deviation of yarns passing through the plate in the respect of fixed needles of the device through which other yarns pass.

3,795,262
DISPENSING DEVICE AND METHOD FOR INTRODUCING FLUID INTO HIGH PRESSURE LINES
John Franklin Post, R.D. 2, Chester, N.J. 07930
Filed Sept. 25, 1972, Ser. No. 291,809
Int. Cl. B65b *3/04*
U.S. Cl. 141—1 **10 Claims**

Apparatus and method is disclosed for introducing a fluid dehydrant into a high pressure refrigeration system. The fluid dehydrant is packaged in a squeeze bottle or tube having a short dispensing section fixed to the discharge opening of the squeeze bottle, the dispensing section being flexible but sufficiently rigid to withstand the pressure in the refrigeration

system. Each end of the dispensing section is provided with a check valve so the portion between the check valves acts as a pump. The discharge end of the dispensing section, in addition, is provided with a threaded flair fitting adapted to mate with the standard fitting of a refrigeration system charging hose. With the flair fitting connected to the charging hose, the bottle is manually squeezed to force the fluid dehydrant through the dispensing section between the check valves and



through the charging hose until it appears at the open end of the charging hose. This purges the dispensing section and charging hose of air and primes the pump portion between the check valves. The charging hose is then connected to the compressor charging valve. Any suitable means such as a pliers is then used to squeeze the dispensing section between the check valves, i.e., the pump portion, for injecting the dehydrant directly into the refrigeration system.

3,795,263

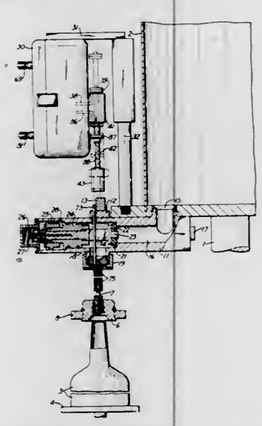
PNEUMATIC SYSTEM CONTROLLING OPERATION OF A FILLING VALVE IN A CONTAINER FILLING MACHINE

Charles V. Wilhere, Pittsburgh, Pa., assignor to Horix Manufacturing Company, Pittsburgh, Pa.

Filed Nov. 27, 1972, Ser. No. 309,733

Int. Cl. B65b *57/14*

U.S. Cl. 141—198 **10 Claims**



First and second fluidic control devices of special construction receive streams of air that are deflected to atmosphere at predetermined intervals by means of jets of air controlled by valves and the liquid level in a container as the machine moves through its cycle. At one point in the cycle, air pressure from one of the fluidic control devices causes the filling valve to open and remain open until a jet of control air is delivered to the fluidic control device when the desired liquid level in the container is reached, whereupon the control device is vented to atmosphere and the filling valve closes. If a container is not present when it should be, the filling valve will not open and there will be no blow-down through the level sensing tube.

3,795,264

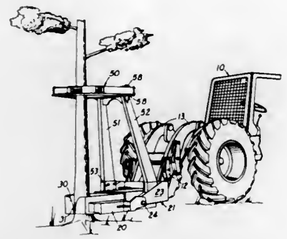
TREE ACCUMULATOR ATTACHMENT FOR A TREE HARVESTER

Samuel J. Coughran, Jr., Cedartown, Ga., assignor to Rome Industries, Cedartown, Ga.

Filed Nov. 23, 1971, Ser. No. 201,370

Int. Cl. A01g *23/08*

U.S. Cl. 144—3 D **4 Claims**



A tree harvesting apparatus capable of severing and accumulating a plurality of trees. The tree harvesting apparatus includes a reciprocally operable shear blade which is operable for severing a tree adjacent the base of the tree trunk and is operable for providing a support for the butt end of a plurality of severed trees. The tree harvesting apparatus includes a tree accumulator means supported at a vertically spaced position above the shear blade. The tree accumulator means includes automatically operable tree receiving means which will permit a tree trunk to be advanced therethrough and which is detailed in dimension for engaging and retaining a plurality of tree trunks. The tree accumulator means and tree severing means are movable from a generally vertically oriented tree severing position to a tilted position with the accumulator means being movable to an open position to permit the plurality of accumulated trees to be discharged.

3,795,265

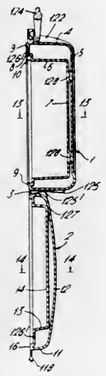
PLASTIC CONTAINER AND BLOW MOLDING METHOD

Peter T. Schurman, Woodbridge, Conn., and Raymond C. Confer, Buffalo, N.Y., assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of Ser. No. 801,620, Feb. 24, 1969, Pat. No. 3,536,435. This application July 28, 1970, Ser. No. 58,819. The portion of the term of this patent subsequent to Sept. 5, 1984, has been disclaimed.

Int. Cl. B65d *11/16*

U.S. Cl. 150—0.5 **3 Claims**



A container with a hollow walled part that has a resilient inner wall for protectively supporting an article and a rigid

outer wall also protecting the article and a method of blow molding an article.

3,795,266

VENETIAN BLIND

Victor Debs, Staten Island, N.Y., assignor to Levolar Lorentzen, Inc., Hoboken, N.J.

Continuation-in-part of Ser. No. 6,395, Jan. 28, 1970, Pat. No. 3,703,920. This application July 6, 1972, Ser. No. 269,372

Int. Cl. E06b *9/30*

U.S. Cl. 160—168 **29 Claims**

The front and rear sidepieces of the ladders are connected to front and rear horizontal runs of a tilt cord at eyelets which are spaced along the horizontal runs. The tilt and lift cords may be connected to individual spool members of a cord-operating unit. The blind is adapted to be combined with a window having metal framing and, where the window has spacing glazings, the ladder-and-slat assembly is adapted to be located between the glazings. The spool members of the cord-operating unit are located at a distance from the horizontal runs of the tilt cord and are adapted to be located in a channel of the window framing.

3,795,267

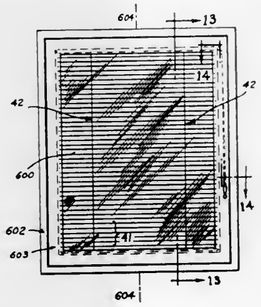
VENETIAN BLIND

Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Continuation-in-part of Ser. No. 6,395, Jan. 28, 1970, Pat. No. 3,703,920. This application Aug. 1, 1972, Ser. No. 277,022

Int. Cl. F06b *9/30*

U.S. Cl. 160—168 **21 Claims**



The head of the Venetian blind is attached to the soffit or lintel of window framing. At least one of the jambs affords a vertical passageway which is separated from the window opening by a jamb wall. A cord-guide fitting, which is part of the Venetian blind head, projects through an entrance in the jamb wall and guides the tilt and lift cords into the vertical passageway at an upper level. The tilt and lift cords extend downwardly in the vertical passageway and are operatively connected to a jamb-mounted cord-operating unit at a lower level.

3,795,268

MOSQUITO-FRAME

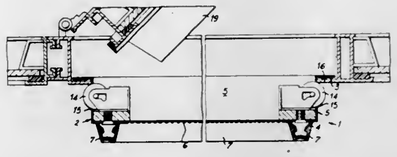
Pieter Jozef Hendriks, Prinz Boudewignlaan 321, Edegem, Belgium

Filed Oct. 11, 1972, Ser. No. 296,580

Claims priority, application Belgium, Oct. 18, 1971, 774047

Int. Cl. E06b *9/52*

U.S. Cl. 160—369 **8 Claims**



The invention pertains to a mosquito-frame, more specially to be used in metal frame structures, comprising a fly-wired frame realized in L-shaped or substantially L-shaped profile of which at least the flange directed outwards, is so very thin that it does not form a hindrance between the fixed and opening part of the window and on this frame, gadgets which permit the linking-up and the taking-out of the mosquito-frame out of the fixed frame structure.

3,795,269

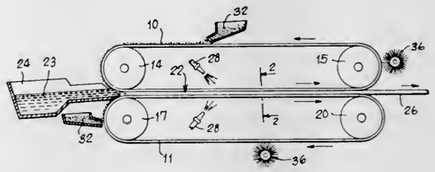
METHOD OF AND APPARATUS FOR CASTING ON MOVING SURFACES

Gerard Bernard Leconte, and John Walter Wright, both of Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Mar. 27, 1972, Ser. No. 238,346

Int. Cl. B22d *11/06*

U.S. Cl. 164—73 **8 Claims**



In the casting of metals on or between movable endless surfaces, a two-layer dressing is applied to each casting surface. The dressing includes a heat-insulating coating fixedly adhered to the casting surface, and a removable parting layer deposited on the coating for preventing metal from sticking to the coating. As the casting surface moves successively out of and into engagement with metal being cast during each cycle of operation, it is cleaned to remove the previously applied parting layer, and a fresh parting layer is newly applied.

3,795,270

METHOD OF AND MEANS FOR SEALING A STOPPING AND WITHDRAWING HEAD IN A CONTINUOUS CASTING MOLD FOR STEEL

Ferdinand Fiala, Thalwil, and Josef Zeller, Weesen, both of Switzerland, assignors to Concast AG, Zurich, Switzerland

Filed Feb. 10, 1972, Ser. No. 225,148

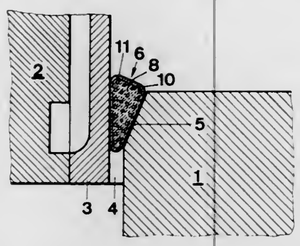
Claims priority, application Switzerland, Feb. 11, 1971, 2017/71

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 **9 Claims**

A method of and means for sealing a stopping and withdrawing head in a continuous casting mold for steel, wherein prior to the commencement of pouring the clearance gap between the stopping and withdrawing head and the wall

of the mold is sealed with a heat insulating seal that can be introduced into this gap. The steel in contact with the seal in the



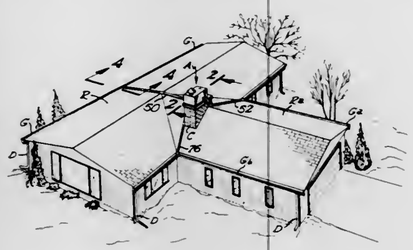
clearance gap during solidification is stopped from dangerously penetrating the seal by penetration-retarding elements distributed within the cross section of the seal.

3,795,271

DEVICE FOR MELTING AND PREVENTING THE FORMATION OF ICE IN THE AREA OF THE EDGE OF A ROOF

Anthony Adamic, 3618 E. 4th St., Duluth, Minn. 55804

Filed Dec. 22, 1972, Ser. No. 317,660
Int. Cl. F24h *3/02*
U.S. Cl. 165—47 **11 Claims**



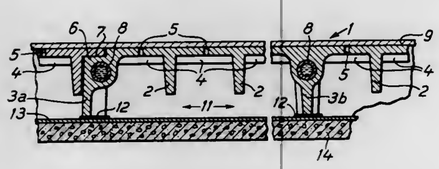
A device for melting and preventing the formation of ice in the area of the edge of a roof including a housing having a source of heat connected to the roof with a blower in the housing and an outlet in the housing to which is connected a supply conduit. The supply conduit leads to a heated air conveying conduit for positioning at the edge of a roof.

3,795,272

CONSTRUCTION MEMBER FOR A HEATED FLOOR AND FLOOR ASSEMBLED THEREFROM

Friedhelm Kahn, Muhlbachstrasse, Ehringshausen, and Hans O. Rittich, Krotenweg 5, Stuttgart, both of Germany

Filed Apr. 12, 1972, Ser. No. 243,175
Claims priority, application Germany, Apr. 17, 1971, 2118665
Int. Cl. F24h *3/02*
U.S. Cl. 165—54 **11 Claims**



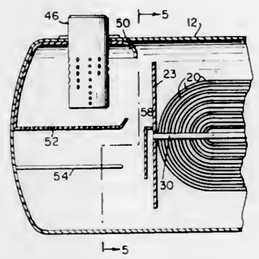
A construction member made of a material of good thermal conductivity has the shape of a board. Along one longitudinal edge a rib projects from the lower surface of the board at substantially right angles which rib serves to support the board on the ground. In the junction area between the board and the rib a channel is provided extending in longitudinal direction for receiving a heating pipe. On the upper surface of the construction member along the edge above the rib a recess is formed for receiving the rib-free edge of the adjacent member. By assembling a plurality of construction members side by side a floor above the ground is formed at a distance equal to the width of the supporting ribs, and the ribs subdivide the space between the floor and the ground into channels wherein the air is warmed up. Holes are provided in the board-shaped portion of the construction member through which the warm air escapes into the space above the floor.

3,795,273

FEEDWATER HEATER

Carlo J. Brigida, Long Island, N.Y.; Meyer Wexler, Rahway, and Philip S. Woodford, Convent Station, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed June 12, 1972, Ser. No. 261,774
Int. Cl. F28b *1/02*
U.S. Cl. 165—112 **8 Claims**



A feedwater heater for use in a power plant system in which steam from another unit in the system is introduced into the shell of the heater and the latter discharges condensate to another unit in the system. Feedwater to be heated is circulated through tubes in the shell in heat exchange relation to the steam whereby a portion of the steam is condensed. Another portion of the steam is directed to an area of the shell where it warms the condensate to a degree that maintains the condensate at or near its saturation temperature. An additional inlet is provided in the shell for receiving condensate from another unit of the system along with means for breaking up the flow of the latter condensate to promote deaeration as a portion of the condensate flashes into vapor. The vapor produced as a result of the flashing is directed in the same flow path as the above-mentioned steam, and vent means are provided for permitting the removal of the non-condensibles and associated water vapor from the shell.

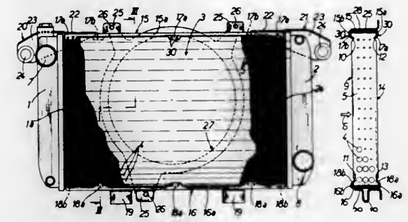
3,795,274

FIXING OF HEAT-EXCHANGERS, INTER ALIA MOTOR VEHICLE RADIATORS

Walter Fieni, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed July 12, 1972, Ser. No. 270,996
Claims priority, application France, July 12, 1971, 71.25459; June 23, 1972, 72.22812
Int. Cl. F24h *3/06*
U.S. Cl. 165—122 **10 Claims**

A heat exchanger, particularly a radiator for a motor vehicle, of the type comprising a plurality of fluid conduits and a plurality of spaced, parallel, plate-like fins extending transversely to the fluid conduits and attached thereto is provided with at least one mounting member, serving either to mount the heat exchanger on a supporting structure or to mount an accessory (such as a motor and fan unit) on the heat exchanger, or serving both those purposes, which mounting member extends adjacent the juxtaposed and edges of a plurality of the



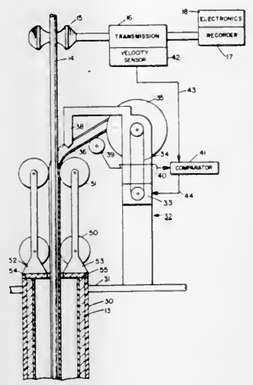
fins and has portions engaging each of the opposite side edges of the fins, so as to clamp the fins between them, at least one of the said portions of the mounting member including a claw which is engaged in aligned notches formed in the corresponding side edges of at least some of the fins.

3,795,275

APPARATUS FOR APPLYING AN ELASTOMERIC SHEATH TO A WIRELINE USED IN OILFIELD SERVICE OPERATIONS

Floyd O. Bohn, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 25, 1972, Ser. No. 300,540
Int. Cl. E21b *33/03*; **B23p** *19/00*
U.S. Cl. 166—85 **4 Claims**



A slotted, continuous elastomeric sheath is applied to a wireline as the wireline and its instruments connected thereto are lowered into a plastic lined tubing within an earth borehole, the elastomeric sheath being used to prevent damage to the plastic coating on the interior of the tubing. The tubular elastomeric sheath is wound on a storage drum for transportation and the application of the sheath to the wireline. The sheath passes through a measuring sheave having a throat positioned at the wireline to be covered. As the sheath approaches the wireline, an orienting finger is used within the slot in the sheath causing the slot to open up. The opening also results from a natural consequence of the sheath being bent about a radius with the slot in the sheath oriented to the outside of the sheave throat. Idler rollers are provided to facilitate the alignment of the sheath with the wireline. The measuring sheave is also used to monitor the linear velocity of the sheath as it is being removed from the wireline. The linear velocity of the wireline is also monitored and compared with the velocity of the sheath. An electrical comparator circuit drives a variable speed motor to either increase or decrease the velocity of the sheath to provide a means for removing the sheath from the wireline at the same velocity as the wireline as it is being hoisted from the well bore. During the application of the sheath to the wireline, the drum upon which the sheath is wound is allowed to rotate freely without the use of the motor and the sheath pulled off the drum by the frictional forces between the sheath and the wireline.

3,795,276

COMPOSITION AND THE USE THEREOF FOR REDUCING THE PERMEABILITY OF A FORMATION

Louis H. Eilers, Inola, and Christ F. Parks, Tulsa, both of Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 20, 1971, Ser. No. 191,059
Int. Cl. E21b *33/13*
U.S. Cl. 166—295 **11 Claims**

An aqueous solution of a water-soluble polymer which can be cross-linked in the presence of certain ions by adjusting the pH of the solution is disclosed. The aqueous solution contains a cross-linkable water-soluble organic polymer and at least two cross-linking agents (ions) for said polymer, each cross-linking agent (ion) being effective to cross-link the polymer at a different pH value. The pH of the initial solution is adjusted to a value between the two effective pH values where minimal (if any) cross-linking occurs. The pH can be adjusted up or down to within a range which is effective to cross-link the polymer.

3,795,277

METHOD FOR IMPROVEMENT OF PETROLEUM OUTPUT PARTICULARLY FROM STORAGE STRATA CONTAINING CONCOMITANTLY PETROLEUM

Akos Ban; Sandor Nagy, both of Budapest, and Valer Balint, Nagykanizsa, all of Hungary, assignors to Koolaj-es Gazipari Tervezo Vallalat, Budapest, Hungary

Filed Oct. 28, 1971, Ser. No. 193,429
Int. Cl. E21b *43/22*
U.S. Cl. 166—265 **8 Claims**

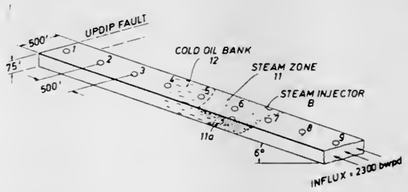
Ammonia or an aqueous solution thereof is injected into geological strata to improve the petroleum output thereof, more particularly where the strata contain both petroleum and natural gas. This will not only result in a substantially complete expulsion of liquid hydrocarbons even from microporous strata, but the invention also provides a sealing fluid at the interface between the liquid and gas phases in the strata containing both liquid and gaseous hydrocarbons.

3,795,278

DOWN-DIP STEAM INJECTION FOR OIL RECOVERY

Derrill G. Whitten, Houston, Tex., and Daryl C. McIntire, Seymour, Iowa, assignors to Shell Oil Company, Houston, Tex.

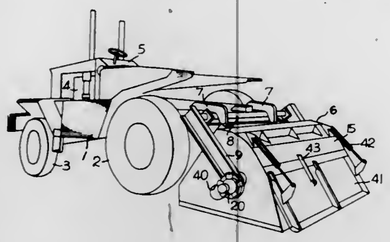
Filed Nov. 10, 1972, Ser. No. 305,637
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 **4 Claims**



In a dipping reservoir which has an active aquifer located down-dip, oil is recovered by injecting a slug of steam only slightly updip from the original oil-water contact in the reservoir while concurrently and subsequently producing fluid

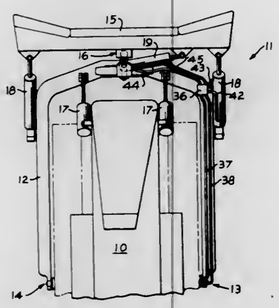
from at least one location updip from the point of steam injection.

3,795,279
SELF-PROPELLED SOIL STABILIZER MACHINE
Albert W. Nelson, Kettering, Ohio, assignor to Koehring Company, Milwaukee, Wis.
Filed July 5, 1972, Ser. No. 269,228
Int. Cl. A01b *67/00*
U.S. Cl. 172—3 **11 Claims**



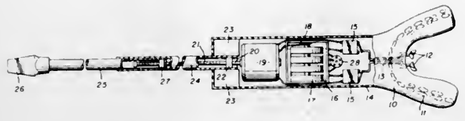
A self-propelled soil stabilizer machine employs a heavy-duty single horizontal rotor for pulverizing and mixing soil it passes over. The rotor is driven by hydraulic motors which are mounted at the rotor ends and operated by a hydraulic pump (engine driven) which is hydraulically coupled to a hydraulic traction pump (also engine driven) which propels the machine. Overloads on the rotor system are automatically sensed by a closed-loop hydrostatic system and result in a decrease in the speed of machine travel until the load on the rotor diminishes. A hydraulic rotary servo-valve and mechanical feed back system automatically controls the rotor to maintain it at a preset depth and provides a visual read-out of depth.

3,795,280
THREE-WAY LEVER CONTROL FOR HYDRAULIC CONTROL CIRCUIT
Robert Casey, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 23, 1972, Ser. No. 265,427
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 **5 Claims**



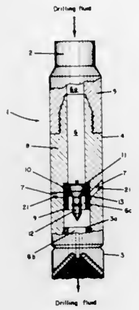
An articulated handle comprises first, second and third arms pivotally attached together with each arm operatively connected to a respective directional control valve. The handle and first and second control valves, operatively connected to the first and second arms, are mounted on a tractor whereas a solenoid actuated third control valve is mounted on the frame of a bulldozer assembly. A pair of lift cylinders, interconnected between the tractor and frame, are operatively connected to the first control valve whereas tilt and angle cylinders, interconnected between the frame and a bulldozer blade, are operatively connected to the third control valve.

3,795,281
TELESCOPIC STICK FOR PARALYTICS
Arthur J. Cloran, 309 Little Bldg., East Liverpool, Ohio 43920
Filed June 5, 1972, Ser. No. 259,783
Int. Cl. A61f *1/00*; **B25j** *13/00*
U.S. Cl. 173—30 **6 Claims**



A telescopic mouth-held stick for paralytics consists of a mouthpiece for retention in the mouth and covering the clinical crowns of all of the teeth and supporting a telescopically extensible stick and an actuating mechanism therefor. Control means for extending or retracting the telescopic portion of the stick are incorporated in the mouthpiece and/or on the actuating mechanism so that patients using the device may conveniently adjust the length thereof for typing, controlling wheel chair switches, turning pages of books, operating switches of lights, radio, TV, or the like.

3,795,282
WELL FLUSHING METHOD
Don L. Oliver, Houston, Tex., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Aug. 31, 1972, Ser. No. 285,142
Int. Cl. E21b *7/00*
U.S. Cl. 175—65 **4 Claims**

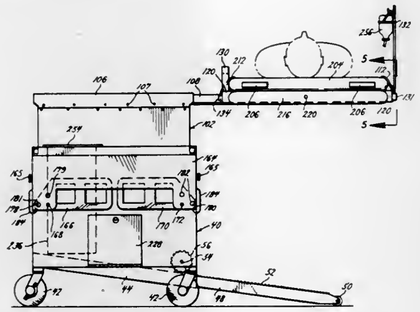


Method of flushing debris from a well wherein an upper section of the well hole has a significantly larger diameter than the lower end. Drilling fluid is normally supplied through a drilling bit, but additional fluid can also be supplied from another source so that the total amount of fluid being pumped to the hole is substantially in excess of that which can be supplied through the bit alone. Upward thrust of drilling fluid in the larger, upper section of the hole is significantly increased, thus overcoming the settling rate of debris therein so that it becomes entrained in the circulated drilling fluid and is hence discharged from the top of the hole while suspended in the fluid.

3,795,283
APPARATUS FOR DRILLING AND SAMPLING ROCK FORMATIONS
Ronald Oughton, Calgary, Alberta, Canada, assignor to Shuttle Mountain Holdings Co. Ltd., Letheridge, Alberta, Canada
Filed June 15, 1972, Ser. No. 263,176
Int. Cl. E21b *21/00, 17/00*
U.S. Cl. 175—215 **13 Claims**

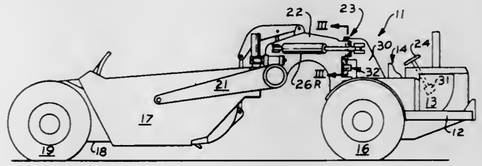
A double walled drill stem has a fluid driven piston on one end thereof which, by porting, reciprocates and strikes an anvil carrying a bit. The fluid exhausts downwardly around the bit and drives chips and the like upwardly through the inner portion of the drill stem, the fluid to drive the piston passing downwardly between the inner and outer drill stem members, the exhausted fluid carrying chips and dust and the like upwardly to the surface in a continuous manner.

3,795,284
PORTABLE SUPPORT AND WEIGHER FOR A BED PATIENT
Milo F. Mracek, 22 Morwood Ln., Creve Coeur, Mo. 63141, and Ronald J. Bauer, Florissant, Mo., assignors to said Mracek by said Bauer
Filed Jan. 3, 1972, Ser. No. 214,806
Int. Cl. G01g *3/12, 19/52*
U.S. Cl. 177—144 **13 Claims**



A normally deflated, readily flexible, inflatable pad which underlies a bed patient can be inflated to raise the bed patient and to gently but firmly hold that bed patient in raised position. When that inflatable pad is inflated, it defines a recess at the lower surface of the center thereof into which the supporting surface of a portable support can be moved; and that inflatable pad and that portable support can thereafter hold the bed patient at a desired level relative to the bed on which that inflatable pad normally rests. When the supporting surface of the portable support subsequently is removed from the recess at the lower surface of the center of the inflatable pad, that inflatable pad can be deflated to lower the bed patient. A pressure transducer, between the supporting surface and the carrier therefor, develops a signal while that supporting surface underlies and holds the inflatable pad and the bed patient; and a readout responds to that signal to indicate the weight of that bed patient.

3,795,285
STEERING SYSTEM FOR ARTICULATED VEHICLES
Rolland D. Scholl, Peoria; Edward J. Moyer, Morton; Terry W. Glynn, East Peoria, and Richard E. Klein, Champaign, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 3, 1972, Ser. No. 240,588
Int. Cl. B62d *5/04, 5/06*
U.S. Cl. 180—79.2 B **7 Claims**

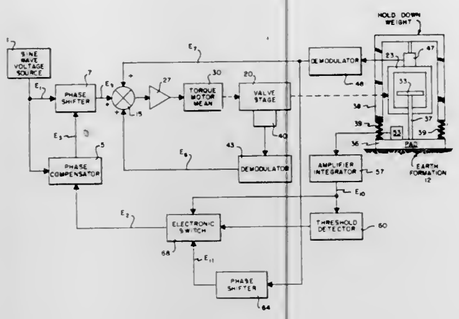


The front frame of an articulated vehicle is pivoted relative to the back frame for steering purposes by fluid motors controlled through an electrically operated valve. The valve is controlled by the output of an amplifier which produces a signal indicative of the difference between a command signal obtained from a potentiometer coupled to the operator's steering wheel and an actual articulation signal from another potentiometer responsive to changes in the angle of the vehicle frames. Thus a difference between the position of the steering wheel and the actual articulation of the vehicle results in operations of the fluid motors to eliminate such difference. A phase lag is provided in the feedback loop defined by the system to counteract the effects of oil mass resonance which otherwise causes instability unless steps are taken that have adverse side effects such as slowing response and decreasing precision in fluid motor operated systems. Safety means are provided for maintaining electrical energization in the event of failure of the primary power supply and for blocking starting of the vehicle engine if steering wheel position does not conform with actual articulation.

3,795,286
APPARATUS AND MEANS FOR INDUCING VIBRATIONS IN AN EARTH FORMATION
Herbert J. Meyer, Houston, Tex., assignor to Texaco, Inc., New York, N.Y.
Filed Feb. 23, 1972, Ser. No. 228,516
Int. Cl. G01v *1/22, 1/14*
U.S. Cl. 181—.5 RC **1 Claim**

Vibrator apparatus induces vibrations in an earth formation so that the nature of the earth formation can be determined from its effect on the induced vibrations. A sine wave voltage is provided having a variable frequency sweep. The voltage is phase shifted and summed with feedback signals. The sum signal is then used to control a torque motor. The motor controls a hydraulic valve which provides a hydraulic output to a cylinder to control the movement of a pad against the earth's formation. The hydraulic valve and the cylinder movements are monitored by a transducer in the form of a linear differential voltage transformer to provide feedback signals. An accelerometer mounted on the pad provides a signal cor-

responding to the acceleration and de-acceleration of the pad. A threshold detector receiving the signal from the accelerometer controls an electronic switch to pass the accelerometer's signal for use in controlling the shifting of the phase of the sine wave voltage when the amplitude of the ac-



celerometer signal is equal to or greater than a predetermined amplitude. When the amplitude of the accelerometer's signal is less than the predetermined amplitude, the threshold detector controls the electronic switch to pass the feedback signal corresponding to the cylinder movement to be used in shifting the phase of the sine wave voltage.

3,795,287

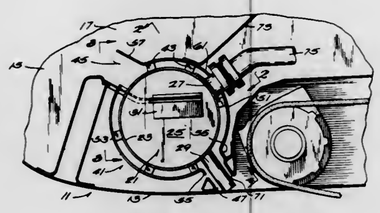
SNOWMOBILE MUFFLER WITH HEAT SHIELD

Edgar Rose, Glencoe, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 13, 1973, Ser. No. 350,817

Int. Cl. F01m *3/06*

U.S. Cl. 181—36 R **7 Claims**



Disclosed herein is a muffler comprising a cylindrical shell or drum including radially extending and circumferentially spaced inlet and outlet pipes and a shield supported by the shell and extending in spaced relation thereto for substantially the length of the shell and arcuately about the shell for substantially the whole of the circumferential periphery from adjacent to one side of the outlet pipe to adjacent to the other side of the outlet pipe. The shield includes an air inlet on the side thereof opposite from the outlet pipe, which inlet extends lengthwise to permit entry of air into the space between the shell and the shield. The shield also includes an air outlet extending lengthwise of the shield and defined by shield portions extending in spaced relation to each other on opposite sides of the outlet pipe to provide for air discharge from between the shield and the shell.

3,795,288

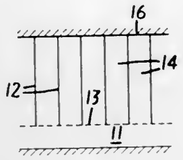
GAS CONDUIT WITH ACOUSTIC INSULATION COMPRISING ANISOMETRIC COMPRESSED AND BONDED MULTILAYER KNITTED WIRE MESH COMPOSITES

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Division of Ser. No. 732,443, May 27, 1968, Pat. No. 3,690,606. This application Sept. 29, 1970, Ser. No. 76,591

Int. Cl. F01n *1/10, 1/04, 7/16*

U.S. Cl. 181—42 **17 Claims**



Gas conduits with acoustic insulation are provided which comprises anisometric compressed and bonded knitted wire mesh composites composed of a plurality of sheets of knitted wire mesh, superimposed at random orientation with respect to each other, compressed or densified to a voids volume within the range from about 10 to about 90 percent, and bonded together. The sheets are taken in sufficient number, usually at least five and preferably 10 or more, and as much as 1,000 or more, to form a self-supporting relatively nonresilient composite of high tensile strength and high breaking strength having an average pore diameter of less than 200 microns, and preferably less than 100 microns, that is relatively uniform in any unit area of the surface, and having an anisometric porosity, the through pores extending crosswise of the sheet greatly exceeding in number the through pores extending laterally of the sheet, which latter pores can be reduced vitually to zero in a highly compressed composite.

The composite is formed by superimposing a plurality of knitted wire mesh sheets, annealing the composite to avoid wire breakage during later processing, compressing the composite to the desired density and anisometricity by application of pressure in a direction approximately perpendicular to the plane of the layers of the composite, and bonding the sheet layers and the wire filaments of the sheets together at their points of contact and/or crossing. The bonding holds the composite at the selected density, prevents relative movement of the wires in the composite, and in conjunction with the multilayer structure imparts the self-supporting nonresilient characteristic, together with high tensile strength and high breaking strength.

3,795,289

LIFTING DEVICE

Claude J. Laforest, 189 A Lakeshore Ln., Timmins, Ontario, Canada

Continuation of Ser. No. 123,766, March 12, 1971, abandoned. This application Jan. 23, 1973, Ser. No. 326,037

Claims priority, application Canada, Jan. 8, 1971, 102246

Int. Cl. B66b *11/64*

U.S. Cl. 187—18 **11 Claims**

A device for lifting a load comprising a platform for supporting said load and a vertically extensible framework supporting said platform, said framework being formed from first and second pairs of spaced parallel vertically extensible members each member being formed from a plurality of interconnected sections and each said section being formed from a pair of cross levers pivotably connected at the center thereof and pivotably connected at the outer extremities thereof to the outer extremities of the cross levers of the next adjacent sections the outer extremities of the cross levers of each section of the first pair of members being also pivotably con-

nected to the outer extremities of the cross levers of the corresponding sections of the second pair of members and a plurality of vertically spaced hydraulic rams disposed within said framework to act in a substantially vertical direction each hydraulic ram comprising a piston and a cylinder said piston being connected to said framework at the central pivot point

of the cross levers of one of said sections and said cylinder being connected to said framework at the central pivot point of the cross levers of another section of said framework whereby to extend and retract said framework on actuation of said rams and means on the bottom of said framework adapted to move transversely of said framework on extension and retraction of said framework.

3,795,290

DRUM, RIM GRIP BRAKING DEVICE

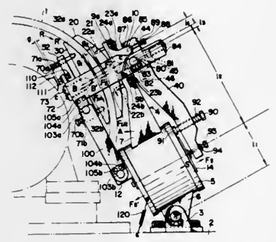
Sadayuki Hori, Katsuta; Akira Mawake, Mito, and Mitio Imanaka, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1971, Ser. No. 203,963

Claims priority, application Japan, Dec. 9, 1970, 45-108555; Dec. 26, 1970, 45-118658; May 17, 1971, 46-32504

Int. Cl. F16d *53/00*

U.S. Cl. 188—76 **9 Claims**



A braking device for elevators or the like, in which an inner shoe and an outer shoe are arranged for engagement with the inner and outer peripheral surfaces of a cylindrical flange of a brake drum respectively and said inner and outer shoes are operated to effect braking.

3,795,291

HYDRAULIC SHOCK-ABSORBING DEVICE

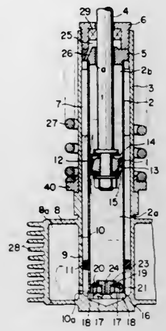
Masaharu Naito, Hamamatsu, and Masae Watanabe, Iwata, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata-shi, Japan

Filed Sept. 18, 1972, Ser. No. 289,943

Claims priority, application Japan, Sept. 17, 1971, 46-71770

Int. Cl. F16f *9/42*

U.S. Cl. 188—274 **7 Claims**



A hydraulic shock-absorber of the oleo type with a double-acting piston and cylinder containing a damping fluid has an outer casing around the cylinder with an annular space interposed therebetween and communicating at its ends to the ends of the cylinder to constitute a fluid storage chamber, and this chamber is communicatively connected to a cooling device for cooling the fluid in the chamber and the cylinder, the fluid in the cylinder being caused by the movements of the piston to flow through the chamber and in and out of the cooling device.

3,795,292

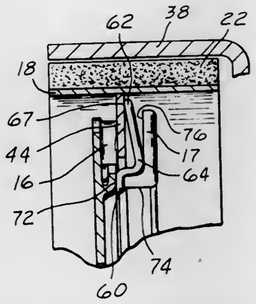
DRUM BRAKE ASSEMBLY

Clarence Keller, Jr., South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 12, 1973, Ser. No. 331,912

Int. Cl. F16d *69/04*

U.S. Cl. 188—340 **7 Claims**

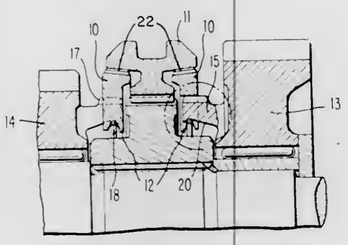


In a brake assembly having a support member and a floating brake shoe provided with a web slidably mounted between oppositely facing guide ledges fixed to the support member for radial movement of the shoe into frictional engagement with a rotating drum. A preloaded shoe hold down spring is interposed between one of the ledges and the shoe web to urge the web against the other oppositely facing ledge so that the brake shoe is centrally positioned with respect to the drum and held out of contact therewith during brake release.

3,795,293
BLOCKING-SYNCHRONIZATION FOR CHANGE-SPEED GEARS OF MOTOR VEHICLES

Gunter Worner, Rommelshausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Dec. 15, 1971, Ser. No. 208,376
Claims priority, application Germany, Dec. 15, 1970, 2061620
Int. Cl. F16d *23/06*
U.S. Cl. 192—53 F 17 Claims

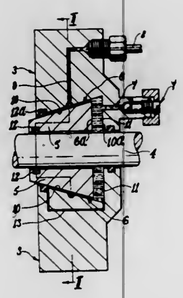


A blocking synchronization for motor vehicle change-speed transmissions in which an axially displaceable shifting sleeve cooperates with synchronizing rings also axially displaceable and rotatable within limits; the synchronizing rings, in turn, cooperate by means of blocking surfaces with the engaging tooth system at the gear whereby the synchronizing rings are centered as well as limited in their axial movability with respect to the shifting sleeve at the gear part carrying the same.

3,795,294
OIL OPERATED COUPLING

Frederick Randall Pearson, Eaglemont, Australia, assignor to Humes Limited, Melbourne, Victoria, Australia

Filed Sept. 11, 1972, Ser. No. 288,239
Claims priority, application Australia, Sept. 13, 1971, 6264/71
Int. Cl. F16d *25/00*
U.S. Cl. 192—85 AT 1 Claim

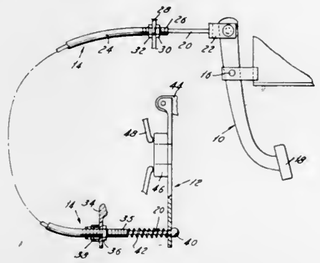


An oil-injection mounting for securing an element with respect to a shaft with which it defines an annular cavity in which fluid pressure selectively applied to a collet fixes the element with respect to the shaft by an interference fit or unfixes them by lubricating self-releasing complementarily tapered surfaces of the collet and element respectively, a source of fluid pressure being connectible to a second part of the cavity, defined by the tapered surfaces, having restricted communication with a first part in which increase of pressure tends to force the surfaces into mating contact, and which first part has a pressure release valve allowing the element and shaft to unfix when the pressure source is turned on after fixing.

3,795,295
DEVICE FOR PREDETERMINING INITIAL FREE PLAY IN CLUTCH ACTUATING MECHANISMS

Frederick Reno, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1972, Ser. No. 312,446
Int. Cl. F16d *21/04*; G05g *1/14*
U.S. Cl. 192—110 R 8 Claims



This disclosure relates to clutches for motor vehicles, and more particularly to a clutch actuating system having means for establishing initial free play without using external gauges. A clutch in accordance with this invention may have a clutch pedal, a clutch release lever and a Bowden wire interconnecting the pedal and the lever. The tubular housing or sheath portion of the Bowden wire has one of its ends secured by a pair of jam nuts to the vehicle body adjacent to the clutch pedal. The other end of the sheath is secured to a stationary member adjacent the clutch release lever by a jan nut and a unique frangible jam nut. The frangible nut has a threaded nut portion and a frangible collar that extends axially from the threaded portion. During initial installation of the clutch actuating mechanism, the jam nuts are tightened to remove all slack in the system and to bring the release fingers of the pressure plate assembly into firm contact with the clutch release bearing. The jam nut that is paired with the frangible nut is tightened until pressure on the collar causes it to fracture and separate from the threaded portion. The gap between the two nuts left by the separated collar is closed by additional tightening of the regular nut. The collar of the special jam nut is dimensioned so that upon its fracture and tightening of the nut paired with it, a proper predetermined amount of initial free play is established in the system.

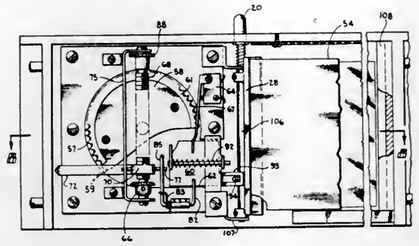
3,795,296
COIN OPERATED DISPLAY DEVICE UTILIZING THREADED TIME STORAGE MEMBER

Leonard R. Forrester, 687 Harold Ave., Winter Park, Fla.

Filed June 21, 1971, Ser. No. 155,181
Int. Cl. G07f *17/16*
U.S. Cl. 194—1 L 15 Claims

A coin-operated card display device equipped with a window behind which a customer may place in public view a previously prepared advertising card, notice, or the like, with the number of coins deposited in the device determining the length of time a given card remains on display. This invention advantageously involves a threaded time storage means that is

indexed in a first or time storage direction by the coins deposited by the customer, and then periodically and incre-

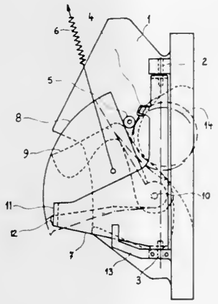


mentally indexed in a second or time utilization direction by an electrically-controlled return means, thus to prevent an unlimited display privilege.

3,795,297
TOKEN OR COIN INLET MECHANISMS FOR PRIOR-PAYMENT MACHINES

Denis Quenot, and Alain Duc, both of Besancon, France, assignors to Compteurs Schlumberger, Montrouge, France

Filed Jan. 19, 1973, Ser. No. 324,929
Claims priority, application France, Jan. 21, 1972, 72.02010
Int. Cl. G07f *3/02*
U.S. Cl. 194—1 E 8 Claims



Coin accepting machine comprising,

a guide means for guiding a coin along a trajectory comprised in the plane of the coin,.

a rotating gate disposed in said trajectory and capable of being rotated by a force exerted through said coin,

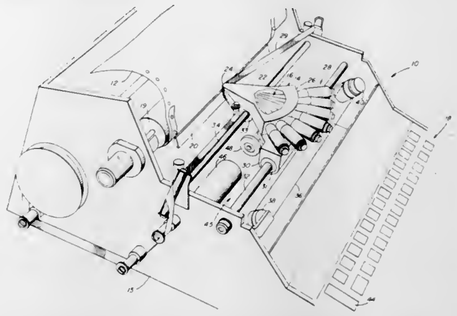
a locking means associated with said gate and control means associated with said locking means for unlocking the gate by insertion of a coin, said control means comprising a detector operatively disposed on a lateral part of the area swept by the coin in said guide means for allowing simultaneous contact of the coin with said gate and said detector.

3,795,298
WIRE MATRIX PRINT HEAD PARTICULARLY FOR HIGH SPEED PRINTERS

Robert D. Kodis, Brookline, Mass., assignor to Di/An Control, Inc., Boston, Mass.

Filed May 30, 1972, Ser. No. 258,044
Int. Cl. B41j *3/50*
U.S. Cl. 197—1 R 14 Claims

A high speed printer utilizes a multi-wire print head for printing graphic symbols on a recording stratum by urging selected wire printing elements against a ribbon interposed between the print head and recording stratum. The print head includes a potted body formed with guideways, each guideway adapted to slidably receive one of the wire printing elements.

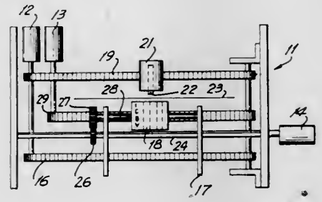


Free flight movement of each wire printing element and distributed frictional contact of each wire within its associated guideway is provided by disposing each guideway in a curved path defined by the elastic curve of the wire printing element received therein.

3,795,299
METHOD OF POSITIONING DRUM FOR PRECISION PRINTING

Toshihiko Nakamura, Suwa; Yoshifumi Gomi, Chino, and Toshiji Yokoyama, Shimosuwa, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 20, 1972, Ser. No. 236,417
Claims priority, application Japan, Mar. 24, 1971, 46-16549
Int. Cl. B41j *1/32*
U.S. Cl. 197—49 3 Claims



In a precision printing machine utilizing a cylindrical drum on which are characters for printing on an adjacent tape, the drum is rotatable in either direction and slidable along an axis in either direction by means of pulse motors. The machine is so designed that the final steps in the printing operation prior to the printing itself always consist of motion of the drum in the same predetermined axial direction and rotation of the drum in the same preselected rotational direction. By this means, possible errors due to gear backlash, and imprecision in machine components are minimized.

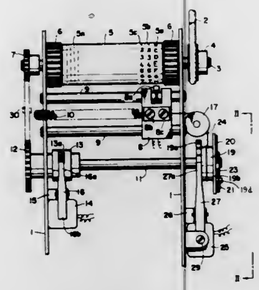
3,795,300
PRINTING MACHINE

Nobuyoshi Matsuzawa, Tokyo, Japan, assignor to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed July 19, 1972, Ser. No. 273,128
Claims priority, application Japan, July 23, 1971, 46/65367
Int. Cl. B41j *9/04*, *1/24*
U.S. Cl. 197—49 3 Claims

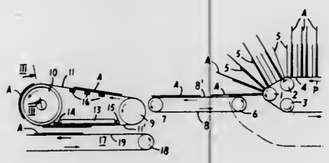
A printing machine arranged so that the two kinds of operations, i.e., progressive shifting in position of the printing

hammer over the rows of printing types and the printing actions by this hammer are carried out by separate drive sources, respectively, and that the hammer module is moved along a



rectilinear rod, whereby high speed printing is feasible and highly legible images of the printed types as well as very clear and pleasant distribution of the printed images of types can be obtained.

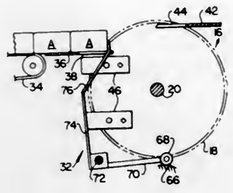
3,795,301
APPARATUS FOR TURNING AND TRANSFERRING SHEET METAL
Ejyo Sugitani, Kuniyoshida, Japan, assignor to Dawa Can Company, Limited, Chuo-ku, Tokyo, Japan
Filed May 10, 1972, Ser. No. 252,088
Int. Cl. B65g *47/00, 43/00*
U.S. Cl. 198—20 R **4 Claims**



A sheet metal such as a tin plate having the property of being attracted by magnetic force and having one surface printed or coated is transferred from a drying furnace with said surface facing downwards and is received by a first transfer means and then passed to the second transfer means, each transfer means having two pulleys and a single endless belt suspended therebetween. The sheet metal moves forward and turns back with the belt as it does and proceeds substantially along the lower path of the belt as it is attracted by the electromagnet mounted along said path of the belt. When the sheet metal arrives at a predetermined position, the electric current of said electromagnet is interrupted by means of a sensing means attached to said electromagnet, whereby the sheet metal drops down upon a discharge means provided below said path and thereafter it is passed to the next step with said printed or coated surface facing upwards.

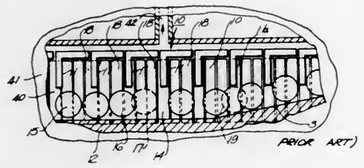
3,795,302
ARTICLE FEEDER FOR WRAPPING MACHINE OR THE LIKE
Lawrence W. Schoppee, Springfield, Mass., assignor to Package Machinery Company, East Longmeadow, Mass.
Filed Oct. 26, 1971, Ser. No. 192,443
Int. Cl. B65g *47/32, 47/52, 29/00*
U.S. Cl. 198—25 **7 Claims**

A rotary feeder or transfer mechanism which is driven and which includes a circumferential series of flights adapted to lift one or a selected number of articles from the front of a packed line of such articles being advanced by a first conveyor and to deposit the one or selected number of articles as a unit



on the inlet end of a second conveyor whereupon such unit is further advanced by the second conveyor separated from the next such unit.

3,795,303
MACHINE FOR ARRANGING CANS IN POSITION
Robert E. Taggart, Carmel, Calif., and Donald E. Miller, Lafayette, Ohio, assignors to The Stolle Corporation, Sidney, Ohio
Filed Sept. 15, 1972, Ser. No. 289,411
Int. Cl. B65g *47/26, 53/04*
U.S. Cl. 198—34 **2 Claims**

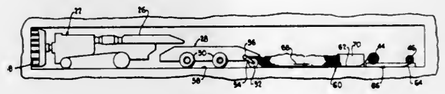


The disclosure relates to a machine for arranging cans, of the type wherein cans or similar articles are fed by a conventional belt conveyor into a tunnel-like structure which is maintained at sub-atmospheric pressure, and through which passes a flight of a second conveyor having pocket partitions presenting pockets therebetween and the partitions extending partly across the tunnel. At the entrance of the tunnel the width is slightly greater than the width of the partition plus the width of the cans. As a pocket partition of the second conveyor and a can arrive at the tunnel entrance, the movement of the can with respect to the conventional conveyor is accelerated so that the can tends to align itself with a pocket between the partitions of the second conveyor. The wall of the tunnel opposite the second conveyor flight constitutes a cam surface which moves the can into a pocket on the second conveyor. This disclosure provides means to prevent damage to cans being fed, which results from a can, not properly aligned with a pocket, being forced by said cam surface against a pocket partition and thus being dented.

3,795,304
METHOD AND APPARATUS FOR CONVEYING MATERIAL
William N. Poundstone, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.
Filed Oct. 21, 1971, Ser. No. 191,388
Int. Cl. B65g *15/00*
U.S. Cl. 198—139 **8 Claims**

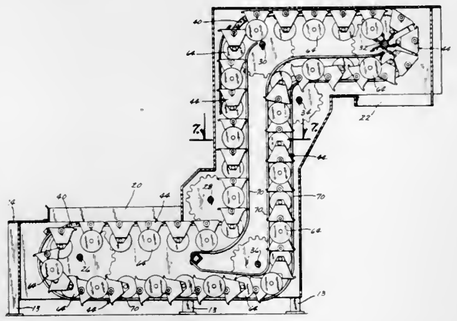
Material dislodged by a continuously advancing mining machine is conveyed rearwardly by a conveyor means on the mining machine and discharged into a movable surge vehicle.

At a fixed discharge station a flexible belt has one end portion coiled on a first rotatable spindle and the other end portion coiled on a second rotatable spindle positioned rearwardly of the first rotatable spindle. The intermediate portion of the belt is reeved about an idler pulley mounted on the movable surge vehicle and is movable therewith. The intermediate portion of the flexible belt forms an upper strand portion extending from the coil on the first spindle to the idler pulley and a lower strand portion extending from the second rotatable spindle to the idler pulley. The lower strand is arranged to slide along the mine floor and the upper strand is arranged to slide on the upper surface of the lower strand and convey material from the movable surge vehicle to the fixed discharge station. Drive means rotates the first rotatable spindle to coil the upper strand of the flexible belt thereon and move the successive portion of the upper strand from the surge vehicle toward the fixed discharge station while the lower strand is being uncoiled



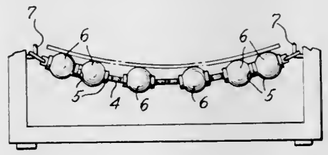
from the second rotatable spindle. Material is discharged from the surge vehicle onto the moving upper strand and is conveyed to the fixed discharge station where the conveyed material is transferred to a fixed conveyor. In one embodiment, a second coil of flexible belt is positioned on the second spindle when the first flexible belt is uncoiled therefrom. The end of the second flexible belt is spliced to the end of the first flexible belt to form a continuation thereof. When the first flexible belt is coiled on the first spindle the end portion is disconnected from the end portion of the second coil of flexible belt and removed from the first spindle. In another embodiment, when a preselected amount of flexible belt is coiled on the first spindle, the second spindle is rotated to uncoil the belt on the first spindle and coil the flexible belt on the second spindle, thus providing a predetermined length of flexible belt for the upper strand to convey additional dislodged material from the surge vehicle to the fixed discharge station.

3,795,305
BUCKET CONVEYOR SYSTEM
Leonard E. Sandvik, Cedar Falls, Iowa, assignor to Universal Industries, Black Hawk, Iowa
Filed Jan. 22, 1973, Ser. No. 325,894
Int. Cl. B65g *17/16*
U.S. Cl. 198—145 **11 Claims**



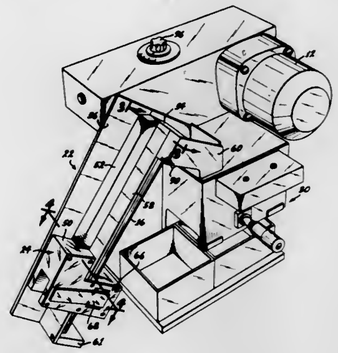
A bucket conveyor system comprising a support housing having a plurality of sprockets rotatably mounted therein having first and second chains looped therearound. A plurality of tiltable buckets are supported by the chains and are adapted to be moved between an inlet portion of the housing to a discharge portion of the housing. Each of the buckets has a pair of support arms extending from the upper center portion thereof which are secured to the chains. A large control wheel is secured to each of the buckets at the lower center portion thereof for engagement with a track provided in the support housing to control the attitude of the bucket. The control wheels of adjacent buckets are positioned on opposite ends of the respective buckets. Means is also provided on the support housing for dumping the buckets at the discharge portion of the housing.

3,795,306
CARRIER ROLLER
Sakuichi Motoume, Nagoya, Japan, assignor to Taisei Industrial Co., Ltd., Aichi, Japan
Filed Sept. 20, 1972, Ser. No. 290,753
Int. Cl. B65g *15/08*
U.S. Cl. 198—192 R **3 Claims**



A carrier roller used for belt conveyors comprises a left shaft, a right shaft and a number of intermediate shafts connected to each other by sprocket chains, a pair of rollers in which the left and right shafts are inserted respectively, a plurality of rollers which receive the intermediate shafts, sleeves between both ends of each shaft and the roller carried thereon, and shackles attached to the left and right shafts.

3,795,307
SMALL PARTS FEEDER SYSTEM
John E. Toth, 13544 Orchard Gate Rd., Poway, Calif. 92064, and Arthur G. Grant, 7014 Colorado Ave., La Mesa, Calif. 92041
Filed Nov. 6, 1972, Ser. No. 303,792
Int. Cl. B65g *25/04*
U.S. Cl. 198—218 **5 Claims**



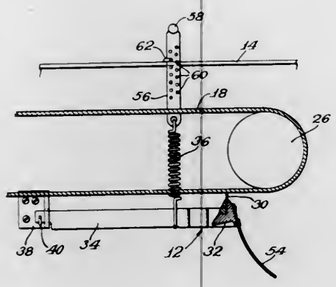
A small parts feeder system having a transmission unit and a platform engagement mechanism. The system includes a movable platform upon which a stack of small parts may be placed and a lever-block combination for selectively engaging a rotatable screw which provides the motive force to the platform. The force is transmitted to the screw through a miter gear train.

3,795,308

SCRAPER FOR CONCRETE CONVEYOR BELT

Robert F. Oury, Elmhurst, Ill., assignor to Rotec Industries, Inc., Elmhurst, Ill.

Filed Apr. 11, 1972, Ser. No. 242,971
Int. Cl. B65g *45/00*
U.S. Cl. 198—230 5 Claims



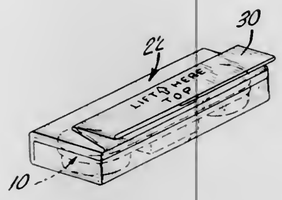
A scraper assembly used for removing residual concrete from a concrete conveyor belt, following removal of most of the concrete therefrom. A scraper blade is positioned against and substantially normal to the plane of the belt and substantially transverse thereto. The blade is constructed of a hard material such as carbide steel. A holder is provided for the scraper blade and the scraper blade is biased with pressure against the outer surface of the conveyor belt so as to substantially remove all the residual concrete therefrom.

3,795,309

SKIN PREPPING SET FOR SURGICAL PROCEDURES

Martin Link, North Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Oct. 20, 1972, Ser. No. 299,476
Int. Cl. A61b *19/02*; B65d *77/30*
U.S. Cl. 206—223 6 Claims



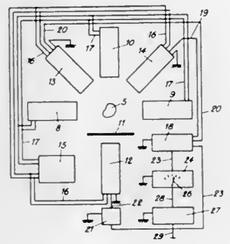
A skin prepping set for surgical procedures which includes a prepping solution tray and a plurality of sponges and absorbent towels placed at the center of a sterile field overwrap. The prepping tray and the sponges and towels are spaced from one another when the prepping set is in a fully opened condition. To form a packaged kit, the sterile field overwrap is serially folded to form lips or tabs that permit opening of the package without contamination of the contents and further when so folded into a finished package the towels and sponges are placed on top of the tray with a plurality of layers of the overwrap interposed therebetween such that the closed package occupies a minimum amount of space.

3,795,310

PROCESS AND APPARATUS FOR CARRYING OUT SAID PROCESS FOR THE PRECONCENTRATION OF ORES BY INDUCED MEASURE OF THE SUPERFICIAL CONTENTS

Pierre Charles Buchot, Versailles; Richard Cohen-Alloro, and Jean-Claude E. Robert, both of Orleans, all of France, assignors to Bureau de Recherches Geologiques et Minieres, Paris, France

Filed Mar. 23, 1972, Ser. No. 237,312
Claims priority, application France, Nov. 10, 1971, 7140299
Int. Cl. B07c *5/34*
U.S. Cl. 209—111.5 4 Claims



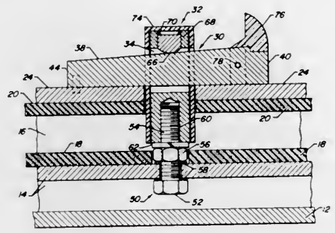
The concentration of a desired mineral in pieces of ore is determined by coating each piece with a fluorescent material that selectively adheres only to the exposed surfaces of the desired mineral. The pieces are then individually illuminated by ultra-violet radiation to fluoresce the selectively coated material. First photo-multipliers sense the magnitude of the fluorescence and a second photo-multiplier, which detects the shadow of the ore piece, yields an output proportional, after inversion, to the cross-sectional area of the ore piece. The magnitude value is then divided by the area value to indicate the concentration of the desired mineral in the ore piece, which may serve as a basis for automatically separating the pieces before further treatment.

3,795,311

MOUNTING ASSEMBLY FOR VIBRATING SCREEN DECK

Robert A. Martin, Cottage Grove, Minn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 23, 1973, Ser. No. 344,408
Int. Cl. B07b *1/42*
U.S. Cl. 209—395 14 Claims



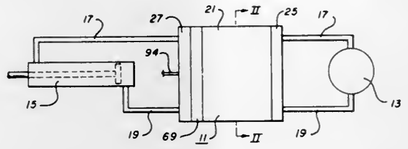
Pin and wedge mounting assembly for flat deck screen panels used on a vibrating screen deck provides secure locking of the screen panels while permitting rapid assembly and disassembly of the assembled components. The pin is slotted for receipt of the wedge and the wedge has an enlarged head which is of a greater width than the pin. The enlarged head serves to deflect product flowing along the screen away from the pin, thus preventing or greatly reducing wear of the pin and the operative surfaces of the wedge. In abrasive applications such as mining, the head of the wedge and the pin are preferably covered with inexpensive, replaceable caps of an abrasion resistant material such as polyurethane, polypropylene or neoprene.

3,795,312

FILTER HEAD

Joseph M. Lawson, 4334 Woodcrest Dr., Memphis, Tenn. 38111

Filed Sept. 15, 1972, Ser. No. 289,677
Int. Cl. B01d *27/10*
U.S. Cl. 210—134 8 Claims



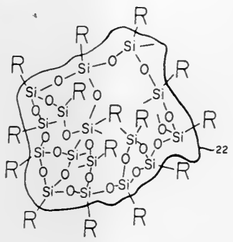
In a closed loop hydraulic circuit, a filter head which, depending on direction of flow, allows fluid from a first flow line to pass through a filter element while allowing fluid from a second flow line to bypass the filter element. The filter head includes a first chamber for receiving fluid from the first flow line, a second chamber for receiving fluid from the second flow line, and an intermediate chamber for receiving fluid from either the first or second chambers depending on direction of flow and for allowing the fluid to pass through a filter element. First and second sliding check valves are provided in the first and second chambers for allowing fluid from one of the flow lines to pass into the intermediate chamber and through the filter element while allowing fluid from the other flow line to bypass the intermediate chamber and the filter element.

3,795,313

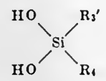
CHROMATOGRAPHIC PACKING WITH CHEMICALLY BONDED ORGANIC STATIONARY PHASES

Joseph J. Kirkland, and Paul C. Yates, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 39,665, May 22, 1970, Pat. No. 3,722,181.
This application Oct. 25, 1972, Ser. No. 300,863
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C 26 Claims



A process for making a chromatographic packing having a polymeric stationary phase in which molecules having the formula



wherein R_3' is a hydroxyl, or an aliphatic or aromatic hydrocarbon monovalent radical, and R_4 is a monovalent aliphatic or aromatic hydrocarbon radical, are partially prepolymerized, chemically bonded to a polyvalent metal-containing substrate, the metal having a valence of 3–5, and futher polymerized.

The polymeric stationary phase has a repeating unit of the formula

wherein A is -O- or a monovalent aliphatic or aromatic hydrocarbon radical, and is chemically bonded to the surface of the substrate by an

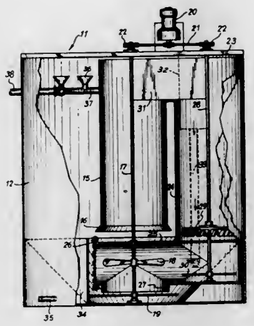
linkage, where silicon is part of a repeating unit.

3,795,314

WATER TREATMENT MUD DECANTING TANK

Julio Von Thaden Pool, Baja California No. 245-201, Mexico City, Mexico

Filed Sept. 20, 1972, Ser. No. 290,688
Int. Cl. B01d *21/14*
U.S. Cl. 210—208 8 Claims



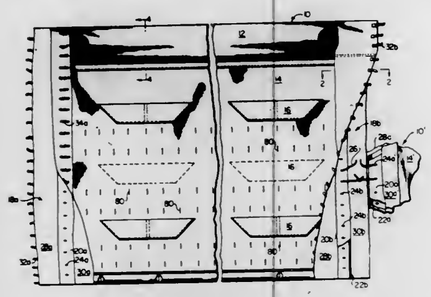
A mud decanting tank for water cold treatment with lime including a substantially cylindrical tank, housing a concentric pipe opened at its ends, and a second vertical eccentric pipe engaged at its top portion with said first pipe by a channel; and at its lower end said eccentric pipe being engaged with a third horizontal pipe located slightly spaced below the open lower end of the first mentioned vertical pipe; the third horizontal pipe including at its lower portion a bore; said three pipes forming a continuous recycling pipeline which draw out the muds by suction from the bottom of said tank by means of stirrers and removers mounted in a pair of parallelly spaced shafts housed respectively in each one of said vertical pipes, said shafts being driven in the same direction by a prime mover.

3,795,315

CONTROL OF WATERBORNE OIL SLICKS

Paul Preus, Smith Rd., Toms River, N.J. 08753

Filed Jan. 2, 1970, Ser. No. 214
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 1 Claim



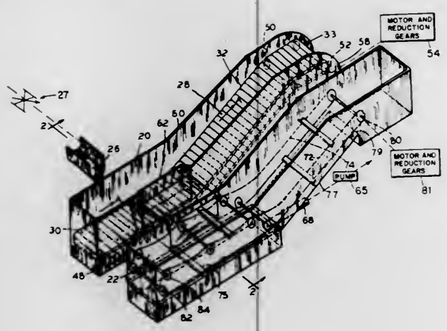
An apparatus and process for controlling waterborne oil slicks wherein a floating barrier having a fluid pervious skirt is positioned in a controlling position relating to the slick and an oleophilic-hydrophobic fiberous substance is introduced into the slick to absorb the oil and render it impenetrable of the skirt.

3,795,316

INDUSTRIAL WASTE PROCESSING APPARATUS

Norman E. Wood, 20 Edgewater Ln., Rochester, N.Y. 14617

Continuation-in-part of Ser. No. 135,282, April 19, 1971, abandoned. This application May 2, 1973, Ser. No. 333,005
Int. Cl. B01d *21/24, 21/04*
U.S. Cl. 210—298 6 Claims



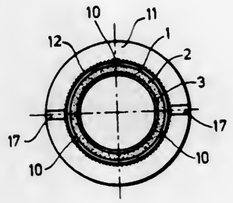
Industrial waste handling apparatus having side by side elongate tanks, one a waste receiving and settling tank, and the other a suspended waste filtration tank, with cross flow below liquid level from the one tank to the other, each of the tanks having an inclined end portion extending upward to a discharge disposed above the liquid level. A solid apron conveyor is disposed in the settling tank extending along near the bottom and the inclined end portion to the discharge, and a strainer grid is disposed above the bottom of the other tank providing a sump therebelow for liquid withdrawal. A drag line conveyor with scraper bars moves over the grid and up the incline, and a submerged weir disposed in the settling tank over the cross flow prevents buoyant material from escape to the filtration tank, the apron conveyor skimming surface oil and removing heavy waste. Liquid velocity from the receiving end of the settling tank to the cross flow opening is equal to the speed of the apron conveyor.

3,795,317

SYSTEM FOR REVERSED OSMOSIS

Cornelis Van Zon, Zwolle, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Filed Jan. 17, 1972, Ser. No. 218,402
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 3 Claims



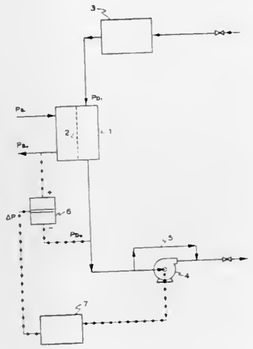
A device for purifying water by means of reversed osmosis consisting of an auxiliary supporting tube provided with a fibrous layer and a membrane on its inner side and a main supporting plastic pipe provided with preferably helically extending grooves on its inner surface. A number of pipes form a unit which is connected with further units comprising a number of pipes, such that the pressure of the liquid in the tubes is maintained at a constant value.

3,795,318

CONTROL OF ULTRAFILTRATION RATES DURING HEMODIALYSIS WITH HIGHLY PERMEABLE MEMBRANES

Robert A. Crane, Walnut Creek; Benjamin J. Lipps, Concord, and John A. Sargent, Berkeley, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 26, 1972, Ser. No. 257,450
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 6 Claims



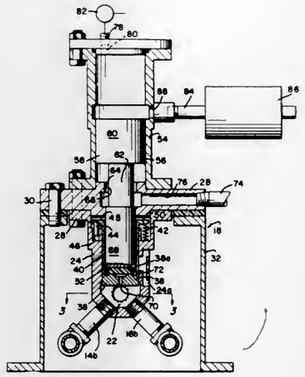
A system for carrying out hemodialysis with high flux membranes without incurring the risk of excessive ultrafiltration rates or reverse ultrafiltration is disclosed. The transmembrane pressure differential is held constant, despite changes in pressure on the blood side of the membrane. The actual differential is sensed, compared to a desired positive magnitude and the pumping rate of a positive displacement, discharge pump adjusted to alter the proportion of the dialysate which passes through a restricted shunt path around the pump, thereby altering the back-pressure on the dialysate side of the membrane until the differential has the desired magnitude.

3,795,319

SHOWER APPARATUS

Oscar Luthi, and John P. Rich, both of Nashua, N.H., assignors to Improved Machinery Inc., Nashua, N.H.

Filed Dec. 2, 1971, Ser. No. 203,989
Int. Cl. B01d *25/32*
U.S. Cl. 210—409 11 Claims



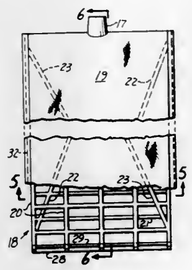
Shower apparatus and methods particularly adapted whereby shower liquid, normally supplied at a first pressure, is intermittently for shorter periods of time supplied at a second pressure, substantially higher than said first pressure. The pressure of the liquid is increased by a piston which is intermittently driven by impact by a second piston, and the impacts of the pistons are cushioned, preferably by shower liquid supplied therebetween.

3,795,320

FILTER ELEMENT CONSTRUCTION

Gordon F. Ehret, Alhambra, Calif., assignor to Swimquip, Inc., El Monte, Calif.

Filed Mar. 6, 1972, Ser. No. 231,989
Int. Cl. B01d *27/00*
U.S. Cl. 210—486 12 Claims



A grid unit for supporting a filter element used in a liquid filter comprises vertical supporting struts crossed by horizontal ribs positioned to cause the liquid to flow in a serpentine manner. A narrow slot at an end of the grid structure controls the flow of the liquid between the grid and a collecting trough. Rectangular construction of the grid unit facilitates joining a plurality of units to enlarge the area of the grid.

3,795,321

TELESCOPING CRANE BOOM

Roger L. Johnston, Marion, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.

Filed May 18, 1972, Ser. No. 254,665
Int. Cl. B66c *23/58*
U.S. Cl. 212—55 5 Claims

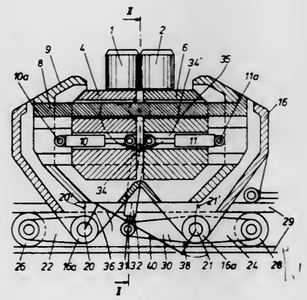
Means and method for extending a telescopic crane boom section of a mobile crane that does not have its own extending cylinder are disclosed. The crane boom comprises four tubular telescopic sections, namely, a first fly section, second and third sections, and a fourth base section. First and second linearly extendable hydraulic rams are located within the boom. The first ram is connected between the base section and the third section to effect movement of the latter. The second ram is connected between the third and second sections to effect movement of the latter. For road transport conditions, the fly section is detachably connected to the second section. To set up the crane for operation, the first ram is used to partially extend the three movable sections. Then the second ram is used to further extend the first two sections. The first ram is then temporarily attached to the fly section and the fly section is disconnected from the second section. The second ram is then used to retract the second section, the fly section is then connected to the second section in fully extended position, and the first ram is then disconnected from the fly section. Both rams are now in readiness to independently operate the second and third sections, with the fly section fully extended on the second section.

3,795,322

ROTARY TILTER FOR ROLLED PRODUCTS

Otto Karl Buchheit, St. Ingbert-Saar, Germany, assignor to Moeller & Neumann GmbH, St. Ingbert/Saar, Germany

Filed Apr. 24, 1972, Ser. No. 246,585
Claims priority, application Germany, Apr. 24, 1971, 2120211
Int. Cl. B65g *47/24*
U.S. Cl. 214—1 QG 7 Claims



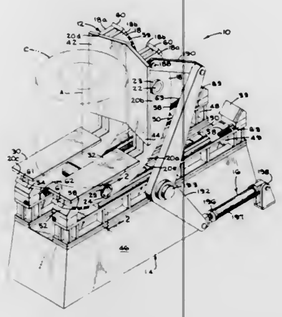
A rotary tilter for bar-like products supported for example on a rollway comprises tilter rollers supported by respective holders movable on a common guide rotatable within a main casing, and means are provided for lifting the main casing with a movement derived from the rotary movement of the guide and the holders thereon during the turning or inverting operation.

3,795,323

ARTICLE ROLL-OVER DEVICE

Ralph C. Ouska, 218 E. The Ln., Hinsdale, Ill. 60521

Division of Ser. No. 122,713, March 10, 1971. This application May 11, 1972, Ser. No. 252,177
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 Q 4 Claims



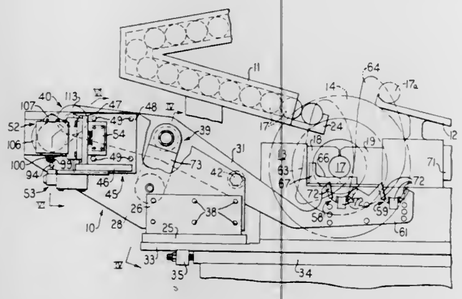
A coil of metal or paper strip to be upended or downended is placed on one bed of a cradle which is constructed of semicircular vertical parallel plates and which is mounted in rolling engagement on a track beneath the cradle. The cradle is then rolled along the track one-quarter turn or 90° by a drive system to axially reorient and laterally transfer the coil. The drive system includes a combination of pivotally interconnected levers which are actuated by a hydraulic cylinder. As the cradle reaches its end point, the upended or downended coil then rests on a second bed of the cradle perpendicular to the initial bed.

3,795,324

PARTS HANDLING FIXTURE

Jozef Kiwalle, Peoria, Ill., assignor to Production Technology Inc., Peoria, Ill.

Filed Aug. 22, 1972, Ser. No. 282,708
Int. Cl. B23b *15/00*
U.S. Cl. 214—1 BD 8 Claims



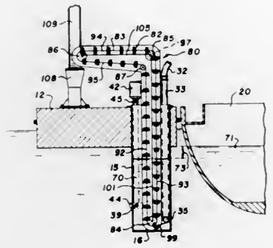
A parts handling fixture for moving workpieces from a loading rack to a work fixture and for moving finished workpieces from the work fixture to an unloading rack within a complete operating cycle, the fixture including loading and unloading jaws arranged in spaced apart relation on elongated arms, the arms being supported for movement relative to a support structure by rotating links of different lengths which establish paths through which the loading and unloading means travel during an operating cycle.

3,795,325

HYDRAULIC FISH UNLOADING APPARATUS

Milton H. McLean, White Rock, British Columbia, Canada, assignor to British Columbia Packers Limited, Richmond, British Columbia, Canada

Filed Dec. 11, 1972, Ser. No. 314,220
Claims priority, application Canada, Dec. 21, 1971, 130622
Int. Cl. B65g *53/30*
U.S. Cl. 214—14 14 Claims



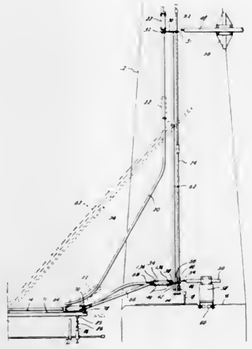
A floating platform having a water-tight caisson depending below the level of the water upon which the platform floats. A syphon pipe extends from the bottom of the caisson into the hold of the vessel to be unloaded, and a pump keeps the level of the water in the caisson below the level of the water in the hold, creating a suction action which sucks water and fish out of the hold into the caisson. Suitable elevator means in the caisson lifts the fish therefrom and discharges them above the caisson.

3,795,326

APPARATUS FOR HANDLING DRILL PIPE

Claude R. Neilon, and Herbert L. Willke, both of Houston, Tex., assignors to Armco Steel Corporation, Middletown, Ohio

Filed May 22, 1972, Ser. No. 255,657
Int. Cl. E21b *19/14*
U.S. Cl. 214—2.5 32 Claims



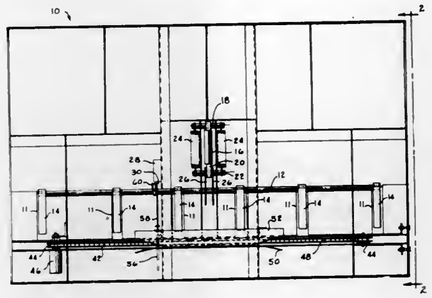
Apparatus which transfers drill pipe between a horizontal attitude in a storage position and a vertical attitude over a well to be drilled is provided, the drill pipe being controlled during transfer by a pipe carriage riding on a fixed track.

3,795,327

SINGLE BALE UNLOADING CONTROL SYSTEM

Donald M. Grey, Selma; Albert C. Cook; Lee D. Butler, both of Kingsburg, all of Calif., and Raymond E. Fisher, Lancaster, Pa., assignors to Sperry Rand Corporation, New Holland, Pa. and Sperry Rand Corporation, New Holland, Pa.CC, 1 Sermar; Frank A.

Filed Apr. 3, 1972, Ser. No. 240,682
Int. Cl. B65g *17/06*
U.S. Cl. 214—8.5 G 11 Claims



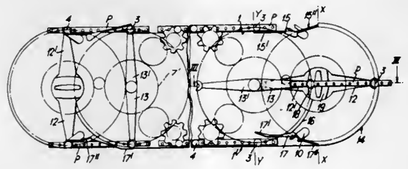
A single bale unloading control system for controlling a plurality of bale separating hooks associated with an unloading table of a single bale unloading bale wagon. The single bale unloading control system of the present invention comprises a hydraulic cylinder operatively connected to a rockshaft transversely journalled on the underside of the unloading table, the rockshaft having secured thereto in lateral spaced apart relationship the bale separating hooks which are aligned to move through openings formed in the unloading table. The unloading table is further provided with a transverse cross conveyor that is adapted to convey a single separated layer of a tier from the unloading table. The hydraulic cylinder used for actuating the bale separating hooks is controlled by a control valve that is actuated by a connecting linkage that is responsive to the movement of the cross conveyor.

3,795,328

MOTOR VEHICLES STORAGE DEVICE

Giovanni Buttironi, Bergamo, Italy, assignor to Au. RO S. r. L., Bergamo, Italy

Filed Sept. 7, 1971, Ser. No. 178,206
Claims priority, application Italy, Sept. 4, 1970, 29346A/70
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 B 5 Claims



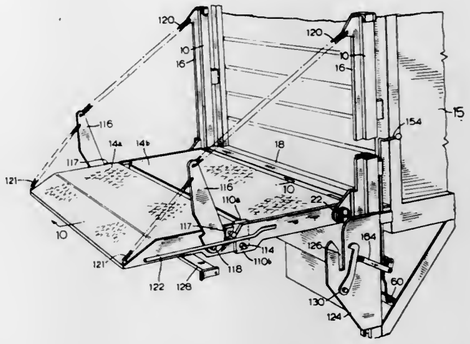
The present invention relates to a motor-vehicles storage device comprising a series of platforms each supporting a motor-vehicle, said platforms being mounted freely slidably and reciprocally in contact along two parallel horizontal superposed tracks, and transferring means at both ends of the tracks to transfer the platforms from one track to the other, said means comprising two rotating transferring arms in correspondence to first rails of the tracks and a single rotating transferring arm in correspondence to second rails of the tracks.

3,795,329

FOLDABLE TAILGATES

Paul H. Martin, Toronto, and William C. McKee, Willowdale, Ontario, both of Canada, assignors to Diesel Equipment Limited, Ontario, Canada

Filed Nov. 28, 1972, Ser. No. 310,122
Int. Cl. B60p *1/44*
U.S. Cl. 214—75 T 9 Claims



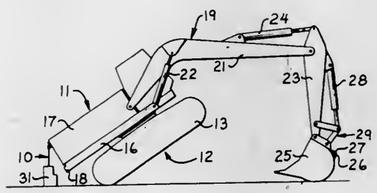
A powered tailgate consisting of a foldable platform having a support arm projecting upwardly from the outer part for connection at its upper end to a flexible connecting device the other end of which is connected to the upper end of the slide member which supports the platform for vertical movement. The support arm is mounted on the outer platform portions so as to project upwardly therefrom so that the plane in which the flexible connecting means extends when the platform is in the open position projects outwardly from the outer end of the platform so that the platform is stable when loads are applied at the outer edge thereof. The support arm is spaced inwardly from the outer edge of the platform so as to provide clearance at the side edges of the outer portion of the platform adjacent the outer edge thereof. A manually engageable lever arm is connected to the inner portion of the platform and projects outwardly therefrom in a direction away from the hinged connection of the inner portion of the platform to the side members. The arm facilitates the manual movement of the tailgate from the folded to the unfolded configuration and vice-versa.

3,795,330

COUNTERWEIGHT SUSPENSION DEVICE

Stanley A. Jorgensen, Oswego, and Richard W. Moss, Jr., Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

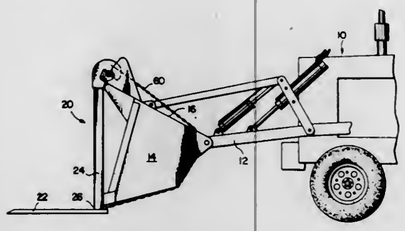
Filed May 18, 1972, Ser. No. 254,496
Int. Cl. E02f *3/00*
U.S. Cl. 214—142 8 Claims



There is disclosed a counterweight suspension device for temporarily supporting a counterweight during its installation or removal from a counter-balanced vehicle. The suspension

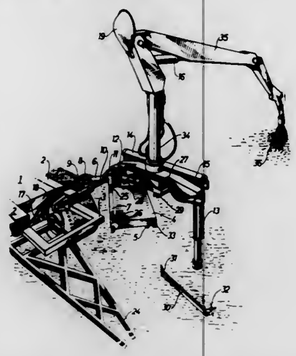
device includes a pair of flexible members connected to adjustable support means secured to the vehicle for elevationally positioning the counterweight relative to securing means on the vehicle. The support device eliminates external lift means and the requirement to accurately locate the counterweight with respect to the vehicle for mounting and is operative to free the counterweight for easier, more convenient removal from the vehicle.

3,795,331
FORK LIFT CONVERTER ATTACHMENT
William H. Guest, P.O. Box 434, Chester, N.J. 07930
Filed July 25, 1972, Ser. No. 275,015
Int. Cl. E02f *3/70*
U.S. Cl. 214—145 **15 Claims**



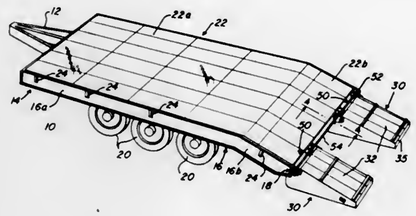
A fork lift converter attachment for a front end loader bucket has a pair of forks with horizontal lifting elements and vertical extension elements, the latter having a cross rod at their upper ends which is generally triangular in transverse cross section: brackets secured to the bucket at the upper edge thereof have generally upwardly facing openings which can receive the cross rod only when the bucket is tilted downwardly, the bucket on reverse rotation causing the cross rod to be locked in the bracket openings. The cross rod may comprise two parallel rods or tubes of different diameters welded together. The vertical and horizontal elements meet at a true right angle, without gussets or fillets. A chain permits fork withdrawal even if the load is resting on the ground.

3,795,332
DEVICE FOR SETTING ASIDE OF AN IMPLEMENT CARRIED BY A VEHICLE AND FOR REPLACING THE IMPLEMENT ON THE VEHICLE
Lars Levi Eriksson, Svensbyn, Sweden, assignor to Bil-City i Pilea AB, Pitea, Sweden
Filed May 17, 1972, Ser. No. 254,174
Claims priority, application Sweden, May 21, 1971, 6584/71
Int. Cl. B66f *9/00*
U.S. Cl. 214—77 R **10 Claims**



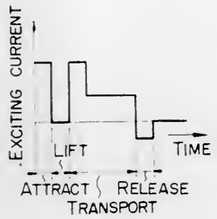
A bearing plate is pivotally mounted for horizontal movement on the frame of a vehicle and normally mounts a support stand thereon. A work implement is pivotally mounted on the end of an articulated loader arm, swingably mounted on the support stand. Extension of a hydraulic cylinder will swing the bearing plate and support stand to a position alongside the vehicle. Outrigger legs, pivotally attached to the support stand, are extended to contact the ground along with the lowered work implement to form a tripod support therefor. Retraction of the bearing plate to its original position on the vehicle frame will disengage the support stand to permit the vehicle to be driven to a distant loading site.

3,795,333
TRAILER RAMP APPARATUS
John A. Tebben, Clara City, Minn. 56222
Filed Aug. 14, 1972, Ser. No. 280,321
Int. Cl. B65g *67/02*
U.S. Cl. 214—85 **5 Claims**



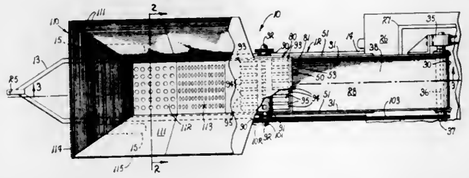
A flat bed trailer has a sloping tail section to which a pair of ramp units are hingedly attached. When lowered into a ground-engaging position, the ramp units provide at each side of the trailer a rearward continuation of the sloping tail surface, thereby enabling heavy equipment to be loaded onto the trailer. When the ramp units are swung upwardly into a raised position, the sloping surfaces on the ramp units complementally confront the sloping tail surface so that the bottom of the two ramp units then present horizontal surfaces which provide a more complete or larger flat bed than would otherwise be available.

3,795,334
METHOD FOR TRANSPORTING LOADS SAFELY BY UTILIZING A PERMANENT MAGNET TYPE LIFTING MAGNET
Shinnosuke Ishida; Kunio Harada; Tadashi Kiyoshe, all of Hitachi; Reizi Takeuchi, Katsuta; Susumu Itoh, Hitachi; Akiyoshi Sotodate, Hitachi, and Tadashi Wachi, Hitachi, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan
Filed Dec. 12, 1972, Ser. No. 314,460
Claims priority, application Japan, Dec. 13, 1971, 71-101208
Int. Cl. B66c *1/06*
U.S. Cl. 214—152 **5 Claims**



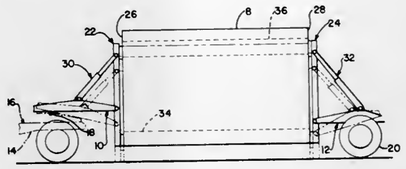
A method for transporting loads safely utilizing a permanent magnet type lifting magnet having a permanent magnet provided in its magnetic circuit and an exciting winding for controlling the magnetic flux developed in said magnetic circuit and adaptable to be operated in an attraction mode in which a load is to be attracted, a lifting mode in which the attracted load is lifted and a transportation mode in which the load is transported, said method comprises the steps of applying an exciting current of a predetermined value to the exciting winding for producing an attractive magnetic force during the attraction mode, reducing the exciting current to a value of zero or less thereby making the magnetic flux less than the residual magnetic flux due to its remanence during the lifting mode and increasing the exciting current to larger than zero during at least the initial period of the operations in the transportation mode, thereby providing the lifting magnet with magnetic flux larger than the residual magnetic flux corresponding to the remanence under the condition in the lifting mode.

3,795,335
MATERIAL HANDLING APPARATUS
Bobbie F. Hansen, Jr., 3693 N. Dickinson, Fresno, Calif. 93705
Filed Apr. 17, 1972, Ser. No. 244,479
Int. Cl. B65g *65/04*
U.S. Cl. 214—304 **9 Claims**



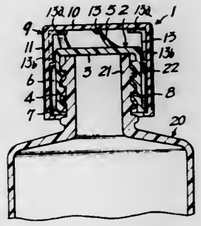
A material handling apparatus mounted in operable association with a source of containers, the apparatus having a frame; an endless belt providing opposite grasping and discharge ends and a lower run, mounted in the frame with the grasping end adjacent to the source and the lower run defining a path of travel away from the source; a plurality of container engaging tines mounted on and extending from the belt; a stripping mechanism mounted in the frame adjacent to the discharge end of the belt; and a source of power mounted in the frame adapted to drive the belt and stripping mechanism so that containers are successively impaled on the tines, drawn from the source of containers so as gravitationally to discharge their contents, and pulled from the tines by the stripping mechanism.

3,795,336
APPARATUS FOR TRANSPORTING BUILDING MODULES
Douglas B. Acker, San Francisco, and Trevis L. Berry, Gilroy, both of Calif., assignors to Reliance Trailer Manufacturing, Inc., San Francisco, Calif.
Filed Oct. 7, 1971, Ser. No. 187,357
Int. Cl. B60p *3/40*
U.S. Cl. 214—390 **8 Claims**



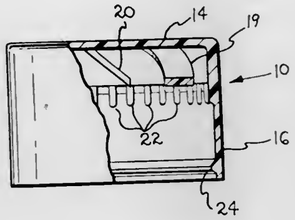
A building module transporter for connection to a towing vehicle comprising a building module and module carriers attached to end walls of the module and resting on carrier supports. The carriers are firmly secured to the module at vertically spaced points to suspend the module between them and to permit the raising and lowering of the suspended module by pivoting the carriers about horizontal axes with respect to the supports. Means is provided for moving the module with respect to the carriers in a lateral direction to facilitate the precision alignment of the module with a foundation at the building site. The spaced connection points between the module and the carriers tension a lower portion of the suspended building and place an upper portion thereof in compression.

3,795,337
SAFETY CAP
Takamitsu Nozawa; Takaharu Tasaki, and Kazuo Nishiiue, all of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan
Filed July 5, 1972, Ser. No. 269,238
Claims priority, application Japan, July 14, 1971, 46-61940; Nov. 4, 1971, 46-102607
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **3 Claims**



A safety cap according to the present invention comprises an outer cap of a synthetic resin and an inner cap vertically movably and rotatably inserted into said outer cap. Between said inner and outer caps there are provided resilient engaging pieces, projections and engaging projecting members, by action of which usually the inner cap can be turned by turning only the outer cap in a tightening direction while the inner cap can not be turned, relative to the untightening direction, unless the outer cap is turned in such a state that the outer cap is pushed down, that is, the outer cap running idle.

3,795,338
RATCHET DRIVE CHILD-RESISTANT CLOSURE
Peter T. Swartzbaugh, Evansville, Ind., and Richard C. Williams, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 181,797, Sept. 20, 1971, abandoned. This application July 19, 1972, Ser. No. 273,177
Int. Cl. B65d *43/02*
U.S. Cl. 215—9 **8 Claims**



A child-resistant, two-piece closure which may be attached to a container by conventional capping machines. An inner

member is formed with a circular top panel having a depending skirt integrally molded therewith. The depending skirt is threaded on its inner surface for engagement with a conventional threaded container finish. The exterior surface of the depending skirt has a plurality of splines about its entire circumference. A plurality of vertical lugs project from and are integrally molded with the top panel. An outer member is likewise formed with a circular top panel and a depending skirt. Integrally formed with the interior of the outer member top panel are a plurality of downwardly extending leaf spring members. The inner surface of the outer member depending skirt has integrally molded therein a plurality of splines extending about its entire circumference. The two members are assembled by pressing the inner member over a retention bead formed in the interior of the lower portion of the outer member depending skirt. The leaf spring members are inclined from the horizontal and will drivingly engage the vertical lugs to allow the assembled closure to be put on a container. However, the leaf spring members will slip over the lugs if one attempts to remove the closure, thus allowing the outer member to rotate freely with respect to the inner member. To remove the closure, the outer member must be pressed down, overcoming the bias of the leaf spring members, to bring the splines of the inner and outer members into driving inter-engagement.

3,795,339

SEAL RING FOR A FLOATING TANK ROOF

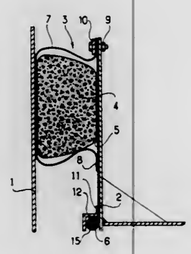
Claude Barbier, Vesinet, France, assignor to Le Joint Francais, Paris, France

Filed Feb. 28, 1972, Ser. No. 229,874

Claims priority, application France, Feb. 26, 1971, 71.06744

Int. Cl. B65d *87/18*

U.S. Cl. 220—26 S **8 Claims**



A seal ring for a floating tank roof where the roof has lateral side walls adjacent the tank walls. The seal includes a pair of rubber strips that can enclose a resilient material. One of the rubber strips forms a loop at its lower portion to receive a pulley cable or tube for positioning the seal.

3,795,340

TAB MOUNTING ARRANGEMENT FOR EASY OPENING CAN END

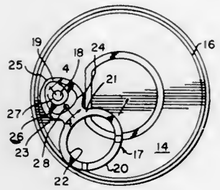
Gary A. Hougen, Palatine, and Henry F. Kloc, Plainfield, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 4, 1972, Ser. No. 278,144

Int. Cl. B65d *17/24*

U.S. Cl. 220—54 **6 Claims**

A pull tab mounting arrangement for an easy opening container of the type having a tear or removable panel portion defined by a continuous score line. The pull tab includes a finger grip portion having a finger opening at one end and a nose portion at the other end. The tab is mounted on the removable panel portion for tilting and turning movement about the rivet. The rivet is fastened to an attachment ear defined by a lance formed in the pull tab. A dimple is formed in the removable panel portion and is adapted to seat within a cavity provided in the pull tab. The dimple is located so that when seated in the cavity, the pull tab is positioned with the nose out of alignment with the score line to prevent tilting of the tab and thereby severance of the score line. The tab is



turnable to a position out of seating engagement with the cavity to a position in alignment with the score line to permit opening of the container.

In a second embodiment of the invention, a projection formed in the panel is accommodated within the finger opening of the tab to maintain the latter in a non-score line severing position.

3,795,341

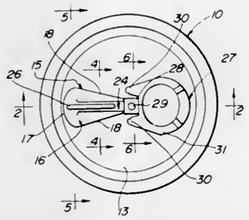
EASY OPENING CONTAINER

Obert M. Ostrem, Westmont, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 13, 1972, Ser. No. 271,473

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 **4 Claims**



An easy opening container including an end closure having a primary score line terminating in spaced ends so as to define a non-detachable tear portion. A secondary score line defining a lever section is formed in the removable panel section and a rigidifying bead is located on the lever section. Upon lifting of the lever section initial severance of the primary score line occurs. A pull tab is attached to the lever section.

3,795,342

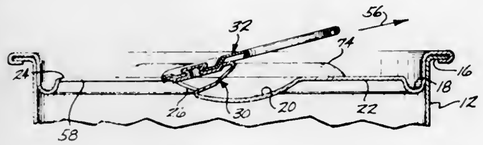
STOWABLE TAB AND TEAR STRIP

Mark H. Ashton, 2707 70th S.E., Mercer Island, Wash. 98040

Filed May 8, 1972, Ser. No. 251,220

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 **47 Claims**



A stowable tab for use with an aluminum end closure for a beverage container includes a pull ring having a ring handle

portion and a lever portion attached to a tear strip, the latter of which is formed by scoring lines in the top of the end closure. A centrally located depressed region and, preferably, a volume compensating raised region spaced from the depressed region is formed in the end closure. The score lines terminate in spaced-apart relationship at or near the depressed region. The tear strip is formed with a leading edge adjacent the periphery of the end closure and has two spaced side portions which extend from the leading edge of the tear strip toward and preferably partially into the depressed region. The tear strip and lever portion of the pull tab are designed such that the forward half of the tear strip bends inwardly from the end closure, while the rearward half of the tear strip bends outwardly from the end closure. The tear strip bends along two areas, a first laterally disposed area centrally located on the tear strip and a second area located near its root end in the depressed region. When the tear strip has been severed along its score lines, it will be resting above the depressed region. By exerting a slight pressure on the top of the tear strip, it will bifold along the two areas into the depressed region. Thus the tear strip is stowed in the depressed region while the pull ring is stowed at a location where it will not interfere with the use of the can.

3,795,343

TROUBLE-DETECTING SYSTEM IN AN AUTOMATIC MONEY DISPENSER

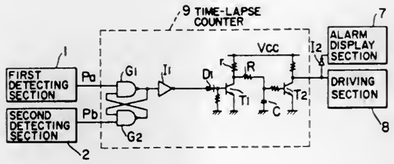
Hideto Shigemori; Akio Ueba, and Motoaki Fukunaga, all of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Sept. 28, 1972, Ser. No. 292,946

Claims priority, application Japan, Sept. 28, 1971, 46-75092

Int. Cl. B65h *43/02*

U.S. Cl. 221—2 **3 Claims**



A trouble-detecting system in an automatic money dispenser comprising a first detecting section for detecting a money-dispensing operation of a money-dispensing mechanism thereby to produce a first detecting signal; a second detecting section for detecting the fact that money has been actually dispensed through a money-dispensing outlet thereby to produce a second detecting signal; and a time-lapse counter operated by the first and second detecting signals, thereby to detect trouble in the dispensation of money, at the same time to stop the operation of the money-dispensing mechanism, and to operate an alarm display device.

3,795,344

BOWL OR CUP DISPENSER

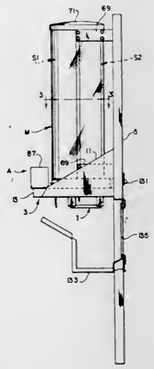
Leonard P. Falk, Florissant, and Robert L. Stadler, Overland, both of Mo., assignors to UMC Industries Inc., New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,485

Int. Cl. B65g *59/06*

U.S. Cl. 221—116 **4 Claims**

A dispenser such as may be needed in conjunction with machines for vending canned food items (e.g., hot cans of soup) to dispense bowls (e.g., paper or plastic bowls) for holding the items. It holds two stacks of bowls, with each bowl in each stack nested in the next bowl below. A stack support is reciprocable between a first position holding up a first of the two stacks at the bottom and clear of the second stack, and a second position holding up the second stack and clear of the first. A first pair of wedging fingers is movable with the stack support for entry between the rim of the bottom bowl of the first stack and the next bowl above when the stack support moves from its first to its second position to wedge the bottom bowl away from the next bowl above and insure its dropping



away from the first stack, which is then held up by these first wedging fingers. A second pair of wedging fingers is movable with the stack support for entry between the rim of the bottom bowl of the second stack and the next bowl above when the stack support moves from its second to its first position to wedge this bottom bowl away from the next bowl above and insure its dropping away from the second stack, which is then held up by these second wedging fingers.

3,795,345

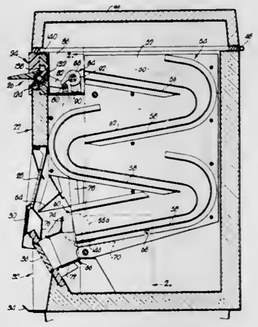
PRODUCT DISPENSING APPARATUS

John William Baxendale, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed May 24, 1972, Ser. No. 256,352

Int. Cl. B65g *59/06*; **G07f** *11/28*

U.S. Cl. 221—125 **7 Claims**



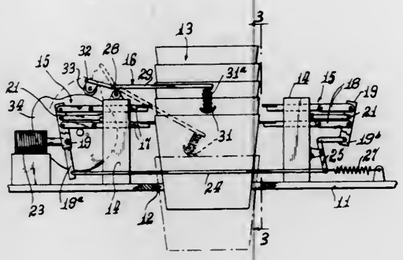
A multiple selection vending machine for canned beverages and the like has individually operable can dispensers for each selection which load the selected, gravitationally fed can at one point and carry the can by gravity to a delivery point for release to the customer, all the while blocking other cans of the selection against release. Selector keys for manually operating the dispensers are controlled by a coin-actuated, mechanical latching mechanism which locks all keys until proper coinage has been deposited, whereupon the main latch of the mechanism is maintained released until a single product vend has been completed.

3,795,346

APPARATUS FOR DISPENSING ARTICLES FROM A STACK THEREOF

Tecwyn V. Roberts, 865 Sheldon Ave., Aurora, Ill. 60507, and David Snelling, 1373 Randall Rd., Aurora, Ill. 60506

Filed Nov. 9, 1972, Ser. No. 305,010
Int. Cl. B65g *59/06*
U.S. Cl. 221—223 12 Claims



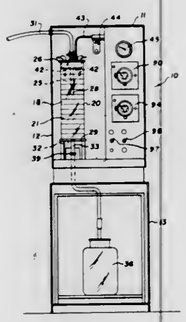
A feeding mechanism for containers in a stack which includes means to alternately grip and release first and second containers in the stack and to forcibly eject the lower container therefrom. The means to eject the container comprises arms movable in a vertical arc and having movable container engaging pressure shoes thereon.

3,795,347

POWER PURGED LIQUID SAMPLER

Ernst Singer, P.O. Box 3491 Luget Dr., Vancouver, British Columbia, Canada

Filed Feb. 3, 1972, Ser. No. 223,152
Int. Cl. B67d *5/30*
U.S. Cl. 222—21 19 Claims



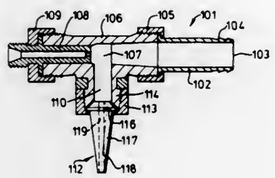
Apparatus for taking measured samples of liquids with or without solids therein. This apparatus includes a volume control tube extending into a closed metering chamber and terminating above the bottom of the latter. A vacuum-pressure power source is operatively connected to the chamber, and programmer means causes this source alternately to apply vacuum and pressure to the chamber. A level controller in the chamber above the lower end of the control tube is connected to operate the power source to shut off the vacuum and start the pressure when liquid in the chamber reaches a predetermined level. A valve controlled outlet at the bottom of the chamber allows the liquids to flow out of it after the pressure has forced the level of the liquid to the lower end of the control tube.

3,795,348

DEVICE FOR DELIVERING PARTICULATE MATERIAL

Charles R. Vertue, P.O. 2532A Wharton Glen Ave., Cooksville, Ontario, Canada

Filed Aug. 7, 1972, Ser. No. 278,320
Claims priority, application Great Britain, Aug. 5, 1971, 36945/71
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 5 Claims



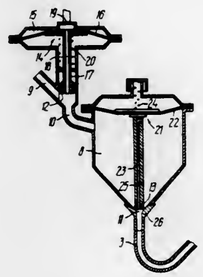
A device for delivery of particulate material, e.g. to a spray gun, has a gas flow passage communicating with an outlet, an inlet in the passage for connection to a fluidized bed of the particulate material, and a gas flow constriction for discharging compressed gas into the passage to entrain the particulate material from the inlet to the outlet. The inlet communicates with the fluidized bed through an inlet nozzle having an inlet passage extending from a mouth, the inlet nozzle having an outer surface which tapers towards the mouth and converges with the inlet passage at the mouth to form a thin edge around the mouth which counteracts build-up of particulate material at the mouth.

3,795,349

DEVICE FOR CONVEYING LIQUID SAMPLES THROUGH PIPELINE BY COMPRESSED AIR

Vasily Ivanovich Schetinin, ulitsa Proletarskaya, 96, and Jury Valerianovich Reutsky, Shkolny Pereulok, 4, kv. 12, both of Zyryanovsk Vostochno-Kazakhstanskoi oblasti, U.S.S.R.

Continuation of Ser. No. 87,946, Nov. 9, 1970, abandoned. This application Feb. 23, 1973, Ser. No. 335,158
Int. Cl. B65g *53/10*
U.S. Cl. 222—193 2 Claims



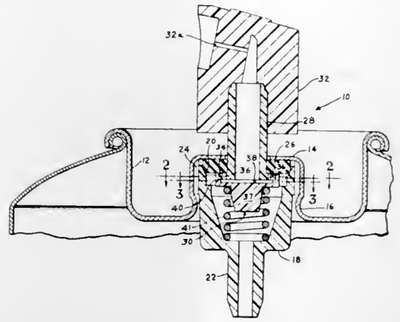
A sampling device for conveying a liquid sample through a pipeline with the aid of compressed air uses a container having an outlet hole, and accumulating the liquid sample; the container is connected with a source of compressed air and the pipeline, and is in communication with the pipeline through a conoid attachment; a shut-off element which closes the outlet hole of said container is disposed inside the container.

3,795,350

AEROSOL VALVE HAVING SELECTABLE FLOW RATE

Joseph John Shay, Manchester, N.H., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Continuation-in-part of Ser. No. 81,020, Oct. 15, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,812
Int. Cl. B65d *83/06*
U.S. Cl. 222—402.17 3 Claims



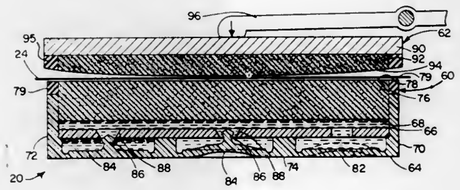
Annular sealing surface in this tilt-type valve has plurality of different-sized openings spaced about it, each opening leading to the discharge stem. Desired rate may be achieved by tilting the valve from the direction which unseats the appropriate opening.

3,795,351

APPARATUS FOR DISPENSING A METERED AMOUNT OF FLUID

Walter G. Lehmann, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 103,986, Jan. 5, 1971, Pat. No. 3,685,412. This application June 5, 1972, Ser. No. 259,388
Int. Cl. B65d *37/00*
U.S. Cl. 222—209 12 Claims



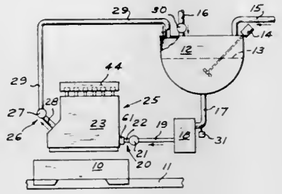
Dispenser apparatus including a container configured for retaining a source of liquid and having a plurality of deformable wall portions which may be selectively activated by an external force so as to reduce the volume of the container and thereby provide repetitive application of a given pressure to the retained source of liquid for dispensing of the liquid from the container. Preferably, a plurality of the wall portions are configured for irreversible deformation so as to permit successively reduced volume in accordance with their actuation and at least one is configured for reversible deformation and is biased to return to its original position upon removal of the actuating force thereby returning any excess of the dispensed liquid to within the container.

3,795,352

VALVE MEMBER FOR PRODUCT MATERIAL DEPOSITING APPARATUS

Robert A. Lewis, Sparta, N.J., assignor to Henry Heide, Incorporated, New Brunswick, N.J.

Filed Mar. 15, 1973, Ser. No. 341,488
Int. Cl. B67d *5/52*
U.S. Cl. 222—255 6 Claims



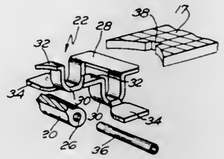
The valve member is composed of a cylindrically-shaped body portion having an open longitudinally extending channel for conducting product material from a supply pipe to a discharge pipe and registerable in one rotative position of the valve member with a row of openings at the bottom of loading cylinders provided with pistons. The entry end of the channel is in communication with a product material supply pipe and the discharge end of the channel is in communication with a material discharge pipe. The valve body portion is also provided with a row of transverse passages which in another rotative position of the valve member connects the cylinder openings with product material discharge openings. The entry and discharge ends of the channel are configured to provide an uninterrupted free flow of product material from the supply pipe to the discharge pipe throughout the reciprocative movements of the valve member between the said two rotative positions.

3,795,353

WATCH BAND CONSTRUCTION AND CONNECTOR FOR USE THEREWITH

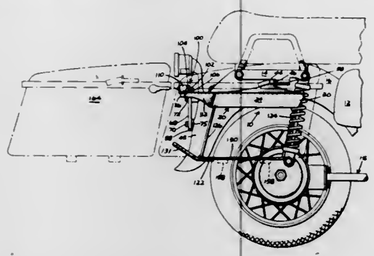
Irving Weiss, New York, N.Y., assignor to Kestenman Bros. Mfg. Co., Providence, R.I. and Lisnow & Weiss Co. Inc., Long Island City, N.Y., part interest to each

Filed Jan. 17, 1972, Ser. No. 218,201
Int. Cl. A44c *5/14*
U.S. Cl. 224—4 E 6 Claims



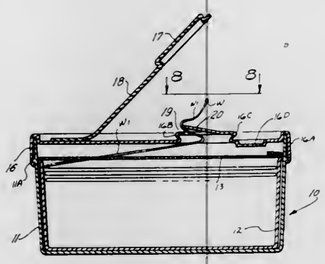
A watch band construction including a band section having a connector member joined thereto that is interconnected to a lug of a watch casing, a connecting element joining the connector member to the lug and being captured within the connector member, wherein the band section is secured to the watch casing in abutting relation to effect a one-piece construction therewith, and the connection of the connector member to the lug being accomplished without tilting or hooking of the band section relative to the lug.

3,795,354
LUGGAGE ATTACHMENT FOR TANDEM-WHEELED VEHICLE
Garold L. Stippich, 6008 Moeller Rd. Lot No. 278, FT. Wayne, Ind. 46806
Filed Feb. 28, 1972, Ser. No. 229,850
Int. Cl. B62j 9/00
U.S. Cl. 224—32 A 15 Claims



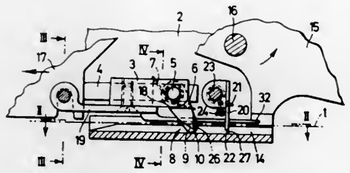
For use on a tandem-wheeled vehicle which includes an open frame having forward and rear ends a luggage attachment comprising a carrier frame having front and rear ends and first and second socket means for slidably coupling the front and rear ends, respectively, of the carrier frame to the vehicle frame. The rear socket means includes a pair of slidably engageable socket elements and means are provided for locking the socket elements against separation.

3,795,355
DISPENSER FOR INDIVIDUALLY DISPENSING THE ENDMOST SHEET OF A CONTINUOUS WEB OF CONNECTED SHEETS
David E. Gerstein, P.O. 63-33 98th Pl., Forest Hills, N.Y. 11374
Filed Jan. 19, 1973, Ser. No. 325,213
Int. Cl. B26f 3/02
U.S. Cl. 225—106 15 Claims



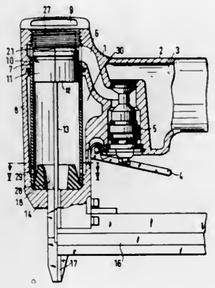
A dispenser for containing a continuous web of connected sheets joined in end to end relationship along a scored or frangible line which can be either randomly stuffed or folded in the body of the dispenser so that essentially the entire volume of the dispenser body is initially occupied with the continuous web of material. The top of the dispenser is provided with a dispensing opening through which the sheets are individually dispensed, one at a time. The opening is defined as a slit or slot associated with a resilient flap which frictionally bears on the sheets being dispensed through the opening so that the endmost sheet is automatically separated along the score line between adjacent sheets as the sheet is pulled through the opening and whereby the sheet following the endmost sheet which is separated is placed in position to be externally grasped by the user for subsequently dispensing the sheet.

3,795,356
LABELLING DEVICES
Erhard Orthen, Ziegelhutterweg 16, Hirschhorn/Neckar, Germany
Filed May 11, 1972, Ser. No. 254,788
Int. Cl. G03b 1/28
U.S. Cl. 226—58 13 Claims



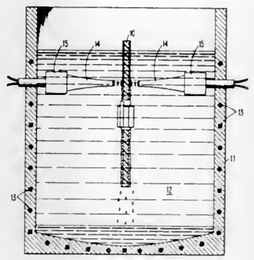
A device for the incremental advancement of a label tape having recesses for controlling the increment of advancement, the device including a slide which reciprocates between two abutments in the longitudinal direction of the tape advancement relative to an underlying flat stationary guide plate, and a spring-biased gripping latch having a gripping edge for gripping the label tape to advance the tape through an increment of advancement when the gripping latch is biased to a gripping position and a feeler for sensing the recesses in the tape and enabling the gripping edge to be biased into the gripping position, the gripping edge including several pointed gripping teeth and the guide plate including several longitudinal grooves corresponding to the gripping teeth and the feeler for receiving the teeth and the feeler when the gripping latch is in the gripping position.

3,795,357
STAPLING OR NAILING DEVICE OPERATED BY PRESSURE MEDIUM
Wilfried Lange, Brockhold, Germany, assignor to Bukama GmbH, Hannover, Germany
Filed Mar. 9, 1972, Ser. No. 233,169
Claims priority, application Germany, Mar. 9, 1971, 2111252
Int. Cl. B25c 1/04
U.S. Cl. 227—130 2 Claims



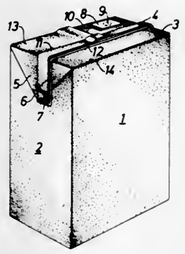
In a fluid operated fastener device a piston is reciprocable in a working cylinder and actuates a driver means which during the working stroke of the piston drives staples into a work piece. The piston is composed of two semicylindrical parts with a separating line which receives said driver means.

3,795,358
IMMERSION SOLDER LEVELING APPARATUS USING ULTRASONIC CAVITATION
Frank H. Sarnacki, Johnson City, and Robert V. Steenstrup, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 11, 1972, Ser. No. 314,079
Int. Cl. B23k 1/00
U.S. Cl. 228—19 4 Claims



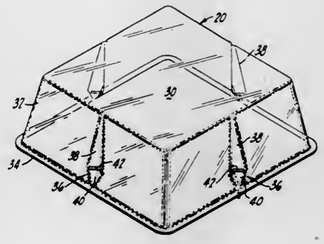
A method and apparatus utilizing ultrasonic cavitation to level molten solder on wetted surfaces to a controlled and a predetermined thickness. By immersing a surface soldered substrate, printed circuit card, printed circuit board or the like into a heated tank containing a liquid glycerol at approximately 10° C. to 40° C. above the melting point of the solder, it is possible to selectively and ultrasonically cavitate solder from the soldered surfaces to achieve uniform solder thickness.

3,795,359
PARALLELLEPIPEDIC PACKAGE
Anders Ruben Rausing, Rome, Italy, assignor to Tetra Pak International AB, Lund, Sweden
Filed Nov. 19, 1971, Ser. No. 200,467
Int. Cl. B65d 5/70, 5/54, 5/56
U.S. Cl. 229—7 R 5 Claims



A parallelepipedic package is produced from a web of packaging material formed into a tube, into which the filling material is introduced, the tube then being pressed flat along transverse, lontitudinally spaced sealing zones so as to divide the filled tube into individual package units which are then shaped into parallelepipedic form. Triangular flaps are formed adjacent the sealed zone at one end of the package during the shaping procedure so as to develop an openable pouring spout, and these flaps are folded downwardly so as to lie against a side wall of the package and retained in place. To facilitate pouring from the spout, the same end of the package is provided with a vent hole covered by a removable protective strip.

3,795,360
COVER FOR BASKET-TYPE CONTAINER AND COMBINATION THEREOF
Jack M. Bianchi, Richmond, and Willis W. Decker, Oakland, both of Calif., assignors to Safeway Stores, Incorporated, Oakland, Calif.
Filed Dec. 2, 1971, Ser. No. 204,155
Int. Cl. B65d 43/10
U.S. Cl. 229—43 21 Claims

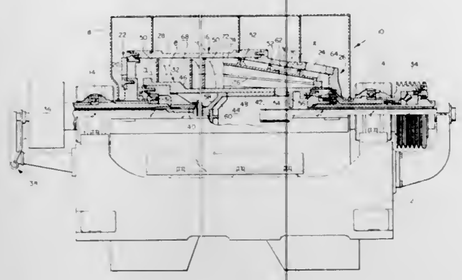


A cover for use with a marketing container of the basket-type for holding perishable agricultural products. The cover includes a bottom wall joined to four side walls. The side walls incline and diverge toward the bottom open end of the cover for seating over the upper end portion of the container. Means are provided on the cover to form a cooperative locking engagement with the container, and the cover is formed of a relatively rigid material permitting some flexing of the side walls so that the locking means may be readily engaged with, and disengaged from, the container. In one embodiment the locking means comprises inwardly projecting indentations formed in the cover side walls for overlapping engagement with the container rim. In another embodiment the locking means includes vertical indentations in the side walls formed with horizontal slots positioned above inclined surfaces. In another embodiment the locking means includes slots or openings formed in the four corners of the cover together with inwardly projecting locking lips integral with a peripheral rim on the cover. In another embodiment the locking means includes T-shaped slots formed in the four corners of the cover.

3,795,361
CENTRIFUGE APPARATUS
Chie-Ying Lee, Hatboro, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Sept. 6, 1972, Ser. No. 284,371
Int. Cl. B04b 1/20
U.S. Cl. 233—7 12 Claims

A decanter centrifuge having a screw conveyor within an imperforate bowl is provided with an annular baffle carried by the screw conveyor. Light phase material and heavy phase material is separated from a mixture thereof fed to the centrifuge bowl. The heavy phase discharge port, usually in a tapered portion of the bowl, is preferably at a greater radial distance from the rotational axis than the inner surface of the light phase material. The periphery of the baffle is closely

spaced from the bowl in order to form a restricted passageway for the underflow of heavy phase material from a separating zone within the cylindrical portion of the bowl to a heavy phase discharge zone within the tapered portion of the bowl. Pressure from the materials within the separating zone, or from an independent source, is transmitted through the restricted passageway and applied to the heavy phase material



undergoing discharge, thus facilitating its discharge with minimum content of light phase material. With a conical baffle, incoming feed is directed onto the inwardly facing surface of the baffle and accelerated in order to minimize turbulence in the separating zone. Efficient separation is accomplished, even with materials heretofore considered unsuited for separation by a decanter centrifuge.

3,795,362

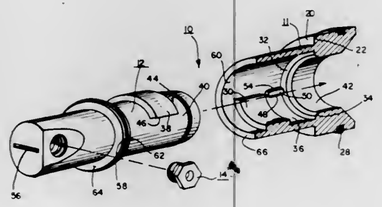
CENTRIFUGE BOWL HAVING AN IMPROVED NOZZLE ASSEMBLY

John Warren Caldwell, Glenside, and Leonard Shapiro, Upper Darby, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 31, 1972, Ser. No. 258,797

Int. Cl. B04b *1/12*

U.S. Cl. 233—20 R **15 Claims**



A nozzle assembly has a retainer sleeve, a nozzle holder, and a nozzle. The sleeve is pushed into an opening in the bowl from the interior thereof, and is keyed into place. The holder is pushed into the sleeve from the exterior of the bowl, and is locked into place (by rotation) by a bayonet type connection. A protrusion on the interior of the sleeve serves to stop the rotation of the holder in extreme positions, i.e., a fully locked position and a fully unlocked position. The nozzle is threadably mounted in the outer end of the holder, and is arranged so as to be aligned in a predetermined direction with respect to the bowl when the holder is in its fully locked position. An annular boss is formed on the holder between the bayonet connection and the nozzle, the boss being slidably mounted within the sleeve and serving to guide and support the holder while simultaneously shielding the bayonet connection.

3,795,363

INDICATOR OF THE MAXIMUM TORQUE USABLE ON A HELICOPTER DRIVEN BY A TURBO-MOTOR

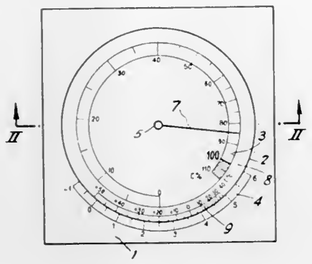
Paul Marie Esteve Henry Fabre, Bouches du Rhone, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 30, 1972, Ser. No. 239,419

Claims priority, application France, Apr. 7, 1971, 71.12263

Int. Cl. G06c *3/00, 27/00*

U.S. Cl. 235—78 **1 Claim**



A calculating instrument for determining the maximum torque output of a helicopter motor comprises a stationary part graduated in torque values, a moving part graduated in temperature values and a movable pointer.

3,795,364

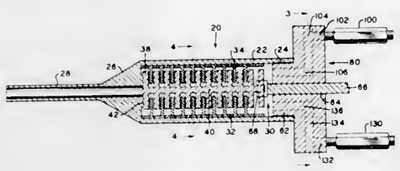
APPARATUS FOR APPLYING HIGH VISCOSITY MIXTURE OF REACTIVE COMPONENTS

Ronald D. Kattner, North Canton, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed May 25, 1973, Ser. No. 356,004

Int. Cl. A01n *17/02;* **A62c** *1/12*

U.S. Cl. 239—8 **14 Claims**



A greatly simplified apparatus for mixing and dispensing a high viscosity mixture of reactive components, such as the components of a urethane-based adhesive. The apparatus consists essentially of an elongated hollow member having an input end and an output end, the member defining a mixing chamber and terminating in a nozzle at its output end. A mixing means is located within the hollow member and acts in cooperation therewith such that, after the first and second reactive components pass through the hollow member under pressure, the reactive components comprise a generally homogeneous mixture. A body member is fixedly mounted to the input end of the hollow member and is adapted to have a plurality of valves mounted thereto. There is a first valve and a second valve mounted on the body member, the first valve having an inlet and a pressurized source of the first reactive component connected thereto, the second valve having an inlet and a pressurized source of the second reactive component connected thereto. Each of the valves has an outlet in permanent, open communication with the mixing chamber by means of a passageway through the body member such that during intermittent stopping and starting of the flow of the components and the mixture, a smooth-walled, continuous flow path is presented to the materials, thus greatly reducing the possibility of build-up of hardened materials within the gun.

3,795,365

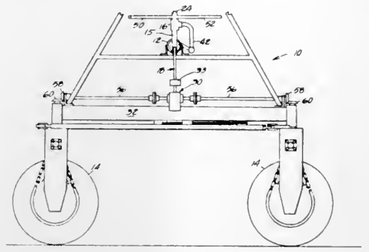
DRIVE APPARATUS FOR AN IRRIGATION SYSTEM

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed Apr. 17, 1973, Ser. No. 352,064

Int. Cl. A01g *25/02;* **B05b** *3/06*

U.S. Cl. 239—212 **7 Claims**



An irrigation system has a pipeline supported by a plurality of towers, with each tower being mounted on wheels. Each tower includes a vertical single piece sleeve into which is positioned a vertical shaft, the bottom end of which is supported. A pair of spaced annular seals are disposed within the sleeve and about the shaft. Means are included for introducing flowing water into the sleeve between the seal, into and through passage means in the shaft, and through a pair of rotor arms fixed to the upper end of the shaft. The arms are shaped and angled so that water flowing therefrom turns the shaft about its longitudinal axis, such rotation of the shaft being used to rotate, through appropriate means, the wheels of the tower, to advance the tower and the pipeline therewith.

3,795,366

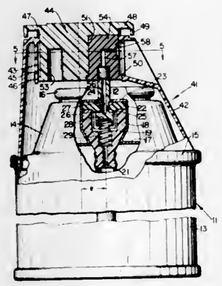
MULTIPLE SPRAY PATTERN DEVICE

Russell Park McGhie, Somers, N.Y., and Joseph George Ferraro, Wyckoff, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 171,146, Aug. 12, 1971, abandoned. This application May 1, 1972, Ser. No. 248,941

Int. Cl. B05b *1/26*

U.S. Cl. 239—397 **20 Claims**



A combination spray pattern selecting and valve operating assembly adapted to be mounted on a pressurized container having a valve comprises cap structure mounting a spray pattern selector member having at least two spaced bores therein containing insert plugs that are formed with through passages providing different spray patterns. The spray pattern selector member is mounted on said cap structure for rotation between positions wherein it may actuate the container valve to discharge container contents through one or the other of the insert passages.

3,795,367

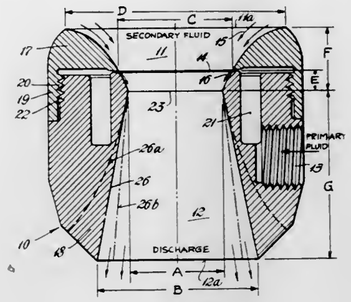
FLUID DEVICE USING COANDA EFFECT

Zenon R. Mocarski, Easton, Conn., assignor to S.R.C. Laboratories, Inc., Fairfield, Conn.

Continuation of Ser. No. 153,172, June 15, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,043

Int. Cl. B63h *25/46;* **B64c** *15/10*

U.S. Cl. 239—265.17 **5 Claims**



A device using the Coanda effect by which a primary fluid of high velocity, small volume induces flow of a secondary fluid with the exhaust fluid being a combination of both fluids.

3,795,368

FOAM-WATER SPRINKLER DEVICE

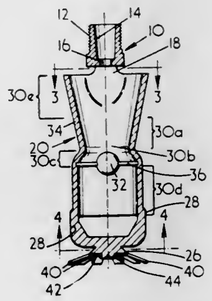
David Arthur Larah, Salford, England, assignor to Mather & Platt Limited, Manchester, England

Filed Mar. 23, 1973, Ser. No. 344,398

Claims priority, application Great Britain, Mar. 7, 1973, 11158/73

Int. Cl. B05b *7/06*

U.S. Cl. 239—432 **4 Claims**



A foam water sprinkler device which has a tubular body and within the body there is a ball splitter. The body has a converging bore, a throat of reduced bore and an enlarged bore portion and the ball splitter is located either downstream or partially within the throat.

3,795,369

AUGER FEED GRANULATOR

Paul R. Moser, Geigertown, Pa., assignor to Beloit Corporation, Beloit, Wis.

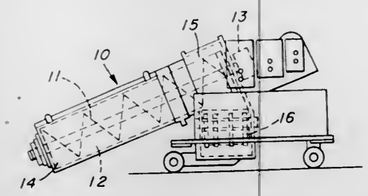
Filed Feb. 25, 1972, Ser. No. 229,304

Int. Cl. B02c *18/00*

U.S. Cl. 241—82.1 **10 Claims**

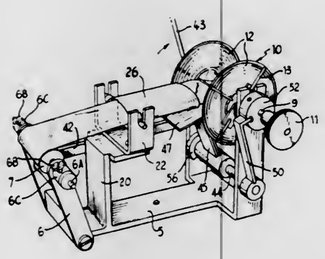
An improved auger feed granulator apparatus for grinding thermoplastic waste to permit reuse of the thermoplastic material. The improved auger has a shear disc affixed at the

discharge end of the auger, rotatable with the auger. A blocking bar extends between the terminal flight of the auger and the shear disc proximate the terminal end of the flight to prevent jamming of material between the terminal end of the flight and the disc. The granulator assembly includes a rotata-



ble cutter blade within a cutting chamber disposed below the discharge end of the auger and closely spaced therefrom. The thermoplastic material is effectively forced into contact with the cutter blades for granulation, without any jamming or wrapping of material about the auger terminal end.

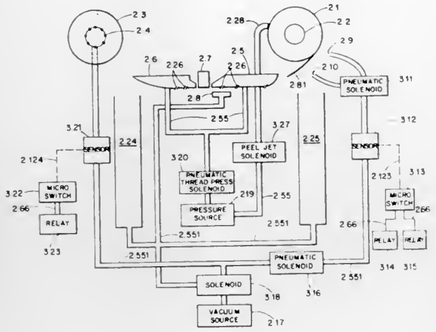
3,795,370
WINDING APPARATUS
Reginald I. R. Dean, 14 Curzon St., Derby, England
Filed Feb. 23, 1972, Ser. No. 228,700
Claims priority, application Great Britain, Feb. 26, 1971, 5508/71
Int. Cl. B65h *17/00, 27/00*
U.S. Cl. 242—67.1 R **16 Claims**



Apparatus for use in winding strip material on to a reel the ends of which are provided with spiral slots or grooves and are spaced apart by a distance slightly less than the width of the strip. The apparatus comprises means for supporting the reel, means for supporting the strip material in a delivery position, and means for curving the strip material to reduce its width to less than the spacing of the ends of the reel, guide means guide the free end of the strip material into register with retaining means at the centre of the reel, and means are provided for flattening the strip material at such location, the reel is rotated to wind the strip material on to it with the edges of the strip material engaged in said slots or grooves and the coils of the strip material spaced from one another.

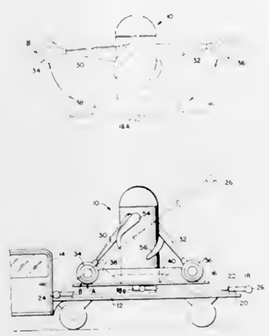
3,795,371
AUTOMATIC THREADING TAPE DRIVE
Charles Tolini, Brockton, and William Hobart, Whitinsville, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 20, 1970, Ser. No. 29,935
Int. Cl. G11b *15/66, 15/58*
U.S. Cl. 242—182 **4 Claims**

An electro-pneumatic automatic tape threading apparatus in combination with a tape handling machine is disclosed. An electro-pneumatic sensing means senses the position of the tip-of-tape relative to a threading guide and when properly positioned, the tape is propelled, assisted by air jets, through a threading guide, past a magnetic head, onto a rotating tape take-up reel provided with vacuum holding means for attracting and holding the tape. Tape take-up sensing means provide



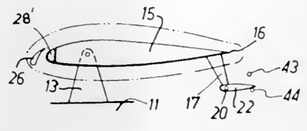
electro-pneumatic control signals when the tape successfully threads and is picked up by the tape take-up reel which informs the system to reverse the tape take-up reel, apply the tape brake, and apply vacuum into the loop chambers drawing slack tape into left and right loop chambers respectively.

3,795,372
SAIL ROTOR CRANE
Lewis Feldman, 88 Massau Rd., Amityville, N.Y. 11758
Filed Aug. 23, 1971, Ser. No. 174,036
Int. Cl. B64c *37/00*
U.S. Cl. 244—2 **21 Claims**



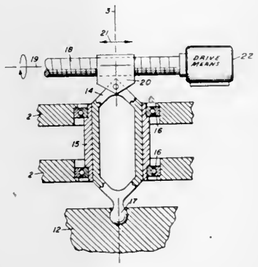
A highly versatile combination of a powered vehicle such as a truck and a flexible rotor aircraft having a lifting capacity for transporting objects from place to place while in flight enables the aircraft to be moved from place to place while stowed upon the truck and used when needed. The aircraft itself includes a rotatable shroud, a rotatable drum, and at least two flexible rotor blades which wrap around and extend outwardly from the drum through corresponding slots in the shroud. Tip engines located at the ends of the rotor blades drive the aircraft and, together with a clutch for selectively coupling the shroud to the drum, control stowing and unfurling of the rotor blades.

3,795,373
AIRCRAFT
Andre P. Gerard, 155, rue de la Croix Nivert, 75-Paris 15 eme, France
Filed July 18, 1972, Ser. No. 272,973
Claims priority, application France, July 22, 1971, 71.26866
Int. Cl. B64c *3/38*
U.S. Cl. 244—48 **6 Claims**



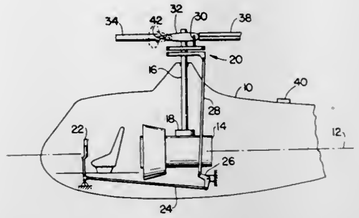
An aircraft with a flying surface rotating around an axis perpendicular to the fuselage and statically balanced around said axis. The flying surface has at the rear two flaps symmetrically disposed in relation to the mean longitudinal plane of the fuselage and deflectable in the same direction and by the same angle from the joystick or control column by a movement of the latter corresponding to elevation control. Variable multiplication means are interposed between the joystick and the flaps providing a multiplication ratio increasing in proportion as the flaps are deflected. The horizontal plane of the tail unit is angularly adjustable, which enables the fuselage to retain the desired angle of incidence despite the different distribution of the load within the fuselage.

3,795,374
AIRCRAFT HAVING ADJUSTABLE SWEPTBACK WINGS
Armin H. Zech, Emdenstrasse 48, Munich 83, and Ernst R. Schaefer, Hartliebstrasse 10, Munich 19, both of Germany
Continuation-in-part of Ser. No. 746,340, July 22, 1968, abandoned. This application July 16, 1971, Ser. No. 163,337
Int. Cl. B64c *3/40*
U.S. Cl. 244—46 **4 Claims**



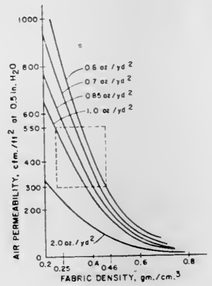
Means for varying the sweepback and angle of incidence of the wings of an aircraft with respect to airspeed so as to maintain efficient operation. The axis of rotation of the wings is pivotal so as to permit adjustment of the axis and consequently variance of the sweep angle in accordance with airspeed. In the forward position of the wings which corresponds to take-off and landing, the wings are parallel to the longitudinal axis of the fuselage with a zero incidence angle. In the sweptback position, the wings rise to a negative angle of incidence for greater operational efficiency during high-speed flight.

3,795,375
SYSTEM FOR CONTINUOUSLY TRIMMING HELICOPTER ROTOR BLADES DURING FLIGHT
Andrew Z. Lemnios, Longmeadow, Mass., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.
Filed May 22, 1972, Ser. No. 255,463
Int. Cl. B64c *27/72*
U.S. Cl. 244—17.27 **2 Claims**



A vibration sensor is mounted on the air frame to provide a continuous output proportional to the unbalance of the rotor blades with respect to one another. This output is fed to a trim tab on the particular blade causing the unbalance to alter that blade's lift slightly until the balance is reduced to an acceptable level.

3,795,376
NON-WOVEN PARACHUTE FABRIC
Philip J. Stevenson, Durham, and Andrew M. Falik, Raleigh, both of N.C., assignors to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 64,538, Aug. 17, 1970, abandoned. This application , Ser. No. 271,959
Int. Cl. B64d *17/12*; **F42b** *25/04*
U.S. Cl. 244—145 **4 Claims**

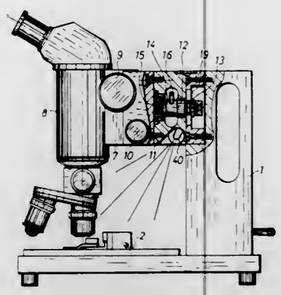


A parachute material utilizes a spunbonded web of continuous nylon filament autogenously bonded together at a substantial number of filament cross-over points, the web having an air permeability of from 300 to 550 $ft^3/min/ft^2$ and having a density of from 0.25 to about 0.46 g/cm^3, to provide equivalent strengths at lower cost.

3,795,377
SUPPORTING MOUNT FOR AN INSTRUMENT STAND
Toni Dietrich, Wetzlar, Germany, assignor to Firma Wilhelm Will KG, Nauborn, Germany
Division of Ser. No. 880,103, Nov. 26, 1969, Pat. No. 3,712,569. This application Oct. 31, 1972, Ser. No. 302,585
Int. Cl. F16m *11/04*
U.S. Cl. 248—125 **4 Claims**

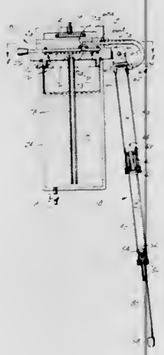
A stand for a precision instrument such as a microscope is provided with a pair of vertically extending plane surfaces which are inclined to each other. The mounting block of the

instrument is provided with correspondingly shaped plane surfaces so that both pairs of plane surfaces may be superposed upon each other. The mounting block is provided with locking means in the form of a rotatable locking bar which passes through the vertical slot between the plane surfaces on the



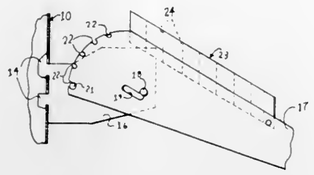
stand and engages a surface of the stand facing away from the mounting block upon rotation of the locking means through an angle of about 90°. The locking member is also capable of axial movement either concurrent with its rotary movement or independently therefrom.

3,795,378
SELF-ADJUSTING TRIPOD
Robert G. Clarke, P.O. 567, Waldo Point, Sausalito, Calif. 94965
Filed Jan. 3, 1972, Ser. No. 214,657
Int. Cl. F16m *11/38*
U.S. Cl. 248—168 **5 Claims**



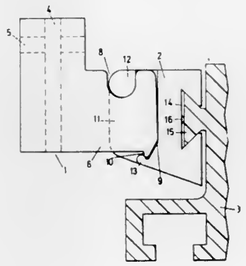
A tripod whose platform can be adjusted to any desired level or angle in one operation with a minium of adjustment includes a sealed reservoir attached to the platform. A valve in the platform has an inlet coupled to the reservoir by a tube and a plurality of outlets. Each leg is pivotally attached to the platform and comprises a plurality of telescopic, hollow cylinders. Means are provided for coupling the interior of each leg to a corresponding outlet of the valve. The reservoir is filled with both a hydraulic fluid and a pneumatic fluid, under pressure. When the valve is open, the pneumatic fluid forces the hydraulic fluid through the tube, the valve, and the coupling means into each leg so as to exert an extending force thereon. The pneumatic fluid pressure is chosen so that extension can be regulated by manual pressure exerted on the platform. When a desired angle or position is reached, the valve is closed to lock the hydraulic fluid in each leg and thus maintain the platform in the desired angle or position.

3,795,379
ADJUSTABLE SHELF SUPPORT
Jerry R. Gray, Birmingham, Ala., assignor to EBSCO Industries, Inc., Birmingham, Ala.
Filed Sept. 13, 1972, Ser. No. 288,521
Int. Cl. A47g *29/02*
U.S. Cl. 248—242 **3 Claims**



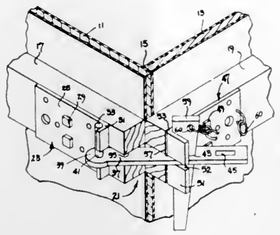
A first support bracket is adapted for connection at one end to a supporting structure with the other end projecting outwardly thereof. One end of a second support bracket extends alongside and is movable relative to the first support bracket. A lateral pivot member carried by one support bracket extends through an elongated opening in the other support bracket permitting pivotal and sliding movement therebetween. A lateral stop member carried by one of the support brackets engages a selected one of a plurality of spaced apart, open ended recesses carried by the other support bracket.

3,795,380
CURTAIN TRACKS
Derek Turner, Burntwood, England, assignor to Hunter Douglas N.V., Curacao, Netherlands
Filed Nov. 11, 1971, Ser. No. 197,734
Claims priority, application Great Britain, Nov. 16, 1970, 54506/70
Int. Cl. A47h *1/10, 5/14*
U.S. Cl. 248—263 **3 Claims**



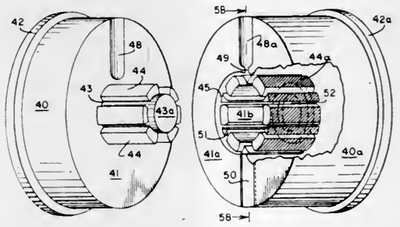
A bracket system for supporting a curtain track comprises a first bracket secured to wall or ceiling, a second bracket carrying the track and an optional third bracket. The curtain-carrying bracket can be secured to the first bracket either directly so as to be near thereto or indirectly through the third bracket, which forms a spacer. The connection in each case is a pair of laterally spaced-apart arms on one bracket with a recess in the top of each arm and a projection on the underside of each arm, and a portion on the other bracket fitting between the two arms, said portion of said other bracket having a first pair of projections pivotally resting in the recess and a second pair of projections engaging the projections on the undersides of the arms to form a snap-in fastening.

3,795,381
CORNER CLAMP
Hiram S. Argust, 11303 Malat Way, Culver City, Calif. 90230
Filed May 15, 1972, Ser. No. 253,155
Int. Cl. E04g *13/02*
U.S. Cl. 249—219 R **7 Claims**



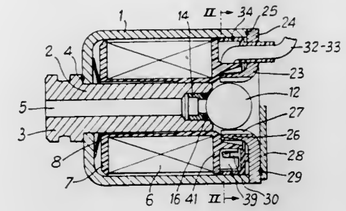
A corner clamp or tie for joining together the free ends of a pair of walers at the corner of a form which comprises a first plate means for attachment to one of the walers. A rotatable bar is pivotally connected at one end thereof to the first plate. A second plate means is adapted to be affixed to the other adjoining waler. The second plate means has a portion thereof extending generally normal to the form member, the perpendicular member having a notch therein which is coalignable and receives the end of said bar opposite from the pivot end connected to the first plate member, and a wedge insertable in an aperture in the end of said rotatable bar adjoining said second plate member.

3,795,382
INJECTION MOLD FOR PLASTIC ROLLER BEARING CAGES
Peregrinus Gruber, and Gerald Seidelman, both of 3382 N. Avondale Ave., Chicago, Ill. 60618
Filed Dec. 15, 1972, Ser. No. 315,622
Int. Cl. B29c *1/14*
U.S. Cl. 249—60 **3 Claims**



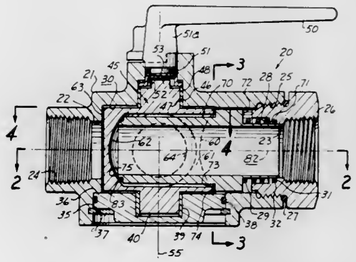
This invention relates to a mold for injection molding and plastic roller bearing cages therefrom. The mold is so designed that the mold parts, illustrated in the drawings of the mold, cooperate to create a mold cavity having no flash except at the gate to the mold cavity. As a result of the mold construction, a plastic cage made in the mold dispenses with removal of excess plastic in the form of flash except for a minute amount at a gate. The product is a roller bearing cage into which rollers may be sprung and retained thereby.

3,795,383
BALL-TYPE SOLENOID VALVES AND METHODS OF ASSEMBLING SAME
Claude Edmond Lombard, and Claude Daniel Moyses, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine), France
Filed Dec. 7, 1972, Ser. No. 312,929
Claims priority, application France, Dec. 21, 1971, 71.045904
Int. Cl. F16k *31/06*
U.S. Cl. 251—139 **13 Claims**



The ball guide of this solenoid valve, consists of a pressed member acting at the same time as the end cover of the valve case so as to close the magnetic circuit thereof; it consists of magnetic metal formed with a cylindrical projection having formed at the same time in its bore longitudinal grooves for permitting the fluid flow, other means being provided for properly sealing the core passage in the closed valve position.

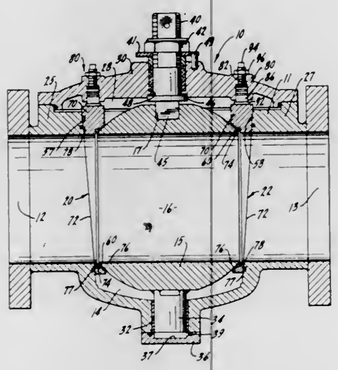
3,795,384
VALVE WITH AXIALLY MOVABLE VALVING TUBE AND LATERALLY MOVABLE VALVING WALL
Robert R. Reddy, 1195 Michillinda Ave., Pasadena, Calif. 91107
Filed Sept. 18, 1972, Ser. No. 289,997
Int. Cl. F16k *31/524*
U.S. Cl. 251—257 **24 Claims**



A valve having a body with an internal chamber and a first and a second port passing through the body into the chamber. A valving tube having an axis is axially movably mounted to the body inside the chamber, and has a tube passage connected to one of the ports. It has a free end with a valving seal that surrounds the end of the tube passage, and axial shifting of the tube moves the valving seal toward and away from a position where it can make sealing contact with a valving wall carried by a movable valve operator inside the chamber. The valving wall is movable laterally relative to the tube axis so it can be moved out of a direct flow path between the other of the ports and the free end of the valving tube. A cam is provided to shift the valving tube. Also, the valving tube may be moved by the cam so that its free end comes into abutment with the other of said ports when the valve is open, and

thereby provides a direct conduit through the valve without a substantial change in cross-section. Also, optionally, mechanical means can be provided to force the valving seal against the valving wall.

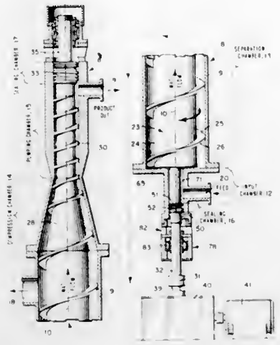
3,795,385
BALL VALVE
Georg K. Westenrieder, South Holland, and James C. Ruffolo, Country Club Hills, both of Ill., assignors to Union Tank Car Company, Chicago, Ill.
Filed Nov. 10, 1972, Ser. No. 305,385
Int. Cl. F16k *25/00*
U.S. Cl. 251—170 **5 Claims**



A ball valve including a body having two longitudinally aligned fluid passages and a lateral opening communicating with a central space. A rotatable ball, having an opening communicable with the fluid passages, is positioned within the central space. A pair of annular seat rings of wedge shape cross section, fit against and clampingly secure the ball therebetween. A pair of seat ring retainer means, integral with the body, having side walls inclined downwardly and inwardly, wedge the ball and seat rings therebetween. Bonnet means is secured to the body in covering relationship to the seat rings and ball. Piston means extend through the bonnet means for selectively applying pressure to an upper portion of the seat rings to compress the seat rings to the ball and the retainer means side walls. Various means are disclosed for the actuation of the piston means. A rotatable valve stem passes through the lateral opening and the bonnet means, and is connected to the ball to rotate the ball between positions of permitting and preventing the passage of fluid therethrough.

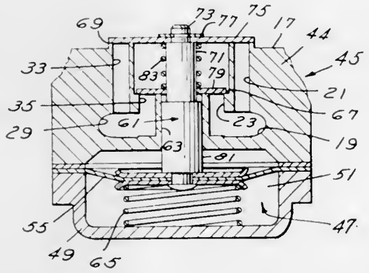
3,795,386
SHAFT SEAL FOR LOW AND HIGH PRESSURES
Don E. Carter, Creve Coeur, Mo., and George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignors to Monsanto Company, St. Louis, Mo.
Filed Aug. 16, 1971, Ser. No. 172,060
Int. Cl. F16j *15/14*; **B29b** *1/10*
U.S. Cl. 259—191 **7 Claims**

A feed assembly adapted for incorporation into a devolatilizer, extruder, or the like which enables one to deliver a pressurized fluid mass intermittently to a chamber maintained under reduced pressure relative to the entering fluid mass from a region circumferentially located about a revolving shaft. The assembly utilizes two coaxial, adjacent viscoseal-type sealing screws located about the shaft. An annular region about the shaft between the viscoseal-type sealing screws and the reduced pressure chamber maintains fluid pressure in input fluid so that these sealing screws are rendered operable.



One such sealing screw seals against normal fluid pressure, the other against reduced pressure chamber pressures when fluid pressure is lost.

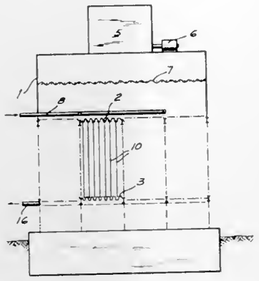
3,795,387
POWER FUEL SUPPLY SYSTEM
Clarence C. Hebert, Southgate, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 23, 1971, Ser. No. 211,447
Int. Cl. F02m *7/06*
U.S. Cl. 261—23 A **9 Claims**



A power fuel supply system for an internal combustion engine carburetor. The system includes a single-stage or multistage power valve assembly having closure elements which are movable in response to intake manifold vacuum to open and close the inlets to the power fuel supply system. The valve is especially suitable for a multi-barrel carburetor to prevent fuel transfer or interaction between the right-hand fuel supply passages and the left-hand fuel supply passages.

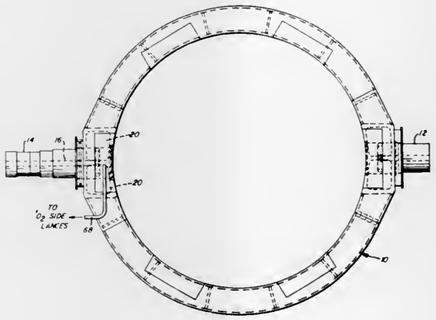
3,795,388
LIQUID COOLING APPARATUS
Albert S. Toth, 32 Broadway, New York, N.Y. 10004
Filed Mar. 29, 1971, Ser. No. 128,868
Int. Cl. B01d *47/00*
U.S. Cl. 261—112 **1 Claim**

Apparatus in the form of a cooling tower having an air outlet and drift eliminator at the inner top area and above the point of entrance of the liquid flow to be cooled, together with fluid distributor means leading flow to a plurality of top panels lying in a horizontal plane and which, as to each, have two series of apertures, one series being air orifices and the second series having means for holding depending flow-receiving elements in register therewith, there being a plurality of bottom panels of form similar to the said top panels but which have only air orifices at the tops of upwardly directed areas intermediate channel formations, the bottom ends of the flow-receiving elements lying below the said air orifices and in the channel formations. The said bottom panels provide cool-fluid reception means and they discharge into a network of flow



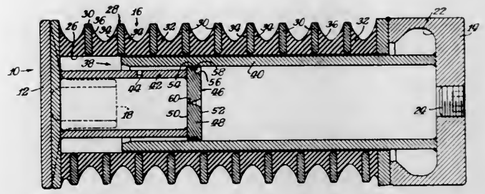
means which preferably is adapted to concentrate the flow to one or several points for removal through the cooling tower. At the base of the cooling tower is an air inlet opening below which the structure is adapted, as desired in some cases, to incorporate one or more liquid reservoirs. At the top of the cooling tower, or at one or more upper side areas, suitable fan means for upward movement of cooling air, may be provided.

3,795,389
TRUNNION SHAFT FLUID SUPPLY DEVICE
Frank Kennedy, Mt. Lebanon Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed June 16, 1972, Ser. No. 263,507
Int. Cl. C21c *5/46*
U.S. Cl. 266—36 P **13 Claims**



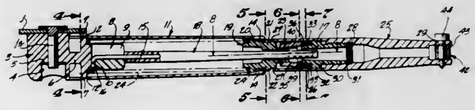
A fluid supply device for a hollow trunnion pin of a Q-BOP furnace is disclosed. The fluid supply device is insertable into the hollow trunnion pin and is operable to provide three fluid flow supply lines throughout the trunnion pin and the associated trunnion ring.

3,795,390
SHOCK ABSORBER DEVICE
Giles A. Kendall, Burbank, and Harish K. Bhutani, Downey, both of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.
Filed June 9, 1972, Ser. No. 261,416
Int. Cl. F16f *3/10, 3/07*
U.S. Cl. 267—33 **3 Claims**



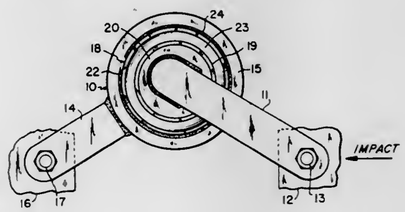
A shock absorber having a helical coil spring and elastomeric material intermediate the coils of the coil spring to form a dual spring unit which with end members defines a closed chamber that is filled with a dampening medium. Arranged within the chamber is a hydraulic assembly acting in parallel with the dual spring unit.

3,795,391
ENERGY ABSORBING DOOR CONTROL DEVICE
Lloyd Richard Poe, Los Angeles, Calif., assignor to The Hartwell Corporation, Los Angeles, Calif.
Filed May 8, 1972, Ser. No. 250,984
Int. Cl. F16f *7/12*
U.S. Cl. 267—136 **8 Claims**



A door closing device having components which include interlocking portions capable of rapid manual assembly without tools; and includes subassemblies relatively extensible by spring force, opposed by an energy absorbing means having a ring of indenting balls and an elastomeric energy absorbing sleeve to control the rate of extension.

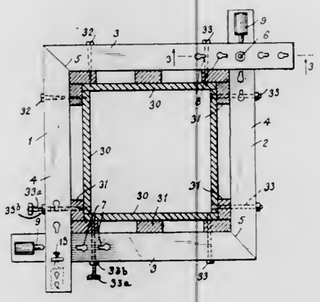
3,795,392
TORSIONAL ENERGY ABSORBER
John E. Nemec, Tallmadge, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
Filed June 23, 1972, Ser. No. 265,917
Int. Cl. B60g *11/22*; **B60r** *19/06*; **F16f** *1/46*
U.S. Cl. 267—140 **4 Claims**



A torsional energy absorber has inner and outer arm members connected by a pivot means. The pivot means has an

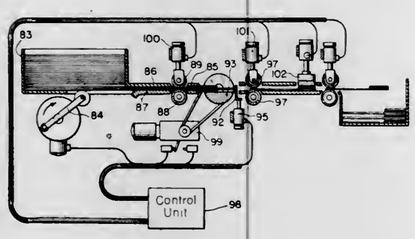
outer tubular member fastened to the outer arm member, an inner member concentrically spaced apart from the outer member and fastened to the inner arm member, and an elastomeric member engagingly positioned between the inner and outer members, preferably under compression, to absorb energy on impact against the energy absorber by initially torqueing between the members and then slipping on the members. Preferably, the inner and outer members are cylindrical sleeves of like curvilinear cross-sections, and the elastomeric member is an annulus. In addition, it is preferred that a self-restoring means, such as a clutch assembly, be provided to restore the inner and outer members to original relative positions after impact.

3,795,393
CONCRETE FORM AND CLAMP THEREFORE
Samuel T. Melfi, 520 N.E. Wave Ct., Boca Raton, Fla. 33432
Filed Dec. 3, 1971, Ser. No. 204,520
Int. Cl. B25b *5/14*; **E04g** *13/02*
U.S. Cl. 269—116 **1 Claim**



A form for producing concrete columns and clamping opened for the form, such means comprising a pair of angle bars of substantially L-shape arranged to cross one another to form a frame which defines a square or rectangular opening for embracing a column form. The bars are held together by a single bolt upon which they may be pivoted during fitment or removal of the form, with adjusting means having quick attachment arrangements provide a means by which the clamp can be urged into clamping relationship with the form. By means of clamps constructed as described, when attached to a form the form may be opened or stripped off as a unit without requiring dismantling of its parts and it may be placed into repeated use with a minimum of effort.

3,795,394
APPARATUS FOR MANUFACTURING A CODE-BEARING TICKET
Emil C. Walker, Woodstock, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Sept. 10, 1971, Ser. No. 179,400
Int. Cl. B65h *45/20*
U.S. Cl. 270—79 **7 Claims**

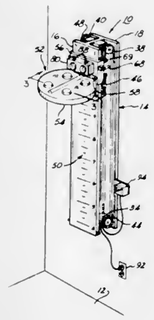


Apparatus and process for producing a subscription television decoding ticket of the type having a matrix decoding element comprising a plurality of electrically conductive segments bonded into accordion-folded pleats in the ticket body. The apparatus includes a novel one-step die punch operation which simultaneously die-cuts the conductive segments and applies them to the ticket body, and a novel single-station folding operation for accomplishing the accordion fold.

3,795,395
DISPENSER FOR DOCUMENTS SUCH AS CURRENCY AND THE LIKE
Leslie R. Ransom, Cincinnati, and John Q. Parmater, West Chester, both of Ohio, assignors to The Mosler Safe Company, Hamilton, Ohio
Filed Oct. 30, 1972, Ser. No. 301,782
Int. Cl. B65h *29/62*
U.S. Cl. 271—4 **14 Claims**

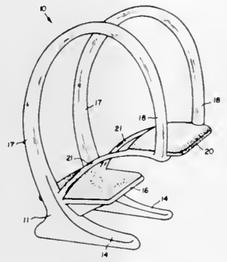
The currency dispenser, which issues bills sequentially from an exit, includes a bill storage compartment divided by a movable horizontal plate into a lower chamber in which a stack of horizontally disposed bills to be dispensed is located, and an upper chamber into which bills are diverted which have been fed from the bottom of the stack and rejected by virtue of being partially or completely overlapped. Also included is a bill feeder mechanism which advances the bottom bill of the stack, a stripper assembly which retards the movement of all but the bottom bill and assures the continued advancement of only that bill, and a transport system including a pair of belts which transport a bill from the stripper assembly to the bill exit along a set of metal guide plates which follow a path from the stripper upwardly alongside the storage compartment and thence horizontally over the compartment to the exit. A single bill sensor is included for detecting partially or fully overlapped bills, and controls a bill reject mechanism above the storage compartment for diverting into the reject compartment partially or fully overlapped bills which have been fed from the bottom of the stack.

3,795,396
JUMP MEASURING DEVICE
Edward Kropelnitski, 5409 Perry Rd., Grand Blanc, Mich. 48439
Filed June 23, 1972, Ser. No. 265,636
Int. Cl. A63b *69/00*
U.S. Cl. 272—59 C **10 Claims**



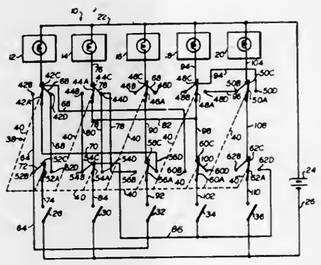
A device for measuring the vertical distance jumped by an athlete and having means, such as a buzzer and lights, for indicating that the athlete has jumped a pre-selected vertical distance. In one embodiment of the invention a wall mounted support carries a horizontally disposed target vertically movable with respect to the support by an electro-mechanical drive. In a second embodiment the target support is telescopically carried by a floor standard. The horizontally disposed target is pivotably attached to a vertical support in such a manner that the target is pivoted upwardly if the target is contacted by an athlete with more force than is necessary to actuate the indicating means. The target will return to its initial horizontal position after contact by the athlete.

3,795,397
SPRING TREAD
John C. Wilson, deceased, late of P.O. 130, Homewood Ln., Rochester, N.Y. 14609 (by Margaret I. Wilson, executrix)
Continuation-in-part of Ser. No. 109,530, Jan. 25, 1971. This application Dec. 26, 1972, Ser. No. 318,232
Int. Cl. A63b *5/10*
U.S. Cl. 272—66 **16 Claims**



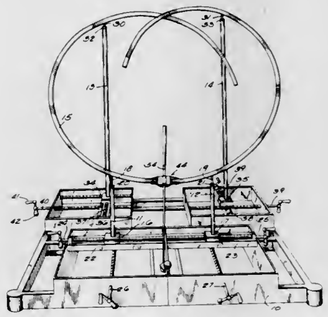
A spring tread for diving into a swimming pool is formed with a base mounted near the edge of the pool and resilient spring arms that curve upward from the base away from the pool, loop toward the pool above the base, and curve downward to where their free ends are connected by a tread resiliently disposed within stepping distance from the base toward the pool. Spring bands extend from the rear of the base to the free ends of the spring arms and join to the tread.

3,795,398
GAME APPARATUS WITH SWITCHING MATRIX BETWEEN SWITCHES AND LOAD DEVICES
Cyril J. Broomer, 22 Greentree Dr., Scarsdale, N.Y. 10583
Filed Oct. 6, 1970, Ser. No. 78,554
Int. Cl. A63b *71/06*
U.S. Cl. 273—138 A **1 Claim**



The game apparatus comprises a plurality of load devices. A source of energy is provided for energizing each one of the load devices. A plurality of switches, each one of which is operable from an open to a closed state is included and leads connect the plurality of switches between the source of energy and the plurality of load devices so that movement of the plurality of switches from the open to the closed state connects a first set of preselected ones of the load devices across the source of energy to energize the first set of preselected ones of the load devices. A switching matrix is connected between the plurality of switches and the plurality of load devices and is movable from a first to at least a second position to rearrange the connections between the switches and the load devices so that movement of the plurality of switches from the open to the closed state connects a second set of preselected ones of the plurality of load devices across the source of energy so that a different set of load devices thereby are energized.

3,795,399
GOLF SWING TRAINING DEVICE
John Beckish, 228 W. Mitchell St., Milwaukee, Wis. 53204
Filed Feb. 5, 1973, Ser. No. 329,599
Int. Cl. A63b *69/36*
U.S. Cl. 273—191 A **7 Claims**

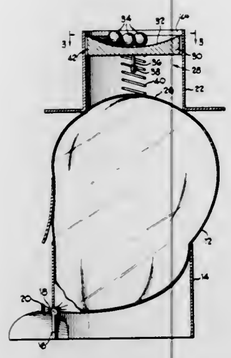


A golf club is pivotally connected to a swing guide mechanism which is maintained in contact with an arcuate track defining a desired golf club swing path. The mechanism includes spring-biased components. The track is supported on vertical standards which are adapted to be moved along each of two intersecting horizontal axes. Manually operable threaded rods may be used to move the standards horizontally. The arcuate track includes at the central lowest point thereof a portion formed on a horizontal plane.

3,795,400
GAME DEVICE
Marvin I. Glass, and Kathy A. Dunn, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 27, 1971, Ser. No. 212,025
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **11 Claims**

A game wherein the participants seek to avoid destroying an object such as a rupturable or puncturable balloon. The game includes a plurality of playing pieces, a rupturable object such as a balloon, a balloon retainer, a pan to be disposed on top of the balloon for carrying the playing pieces therein, the pan having an elongated member extending downwardly from the bottom of the pan and a chance device for determining the

number of playing pieces to be deposited in the pan. The pan is held spaced from the balloon by a helical spring surrounding



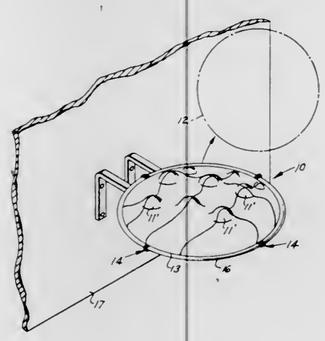
the elongated member. As weight is added to the pan the elongated member is forced against the balloon against the bias of the spring and eventually the balloon bursts.

3,795,401

BASKETBALL REBOUND DOME

Bradford H. Voltz, Erie, Pa., and Kenneth E. Hayden, Avon, Ohio, assignors to Kenneth E. Hayden, Avon, Ohio

Filed Apr. 23, 1969, Ser. No. 818,572
Int. Cl. A63b *63/00*
U.S. Cl. 273—1.5 A **2 Claims**



A basketball rebound dome in the shape of a convex surface member having a plurality of raised hemispherical surfaces against which a basketball may strike to cause erratic bouncing is held within the rim of a basketball goal by a plurality of radially extending clamps.

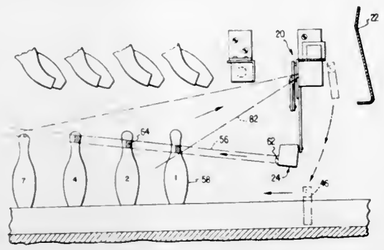
3,795,402

PIN SENSING SYSTEM

John G. Bolger, Jr., Orinda, and Carl A. Walker, Moraga, both of Calif., assignors to Digilux Corporation, Oakland, Calif.

Division of Ser. No. 44,733, June 9, 1970, Pat. No. 3,705,722.
This application Feb. 7, 1972, Ser. No. 224,245
Int. Cl. A63d *5/04*
U.S. Cl. 273—54 E **4 Claims**

A pin sensing system, based on the definition of pin sensing zones by intersecting reflecting and transmitting optical paths, transmits "pins standing" information to distinct optical projection and data printing systems. The intersecting, reflecting



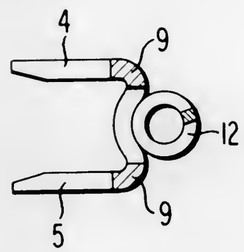
and transmitting optical paths originate in front of the head pin position and converge in the direction of the pit end of the lane.

3,795,403

ONE-PIECE CHANNEL SHAPED PISTON RING

Eisuke Sugahara, c/o 12-203 No. 1, Akabanedail-chome, Tokyo, Japan

Division of Ser. No. 85,042, Oct. 29, 1970, Pat. No. 3,729,790.
This application Nov. 11, 1971, Ser. No. 197,745
Int. Cl. F16j *9/00*
U.S. Cl. 277—201 **2 Claims**



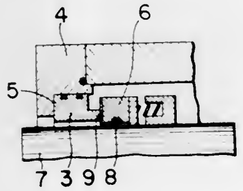
A piston ring has an electrolytic Cr plating applied to the surface of the channel shaped steel article prior to slitting by the grinder to form a plurality of lateral slits.

3,795,404

SEALING OF MECHANICAL SEAL AND MANUFACTURE THEREOF

Kazuki Ogawa, Fukuoka; Hiroshi Ito, Dazaifu-machi, and Mitsuhiko Furukawa, Fukuoka, all of Japan, assignors to Nippon Tungsten Company, Ltd., Fukuoka-shi and Nippon Pillar Packing Company, Ltd., Osaka-shi, both of, Japan

Filed May 2, 1972, Ser. No. 249,669
Int. Cl. F16j *15/34*
U.S. Cl. 277—235 R **2 Claims**



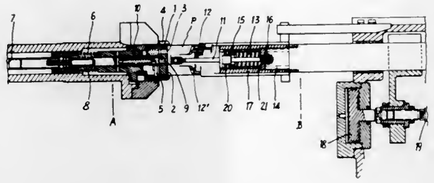
Seal ring of mechanical seal comprising a basic metal or substrate having a hard metal coating adhered thereto by a sintering process.

3,795,405

CLAMPING OF PARTS BY ADHERENCE ON AXIAL THRUST SUPPORT

Pierre Lecailtel, and Bruno Dressler, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Dec. 2, 1971, Ser. No. 204,151
Claims priority, application France, Dec. 4, 1970, 70.43694; Nov. 24, 1971, 71.42070
Int. Cl. B23b *5/24*
U.S. Cl. 279—1 L **5 Claims**



A clamping device, especially for pistons of internal combustion motors, permitting previous indexing and ensuring the handling and maintenance in position of the said pistons during the half-finish and finish machining operations of the skirt and the lands of said pistons.

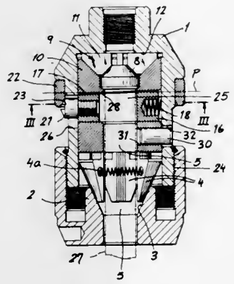
The device comprises a receiving member in frontal support of the head of a workpiece, presenting, centering and indexing members for the piece towards the said receiving member, and members intended to apply the piece against the presenting member by supporting the face of the head of the piece opposite to its face which is frontally supported against the receiving member.

3,795,406

SELF-TIGHTENING DRILL CHUCK

Gunter Horst Rohm, Muhlstrasse 9, 9727 Sontheim/Brenz, Germany

Filed July 3, 1972, Ser. No. 268,752
Claims priority, application Germany, July 3, 1971, 2133142
Int. Cl. B23b *31/16*
U.S. Cl. 279—56 **10 Claims**



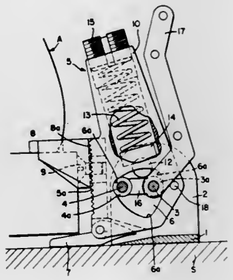
A self-tightening drill chuck has a rotatable housing carrying a first element formed with a tapered seat on which a plurality of angularly-spaced wedgelike jaws are provided. A second element axially engages the jaws and either the first or second element is threaded on the housing such that its rotation displaces the jaws radially and axially on the seat to clamp the shank of a tool. A body is provided in the housing to form an abutment for the shank end, this body is connected to the other element by means which translate axial pressure against the body in one direction into opposite axial displacement of the jaws to tighten them while forming a shock-absorbing mechanical cushion. Mechanism is also provided which prevents reverse displacement of the jaws during use of the tool, but which permits such displacement for removal of the tool.

3,795,407

HEEL-HOLDING DEVICE FOR SAFETY SKI BINDINGS

Yoichi Nagasaki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed June 8, 1972, Ser. No. 260,805
Claims priority, application Japan, July 21, 1971, 46-54470
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **11 Claims**



A heel-holding device for a safety ski binding comprises a rotatable member provided with a pedal and a heel clamping projection and having an aperture. A pair of stationary shafts each having a roller therearound are extended into the aperture with the rollers in contact with the aperture wall. The aperture has a pair of deeply concaved walls and other walls contiguous thereto and so shaped as to allow the rotatable member to rotate about both of the shafts respectively. A constantly acting force is exerted against the rotatable member to hold it in any rotated position.

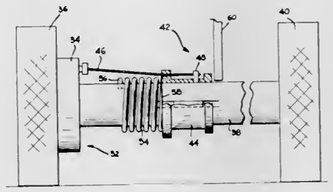
In a boot-clamped state, one of the shafts is engaged into one of the deeply concaved walls, and when a force exceeding the above-mentioned force is applied to release the boot, the rotatable member is rotated about said one of the shafts and then further rotated about the other of the shafts, so that the heel clamping projection is raised apart from the heel.

3,795,408

WHEEL AND AXLE SYSTEM FOR LAND VEHICLES

Laszlo Nemessanyi, Glen Head, N.Y., assignor to Tridair Industries, Redondo Beach, Calif.

Continuation of Ser. No. 56,570, July 20, 1970, abandoned.
This application Oct. 30, 1972, Ser. No. 301,936
Int. Cl. B60k *23/06*
U.S. Cl. 280—80 R **4 Claims**



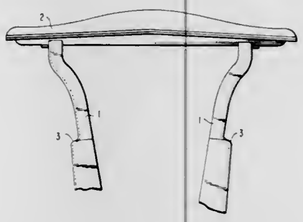
A wheel and rotatable axle system for land vehicles where, when one wheel moves at an angular velocity that is different than the angular velocity of a second wheel, a clutch (1) permits the one wheel to rotate independently of the second

wheel, and (2) damps any angular velocity oscillations imposed on the system to return both wheels to the same or substantially the same angular velocity so that "fishtailing" of a land vehicle supported by the wheel and axle system is eliminated.

3,795,409
WHEELED COASTING DEVICE
Patrick Cudmore, 9 Fallon St., Cambridge, Mass. 02138
Filed Apr. 28, 1972, Ser. No. 248,446
Int. Cl. B62b *3/00*
U.S. Cl. 280—87.04 **13 Claims**

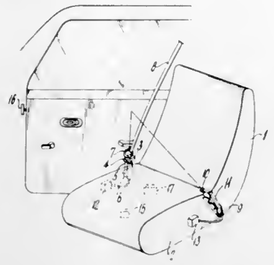
A wheeled coasting device having a one-piece molded plastic thin shell construction. The device has a riding platform and front and rear integral resilient suspension arms which extend downwardly and centrally. The suspension arms mount two parallel axles, each of which carries a wide cylindrically shaped ridged tire. When the rider shifts his weight laterally, the platform tilts, the suspension arms pivot, and the tires cock in opposite directions causing the coasting device to turn in the direction that the rider is leaning.

3,795,410
BEARER, ESPECIALLY LONGITUDINAL BEARER FOR MOTOR VEHICLES
Guntram Huber, Dachtel, Germany, assignor to Daimler-Benz AG, Stuggart, Germany
Filed May 7, 1971, Ser. No. 141,209
Claims priority, application Germany, May 8, 1970, 2022683
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 R **10 Claims**



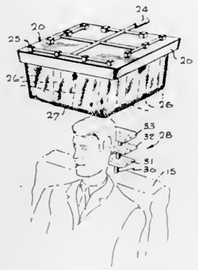
A bearer, especially a longitudinal bearer for motor vehicles in which at least one step-shaped offset is provided which changes in effect the cross-sectional area thereof; the offset is thereby so constructed that in case of an impact-like load on the longitudinal bearer substantially in the direction of the longitudinal bearer axis, a folding of the individual sections of different cross-section one within the other can take place.

3,795,411
MECHANISM FOR AUTOMATICALLY APPLYING SAFETY RESTRAINT BELTS
Takezo Takada, 1731 Hikotomi-cho, Hikone, Japan
Filed Mar. 15, 1972, Ser. No. 234,796
Claims priority, application Japan, Aug. 20, 1971, 46-62933
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **15 Claims**



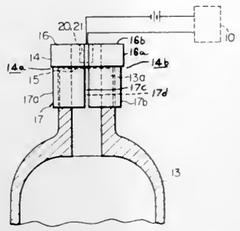
A mechanism for automatically applying a safety restraining belt to the occupant of a vehicle seat includes a pair of linear or curved arms movable between retracted positions with their free ends withdrawn to the sides of the seat and advanced positions with the free ends near each other above the seat cushion and forward of the seat back, and motors which are energized upon occupation of the seat and the closing of the vehicle door to advance and retract the arms. One of the arms upon advance withdraws the safety belt from a belt retraction reel and the other advanced arm engages the coupler on the belt and upon retraction draws it into locking engagement with a mating coupler at the side of the seat. Retractable belts may be located on opposite sides of the seat and the advancing arms withdraws from the belts and effects the engagement of the buckles on the belts.

3,795,412
VEHICLE OCCUPANT RESTRAINT SYSTEM
Andrew E. John, 7315 Asman Ave., Los Angeles, Calif. 91304
Filed June 16, 1972, Ser. No. 263,405
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **10 Claims**



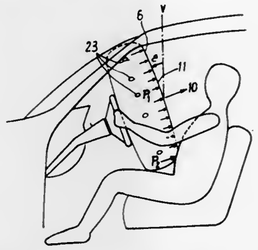
A vehicle safety device is disclosed herein for protecting occupants during an accident having a roof housing for storage of a plurality of inflatable, spaced apart tubes carrying a sleeve of netting material adapted to surround and confine the occupants upon deployment. Deployment is achieved upon the occurrence of an accident by releasing a pressurized gas coupled to the tubes for inflation thereof and rapid extension of the netting from the housing. The netting and inflated tubes are positioned about the occupants and the back of the seat to restrain the occupants from forward or lateral movement.

3,795,413
INFLATABLE SAFETY DEVICE FOR MOTOR VEHICLE
Keizaburo Usui, Yokosuka; Michio Yamaguchi, Yokohama; Yasuhiro Saito, Tokyo; Tsugio Noda, Kawagoe; Takashi Mitani, Kawagoe; Shinzo Tsuji, Kawagoe, and Kenichi Mitsuhashi, Tokyo, all of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan
Filed Apr. 21, 1971, Ser. No. 136,051
Claims priority, application Japan, Apr. 25, 1970, 45-40411; May 4, 1970, 45-43852
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **5 Claims**



A safety device for a motor vehicle adapted to protect a vehicle occupant from injury in the event of a collision of a motor vehicle. The safety device includes a pressurized gas supply unit comprising pressurized gas generating means and sealing means in closing engagement with a discharge spout of the pressurized gas generating means. The sealing means includes a first split cap member releasably attached to the discharge spout to hermetically seal off the same engaging the discharge spout, a second cap member associated with the first cap member for hermetically seal off the discharge spout, and explosive means for releasing, when activated, the first and second cap members from the discharge spout thereby to provide communication between the discharge spout and the inflatable confinement whereby the pressurized gas is admitted into the inflatable confinement to actuate the same to its protective position.

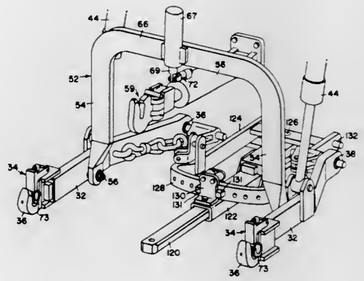
3,795,414
INFLATABLE SAFETY DEVICES FOR PROTECTING THE DRIVERS OF MOTOR VEHICLES
Pierre Ventre, and Jacques Lacambre, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed Nov. 8, 1971, Ser. No. 196,417
Claims priority, application France, Nov. 19, 1970, 70.41537
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **4 Claims**



This safety device comprises an inflatable air-bag interposed between the passenger and one portion of the passenger compartment of a vehicle, wherein the surface portion of the air-bag which is to engage the passenger in case of crash forms an acute dihedral angle with a vertical plane of reference.

The aforesaid dihedral angle is directed forwards in relation to the passenger, and the interior of the surface portion of the bag which is to engage the passenger in case of crash is subjected to two unequal fluid pressures of which the highest is exerted at least in the air-bag portion nearest to the passenger.

3,795,415
MULTI-LOAD TRACTOR HITCH SYSTEM
James Allan Koch, Hudson, and Donald LeRoy Henderson, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Sept. 29, 1972, Ser. No. 293,436
Int. Cl. B62d *53/00*
U.S. Cl. 280—461 A **22 Claims**

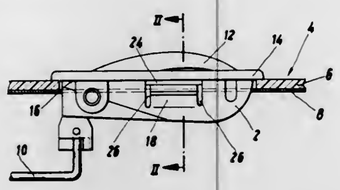


A tractor includes a hitch system comprising spaced lower draft links carrying draft hooks at their distal ends and an upper center link in the form of an extensible and retractable hydraulic actuator and a drawbar. An inverted U-shaped arch member has opposite legs respectively pivotally connected to the draft links at locations intermediate the ends thereof by means establishing a horizontal transverse axis about which the arch member is swingable fore and aft. A swivel bracket including rollers is mounted for rolling movement along the transverse bight portion of the arch member between a stored position on one of the legs of the arch member and an operative position on the transverse bight portion of the arch member. The hitch structure may be arranged in a three-point hitch mode by suspending the center link-forming hydraulic actuator from the bight portion of the arch member by spring means and by connecting a draft hook to the end of the piston rod of the center link-forming actuator. The hitch structure may be arranged in a weight transfer mode by placing the swivel bracket in its operative position, by connecting the end of the piston rod of the center link-forming actuator to the bracket and by connecting a force transmitting member or link between the swivel bracket and the implement to be towed. The hitch structure includes draft responsive means for initiating automatic draft and weight transfer control, the draft responsive means being, in one embodiment, responsive to forces imposed on the lower draft links or on the drawbar and being responsive in a second embodiment to draft forces imposed on the center link-forming actuator.

3,795,416
HOUSING FOR MOUNTING AN OPERATING LEVER FOR AN AUTOMOTIVE VEHICLE DOOR LOCK
Klaus Friedrich Hehl, and Bernd Schenk, both of Norderstedt, Germany, assignors to ITW-ATECO GmbH, Norderstedt, Germany
Filed June 23, 1972, Ser. No. 265,856
Int. Cl. E05c *13/04*
U.S. Cl. 292—336.3 **2 Claims**

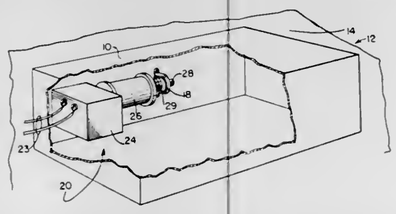
A housing for an automobile vehicle door lock that is insertable into the inner wall of the vehicle door is disclosed. An operating lever is mounted on the housing and a shield covers

the insert opening. A resilient tongue for releasably securing the housing to the door is located on the interior portion of the



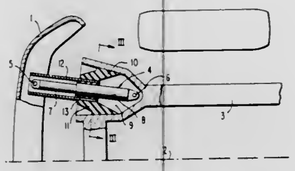
housing and is offset from the shield by a distance substantially equal to the thickness of the wall of the vehicle door.

3,795,417
ELECTRICALLY OPERATED COIN BOX LOCK
David J. Cohen, 9614 N. Crawford Ave., Skokie, Ill. 60646
Filed Oct. 18, 1971, Ser. No. 190,078
Int. Cl. E05c *1/08*
U.S. Cl. 292—144 **10 Claims**



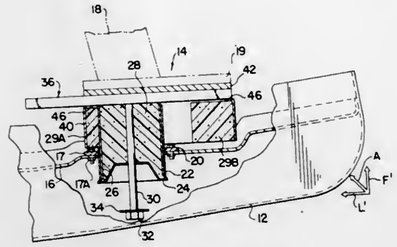
This invention relates to an electrically actuated coin box locking device for vending machines and the like. The electrically actuated locking device comprises a solenoid having a spring loaded plunger which is positioned to engage a staple coupled to the machine. When the plunger engages the staple the coin box cannot be removed from the machine. The solenoid is actuated by an appropriate signal having a particular characteristic.

3,795,418
BUMPER ARRANGEMENT IN A VEHICLE
Bela Barenyi, Maichingen, and Hermann Renner, Magstadt, both of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany
Filed June 2, 1972, Ser. No. 259,001
Claims priority, application Germany, June 2, 1971, 2127258
Int. Cl. B60r *19/06*
U.S. Cl. 293—88 **31 Claims**



A bumper arrangement in a vehicle, especially in a motor vehicle in which at least two shock absorbers are provided between the bumper and the support structure; the shock absorbers thereby extend in extension of the lateral parts of the support structure at least approximately in the vehicle longitudinal direction and are secured to the bumper and to the support structure by way of joints having vertical axes while they are supported in the vehicle transverse direction between elastic bodies.

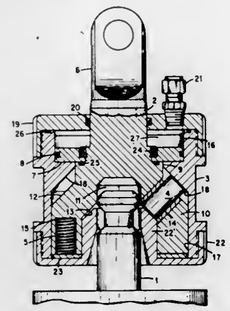
3,795,419
BI-AXIAL SHOCK ABSORBING BUMPER
Ignatius John Niemkiewicz, Wilmington, Del., and William S. Aseltine, Devon, Pa., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.
Filed June 9, 1972, Ser. No. 261,507
Int. Cl. B60r *19/08*
U.S. Cl. 293—88 **14 Claims**



A shock absorbing bumper for a vehicle (or structure) is capable of absorbing impact forces along both a frontal and a lateral axis. The bumper comprises at least one pair of complementary, telescopically engaging chambers at least partially encompassed by a fixed housing, with one of the chambers mounted on a slide bar and the other having an impact-receiving face affixed thereto. The slide bar and consequently the chambers are laterally moveable with respect to the fixed housing. Shock absorbing material, e.g., a resilient plastic foam material, is contained within the chambers and the fixed housing.

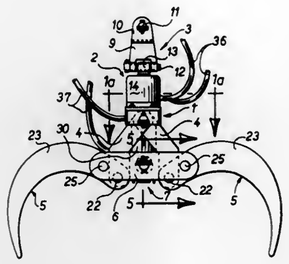
Frontal impact forces will drive the pair of telescopic chambers together, compressing the shock absorbing material between them. Lateral impact forces will drive the slide bar and chambers laterally with respect to the fixed housing, compressing the shock-absorbing material between the housing and the chambers.

3,795,420
LIFT COUPLING
Max K. Preston, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Mar. 7, 1973, Ser. No. 338,798
Int. Cl. B66c *1/66*; **G21c** *19/20*
U.S. Cl. 294—86 A **2 Claims**



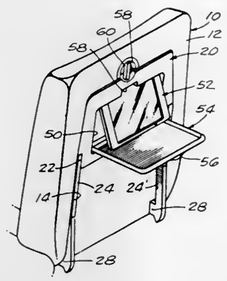
A positively locking coupling system especially designed for the positive function necessary in remote handling of highly radioactive loads is provided. The coupling is adapted to be remotely operable.

3,795,421
GRAPPLE ASSEMBLY
Justin Vohl, and Paul-Eugene Vohl, both of St. Marc des Carrieres, Quebec, Canada
Filed Nov. 29, 1972, Ser. No. 310,265
Int. Cl. B66c *13/14*
U.S. Cl. 294—88 **10 Claims**



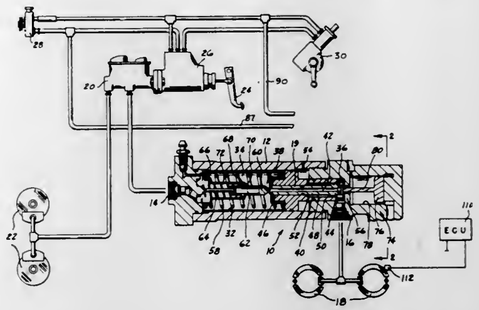
A grapple assembly arranged to be suspended from a boom, for example on a vehicle to load logs in the forest. A grapple assembly having grapple jaws or buckets and forming a compact slender unit not prone to become obstructed or damaged by surrounding obstacles, positively pivoted around an upright axis and having jaws which can pivot unequally when one is offered a larger resistance than the other upon grappling. A grapple assembly having two grapples pivotally supported by a pivoted linkage arrangement allowing the unequal pivoting thereof, a hydraulic actuator for the grapples and a direction changing drive to pivot the grapples and the actuator about an upright axis.

3,795,422
SEAT MOUNTED FOOD TRAY WITH VANITY MIRROR
Roger R. Robinson, Thousand Oaks, and Stanley J. Hardman, Los Angeles, both of Calif., assignors to Air Specialties, Inc., Venice, Calif.
Filed Apr. 4, 1972, Ser. No. 241,006
Int. Cl. A47c *7/62*
U.S. Cl. 297—191 **5 Claims**



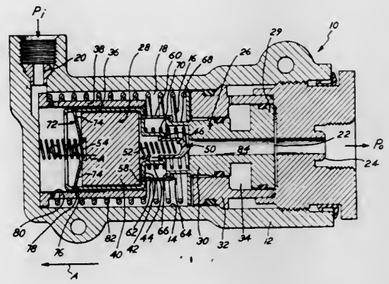
A food serving tray adapted particularly for use in aircraft mounted from the back of a seat on pivot arms so that it can be collapsed flush into a recess in the back of the seat. The underside of the tray has a covered vanity mirror adapted to be used when the tray is in collapsed position.

3,795,423
ADAPTIVE BRAKING MODULATOR
Martin A. Shields, and David A. Jackson, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.
Filed Sept. 18, 1972, Ser. No. 289,930
Int. Cl. B60t *8/12*
U.S. Cl. 303—6 C **5 Claims**



An adaptive braking system for an automotive vehicle is disclosed which permits the proportioning unit valve commonly used in vehicle braking systems to also function as the adaptive braking modulator. The device provides a fluid motor which engages the proportioning piston and urges the latter into sealing engagement with the poppet member to prevent fluid communication to the brakes of the vehicle when an adaptive braking cycle has initiated. Thereafter, the fluid motor continues to urge the proportioning piston in a direction enlargening the outlet chamber of the proportioning valve, to thereby reduce the fluid pressure level communicated to the vehicle brakes. An electrically actuated solenoid valve is responsive to an output signal from an electronic control unit when an adaptive braking cycle is initiated to communicate fluid pressure to the fluid motor for operating the latter.

3,795,424
DECELERATION RESPONSIVE PROPORTIONING VALVE FOR VEHICLE BRAKING SYSTEM
Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.
Filed Aug. 16, 1971, Ser. No. 171,929
Int. Cl. B60t *13/06*
U.S. Cl. 303—6 C **13 Claims**



A proportioning valve for a vehicle braking system is disclosed which includes a pair of valve members slidably disposed within a housing and cooperating with the latter to define an inlet chamber connected to the vehicle's master cylinder and an outlet chamber in fluid communication with the rear wheel brakes of the vehicle. The valve members ini-

tially permit uninhibited fluid communication between the inlet and outlet chambers until a predetermined relationship exists between vehicle deceleration and the pressure level in the valve, whereupon the valve members cooperate with one another to restrict fluid communication between the inlet and the outlet chambers to thereby establish a lower fluid pressure level in the outlet chamber than the fluid pressure level established in the inlet chamber.

3,795,425

ELECTRONIC BRAKING SYSTEM

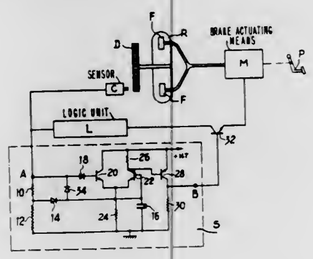
Guy Marouby, Neuilly, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed May 24, 1972, Ser. No. 256,495

Claims priority, application France, June 18, 1971, 7122193

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE **4 Claims**



The invention relates to an electronic anti-skid system which avoids the untimely operating of the system which occurs especially further to the aleatory variations of the wheel speed. A given percentage of the output voltage of a wheel speed sensor is memorized in a capacitor by means of a diode, as soon as the wheel decelerates. The exhaust signal which is given at the output of an anti-skid logic circuitry is transmitted to a transistor only when the wheel speed has decreased of an amount equal to the complementary percentage of the given percentage. The resetting of the devices is effected by another diode which deletes the memorized voltage of the capacitor.

3,795,426

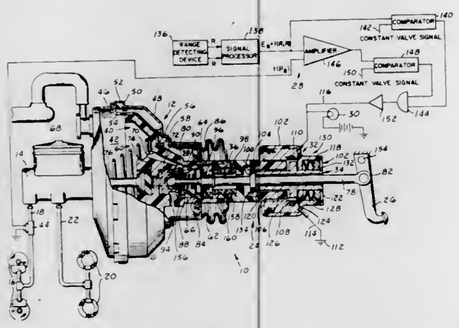
ACTUATION MEANS RESPONSIVE TO A SENSED BRAKING CONDITION FOR ACTIVATING A SERVOMOTOR

Albert E. Sisson, Southfield, Mich., assignor to The Bendix Corporation, South Bend, Ind.

Filed Mar. 30, 1973, Ser. No. 346,394

Int. Cl. B60t *8/04*

U.S. Cl. 303—21 F **10 Claims**



A solenoid actuator connected to a servomotor for operating a control valve in response to an automatic input force overriding a manual input force when a sensed speed condition indicates a closure distance between a vehicle and an object exceeds a predetermined rate.

ERRATUM

For Class 305—56 see:
Patent No. 3,795,431

3,795,427

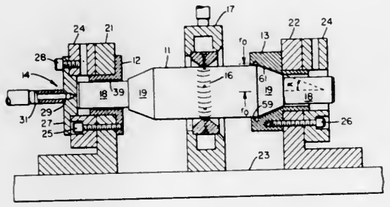
ANTI-WHIRL FLUID BEARING

Lazar Licht, San Mateo; Moritz Branger, Los Altos; Helmut L. Kayan, and Bob L. Lawson, both of Redwood City, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Nov. 24, 1972, Ser. No. 309,196

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 **17 Claims**



An anti-whirl capability is provided for a shaft and journal bearing, or a conical-ended shaft in a combination journal-thrust bearing, by coiling a springy foil-strip in more than one full turn around the shaft within the bearing concavity, the springiness of the coiled strip being such as to cause the coil to expand away from the shaft and against the walls of the concavity in the bearing block.

3,795,428

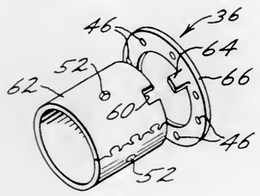
TWO-PIECE INTERLOCKED SUPPORT/THRUST BEARINGS

John H. Paine, Peoria, and Orville E. Kessinger, Jr., Mackinaw, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 10, 1972, Ser. No. 216,631

Int. Cl. F16c *33/06*

U.S. Cl. 308—161 **7 Claims**



A track roller bearing in two pieces is provided having interlocking means between each piece to provide a unitary, one-piece construction.

3,795,429

OPEN BALL BEARING

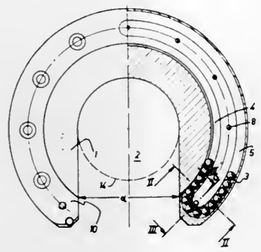
Jean-Pierre Peyrot, 1, avenue de la Division du General Lecler, Villejuif, Val de Marne, France

Filed Aug. 16, 1971, Ser. No. 171,878

Claims priority, application France, Aug. 18, 1970, 7030265

Int. Cl. F16c *19/02*

U.S. Cl. 308—185 **4 Claims**



Open ball bearing in which the bearing cage comprises an inner crown and an outer crown lined with bearing balls on a single endless race or track, the opening or aperture of the crowns curving in the shape of a clamp or pliers enabling a recessed shaft to be rotatably lodged inside the inner crown or curved element of the bearing balls for circular welding on a tube placed in the recess.

3,795,430

WEAR RESISTANT FRICTIONALLY CONTACTING SURFACES

Carl Wiern Farley, Hockessin, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Oct. 19, 1972, Ser. No. 298,837

Int. Cl. F16c *33/12*

U.S. Cl. 308—241 **14 Claims**

An improved mechanical system comprising a first part presenting a first metallic surface, a second part presenting a metallic surface of the same or a different metal and capable of being in sliding contact with the first surface, and means for inducing and maintaining the two surfaces in sliding contact with each other, for example, in liquid pumps of the gear type wherein there is sliding and rolling between the teeth of adjacent meshing and unmeshing gears, the improvement consisting of employing as each surface a metallic surface comprising an alloy containing at least 60 atom percent of at least two heavy metal transition elements, the ratio of the atomic radii of the largest to the smallest transition elements being 1.05–1.68, and consisting of 10–100 volume percent of a hard phase and 0–90 volume percent of a matrix phase which is softer than the hard phase, said hard phase containing a major fraction of Laves phase in such amount as to provide at least 10 volume percent thereof in the alloy.

3,795,431

TRACK LINK WITH REPLACEABLE RAIL

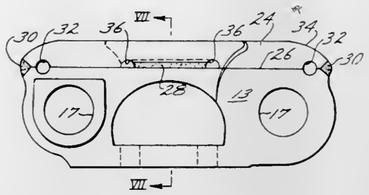
Roger L. Boggs, East Peoria, and Harold L. Reinsma, Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 10, 1972, Ser. No. 216,611

Int. Cl. B62d *55/20*

U.S. Cl. 305—56 **5 Claims**

A track link for an endless track chain assembly has a replaceable rail secured to one edge for engaging track rollers on a track suspension. The rail is welded to the link along its central portion and at its extreme ends. Intermediate the central portion and the ends of the rail, the rail is free to move longitudinally or "grow" with respect to the track link.



In an alternative embodiment, the rail has its central portion bolted to the track link. A groove and key arrangement in the abutting surface of the rail and track link allow longitudinal growth of the rail while resisting lateral deflection forces.

3,795,432

METHOD FOR ELIMINATING DEGRADATION OF CROSSED-FIELD-AMPLIFIER PERFORMANCE

Bernard Goldstein, Princeton, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1972, Ser. No. 223,327

Int. Cl. H01j *9/50*

U.S. Cl. 316—2 **2 Claims**

A method for restoring the performance of certain crossed-field-amplifier tubes which have deteriorated because of degradation of the secondary emission characteristic. Performance is restored by providing an agent for gettering desorbed carbon on the cathode and activating the tube and the gettering agent simultaneously.

3,795,433

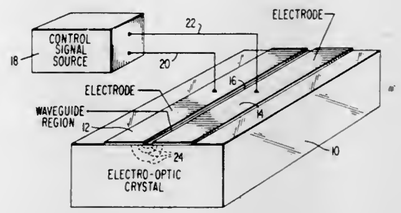
VOLTAGE INDUCED OPTICAL WAVEGUIDE MEANS

Donald Jones Channin, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 22, 1972, Ser. No. 255,660

Int. Cl. G02b *5/14*; **G02f** *1/26*

U.S. Cl. 350—96 WG **14 Claims**



The increase of the refractive index in one or more localized regions defined by spaced electrodes on a surface of an electro-optic crystal, in response to a voltage across the electrodes, provides voltage-induced optical waveguide means. By controlling the voltage and/or the configuration of the electrodes, complex optical translating systems can readily be constructed.

3,795,434

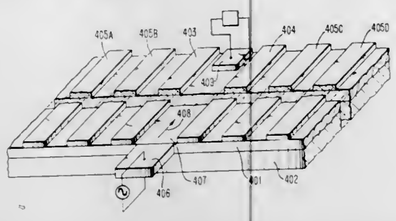
GRATING GUIDES FOR OPTICAL SURFACE WAVES

Eric Albert Ash, London, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 203,185, Nov. 30, 1971, abandoned. This application July 20, 1972, Ser. No. 273,576

Int. Cl. G02b *5/14*

U.S. Cl. 350—96 WG **8 Claims**



Waveguides for use with guided elastic waves and guided optical waves wherein the lateral leakage rate of the waveguides is very small. The decreased leakage rate is effected by longitudinal strip regions or gratings periodically spaced on either side of the main waveguide region. These periodically spaced gratings rapidly decrease the rate of the evanescant portion of the wave according to a geometric law. Further, by controlling the amount of discontinuity presented by the periodic gratings the rate of evanescance may be controlled.

3,795,435

REFLEX LIGHT REFLECTION SHEET AND METHOD FOR ITS MANUFACTURE

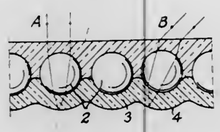
Kurt Schwab, Innsbruck, Tirol, Austria, assignor to D. Swarovski & Co., Tirol, Austria

Division of Ser. No. 847,528, July 30, 1969, Pat. No. 3,702,213. This application Oct. 8, 1970, Ser. No. 79,360

Claims priority, application Austria, May 9, 1969, 4502

Int. Cl. G02b *5/12*

U.S. Cl. 350—105 **11 Claims**



Reflex light reflector sheet of the kind wherein a spacer layer is interposed between substantially spherical transparent beads and a rear mirror surface. The spacer layer is formed from a smooth, prefabricated self-supporting transparent plastic foil which is deformed so as to snugly conform to and envelope the rear contours of the spherical beads. The deformation of the spacer layer foil is accomplished by subjecting the foil with the beads placed thereon to a pressure differential such as by applying vacuum to one side of the foil.

A plane cover layer may be superimposed on the front portion of the beads and the beads are bonded by a suitable binder.

3,795,436

NEMATOGENIC MATERIAL WHICH EXHIBIT THE KERR EFFECT AT ISOTROPIC TEMPERATURES

Arthur Boller, Binningen, and Hanspeter Scherrer, Therwil, both of Switzerland, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

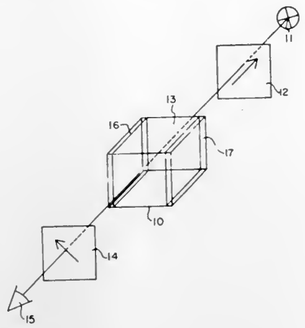
Filed July 11, 1972, Ser. No. 270,789

Claims priority, application Great Britain, June 21, 1972, 28987/72

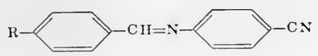
Int. Cl. G02f *1/16*

U.S. Cl. 350—150 **17 Claims**

An electro-optical light-modulation cell having a dielectric disposed between electrodes and being comprised of a nematogenic fluid in the isotropic state, is described. Said dielectric, upon application of a voltage to the electrodes, becomes



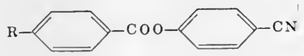
double refracting. More particularly the nematogenic fluid comprises compounds of the general formula



I

wherein R is ethyl, n-propyl, n-butyl, n-pentyl, n-hexyl, isohexyl, n-heptyl or n-octyl

or compounds of the general formula



II

wherein R is n-butyl, n-pentyl, n-hexyl, n-heptyl or n-octyl,

or mixtures thereof or mixtures of these compounds with other nematogenic substances.

3,795,437

PHOTOGRAPHIC OBJECTIVE OF RELATIVELY NARROW VIEWING ANGLE

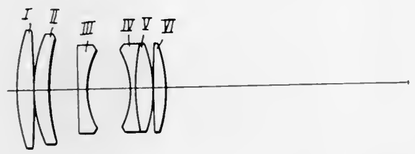
Takahiro Sugiyama, Tokyo, Japan, assignor to Asahi Kogahu Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1972, Ser. No. 254,423

Claims priority, application Japan, May 24, 1971, 46-35397

Int. Cl. G02b *9/60*

U.S. Cl. 350—218 **1 Claim**



A photographic objective having a relatively narrow viewing angle. The length of the objective is relatively great. In order to achieve a small Petzval sum and the relatively narrow angle, the dimension d_2 of the space along the principal axis between the second and third lenses is relatively great.

3,795,438

APPARATUS FOR PERMEATING AN AUDITORIUM WITH ODOURS IN CONJUNCTION WITH PROJECTION OF A MOTION PICTURE FILM

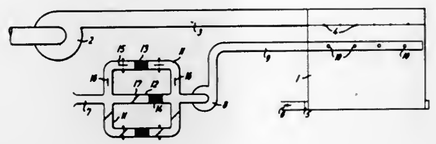
Sven Torben Westenholz; Svend Helge Kristiansen, and Ole Roslyng, all of Naestved, Denmark, assignors to Nordisk Ventilator Co. A/S., Naestved, Denmark

Filed June 21, 1971, Ser. No. 155,182

Claims priority, application Denmark, June 22, 1970, 3221

Int. Cl. G03b *21/32*

U.S. Cl. 352—85 **7 Claims**



A method and apparatus for introducing controlled amounts of odors into an auditorium generally in conjunction with, for example, a visual presentation. Cartridges or other receptacles containing odorous substances can be made to communicate with an air injection duct in correspondence to markings on, for example, a film strip. A secondary air feed system is capable of evacuating the odorous substance below the sensing threshold. Appropriate valve means and ducts along with injection nozzles are provided and controlled for introducing the odor.

3,795,439

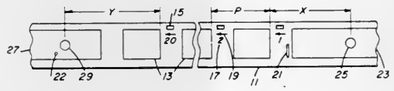
PHOTOGRAPHIC FILMSTRIP

Gordon P. Brown, Rochester, and David N. Schwardt, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1971, Ser. No. 205,853

Int. Cl. G03c *1/76*

U.S. Cl. 352—235 **3 Claims**



A photographic filmstrip having predefined image areas regularly spaced from one another at a uniform pitch distance includes discontinuities for facilitating the splicing of two of such filmstrips together end-to-end in such a manner that, when spliced, the endmost image area of one strip will be spaced from the adjacent image area of the other strip by a distance which is a multiple of the pitch distance.

3,795,440

MULTI-TRACK SOUND SYSTEM FOR NARROW-WIDTH MOTION PICTURE FILM

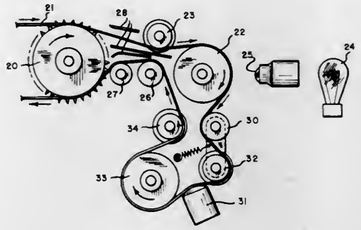
Robert Swerdlow, Toronto, Ontario, and Emil Schilder, Kensington, Ontario, both of Canada, assignors to Cinacor, Ltd., Ontario, Canada

Filed Mar. 31, 1971, Ser. No. 129,935

Int. Cl. G03b *31/02*

U.S. Cl. 352—27 **3 Claims**

Narrow-width motion picture systems are provided with a multiple-track sound capability by providing the film with a plurality of magnetic recording stripes and by providing projecting equipment with specially devised adapters for playing back sound tracks recorded on these stripes. The adapters are



designed to be compatible with existing equipment, and they include a switching arrangement for permitting the sound tracks to be replayed separately or in combination.

3,795,441

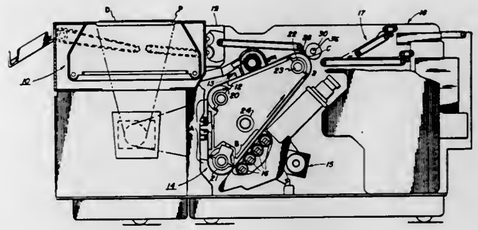
TRANSFER ROLLER

Daniel S. Hoffman, Rochester; Thomas Meagher, Webster, and Robert J. Michatek, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 9, 1972, Ser. No. 278,984

Int. Cl. G03g *15/16*

U.S. Cl. 355—3 R **3 Claims**



A transfer roller for a transfer roller assembly to be included within an electrostatographic machine wherein the transfer roller is texturized by providing a plurality of grooves and ridges having a vertical distance therebetween of from about 0.003 to 0.008 inches. The roller may include a coating of a high gloss durable material.

3,795,442

ELECTROPRINTING DEVICE

Takuhei Kimura, and Masaki Akita, both of 7-41 Kugayama 1 Chome, Suginami-ku, Tokyo, Japan

Continuation-in-part of Ser. Nos. 793,506, Jan. 23, 1969, abandoned, and Ser. No. 174,977, Aug. 25, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,213

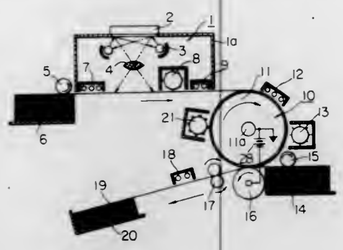
Claims priority, application Japan, Jan. 26, 1968, 43-4271

Int. Cl. G03g *15/00*

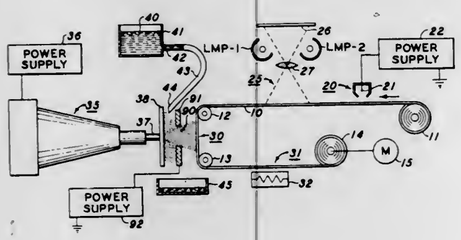
U.S. Cl. 355—3 R **4 Claims**

An electroprinting machine comprising a master-sheet making device and a transcribing device following and directly connected to the master-sheet making device. The transcribing device comprises a rotating drum which receives the master-sheet and carries it on its periphery during its rotation.

The master-sheet is charged by an additional charging device while being irradiated with light, the toner adheres to the image parts of the master-sheet in a succeeding development by a developer, and the toner on the master-sheet is transcribed to the transferred paper under suitable pressure and voltage applied to the drum and a transcription roller when each transcription paper is synchronously passed between the rotating drum on which the master-sheet is secured and the transcription roller.



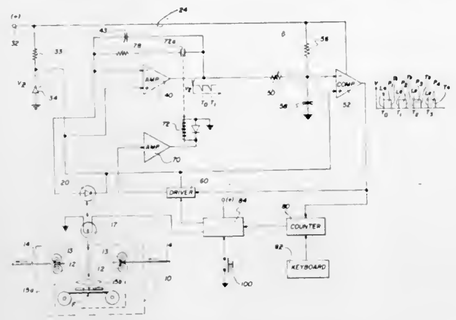
3,795,443
XEROGRAPHIC DEVELOPMENT
Robert V. Heine-Geldern, Pittsford, and Alan B. Amidon, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed Aug. 26, 1968, Ser. No. 755,461
Int. Cl. G03g *13/10*
U.S. Cl. 355—10 **11 Claims**



A method and apparatus for developing an electrostatic charge pattern with an ultrasonically generated uncharged droplet mist. The apparatus comprises an ultrasonic transducer which is energized from a power source and which has the capability of generating uncharged droplet mist particles from a liquid material. The droplet mist so created is brought into contact with the electrostatic charge pattern to effect its development without regard to image or charge polarity.

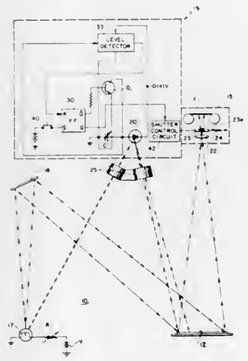
3,795,444
EXPOSURE CONTROL APPARATUS
Dennis James Glidden, and Wayne Alan Freiert, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 5, 1972, Ser. No. 295,410
Int. Cl. G03b *27/76*
U.S. Cl. 355—68 **1 Claim**

Exposure control apparatus for use in photographic reproduction apparatus such as a microfilmer includes at least one exposure lamp effective when energized to illuminate a document to be photographed when disposed at a photographic station. The apparatus further includes a photocell which receives light directly from the lamp and has a parameter the magnitude of which varies as a function of the level of intensity of such light. An electrical network coupled to the photocell includes (1) an integrator circuit effective in a first condition to produce a signal having a stable amplitude and in a second condition responsive to the magnitude of the parameter to produce a time dependent signal, the amplitude of which is a function of the cumulative total level of radiant energy received from the lamp by the document, (2) a comparator circuit adapted to produce a pulse signal when the



time dependent signal reaches a threshold level; (3) an electronic switch such as a relay responsive to the pulse signal to cause the integrator circuit to switch to the first condition and then back to the second condition, and (4) counter means responsive to selected number of such pulse signals for de-energizing the exposure lamps to end document exposure.

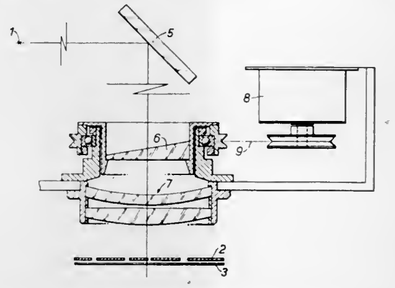
3,795,445
SLOPE CONTROL EXPOSURE CONTROL APPARATUS
Ronald Jackson Hamlin, Brockport, and Richard Edmund Albrecht, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 15, 1973, Ser. No. 341,434
Int. Cl. G03b *27/78*
U.S. Cl. 355—68 **5 Claims**



For use in a document reproducing apparatus such as a planetary microfilmer, a non-linear exposure control apparatus utilizing slope control includes at least one illumination lamp for projecting light upon a document to be photographed to expose a medium such as film to actinic light reflected from such document. The exposure control apparatus further includes a photocell adapted to produce an output signal which is a function of the intensity and spectrum of received actinic light. A filter is disposed in optical alignment with the photocell and adapted to pass to the photocell light coming directly from the lamp and light reflected from

the document. The filter has a spectral response selected to cause the output signal of the photocell to correlate with the spectral response of the medium. A control circuit includes the photocell which terminates exposure after a predetermined exposure of the medium in response to the output signal. A feature of the invention is the simplicity of such control circuit.

3,795,446
LITHOGRAPHY
John Kenneth Houston, Epping, England, assignor to The Rank Organization Limited, London, England
Filed Aug. 12, 1971, Ser. No. 171,286
Claims priority, application Great Britain, Aug. 12, 1970, 38809/70; Mar. 19, 1971, 7288/71
Int. Cl. G03b *27/02*
U.S. Cl. 355—78 **33 Claims**



This invention is concerned with shadow or contact printing as employed, for example in the photo-etching of substrates. An extended source of printing radiation, either in the form of an effectively annular fixed source or an orbiting source, is used to illuminate the mask under conditions of transitional Fresnel-Fraunhofer diffraction, the effective illumination condition of the mask during an exposure causing diffraction patterns which tend to cancel each other, producing a sharply defined shadow of the mask.

ERRATUM

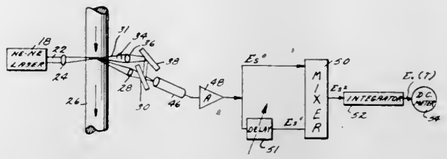
For Class 355—4 see:
Patent No. 3,795,917

ERRATUM

For Class 356—45 see:
Patent No. 3,795,918

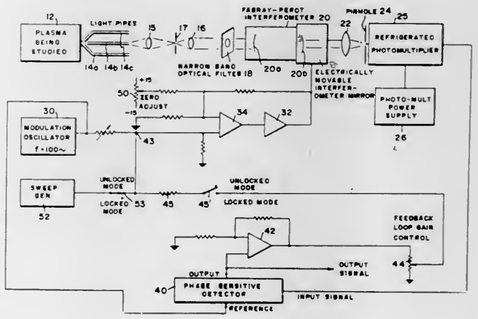
3,795,447
LASER ANEMOMETER FREQUENCY TO D.C. CONVERTER
Nathan E. Welch, 307 Crestwood Dr., Tullahoma, Tenn. 37405, and Richard G. Ray, 907 Leona St., Tullahoma, Tenn. 38468
Continuation-in-part of Ser. No. 839,526, July 7, 1969, abandoned. This application June 23, 1971, Ser. No. 155,797
Claims priority, application Great Britain, June 29, 1970, 31347/70
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **5 Claims**

A method and apparatus for converting frequency information to a DC voltage for use particularly with a laser velocity measuring system whereby a laser beam is passed through a flowing media, and a portion of the Doppler shifted beam is optically combined with the non-shifted beam to produce a fixed homodyne signal which is then applied to a photodetector to produce a modulated electrical signal. This modulated electrical signal is then amplified and delayed by a fixed or variable time interval. Next, the delayed and undelayed signals are mixed together and the output integrated or applied to a low frequency filter to produce a DC signal having an amplitude proportional to the cosine of a constant times the velocity of the flowing media. The amplitude of the coefficient of the cosine function can be readily ascertained by adjusting the variable time delay line until the minimum or maximum value on the DC meter is observed, and then the velocity can be determined by adjusting the time delay until a DC meter has an average fluctuation of zero at which point the speed can be quickly determined from the value of the time delay. Alternatively, the delay line can be fixed and the signal from



the flowing media can be mixed with a variable oscillator output signal to produce a signal at any given frequency which will give a zero reading on the DC meter. In a further embodiment a hold and track circuit is employed to cause the output to retain the previous tracked value whenever an interval occurs in which the signal is predominantly noise. In another embodiment a feed back loop is employed to vary the frequency of an oscillator, whose output is mixed with the velocity signal, in order to maintain a null at the output. In yet another embodiment, a digital system is employed to compare the frequency of the velocity signal with the frequency of the signal from a variable frequency oscillator.

3,795,448
DOPPLER SHIFT SYSTEM
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an Invention of, and Sol Aisenberg, 36 Bradford Rd., Natick, Mass. 01760
Filed June 28, 1972, Ser. No. 266,943
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **6 Claims**



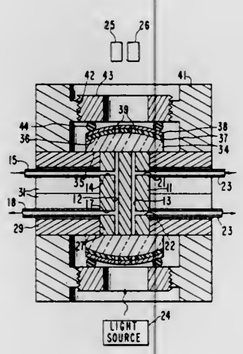
A system for measuring velocities of radiating particles based on doppler shift is disclosed. Light from the particles is directed through a narrow band optical filter to a Fabry-Perot interferometer initially tuned to a selected center line corresponding to zero particle doppler shift. The movable mirror of the interferometer is made to sweep about the center line by the output of a modulation oscillator. The fringe pattern output is imaged onto a pin hole through which light is

directed to a photomultiplier. The output of the photomultiplier is supplied to a phase sensitive detector which is supplied with the oscillator output as a reference signal and which operates in the quadrature mode. The detector's output is gain controlled and is combined with the oscillator's output to adjust the interferometer's movable mirror to acquire the line center.

3,795,449
CUTTER MONITOR
Russell M. McKay, Sr., Los Altos, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Jan. 11, 1973, Ser. No. 322,708
Int. Cl. B23c *9/00;* **G01b** *11/26*
U.S. Cl. 356—160 **3 Claims**

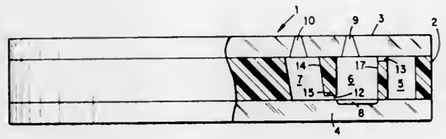
A cutter monitor is used to sense the position of a cutter. Optical non-contact means sense the position of the cutter and produce an electrical output that represents that position. The electrical outout is fed through electronic circuits that convert it to two signals. The first signal drives a directly readable digital output and the second signal is fed to a data processor.

3,795,450
DUAL BEAM OPTICAL ABSORPTION PHOTOMETRY DETECTOR ASSEMBLY FOR HIGH PRESSURE APPLICATIONS
Miner N. Munk, Walnut Creek, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Jan. 18, 1973, Ser. No. 324,636
Int. Cl. G01n *11/10*
U.S. Cl. 356—246 **10 Claims**



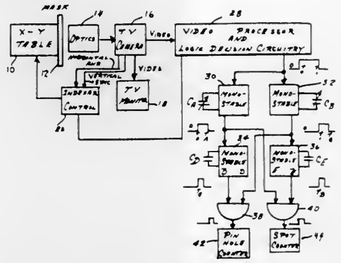
A detector assembly providing a sample cell and a reference cell for use in a dual beam optical absorption photometry instrument wherein the reference cell and sample cell are formed by a pair of bores extending through a main detector body in an axial direction from one end of the body to the other end, each end of the body being provided with apparatus to seal the reference and sample bores from each other comprising a transparent lens with a flat surface positioned at the end of the body and over the cell openings, the outer face of the lens being convex, a thin sheet gasket material overlying the outer face of the lens, a metal pressure plate overlying the gasket material, both the gasket and pressure plate being provided with openings therein aligned with the sample and reference bores in the cell body, and means for exerting a pressure on the surface of the pressure plate whereby the pressure plate exerts a force on the gasket and lens to force the lens against the end wall of the cell body, the pressure plate deforming under pressure to assume the convex shape of the outer face of the lens whereby the pressure applied by the pressure plate is spread over the surface area of the lens with a maximum pressure applied at the central region thereof which is aligned with the wall section of the main body between the two cell bores. In one embodiment, an additional gasket material is positioned between the flat surface of the lens and the end of the cell body with suitable openings therein aligned with the sample and reference cell bores, this additional gasket material either being heat treated to fuse to the cell body and lens face and provide additional sealing or left in its natural state to provide resilience at the surface of the seal.

3,795,451
ROTOR FOR FAST ANALYZER OF ROTARY CUVETTE TYPE
James C. Mailen, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Apr. 24, 1973, Ser. No. 354,041
Int. Cl. G01n *1/10, 1/28*
U.S. Cl. 356—246 **8 Claims**



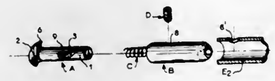
An improved rotor characterized by efficient premixing of sample and reactant liquids prior to their being discharged into a sample analysis cuvette is provided. Inner and outer concentric circular arrays of static loading cavities are disposed within the rotor on a one-to-one basis centripetal to an array of sample analysis cuvettes. The centrifugal walls of cavities in the inner array of loading cavities each slope downwardly and outwardly to a capillary-sized passage having a bubble trap. Liquid communication is provided by the capillary-sized passages between those cavities and respective cavities in the outer array of loading cavities upon rotation of the rotor while intercontact of the liquids in the respective cavities is prevented under static loading conditions. The centrifugal walls of cavities in the outer array of loading cavities each slope upwardly and outwardly to a cuvette-loading passageway at an angle approaching the vertical in order to retain liquids in those cavities at preselected low rotor rotational speeds sufficient to cause liquid to flow through the capillary-sized passage and to discharge liquids through the cuvette loading passageways at preselected higher speeds.

3,795,452
INSTRUMENT FOR AUTOMATICALLY INSPECTING INTEGRATED CIRCUIT MASKS FOR PINHOLES AND SPOTS
Roger J. Bourdelais, Essex Junction, Vt.; Dominick Colangelo, Camillus, N.Y.; Robert J. McFadyen, and James F. Elliott, both of Syracuse, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Feb. 28, 1973, Ser. No. 336,585
Int. Cl. G01n *21/16, 21/32*
U.S. Cl. 356—237 **3 Claims**



An apparatus for automatically detecting pinholes and spots in an integrated circuit photographic mask. The photographic mask is scanned by a television-type camera through a microscope to detect imperfections. Signals representing the imperfection are processed in logic circuitry.

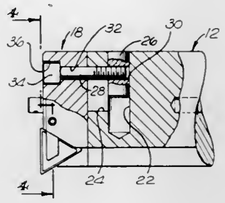
3,795,453
FRAMEWORK ASSEMBLING MEMBERS
Georges Julien Condevaux, 159, rue Blomet, 75015 Paris, France
Filed July 7, 1972, Ser. No. 269,526
Claims priority, application France, July 7, 1971, 71.24863
Int. Cl. F16b *7/00*
U.S. Cl. 403—3 **8 Claims**



In a framework built from section elements, some of which are formed with a sidewall constituted by spaced flanges defining a semi-closed slot, an assembling member essentially comprised of a stem secured in one end of a first element by a set screw, and of an oblong head to be fitted in the slot of a second section element. Said stem is formed with a large-pitch helical groove registering with said screw and terminating in a locking cavity, whereby pressing said second element on said first element causes said head to be rotated into locking position transversely of said slot, and tightening of said screw in said cavity causes said flanges of said second element to be clamped between said head and said first element.

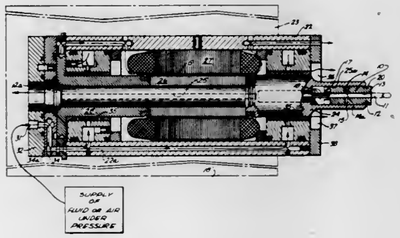
3,795,454
ADJUSTABLE BORING BAR WITH LUBRICANT PASSAGES
Stephen Elchyshyn, 23105 Collins St., Woodland Hills, Calif. 91364
Filed Oct. 1, 1971, Ser. No. 185,500
Int. Cl. B23b *29/10;* **B23q** *3/12*
U.S. Cl. 408—197 **6 Claims**

An adjustable boring bar is described, as for use in a machine tool for machining inside diameters in various workpieces. An elongated shank matingly receives a head for holding cutting tools. Near the end of the shank, a transverse bore (one end closed) telescopically receives a pin that is coupled out of the bore to the head by a stud extending through a transverse slot in the end of the shank. A lubricant passage is



provided through the shank and the head which also receives a nozzle as for directing lubricant at the instant location of cutting. The head and the shank also define aligned index surfaces to facilitate adjustment and measurements. Forms of the bar are disclosed for receiving both inserts and conventional cutting tools.

3,795,455
MACHINE TOOL HAVING CENTRIFUGALLY ACTUATED COLLET
Wojciech B. Kosmowski, Covina, Calif., assignor to Digital Systems, Inc., Arcadia, Calif.
Division of Ser. No. 33,844, May 1, 1970, Pat. No. 3,687,467.
This application July 24, 1972, Ser. No. 274,175
Int. Cl. B23b *31/08*
U.S. Cl. 408—239 **5 Claims**

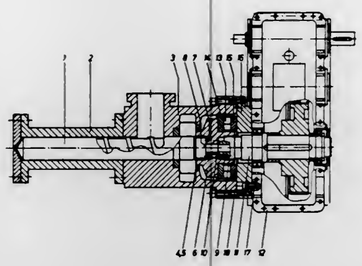


This disclosure relates to machine tools such as drilling machines particularly adapted for drilling on printed circuit boards and the like. In particular, the disclosure is directed to improvements in centrifugally actuated collets for use with rotatable spindles employed in such drilling machines.

3,795,456
WORM EXTRUDER WITH BUILT-ON TRANSMISSION
Heinrich Schafer, Kassel, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany
Filed July 19, 1972, Ser. No. 273,132
Int. Cl. F01d *5/00*
U.S. Cl. 415—72 **5 Claims**

A worm extruder with built-on transmission, in which the output shaft of the transmission drives the extrusion worm

which is rotatably journaled in a housing which is connected to the transmission housing through the intervention of a plate between which latter and a pressure member there is mounted



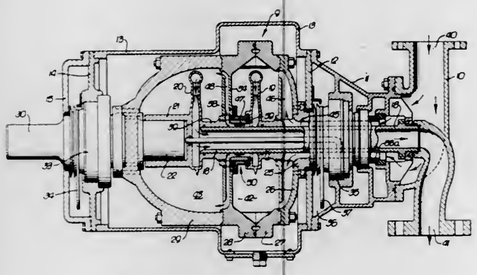
a thrust bearing, said pressure member being connected for rotation either with and to the worm, or with and to the output shaft.

3,795,457

MULTISTAGE PITOT PUMP WITH MEANS FOR FEEDING CLEAN FLUID TO SEALS

John W. Erickson, Huntington Beach, and Vitolis Budrys, La Mirada, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Feb. 26, 1973, Ser. No. 335,483
Int. Cl. F04d *1/14;* **F01d** *11/00*
U.S. Cl. 415—89 **3 Claims**



A multistage pitot pump, i.e., a centrifugal pump comprising a rotatable casing within a stationary housing, means for delivering the fluid to be pumped to the interior of the casing, a pitot tube assembly fixed within and having a pitot tube extending radially in the casing, and a discharge duct for the pitot tube in the pitot tube assembly and coaxial with the casing, in which an annular fluid seal is provided between the casing and the pitot tube assembly, with means for feeding clean fluid to the annular seal.

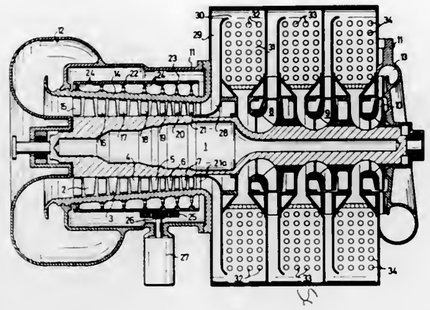
3,795,458

MULTISTAGE COMPRESSOR

Rene Strub, Winterthur, Switzerland, assignor to Brown Boveri-Sulzer Turbomachinery Limited, Zurich, Switzerland

Filed Jan. 17, 1972, Ser. No. 218,161
Claims priority, application Switzerland, Jan. 20, 1971, 844/71
Int. Cl. F04d *15/00, 27/00, 29/58*
U.S. Cl. 415—149 **7 Claims**

The axial-flow low pressure section and radial-flow or diagonal-flow high pressure section are separated by a recooler in which the working fluid is first deflected outwardly from the rotor, spread fanwise in a channel around and perpendicularly of the rotor, then deflected towards the rotor and



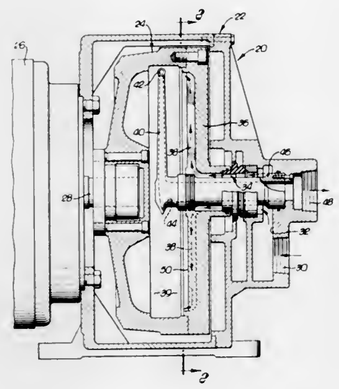
fed perpendicularly through a channel to the compressor axis. In addition, a cooling element is disposed in one of the channels for cooling of the working fluid.

3,795,459

PITOT PUMP WITH SLOTTED INLET PASSAGES IN ROTOR CASE

John W. Erickson, Huntington Beach; Carter P. Williams, La Crescenta, and Ralph F. McArthur, Huntington Park, all of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Mar. 21, 1973, Ser. No. 343,504
Int. Cl. F04d *1/14*
U.S. Cl. 415—89 **4 Claims**



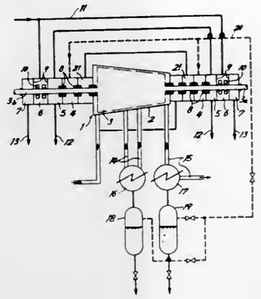
A pitot pump, i.e., a centrifugal pump, comprising a rotary casing, means for delivering a fluid to be pumped to a pumping chamber in the rotary casing, and a discharge duct coaxial with the rotary casing. The pitot tube is disposed in and extends radially of the rotary casing and is provided adjacent its outer end with an inlet facing in a direction opposite to the direction of rotation of the rotary casing, whereby the inlet receives fluid from adjacent the periphery of the rotary casing with a ram effect. The rotary casing is provided with open slots, generally radial, for conveying the fluid to be pumped from the central portion of the pumping chamber to the periphery thereof.

3,795,460

SEALING APPARATUS FOR GAS COMPRESSOR

Takamasa Endo, and Shojiro Sugimura, both of Okayama, Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1971, Ser. No. 205,879
Claims priority, application Japan, Dec. 16, 1970, 45-112108
Int. Cl. F01d *11/00;* **F04d** *29/08*
U.S. Cl. 415—175 **3 Claims**



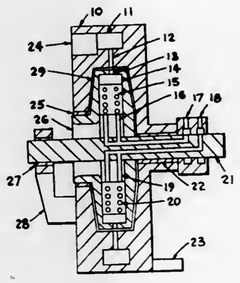
Apparatus for sealing the rotor shaft of gas compressor by sealing liquid fed under pressure comprising buffer gas chambers for preventing the leakage of corrosive or noxious gas in the operating gas, non-corrosive and innoxious gas separated from the operating gas by condensation and evaporation being fed into the buffer gas chambers.

3,795,461

COMPRESSOR WITH COOLING

Michael Eskeli, 6220 Orchid Ln., Dallas, Tex. 75230

Filed Aug. 10, 1972, Ser. No. 279,739
Int. Cl. F04d *29/58;* **F01d** *5/08*
U.S. Cl. 415—1 **6 Claims**



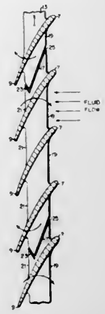
Method and apparatus for compressing gaseous fluids with minor amounts liquids, if any; by employing a rotating rotor wherein said fluid is compressed to a pressure that is normally higher than the fluid pressure immediately leaving said rotor; said fluid being usually further pressurized in a diffuser to utilize the kinetic energy of said fluid leaving at high velocity said rotating rotor; said rotating rotor being a centrifuge, with said fluid being compressed in the cavity of said rotor; said rotor cavity being provided with a cooling means to maintain nearly constant fluid temperature during said compression. Discharge nozzles from said rotor cavity are provided for said fluid near the periphery of said rotor; said nozzles may be arranged to discharge said fluid either radially, backward or forward as desired; said nozzles being either converging or converging diverging in shape as required to attain highest possible exit velocity for said fluid.

3,795,462

VIBRATION DAMPENING FOR LONG TWISTED TURBINE BLADES

William E. Trumpler, Jr., Philadelphia, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 169,979
Int. Cl. F01d *5/10*
U.S. Cl. 416—196 **4 Claims**



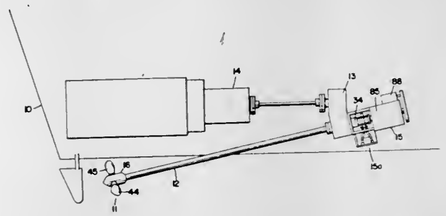
Lashing long twisted turbine blades in groups with a small V-shaped gap between the groups, which tends to close due to the untwisting of the blades, when they are subjected to high centrifugal forces, provides a substantially continuous lashing ring with good vibration dampening characteristics, which is sufficiently flexible to allow for thermal expansion and contraction, and cooperates with the vibration reducing characteristic of joining the blades into groups to minimize stress vibrations in such blades.

3,795,463

CONTROLLABLE PITCH PROPELLER AND DRIVE MEANS THEREFOR

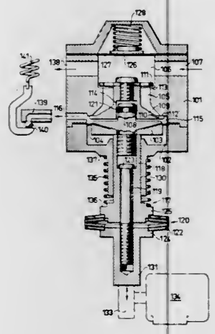
William B. Herbert, 111 Yantacau Brook Rd., Montclair, N.J. 07043

Filed July 21, 1971, Ser. No. 164,502
Int. Cl. B63h *3/02*
U.S. Cl. 416—207 **6 Claims**



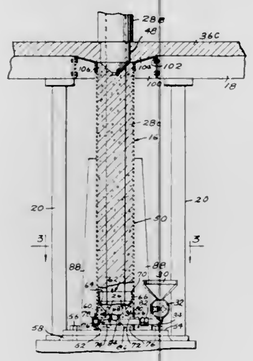
A controllable pitch propeller is provided in which the blades are rotatably mounted on a hollow hub having an axial bore, the wall of which is of non-circular cross-section, and control of the pitch of the blades is effected by a pair of axially-threaded nuts slidably mounted in said axial bore, and a single double-threaded control screw threadedly connected with said nuts. The blades are mounted on the hub in a novel manner which strengthens the attachment of the blades to the hub, and permits removal or replacement of the blades without disturbing other parts involved in the assembly of the blades with the hub. A differential assembly is provided for driving the propeller and the control screw at the same speed, as well as power driven means for driving the control screw at a speed different from that of the output shaft, whereby the aforesaid nuts are moved relatively to each other without interfering with the rotation of the hub. Means are also provided for indicating the pitch position of the blades and for activating the power driven means for driving the control screw.

3,795,464
HYDRAULIC PULSE GENERATOR
Sture Anders Backman, and Knut Ludvig Winquist, both of Orebro, Sweden, assignors to Johan H. Graffman, Benicasim, Castellon, Spain
Division of Ser. No. 809,685, March 24, 1969, Pat. No. 3,645,648. This application Dec. 1, 1971, Ser. No. 203,922
Claims priority, application Sweden, Aug. 23, 1968, 11405/68; Dec. 6, 1968, 16743/68
Int. Cl. F04b *19/00*
U.S. Cl. 417—274 16 Claims



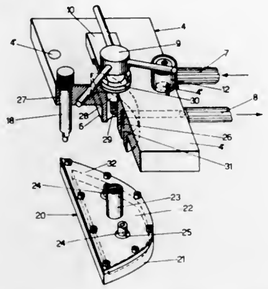
A device for creating a flow of liquid and for imparting a pulsating pressure condition thereto, such as, for example, a device for pumping liquid fuel to the nozzle of an injection type carburetor.

3,795,465
CONCRETE BUILDING CONSTRUCTION
Raymond A. Burkland, 27 W. State St., Trenton, N.J. 08608
Division of Ser. No. 33,478, April 30, 1970, abandoned. This application Sept. 5, 1972, Ser. No. 286,742
Int. Cl. E04b *5/16*
U.S. Cl. 425—63 9 Claims



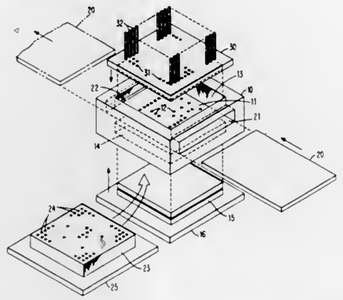
Building a structure in accordance with the new system includes setting up a plurality of column forms anchored to a footing, pumping one floor-height's worth of cement slurry into the forms, casting a floor at the tops of these columns; after the cement has set, pumping another floor-height's worth of the cement slurry into the bottoms of the column forms to raise the building for receipt of another, lower floor, etc., until the building is complete.

3,795,466
MOLD FOR MACHINES FOR APPLYING THERMOPLASTIC BOX TOES TO SHOE UPPERS
Antonio Capuano, Vigevano, Italy, assignor to ISM Corporation, Woburn, Mass.
Filed Dec. 13, 1971, Ser. No. 207,378
Int. Cl. B29c *27/18*
U.S. Cl. 425—117 10 Claims



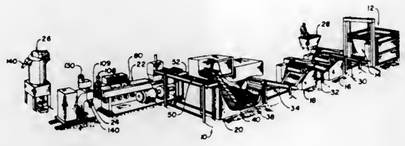
A mold for use on machines for applying thermoplastic box toes to shoe uppers has a first part horizontally reciprocable to move the mold from a thermoplastic material supply station to a box toe applying station and conversely, and a second part mounted on the first part and carrying on the lower side thereof a male element provided with a downwardly open recess to receive the box toe and with a chamber above said recess to receive the cooling liquid. The first part consists in a plate provided beneath the male element of the second part with a window larger in size than the male element. The latter is clamped to the second part and is removable from the bottom through the window in the first part. The female consists in a plate provided with an opening therein and is adapted to be removed horizontally from the first part to clear the window.

3,795,467
APPARATUS FOR LOADING CONDUCTIVE POWDERS INTO AN ELECTRICAL CONNECTOR SOCKET
Wendell J. Wheeler, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 2, 1972, Ser. No. 294,398
Int. Cl. B30b *11/02, 15/02*
U.S. Cl. 425—78 6 Claims



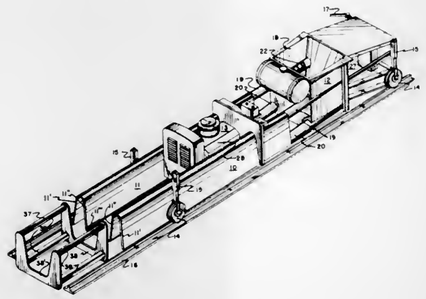
An apparatus for introducing submicron diameter nickel/gold particulate powder and compacting them within sockets which function to provide a detachably pluggable electrical connector. A predetermined amount, by weight, of particulate powder is loaded into holes in a transfer plate under the influence of mechanical vibration to produce particulate segregation. A socket receptacle circuit board or module is attached to the transfer plane and the powder particulate is then transferred into the sockets under mechanical vibration so as to accomplish densification to a predetermined volume fraction of the powder particulate.

3,795,468
WASTE RECOVERY OF THERMOPLASTIC CONTINUOUS FILAMENTARY MATERIAL
Robert Hester, and Howard P. Pierson, both of Kingsport, Ind., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 67,324, Aug. 27, 1970, Pat. No. 3,703,347. This application Sept. 5, 1972, Ser. No. 286,492
Int. Cl. B29b *1/04*
U.S. Cl. 425—208 4 Claims



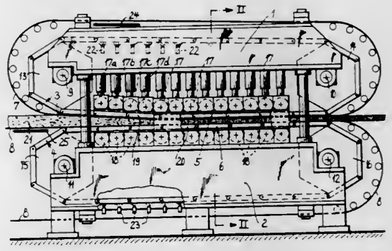
Method and apparatus for recovering waste thermoplastic fiber of continuous length filamentary material and converting it into re-useable feed stock and particularly a large otherwise unmanageable, entangled mass of continuous length filamentary material, some or all of which being either drafted or undrafted, wherein the continuous length filamentary material is converted into random length staple fiber, the staple fiber is then mechanically compacted and melted into a melt flow, and the melt flow is finally extruded as the re-useable feed stock; and the resulting product of the method.

3,795,469
SLIP FORM
Gareth D. Swatzel, Twin Falls, Idaho, assignor to K & S Feed Bunks, Inc., Twin Falls, Idaho
Filed Dec. 22, 1971, Ser. No. 210,686
Int. Cl. B28b *5/00*
U.S. Cl. 425—219 1 Claim



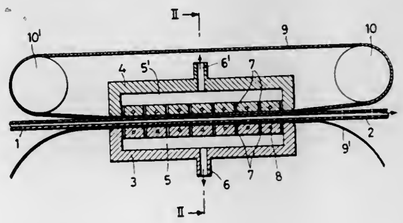
The slip form apparatus of this invention includes a slip forming pan having a substantially M-shaped transverse configuration and being of a rectilinear length to form concrete material. A material feed assembly is provided at the forward-most terminal end of the forming pan. The feed assembly includes a material input hopper, and an upper pair of material feeding conduits disposed between the hopper and the upper portions of the forming pan, with one conduit of the pair being disposed at each side of the slip form. The feed assembly also includes a lower pair of material feeding conduits disposed between the hopper and the lower portions of the forming pan, with one of the pair of conduits being disposed at each side of the slip form. Each of the conduits includes an auger which is operable to force material from the hopper to the forming pan. The augers are mounted on suitable shafts and are provided with a drive train, including an engine suitably mounted in the forming pan with its drive shaft disposed forwardly, and a gear train fastened to the forwardmost terminal end of the drive shaft. The gear train includes sprocket means disposed on the auger shafts, the gear means being operable to turn the augers, and wheel means carried on the slip form, which is operable to permit the slip form to move in a predetermined path.

3,795,470
PRESS FOR CONTINUOUSLY PRODUCING CHIP BOARD, FIBER BOARD OR THE LIKE
Albert De Mets, Roeselare, Belgium, assignor to De Mets N.V. Konstruktienerkhuizen, Klaasterstraat, Kachtem, Belgium
Filed June 12, 1972, Ser. No. 261,668
Claims priority, application Germany, July 14, 1971, 2135230
Int. Cl. B29c *15/00*
U.S. Cl. 425—371 35 Claims



A press for continuously producing fiber board, chip board or the like comprising an upper and a lower endless link chain each traveling between a pair of guide rollers rotatable in one direction about parallel horizontal axes, each of said chains consisting of rigid link plates each pivotably connected to the adjacent plates, an endless feed belt surrounding each chain and traveling therewith, a plurality of pressure rollers acting upon the link plates of the inner stringers of both chains, and adjustable hydraulic or pneumatic pressure means acting at least upon each pressure roller for the upper chain, each link plate as seen in the direction of its travel having a length equal to at least twice the distance between the axes of two adjacent pressure rollers of the same chain so that each link plate of each inner chain stringer will be acted upon by the pressure of at least two adjacent pressure rollers.

3,795,471
APPARATUS FOR SHAPING HOLLOW EXTRUDATES OF A PLASTIC MATERIAL
Giuseppe Milani, Lonate Pozzolo, Italy, assignor to Amunt S.P.A., Novara, Italy
Filed Mar. 3, 1972, Ser. No. 231,520
Claims priority, application Italy, Mar. 5, 1971, 21395/71
Int. Cl. B29c *17/07*
U.S. Cl. 425—388 7 Claims



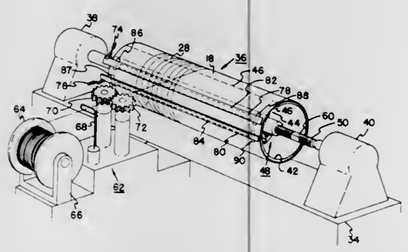
An apparatus for impressing fancy patterns on the outer surface of extrudates of a plastic material, particularly a ther-

moplastic material. A continuous band or web is inserted between a mould wall and the extrudate outer surface and is fed forward concurrently with the extrudate, negative pressure being employed to imprint on the extrudate the desired patterns which are reproduced on the continuously advancing web or band. Preferably, the band or web is either porous or foraminous.

3,795,472
APPARATUS FOR THE PRODUCTION OF ELECTRICALLY HEATED WINDOW

George A. Gruss, Mentor; Leslie H. Pfeiler, Willowick, and George J. Polanka, Solon, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 166,064, July 26, 1971, Pat. No. 3,729,616. This application Dec. 27, 1972, Ser. No. 318,867
Int. Cl. B29c *27/14*
U.S. Cl. 425—517 **2 Claims**



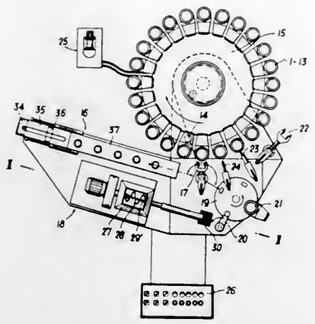
A laminated safety glass window is described having a clear polymer inner layer which includes a pattern of wrinkled resistance wires oriented in non-parallel random fashion so as to reduce glare from the wires when the window is used as a windshield. The individual resistance wires are partially embedded in the polymer sheet by a technique utilizing shrinkage of a thermoplastic polymer from its original dimensions when heated to an elevated temperature together with having the individual wires change configuration when relaxed from tension forces on the wire when first assembled with the polymer sheet. A method of forming the wire-incorporated polymer sheet member is also described along with equipment for automatically applying prestressed resistance wire to a thermoplastic sheet followed by heating the assembly under proper conditions to form the composite member.

3,795,473
APPARATUS FOR THE AUTOMATIC PRODUCTION OF BRAKE SHOES AND LININGS

Karl Holik, Wolfern bei Steyr, Austria, assignor to FA. Automatisationsanlagenprojektierungs & Bauges m.b.H., Wolfern bei Steyr, Austria

Filed June 26, 1972, Ser. No. 266,391
Claims priority, application Austria, Jan. 5, 1971, 5782/71
Int. Cl. B29c *27/14, 3/04*
U.S. Cl. 425—506 **10 Claims**

Apparatus for the automatic production of brake shoes and linings comprising an intermittently rotatable table that carries a plurality of hot presses. Brake lining compound is masticated, preheated, comminuted and fed to a pelletizing press, a pellet being fed from the pelletizing press to each hot press on the table during a dwell in the rotary indexing movement of the table. A backing plate for the lining is also fed to each press beneath the pellet. Each hot press is so constructed to apply first a relatively low closing pressure and then a relatively high operating pressure. A vertically movable mold above a heating plate encompasses the die held by a vertically

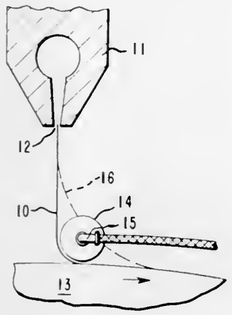


movable die holding plate; but the relative vertical movement is limited so that the die cannot escape the mold during operation.

3,795,474
MOLTEN THERMOPLASTIC WEB QUENCHING APPARATUS

David E. Heyer, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 23,390, March 27, 1970, abandoned. This application Mar. 8, 1972, Ser. No. 232,765
Int. Cl. B29c *17/00*
U.S. Cl. 425—325 **14 Claims**



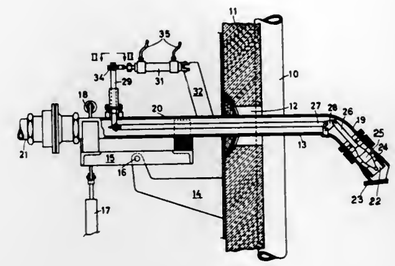
In the casting of molten thermoplastic web onto a moving quenching surface, the improved apparatus which comprises a bearing having a lubricating fluid on the surface thereof and over which the freshly extruded web is passed.

3,795,475
BURNER FOR LIQUID WASTE FUEL

Bengt Olov Hellstrom, Goteborg, Sweden, assignor to Gotaverkens Angtekniska AB (Gotaverken Heat Engineering Co. Ltd.), Sljarnatan, Goteborg, Sweden

Filed Mar. 16, 1973, Ser. No. 341,954
Int. Cl. F23c *5/06*
U.S. Cl. 431—1 **2 Claims**

An oscillating burner pipe including a straight and a bent portion, of which the latter is intended to extend into a furnace and is provided with throttling means adjacent to its outlet end as well as with a regulating body reciprocable with

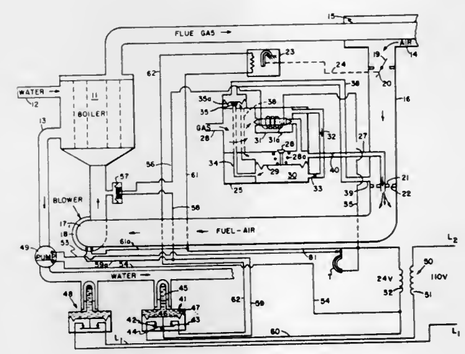


respect to said throttling means by way of a mechanism designed to follow the movements of the oscillating pipe.

3,795,476
COMBUSTION CONTROL APPARATUS

Lorne W. Nelson, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 6, 1972, Ser. No. 304,158
Int. Cl. F23n *1/02*
U.S. Cl. 431—90 **8 Claims**



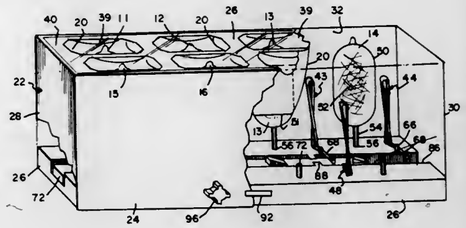
Combustion control apparatus for a gas furnace wherein a dual thermostat senses the furnace water temperature to turn on the gas and to then modulate air flow in accordance with heat demand. A diaphragm gas valve has a pressure regulator therein that responds to the air pressure to adjust the diaphragm valve to maintain a substantially constant fuel/air ratio.

3,795,477
SELECTIVE ACTUATING MECHANISM FOR PERCUSSIVE PHOTOFLASH LAMP ARRAY

David R. Broadt, Lewisburg, Pa., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Dec. 18, 1972, Ser. No. 315,812
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **15 Claims**

For a photoflash assembly comprising a plurality of percussively-ignitable flashlamps mounted on a support member and arranged in a planar array with respectively associated reflectors and preenergized striker springs, a selective actuating mechanism for sequentially releasing the striker springs to fire respective flashlamps in response to successive indexing. The selective actuating mechanism comprises a single slidable bar retained in a longitudinal channel in the support member and having a number of linearly spaced projecting ramps. The lamps and striker springs are mounted in two parallel rows on

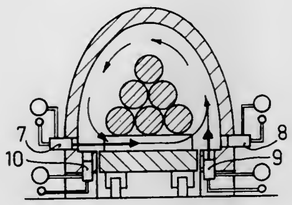


each side of the channel with the strikers in each row projecting in opposite directions over the bar to lie in the path of travel of the ramps. Linear indexing of the slidable bar along the channel causes one of the ramps to release a striker. A detent retains the position of the bar after each indexing cycle, and the sequence of releasing the strikers in response to successive indexing is programmed by the number and respective location of the ramps along the length of the bar and the respective location of the strikers.

3,795,478
METHOD OF OPERATION OF A CHAMBER FURNACE

Ruediger Knaak, Neuss, Germany, assignor to Koppers-Wista-Ofenbau GmbH, Duesseldorf, Germany

Continuation-in-part of Ser. No. 118,812, Feb. 25, 1971, Pat. No. 3,726,515. This application Feb. 23, 1973, Ser. No. 335,123
Claims priority, application Germany, Mar. 3, 1970, 2009761
Int. Cl. F27b *9/14, 3/26*
U.S. Cl. 432—25 **4 Claims**



A method of operating a chamber furnace for heat treatment of material located in the furnace spaced from the wall thereof by a plurality of high-speed burners arranged so that half of the burners produce a helix of combustion gases extending in one direction about the material to be treated and the other half a helix in the opposite direction and in which during operation of the furnace at full load, all burners are simultaneously operated, during operation of the furnace at 99-50% of its full load all burners are operated for a first time interval and then for a second time interval only half of the burners which produce a helix in the same direction, and during operation of the furnace at less than 50 percent of the full load, only burners which produce a helix in the same direction are operated, whereby during operation of the furnace at less than full loads the burners which produce a helix in the one and in the opposite direction are cyclically changed.

CHEMICAL

3,795,479
FIXING PRINTS OF STABILIZED AZOIC AND REACTIVE DYES ON CELLULOSE AND CELLULOSE/POLYESTER

Erich Feess, Lorsbach/Taunus; Willy Gronen, Hofheim/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Oct. 13, 1971, Ser. No. 189,043
Claims priority, application Germany, Oct. 15, 1970, 2050631
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 C **8 Claims**

A process for printing and continuous fixation of stabilized dyeing preparations forming azo dyestuffs and of reactive dyestuffs on textile materials containing cellulose or consisting exclusively of cellulose material, comprising a continuous working process of steaming the material printed with the dyeing preparations and reactive dyestuffs, for a short time for developing and fixing the azo dyestuffs using high concentrations of volatile acids with or without use of a counter-current operation method, and of treating then the material according to a known two-phase-fixation process for fixing the reactive dyestuffs and finishing it as usual by washing, soaping and rinsing as well as a process comprising the said very rapid fixation process of stabilized dyeing preparations forming azo dystuffs, by means of acid steam except for the use of reactive dyestuffs and for the use of the two-phase-fixation process which leads to dyeings of azo dyestuffs and of reactive dyestuffs of good fastenesses and brilliancy obtained in a very short time by means of a fully continuous process of fixing azo and reactive dyestuffs and of after-treatment the dyed material.

3,795,480
PROCESS FOR PREPARING DURABLE-PRESS OR WASH-WEAR FABRICS WHICH CAN BE WHITENED WITH ACIDIC OPTICAL BRIGHTENERS

Robert J. Harper, Jr.; Gloria A. Gautreaux, both of Metairie, and Eugene J. Blanchard, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 24, 1972, Ser. No. 220,415
Int. Cl. D06p *5/00*
U.S. Cl. 8—18 **7 Claims**

This invention consists of the preparation of durable-press fabrics with basic moieties crosslinked into the fabric. As a consequence of these basic moieties, these fabrics can now absorb acidic optical brighteners. Heretofore, crosslinked cotton fabrics showed poor absorption characteristics for acidic optical brighteners. This fabric basicity is achieved by the use of reactive alcohol additives containing amine groups such as diethanolamine, triethanolamine, monoethanolamine, and 2-dimethylaminoethanol.

3,795,481
PROCESS FOR THE SINGLE-BATH DYEING OF CELLULOSE AND POLYAMIDE FIBER BLENDS ACCORDING TO THE PAD DYEING TECHNIQUE

Hans-Ulrich von der Eltz, Frankfurt/Main; Hans-Peter Maier, Sulzbach/Taunus; Dietfried Suchy, Fulda, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany Lucius & Bruning, 03, Frankfurt/Main, Germany

Filed Feb. 23, 1972, Ser. No. 228,756
Claims priority, application Germany, Feb. 25, 1971, 2108875
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 B **8 Claims**

Process for the single-bath dyeing of blends of cellulose fibers and synthetic polyamide fibers with reactive dyestuffs and non-reactive metal complex dyestuffs according to a continuous or semi-continuous method of the pad dyeing technique, by applying to these fibrous materials aqueous padding liquors which contain alkaline agents in addition to combinations of the above-mentioned dyestuffs, and then, optionally after intermediate drying, submitting the material so treated in the alkaline medium to the action of heat or allowing it to dwell at room temperature or at slightly elevated temperature for the fixation of the dyestuffs.

3,795,482
HYDROGEN PEROXIDE AND NITRITE OR NITROUS ACID OXIDATION OF POLYESTER FIBERS

Robert E. Yelin, Willingboro; Jeffrey R. Frazier, Rocky Hill, both of N.J., and Ralph F. Villiers, Mexico, 10 D.F., Mexico, assignors to FMC Corporation, New York, N.Y.

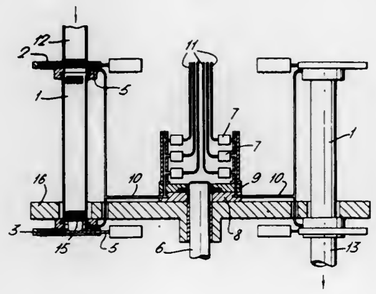
Filed Dec. 15, 1971, Ser. No. 208,387
Int. Cl. D06m *5/06*
U.S. Cl. 8—115.5 **6 Claims**

This invention provides a process for treating polyester materials employing a treatment solution containing a synergistic combination of hydrogen peroxide values and nitrites (or nitrous acid) whereby the cotton-like hand of the polyester is improved and the polyester is made cationocally dyeable.

3,795,483
METHOD AND DEVICE FOR STERILISING OF CONTAINERS

Alfred Grafingholt, Hamburg, Germany, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 52,208, July 6, 1970, abandoned.
This application Sept. 21, 1972, Ser. No. 291,151
Claims priority, application Germany, July 7, 1969, 1934363
Int. Cl. A61l *1/00, 13/00, 13/02*
U.S. Cl. 21—56 **4 Claims**



A method of sterilising stackable containers by the effects of a sterilising gas before they are filled and closed in which the containers to be sterilised are stacked one inside the other, are exposed to the effects of sterilising gas in a sterilisation chamber and are subjected to strong fluctuations in pressure of the gas at successive intervals, after which the containers are filled and sealed under sterile conditions.

3,795,484
AUTOMATED DIRECT METHOD FOR THE DETERMINATION OF INORGANIC PHOSPHATE IN SERUM

John A. Daly, Valley Cottage, and Gerhard Ertingshausen, Riverdale, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

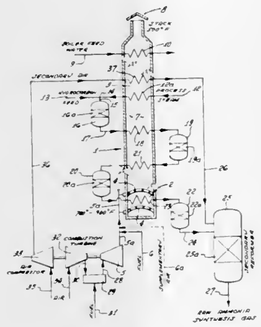
Filed Dec. 22, 1971, Ser. No. 211,075
Int. Cl. G01n *21/22, 33/16*
U.S. Cl. 23—230 B **5 Claims**

A direct method is provided for the spectrophotometric determination of inorganic phosphate in fluids, particularly body fluids, such as blood serum. The process requires only a single reagent addition and comprises reacting the phosphate-containing fluid with an ammonium molybdate solution and thereafter measuring the absorbance within a specified time interval before the reaction has measurably proceeded and at the end of the reaction by means of a centrifugal analytical photometer. Inasmuch as a linear relationship exists between the phosphate concentration and the change of absorbance, the concentration is an unknown sample can be conveniently calculated by comparison with the results obtained from the simultaneous measurement of a sample of known concentration.

3,795,485
SYNTHESIS GAS GENERATION APPARATUS

Marcel J. P. Bogart, Whittier, Calif., assignor to Fluor Corporation, Los Angeles, Calif.

Filed June 28, 1971, Ser. No. 157,452
Int. Cl. B01j *9/04*
U.S. Cl. 23—262 **1 Claim**

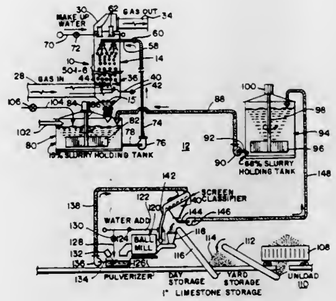


Apparatus for generating high pressure synthesis gas containing hydrogen and carbon oxides and useful in Oxo processes, hydrogen production, and in the production of ammonia, methanol and the like. The apparatus includes a furnace, a novel arrangement of a combustion turbine exhausting into the furnace to supply preheated oxygen thereto and a sequence of heaters and reactors for alternately heating the reaction mixture in the furnace and adiabatically reacting the mixture outside the furnace to enable reaction and thus gas product at higher pressures than previously obtained. The mentioned heater-reactor sequence minimizes waste heat in the furnace and makes its recovery, e.g. as steam, no longer of such major economic importance to the process, enabling use of a combustion turbine both to supply preheated oxygen to the furnace and to drive plant machinery such as compressors for air to be fed to the secondary reformer in ammonia synthesis gas production.

3,795,486
WET SCRUBBER

Frank O. Ekman, Barrington, Ill., assignor to Environeering Inc., Skokie, Ill.

Filed Feb. 22, 1973, Ser. No. 334,739
Int. Cl. B01d *47/06, 47/12*
U.S. Cl. 23—283 **7 Claims**



A wet scrubber for absorbing oxides of sulphur from contaminated gas comprises an upright housing having an inlet for contaminated gas adjacent at the lower end and an outlet for clean gas adjacent the upper end, a plurality of vertically stacked, successive intense wet scrubbing zones in said housing between said inlet and outlet, each of said zones comprising a horizontal array of elongated, parallel, spaced apart rod like elements which substantially reduce the total flow cross section available to the gas moving therebetween to a value less that of the cross section above and below the array, upper spray means adjacent an upper of said scrubbing zones for distributing into said gas finely divided droplets of scrubbing liquor, which liquor comprises a limestone slurry, said liquor flowing in a downward direction and cascading countercurrent to the upward gas flow through each successively lower scrubbing zones, a high velocity particulate collector stage in said housing between said inlet and a lower of said wet scrubbing zones comprises baffle means across said housing having a flow restricting opening therein and lower spray means for directing scrubbing liquid into the high velocity gas flowing through said opening in a concurrent direction therewith.

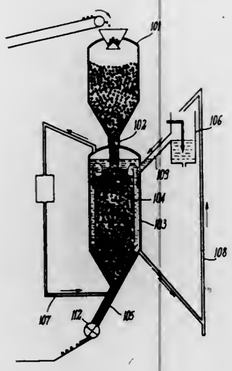
3,795,487
APPARATUS FOR IMPROVING HEAT TRANSFERS BETWEEN FLUIDIZED PARTICLES AND GRANULAR MATERIALS

Michel Tamalet, Rueil Malmaison, France, assignor to Societe Anonyme Heurtey, Paris, France

Filed June 11, 1971, Ser. No. 152,342
Claims priority, application France, June 12, 1970, 70.21613
Int. Cl. B01j *9/18, 9/20;* **F27b** *3/26*
U.S. Cl. 23—284 **14 Claims**

The natural circulation of fine particles constituting a fluidized bed and therefore the heat transfer can be accelerated and improved in a vertical cylinder filled with ball-shaped products by immersing this cylinder in a fluidized bed of said particles and giving to the lower portion of said cylinder a tapered shape outflaring downwardly. Thus, the granular or ball material contained in the cylinder is treated therein by providing at the bottom a grate of relatively wide wire mesh capable of retaining these balls while permitting the

upward circulation of the fine particles from the fluidizing bed. Heating means are disposed for various treatements,



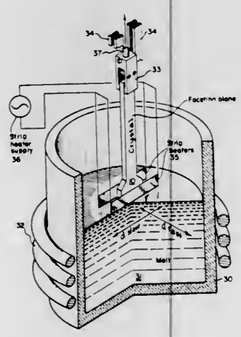
whether thermal or reactive. Alternately, the cylinder may be replaced by a conveyor belt.

3,795,488

METHOD FOR PRODUCING CRYSTAL BOULES WITH EXTENSIVE FLAT, PARALLEL FACETS

David W. Oliver, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,400
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 SP **6 Claims**



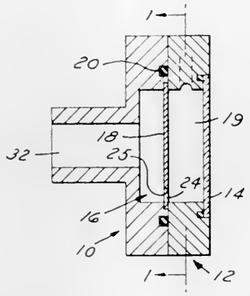
A particular symmetric anisotropic temperature distribution is established at the crystal-melt interface and the seed crystal is pulled from the melt to produce a crystal boule. The seed crystal is oriented in a specific crystallographic direction and is prevented from rotation with respect to the temperature symmetry axes while being withdrawn from the melt. The temperature distribution is such that the temperature varies slowly with varying distance from the center of the crystal boule along a first axis defining the crystal boule width, and varies rapidly with distance along a second axis perpendicular to the first and which defines the crystal boule thickness. The maintenance of the particular anisotropic temperature distribution at the crystal-melt interface produces a single crystal boule with a pair of extensive flat, parallel facets that are microscopically smooth.

3,795,489

CHEMILUMINESCENCE REACTION CHAMBER

Alan Warnick, Oak Park, and Cassimer M. Kukla, Taylor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 15, 1971, Ser. No. 180,823
Int. Cl. G01n *27/68*
U.S. Cl. 23—254 R **8 Claims**



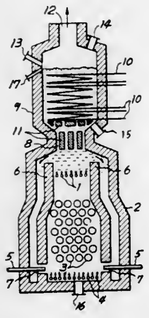
Gaseous sample mixture and gaseous reactant mixture are brought together at one edge of a shallow disc-shaped reaction chamber. The exhaust opening of the reaction chamber is located diametrically from the mixture inlet. A light transmitting element forms one wall of the reaction chamber and the reacting gases pass through the reaction chamber in a plane substantially parallel to the light transmitting element.

3,795,490

APPARATUS FOR THERMAL CRACKING AND QUENCHING

Tokuji Ozawa, Sakai; Mikio Uyeda, Amagasaki, and Shigenori Suzuki, Osaka, all of Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Division of Ser. No. 55,403, July 16, 1970, Pat. No. 3,718,708.
This application Sept. 11, 1972, Ser. No. 287,873
Claims priority, application Japan, July 18, 1969, 44-56987
Int. Cl. B01j *1/00, 6/00*
U.S. Cl. 23—284 **2 Claims**



An apparatus is described for the thermal cracking of hydrocarbons which includes a vertically disposed external shell housing a heating and reaction tower in the lower portion, a quenching tower in the upper portion, and an intermediate transfer line. A bundle of heating tubes is disposed in the heating and reaction tower and a bundle of quenching tubes in the quenching tower. Hydrocarbon feed stock is introduced through nozzles located above the heating tubes in the heating and reaction tower and with or without a diluent from high velocity nozzles located below the heating tubes.

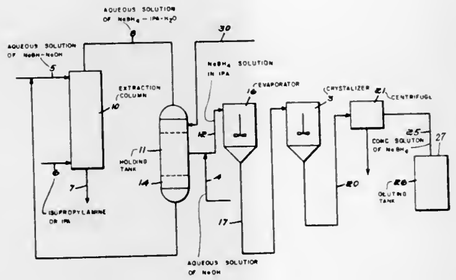
The heating and reaction tower is completely filled with molten metal which is circulated upwardly therethrough by the feed stock and diluent so that it flows around the heating tubes, up and over a weir, down between the heating and reaction tower and the external shell, and into the bottom of the heating and reaction tower again. Diluent nozzles are provided through the external shell as a primary means of causing the molten metal to flow from the overflow weir into the lower portion of the heating and reaction tower. A quenching medium, which may be a granular solid such as fluidized sand or a high boiling oil, fills the quenching tower and is violently agitated therein by upwardly flowing reaction products and gases. Deposition of coke on the inner walls of the apparatus is prevented by the molten metal in the heating and reaction zone and by the oil or sand in the quenching tower and transfer line.

3,795,491

METHOD FOR PREPARING AQUEOUS SOLUTIONS OF SODIUM BOROHYDRIDE OF HIGH CONCENTRATION

Edward R. Winiarczyk, Salem, Mass., assignor to Ventron Corporation, Beverly, Mass.

Filed Jan. 26, 1972, Ser. No. 180,005
Int. Cl. B01d *9/02, 11/04;* **C01b** *6/14*
U.S. Cl. 23—299 **3 Claims**



Sodium borohydride is extracted from an aqueous solution containing from about 5 to about 12.9 percent sodium borohydride and from about 35 to about 47 percent sodium hydroxide by weight by countercurrent extraction with a solvent for sodium borohydride, such as isopropylamine. The solvent is removed from the extract by distillation leaving an aqueous solution of high sodium borohydride content. From the latter, crystals of sodium borohydride dihydrate are separated leaving an aqueous mother liquor containing about 32 percent sodium borohydride and about 5 percent sodium hydroxide. The mother liquor is diluted with sodium hydroxide or an aqueous solution of high sodium hydroxide content and relatively low sodium borohydride content to obtain an aqueous solution of from about 13 to 30 percent sodium borohydride. The sodium borohydride dihydrate is dried to obtain solid sodium borohydride.

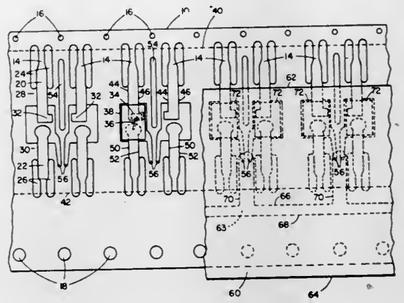
3,795,492

LANCED AND RELIEVED LEAD STRIPS

Milan L. Lincoln, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 9, 1970, Ser. No. 79,602
Int. Cl. B23d *81/00*
U.S. Cl. 29—193.5 **8 Claims**

The supporting bar of a lead frame is cut through before the encapsulation of the semiconductor device which is electrically connected to the inner ends of the leads comprising the lead frame. To keep the so cut frame flat and smooth, relief



slots are provided in the strip to receive the portions of the strip that is lengthened by the cutting action.

3,795,493

BEARING MATERIAL FOR DRY OPERATION OF THE SINTERED BRONZE TYPE

Klaus Mertl, Reinbek, Germany, assignor to Jurid Werke GmbH, Glinde near Hamburg, Germany

Filed May 25, 1971, Ser. No. 155,675
Claims priority, application Germany, June 6, 1970, 2027902
Int. Cl. B22f *1/00;* **C10m** *5/28*
U.S. Cl. 29—182.5 **2 Claims**

A bearing material for dry operation of the sintered bronze type with a solid lubricant additive, particularly graphite, in a proportion amounting to 12 to 20%, and with at least one element selected from the group consisting of Titanium and a metal of Groups VI, VII and VIII of the Periodic System, present in a proportion of about 4 to 15% for increasing stability, the balance of the material being copper or a known bronze other than binary lead bronze.

3,795,494

EROSION RESISTANT WARES COMPOSED PREDOMINANTLY OF CHROMIUM BEARING STEEL

Monroe J. Hordon, Newton, Mass., assignor to National Research Corporation, Cambridge, Mass.

Filed Mar. 20, 1972, Ser. No. 236,164
Int. Cl. B32b *15/00*
U.S. Cl. 29—196.6 **6 Claims**

Chromium bearing steel wares are rendered resistant to aerodynamic erosion by multiple coating thereof. The outermost coating comprises boron carbide.

3,795,495

GASOLINE ANTI-ICING ADDITIVES

Ward W. Howland, Anaheim, and William R. Mallett, Placentia, both of Calif., assignors to Union Oil Company, Los Angeles, Calif.

Filed Jan. 20, 1971, Ser. No. 108,015
Int. Cl. C10l *1/26*
U.S. Cl. 44—58 **9 Claims**

A combination of two specific types of known gasoline additives is found to provide, in addition to good overall carburetor detergency, a synergistic degree of anti-icing activity. One additive is an alkyl aminoalkyl phosphate, while the other is a succinimide condensation product of an alkylene polyamine wit an alkenyl succinic anhydride.

3,795,496

COATED ABRASIVE ARTICLES HAVING A PLASTICIZED POLYVINYL ACETATE SUPERSIZE COAT

James Greenwood, Blackburn, England, assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 38,504, May 18, 1970, abandoned. This application Dec. 16, 1971, Ser. No. 208,889
Claims priority, application Great Britain, May 19, 1969, 25303/69
Int. Cl. B24d *3/34*
U.S. Cl. 51—295 6 Claims

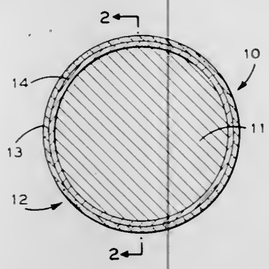
Coated abrasive articles which have been treated with a plasticized polyvinyl acetate supersize coating exhibit less tendency to become loaded with wood dust when used to sand wood, and can be used for a longer period of time.

3,795,497

METAL BONDED GRINDING WHEELS

Shirley I. Weiss, Ramsey, N.J.

Filed June 10, 1969, Ser. No. 831,943
Int. Cl. B24d *3/06*
U.S. Cl. 51—297 11 Claims



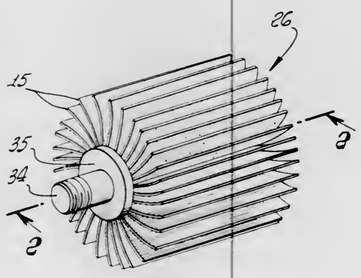
Grinding wheels having an electrodeposited metal matrix and abrasive grit forming a grinding surface, with an electrodeposited metal backing layer integrated with the composite matrix and grit layer; the matrix layer having an optimized distribution of grit therein.

3,795,498

METHOD OF MAKING AN ABRASIVE WHEEL

Hiroshi Hasegawa, Whittier, Calif., assignor to Merit Abrasive Products, Inc., Compton, Calif.

Filed May 3, 1972, Ser. No. 250,049
Int. Cl. B24d *11/00*
U.S. Cl. 51—297 7 Claims



An abrasive wheel in which abrasive surfaced flexible leaves extend radially from a stud or mandrel, the base edges of the leaves being bonded directly to the surface of the stud.

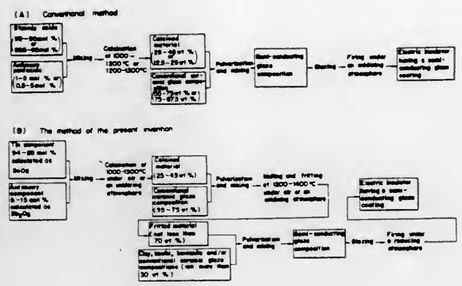
The method of making such a wheel includes the steps of forming a straight stack of abrasive leaves, cutting at least one groove down the edge of the stack which is to be the base of the leaves in the completed wheel, adhesively disposing a string in the groove to hold the leaves in assembly for further handling, the string and adhesive when cured being flexible and reposing within the groove, applying to said edge of the stack, and preferably also to the stud, a tenacious bonding agent lacking flexibility when cured, wrapping the stack around a stud with the edge which is coated with the bonding agent in direct contact with the stud, and providing for the bonding agent to harden and permanently adhere the edge made up of the base ends of the abrasive leaves to the stud.

3,795,499

METHOD OF PRODUCING SEMI-CONDUCTING GLAZE COMPOSITIONS

Yutaka Ogawa, Nagoya; Takayuki Ogasawara, Kohnan, and Shoji Seike, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya City, Japan

Division of Ser. No. 70,404, Sept. 8, 1970, Pat. No. 3,658,583.
This application Mar. 14, 1972, Ser. No. 234,594
Claims priority, application Japan, Oct. 11, 1969, 44-81014
Int. Cl. C03c *17/04*
U.S. Cl. 65—60 4 Claims



A semi-conducting glaze composition is prepared by calcining a mixture of 85 – 94 mol percent, calculated as SnO_2, of tin oxide and 6 – 15 mol percent, calculated as Sb_2O_5, of antimony oxide at a temperature of 1,000° – 1,300°C under an oxidizing atmosphere; mixing 25 – 45 percent by weight of the calcined material with 55 – 75 percent by weight of a conventional ceramic glaze composition; melting the resulting mixture at a temperature of 1,200° – 1,400°C under an oxidizing atmosphere and pulverizing the melt to prepare a fritted material; and mixing again not less than 70 percent by weight of the resulting fritted material with not more than 30 percent by weight of at least one member selected from the group consisting of clay, kaolin, bentonite and conventional ceramic glaze composition. By applying the above-mentioned semi-conducting glaze composition on a prepared insulator body, the surface electrical stress distributions of a heavy duty suspension and a solid core insulators, which require the firing under a reducing atmosphere, can be improved.

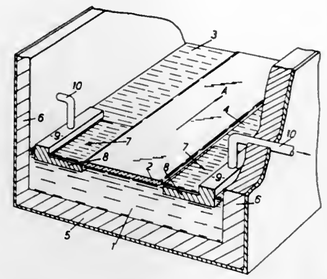
3,795,500

EXTRACTION OF GASES FROM THE MOLTEN BATH OF A FLOAT GLASS OPERATION

Norman Aidan Murphy, Liverpool, England

Continuation-in-part of Ser. No. 800,568, Feb. 19, 1969, abandoned. This application Sept. 21, 1971, Ser. No. 182,443
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A 8 Claims

In the float process for glass manufacture, gases are extracted from the molten metal bath by applying suction to a removable body of porous nonmetallic refractory material, for



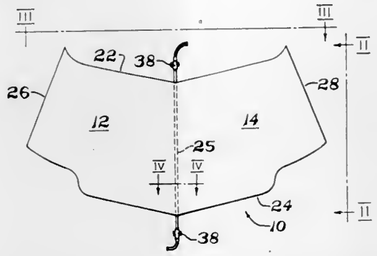
example graphite or alumino-silicate refractory, which is immersed in the bath alongside the path of the glass ribbon.

3,795,501

METHOD OF SHAPING GLASS SHEETS TO SHARP BENDS

Robert A. Jansson, Pittsburgh, and Thomas J. Reese, Sarver, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1972, Ser. No. 239,032
Int. Cl. C03b *23/02*
U.S. Cl. 65—106 18 Claims



Simultaneously bending pair of glass sheets having a sharply bent portion extending across a portion of the sheet, using a combination of locally applied electrical resistance heating in said sharply bent portion in combination with general overall heating so that a pair of glass sheets bent simultaneously do not fuse together and can be separated after they are shaped, then assembled with a layer of plastic interlayer material therebetween and laminated.

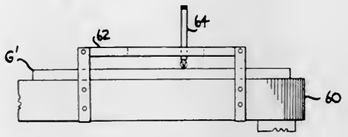
3,795,502

METHOD OF CUTTING GLASS

Robert P. De Torre, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Original application July 23, 1970, Ser. No. 57,574, now abandoned. Divided and this application May 26, 1972, Ser. No. 257,130
Int. Cl. C03b *33/02*
U.S. Cl. 65—174 6 Claims

Pieces of glass about 18 millimeters thick are cut to desired size without the necessity of grinding to size and polishing. In a first embodiment, edges of the piece are cut in accordance with a procedure involving the use of a scoring wheel of larger-than-usual diameter and a greater-than-usual applied pressure, to produce a fissure 1.75 millimeters deep or more, followed by the application of heat along the length of the score to cause the glass to become nearly severed. A thin glass layer remains that is easily severed. Light seaming of the tops and bottoms of the edges completes the preparation of those edges. In a second embodiment, a curved deep-fissure is produced by a scoring wheel of larger-than-usual diameter under greater-



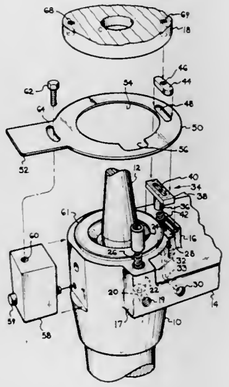
than-usual pressure, in the same manner as the first embodiment. However, a top center tap is used to propagate a fracture, leaving only a thin glass layer. Light seaming completes the preparation of the curved edge.

3,795,503

APPARATUS FOR SELECTING THE RELEASE POINT IN A NINETY-DEGREE SWEEPOUT FOR A GLASS FORMING MACHINE

Jack I. Perry, Sylvania, Ohio, assignor to Owens-Illinois, Inc.

Filed Nov. 20, 1972, Ser. No. 308,291
Int. Cl. B65g *47/00;* C03b *9/44*
U.S. Cl. 65—260 12 Claims



Apparatus for selecting the point in the arc of movement of glass containers being moved by a ninety-degree sweepout mechanism at which the containers are released to a removal conveyor. A ninety-degree sweepout mechanism moves newly formed glass container from a forming machine dead plate to a removal conveyor. The containers are engaged by fingers while on the dead plate, and are pushed through an arc of about ninety degrees to a removal conveyor where the fingers retract to allow the containers to be removed. In order to select the exact point in the arc of movement at which the fingers retract, a rotatable timing disk is inserted between a fixed housing and a rotatable base plate which carries the finger extending and retracting mechanism. When the sweepout mechanism is in position to extend the fingers to engage the containers on the dead plate, a fixed opening in the housing is connected to passageways in the base plate to introduce a working fluid to the finger extending mechanism. The timing disk is cut away to avoid interference with this connection. When the base plate is rotated to move the containers onto the removal conveyor, a second

set of passageways in the base plate are connected to an opening in a spacer block carried by the timing disk. This allows the operating fluid to be introduced to the finger operating mechanism to retract the fingers. The spacer block opening receives operating fluid from an elongated slot in a fixed valve member in the housing. By moving the position of the timing disk relative to the slot, the position at which the spacer block and the passageways in the base plate are in alignment may be changed. Thus, the point in the arc of travel of the containers at which the containers are released to the removal conveyor can be adjusted.

3,795,504

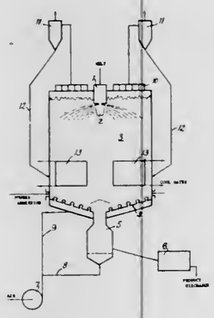
PROCESS FOR PRILLING FERTILIZER MELTS

Wilhelm Wengeler, Bochum-Stiepel, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany

Continuation-in-part of abandoned application Ser. No. 107,999, Jan. 20, 1971. This application Sept. 7, 1972, Ser. No. 286,906

Int. Cl. B22d *23/08*

U.S. Cl. 71—64 DB **2 Claims**



Process for prilling fertilizer melts in which the hot fertilizer melt is sprayed in the upper portion of a tower inside a fluid bed which has a minimum density of 100 kg./m.³ and a settling velocity of the prills of 10 to 20 cm./second. The fluid bed is formed by air under pressure, and dust and powder are introduced in a particular manner. The dust is separated from the prills and introduced to the tower to assist in forming the fluid bed. The prills are cooled as well as powder coated and solidified as they reach the bottom of the tower.

3,795,505

PRODUCTION OF DEOXIDATED, DEPURATED, KILLED AND REFINED STEELS USING ALUMINUM-LITHIUM ALLOYS

Dante Corradini, Via Cacciolepori 11, Milan, Italy

No Drawing. Continuation-in-part of application Ser. No. 145,049, May 19, 1971, which is a continuation of application Ser. No. 633,714, Apr. 26, 1967, both now abandoned. This application Oct. 18, 1971, Ser. No. 190,402

Claims priority, application Italy, Apr. 7, 1967, 14,703/67

Int. Cl. C21c *7/08*

U.S. Cl. 75—53 **1 Claim**

The invention relates to the use of alloys consisting essentially of aluminum-lithium for the purpose of deoxidizing, depurating, killing and refining any kind of carbon- or alloy-steel.

The alloys used in the process of the invention contain from 50 to 99.7% of aluminum and from 0.3 to 8% of lithium; they may also suitably contain at least one element selected from the group consisting of rare earths (TR), Ca, Ba, Fe and B, in percentage ranges as follows:

Fe 0.5–20%; TR 0.5–13%; Ca 0.2–8%; Ba 0.2–2%.

3,795,506

NONTHERMAL REFINING TYPE HIGH TENSION STEEL EXHIBITING EXCELLENT COLD-WORKABILITY

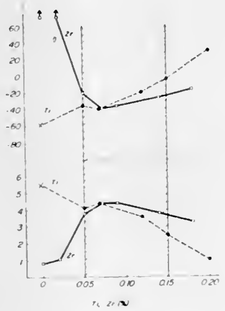
Tetsuo Yamaguchi and Hisashi Gonda, Tokyo, Akihiko Nishimoto, Yokohama, and Yoshisuke Ikegami, Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha Tokyo, Japan

Filed Apr. 19, 1972, Ser. No. 245,351

Claims priority, application Japan, Apr. 20, 1971, 46/24,946

Int. Cl. C22c *37/00, 39/00*

U.S. Cl. 75—123 **4 Claims**



A nonthermal refining type high tension steel substantially consisting of 0.05 to 0.15% C and complex addition of 0.01 to 0.10% Nb, 0.03 to 0.15% Ti and 0.05 to 0.15% Zr, unavoidable impurities and remainder Fe, exhibits high tensile strength of more than 60 kg./mm.² or yield stress of more than 45 kg./mm.² and excellent cold-workability.

3,795,507

SEMI-AUSTENITIC Cr-Ni-Al-Cu STAINLESS STEEL

Paul M. Allen, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,292

Int. Cl. C22c *37/10, 39/54*

U.S. Cl. 75—124 **16 Claims**

A semi-austenitic chromium-nickel-aluminum stainless steel consisting essentially of, by weight percent, about 7.0–18.0% chromium, about 6.0–12.0% nickel, about .5–2.5% aluminum, manganese and silicon each not exceeding about 1.0%, carbon not exceeding about .042%, phosphorus not exceeding about .040%, sulfur not exceeding about .015%, nitrogen not exceeding about .05%, molybdenum up to about 8.0%, about 1.0–3.0% copper, about .0005–.003% boron, and the balance

essentially iron. Said steel, in the precipitation hardenable conditions, is characterized by a U.T.S. of at least 230 ks.i. and improved toughness at room temperature as measured by a precracked sheet charpy with a value of 1000 in.-lbs./in.², provided that the carbon content plus 6X boron content does not exceed .045.

3,795,508

STEEL CONTAINING ALUMINUM, COPPER AND NICKEL

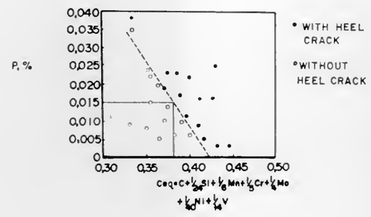
Jinkichi Tanaka and Junichi Tanaka, Kawasaki, and Tatsumi Osuka, Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Sept. 3, 1971, Ser. No. 177,611

Claims priority, application Japan, Sept. 9, 1970, 45/73,418

Int. Cl. B21b *31/08;* **B60b** *7/04*

U.S. Cl. 75—124 **3 Claims**



A steel composition for steel stocks for use in welding and construction and which have a tensile strength of about 45 to 55 kg./mm.², said steel composition including a phosphorus content relative to the carbon equivalent Ceq selected to impart the property of resistance to heel cracking in fillet welding.

3,795,509

AUSTENITIC STEEL OF THE Cr-Ni-Mn GROUP

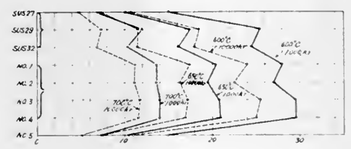
Tohru Mimino, Kazuhisa Kinoshita, Takayuki Shinoda, and Isao Minegishi, Kanagawa-ken, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Ootemachi, Japan

Continuation-in-part of abandoned application Ser. No. 774,092, Nov. 7, 1968. This application Jan. 8, 1971, Ser. No. 105,096

Claims priority, application Japan, Nov. 10, 1967, 42/71,952

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 A **5 Claims**



Austenitic steel with high strength and oxidation resistance at high temperature prepared by adding Ta, Nb and/or Ti to a steel basically comprising Cr, Ni and Mn. Further improvement in high temperature strength is achieved by incorporation of B or V in addition to Ta, Nm and/or Ti.

3,795,510

VALVE COMPONENTS

Richard G. Davies, Dearborn, and Thomas L. Johnston, Bloomfield Hills, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 21, 1968, Ser. No. 777,557

Int. Cl. C22c *19/00;* **F01i** *3/02*

U.S. Cl. 75—171 **1 Claim**

This invention relates to internal combustion engine valve system components which are exposed to exhaust gas and must be resistant to oxidation, sulfidation and the effects of lead compounds at high temperatures. A typical composition of such a component is 20% chromium, 5.5% aluminum, 2.5% titanium, 7.5% iron, 0.15% carbon, remainder nickel.

3,795,511

METHOD OF COMBINING IRON-BASE SINTERED ALLOYS AND COPPER-BASE SINTERED ALLOYS

Itaru Niimi, Nagoya, Kametaro Hashimoto, Kenzi Ushitani, and Yoichi Serino, Toyota, Seishu Mitani, Kyoto, and Kunizo Imanishi, Nagoya, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Oct. 22, 1971, Ser. No. 191,606

Claims priority, application Japan, Apr. 27, 1971, 46/33,680

Int. Cl. B21k *1/24;* **B22f** *7/00*

U.S. Cl. 75—208 **1 Claim**

Method of combining iron-base sintered alloys and copper-base sintered alloys comprises steps of thinly coating mixed powder of copper and nickel onto joint surface of iron-base powder or sintered mass thereof, and subjecting the coating to sintering process using temperature applicable to iron-base powder. Joint surface of copper-nickel is then abutted with formed mass of copper-base powder and again subjected to sintering process using temperature applicable to copper-base powder. Integral piece is thereby obtained most suitable for fabricating valve seats of internal combustion engines.

3,795,512

IMAGING SYSTEM

James J. Knieser, 1225 Wall Road, Webster, N.Y. 14580

Filed Dec. 21, 1967, Ser. No. 692,336

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **24 Claims**

A positive to positive (negative to negative) imaging system, the imaging member generally comprising, in its simplest form, photosensitive fracturable material contained in a softenable, electrically insulating layer on a substrate, the process steps generally comprising in a preferred embodiment, uniform charging with a charge of a first polarity; imagewise exposure; uniform charging with a charge of a polarity opposite said first polarity; and uniform exposure to form the latent image which may then be developed to cause imagewise migration of fracturable material.

3,795,513

METHOD OF STORING AN ELECTROSTATIC IMAGE IN A MULTILAYERED PHOTORECEPTOR

Anthony J. Ciuffini, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sept. 2, 1971, Ser. No. 177,246

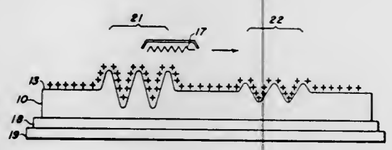
Int. Cl. G03g *13/00*

U.S. Cl. 96—1 R **4 Claims**

A xerographic member having a supporting substrate which contains an electrically insulating blocking layer,

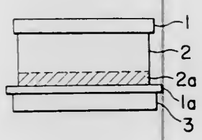
a layer of vitreous selenium containing a thallium dopant overlays the barrier layer and a layer of a photoconductor transport material overlays the thallium doped layer. The member is imaged by uniformly positive charging the top surface while simultaneously exposing to light, charging to a negative polarity and exposing to imaging light whereby a latent electrostatic image is formed within the thallium doped layer.

3,795,514
DEFORMATION IMAGING METHOD
Alex E. Jvirblis, La Jolla, and John C. Urbach, Portola Valley, Calif., assignors to Xerox Corporation, Stamford, Conn.
Continuation-in-part of abandoned application Ser. No. 874,181, Nov. 5, 1969. This application Sept. 15, 1972, Ser. No. 289,504
Int. Cl. G03g *13/00*
U.S. Cl. 96—1.1 **14 Claims**



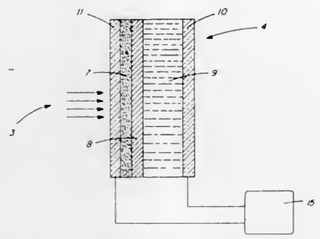
The method of amplifying deformation images wherein a deformation imaging member having a softenable deformation imaging surface material is softened in an electric field whereby the vertical distance between the peaks and valleys of the deformations is increased.

3,795,515
PHOTOSENSITIVE ELEMENTS FOR USE IN ELECTROPHOTOGRAPHY
Koichi Kinoshita, Narashino, and Tadaji Fukuda, Tokyo, Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan
Filed May 28, 1971, Ser. No. 147,927
Claims priority, application Japan, May 29, 1970, 45/45,787
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **5 Claims**



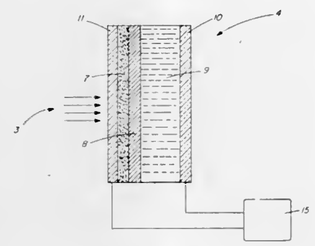
In a photosensitive element comprising a transparent highly insulative layer, a photoconductive layer manifesting persistent internal polarization and an electrode layer which are bonded together into an integral unit, there is provided a series of low resistivity layers between the photoconductive layer and the electrode layer, the composition of the low resistivity layers being such that the resistivity thereof gradually approaches that of the photoconductive layer from the side thereof contiguous to the electrode layer.

3,795,516
BARRIER LAYER FOR LIQUID CRYSTAL-CONTAINING ELEMENTS
Richard W. Stahr and Hans G. Franke, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 13, 1972, Ser. No. 306,231
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **9 Claims**



An improved barrier layer containing poly(vinyl alcohol) is disclosed for use in an electrooptical element containing a photoconductive layer, a liquid crystal film, and the barrier layer sandwiched between them.

3,795,517
BARRIER LAYER FOR LIQUID CRYSTAL-CONTAINING ELEMENTS
Richard C. Sutton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 13, 1972, Ser. No. 306,232
Int. Cl. G03g *5/00*
U.S. Cl. 96—1.5 **9 Claims**



An improved barrier layer containing a polymerized blend of at least 50 mole percent of one or more α,β-ethylenically unsaturated amides, 0 to 50 mole percent of an α,β-ethylenically unsaturated sulfo ester, and 0 to 10 mole percent of a crosslinkable monomer is disclosed for use in an electro-optical element containing a photoconductive layer, a liquid crystal film, and the barrier layer sandwiched therebetween.

3,795,518
ALPHA-CYANOPHENYLACETIC ACID DEVELOPING AGENTS
Myron S. Simon, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
No Drawing. Filed May 5, 1972, Ser. No. 250,597
Int. Cl. G03c *1/06, 5/30*
U.S. Cl. 96—66 R **14 Claims**

Novel silver halide developing agents comprising alpha-cyanophenylacetic acids derived from ester precursors by alkali hydrolysis are used in photographic diffusion transfer systems.

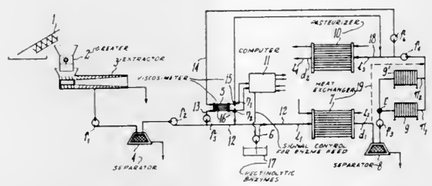
3,795,519
PHOTOGRAPHIC MATERIALS CONTAINING MORDANTS
Takushi Miyazako, Tatsuya Tajima, Hirotetu Kato, Tadayoshi Kokubu, Tsutomu Nishina, and Nobuo Tsuji, Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed July 24, 1972, Ser. No. 274,373
Claims priority, application Japan, July 30, 1971, 46/57,276
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 A **12 Claims**

A photographic material comprising a support having thereon a hydrophilic colloid layer containing a polymer of an addition product of bisacrylamide and a secondary diamine or the quaternary salt thereof, and a water-soluble acidic dye is disclosed.

3,795,520
STORAGE-LIFE EXTENDER FOR CRYSTALLINE PHOTOPOLYMERIZABLE COMPOSITIONS
William John Nebe, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 18, 1972, Ser. No. 281,944
Int. Cl. G03c *1/68, 1/70*
U.S. Cl. 96—115 P **15 Claims**

Substituted benzoxazoles, such as 2-mercapto-5-t-butylbenzoxazole, extend the storage life of predominantly crystalline photopolymerizable systems.

3,795,521
VISCOSITY CONTROLLED PECTINOLYTIC ENZYME ADDITION TO FRUIT AND VEGETABLE JUICE
Jean-Paul Richard, 46 Bd Raspail, Paris, France
Filed Nov. 1, 1971, Ser. No. 194,459
Claims priority, application France, Nov. 2, 1970, 7039364
Int. Cl. C12b *1/02*
U.S. Cl. 426—51 **3 Claims**



A process for the production of stable juices, of controlled clarity or turbidity or pulpy in which the depectinization is carried out continuously under closely controlled conditions, particularly by controlling the enzyme concentration, the temperature and the time. This allows the set up of a continuous production line from juice extraction to bottling with the elimination of the conventional fining and settling processes. The viscosity of the juice before and after depectinization is measured and used as a control parameter.

3,795,522
PREPARATION OF AQUEOUS REDISPERSIBLE GELS OR STABLE DILUTABLE SOLS CONTAINING TUNGSTEN AND TITANIUM AND TITANIUM-TUNGSTEN CARBIDES THEREFROM
Anthony Cecil Fox, Didcot, and Kenneth Robert Hyde, Wantage, England, assignors to United Kingdom Atomic Energy Authority, London, England
No Drawing. Filed Oct. 1, 1971, Ser. No. 185,859
Claims priority, application Great Britain, Oct. 5, 1970, 47,314/70
Int. Cl. B01j *13/00;* **C04b** *35/56*
U.S. Cl. 106—43 **18 Claims**

Aqueous, stable, dilutable sols and aqueous, redispersible gels having a weight ratio of TiO_2:WO_3 of at least 0.15 containing tungsten and titanium and optionally other metals are made by mixing freshly precipitated tungstic acid or a tungstate with an aqueous solution of a titanium salt. The sols and gels may be calcined at temperatures below 1800° C. in the presence of carbonaceous material to give mixed tungsten-titanium carbides.

3,795,523
SILVER HALIDE CONTAINING VARIABLE-TRANSMITTANCE BOROSILICATE GLASS
Yoshiro Moriya, Takamichi Kawamoto, Hiroshi Tanaka, and Tsutomu Ueno, Osaka, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Continuation of abandoned application Ser. No. 74,709, Sept. 23, 1970. This application July 5, 1972, Ser. No. 270,104
Claims priority, application Japan, Sept. 26, 1969, 44/77,030
Int. Cl. C03c *3/06, 3/08, 3/26*
U.S. Cl. 106—54 **3 Claims**

A variable-transmittance glass, having a high response speed to light, consisting essentially of 50–70% of SiO_2, 10–26% of B_2O_3, 6–14% of Al_2O_3 and 5–15% of alkali metal oxides including K_2O and Li_2O in a ratio of from 1:0.1 to 1:0.7, with the content of other alkali metal oxides kept below the Li_2O content, all of which make a total of 100%, plus 0.05–1.0% of Ag, at least an equivalent percentage of at least one halogen to the percentage of Ag to form silver halide crystals, and 0.005–0.03% of CuO, all percentages being by weight.

3,795,524
ALUMINUM BORATE AND ALUMINUM BOROSILICATE ARTICLES
Harold G. Sowman, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Mar. 1, 1971, Ser. No. 119,726
Int. Cl. C04b *35/10*
U.S. Cl. 106—65 **29 Claims**

Transparent refractory aggregates and shaped articles, such as fibers, films, flakes, and microspheres, of novel aluminum borate or aluminum borosilicate compositions free of crystalline alumina are made by shaping and dehydratively gelling, for example by extruding in air, viscous aqueous boric acid-stabilized aluminum acetate, with or without colloidal silica dispersed therein, and heating the resulting gelled body or article in a controlled manner to decompose and volatilize undesired constituents and convert the body to said refractory material or article, which is useful to form, for example, refractory fabrics, or as reinforcement for composites.

3,795,525
ALUMINUM-ASBESTOS COATING COMPOSITIONS
Earl F. Carlston, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 60,121, July 31, 1970. This application Mar. 23, 1972, Ser. No. 237,556
The portion of the term of the patent subsequent to May 12, 1987, has been disclaimed
Int. Cl. C08h *15/02;* **C09d** *3/24*
U.S. Cl. 106—123 **7 Claims**

An aluminum-containing weather-resistant non-bituminous coating composition which comprises aluminum pigment, a high molecular weight viscous oil, a hydrocarbon solvent or thinner, asbestos fibers, ground mica, a polyurea material effective as an additive which prevents settling out of fillers and enhances the color of the finished coating and optionally a color pigment.

3,795,526

PHOSPHAZENE FIRE RETARDANTS

Charles R. Bergeron, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Aug. 30, 1972, Ser. No. 285,007

Int. Cl. C08b *21/20, 21/22;* **C09j** *3/04*

U.S. Cl. 106—168 **8 Claims**

Improved fire retardant phosphonitrilate polymer compositions having two cyclic oligomeric phosphonitrilate compounds, such as hexapropoxyphosphazene, cross-linked by oxygen forming a P—O—P bond. The cross-linked phosphonitrilate compounds are prepared by reacting a chlorophosphazene with a metal alcoholate, preferably sodium propoxide, and an alkali metal hydroxide, preferably sodium hydroxide.

3,795,527

DRY POWDER PAPER SIZE HAVING IMPROVED RESISTANCE TO CAKING

James N. Stone and James H. Wing, Augusta, and Frank B. Thomas III, Martinez, Ga., assignors to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed Apr. 23, 1973, Ser. No. 353,262

Int. Cl. C08b *25/02, 27/44*

U.S. Cl. 106—206 **5 Claims**

A dry powder paper sizing composition having resistance to caking by atmospheric humidity comprised of a mixture of a cationically active material, a fatty acid and an alkali hydroxide is obtained by coating the fatty acid with the cationically active material prior to its admixture with the alkali hydroxide.

3,795,528

STABILIZED ORANGE PIGMENTS

Georg Henning, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Nov. 24, 1972, Ser. No. 309,473

Claims priority, application Germany, Dec. 1, 1971, P 21 59 440.1

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q **1 Claim**

A nickel complex dye derived from the dioxime of acetoacet-o-anisidide stabilized by the addition of the corresponding nickel complex having ethylene diamine or phenylene diamine instead of the o-anisidine. The orange pigments are eminently suitable for coloring resins, printing inks and surface coatings.

3,795,529

TEMPERATURE SENSITIVE VISIBLE DISPLAY DEVICE

James V. Cartmell and Donald Churchill, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Original application Feb. 8, 1971, Ser. No. 113,716, now Patent No. 3,720,623. Divided and this application Nov. 15, 1972, Ser. No. 306,949

Int. Cl. B44f *1/10*

U.S. Cl. 117—1.7 **3 Claims**

A mixture of cholesteric liquid crystal material such as cholesteryl nonanoate and nematic liquid crystal material such as methoxybenzilidene-p-n-butylaniline is disclosed. The mixture can be encapsulated and employed in temperature-sensitive visual display devices. The addition of nematic liquid crystal material to cholesteric liquid crystal material enhances the brightness of films employing cholesteric liquid crystal material and prolongs the usable life of the films.

3,795,530

ELECTROSTATIC LATENT IMAGE DEVELOPMENT

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

No Drawing. Original application Apr. 26, 1968, Ser. No. 724,596, now Patent No. 3,676,215. Divided and this application Dec. 7, 1971, Ser. No. 205,746

Int. Cl. G03g *13/08*

U.S. Cl. 117—17.5 **12 Claims**

A simple electrostatographic imaging system including an electrostatographic imaging surface, a donor member having a liquifiable polar developer layer on a surface thereof and developer repellent spacer particles sandwiched between the electrostatographic imaging surface and the liquifiable polar developer layer. Imaging is accomplished in this system by forming an electrostatic latent image on the surface of the electrostatographic imaging surface, liquifiying the liquifiable polar developer on the surface of the donor member and allowing the resulting liquified polar developer to migrate to the surface of the electrostatographic imaging surface in image configuration.

3,795,531

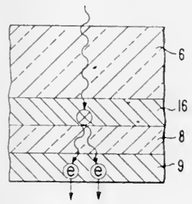
X-RAY IMAGE INTENSIFIER TUBE AND METHOD OF MAKING SAME

William E. Spicer, Portola Valley, Calif., assignor to Varian Associates, Palo Alto, Calif.

Continuation of abandoned application Ser. No. 606,514, Dec. 27, 1966. This application Feb. 3, 1970, Ser. No. 7,358

Int. Cl. H01j *31/49*

U.S. Cl. 117—33.5 C **15 Claims**



The present invention relates in general to methods for making pick-up screens for X-ray image intensifier tubes and, more particularly, to an improved method wherein the X-ray fluorescent phosphor screen element is formed by evaporation of an alkali metal halide material in vacuum and condensing the evaporated material on an X-ray transparent portion of the X-ray intensifier tube, whereby a curved X-ray image pick-up screen is formed which has improved quantum efficiency and resolution. Such improved X-ray image intensifier tubes are especially useful for, but not limited in use to, X-ray systems and for intensifying gamma ray images obtained in applications of nuclear medicine.

3,795,532

WIDE LATITUDE COPY SHEET

Donald J. Newman and Donald J. Williams, White Bear Lake, and John R. Berg, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 123,106, Mar. 10, 1971, now Patent No. 3,682,684, dated Aug. 8, 1972. This application Mar. 9, 1972, Ser. No. 233,348

Int. Cl. B41m *5/22*

U.S. Cl. 117—36.2 **7 Claims**

Copy sheet material, containing 10–80 parts by weight of silver soap and correspondingly 90–20 parts by weight of ferric soap, exhibits increased exposure latitude in a heat-activated copying process.

3,795,533

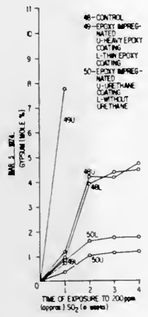
PRESERVATION AND STRENGTHENING OF POROUS SOLIDS

Kharaiti Lal Gauri, Louisville, Ky., assignor to Research Corporation, New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,871

Int. Cl. B27k *3/34;* **C04b** *41/28*

U.S. Cl. 117—54 **13 Claims**



A porous solid is preserved and strengthened by sequentially impregnating into said solid, a plurality of solvent mixtures, wherein each of the sequentially impregnated mixtures contains a higher concentration of curable polymeric material than the previously impregnated mixtures. The adjacent, sequentially impregnated mixtures are allowed to remain in contact, within the porous solid, so as to permit diffusion of the polymeric material therebetween, and to minimize the presence of distinct concentration boundaries. Upon curing, the resin forms an impregnate of continuously increasing concentration from the innermost portion of the impregnated solid to the surface of the solid. In one embodiment, the first of said sequentially applied mixtures may be a solvent treatment procedure, with a water-miscible solvent, or, more preferably, with a plurality of sequentially impregnated mixtures of water and solvent of increasing solvent concentration, wherein the final solvent impregnate is an anhydrous water-miscible solvent.

3,795,534

MANUFACTURE OF VIDEO DISCS

Robert Michael Mehalso, Trenton, and David Isaac Harris, Kendall Park, N.J., assignors to RCA Corporation

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,657

Int. Cl. B44c *1/20, 5/00*

U.S. Cl. 117—101 **3 Claims**

A method of forming a video disc with a uniform groove radius from a disc having grooves of nonuniform radius and depth by applying an excess of photoresist to the grooved disc surface while rotating the disc rapidly only long enough to drive off the excess photoresist and allowing the remaining photoresist to dry while rotating the disc very slowly.

3,795,535

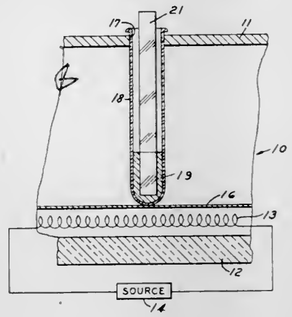
METHOD OF TREATING A SURFACE OF A GLASS ARTICLE AND THE GLASS ARTICLE PRODUCED THEREFROM

Thomas E. Boller, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 29, 1969, Ser. No. 828,907

Int. Cl. C03b *21/00*

U.S. Cl. 117—118 **16 Claims**



A surface of a glass article is treated to make the glass surface water wettable (hydrophilic) in the following manner. A bath of a mixture of an ion exchange medium for the glass and a material which has surface active qualities is formed. The glass article is treated in the bath and an interchange of ions from the ion exchange medium is effected between the glass. This ion interchange results in a carryover to the glass of at least a portion of the material having the surface active qualities. The materials having the surface active qualities are preferably selected from the group consisting essentially of silicones, silanes and fluorocarbons.

3,795,536

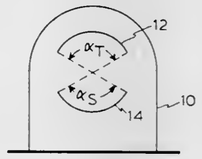
NON-ROTATIONAL CONSTANT FILM THICKNESS, COMPLETE STEP COVERAGE EVAPORATION SYSTEM

Sanford Platter, Phoenix, Ariz., assignor to Steatite Research Corporation, Phoenix, Ariz.

Filed Oct. 26, 1971, Ser. No. 192,272

Int. Cl. C23c *13/12*

U.S. Cl. 117—106 R **4 Claims**



A high vacuum metal evaporation deposition system is described which avoids the necessity for rotating the targets in order to achieve an even deposition thickness distribution over the target area.

3,795,537

HARD DIFFUSION FORMED REACTION COATINGS

Ray Joseph Van Thyne, 10148 S. Cook Ave., Oak Lawn, Ill. 60453, and John Jacob Rausch, Rte. 2, Box 177, Antioch, Ill. 60002

No Drawing. Continuation-in-part of application Ser. No. 768,187, Oct. 16, 1968, now Patent No. 3,620,816. This application Nov. 12, 1971, Ser. No. 198,413

Int. Cl. C23c *9/00*

U.S. Cl. 117—114 R **9 Claims**

A novel process for producing hard coatings by diffusing one or more reactive elements in molten lead and reacting with one or more hardening elements of the group carbon, nitrogen, boron, and silicon present in ferrous products. The process offers flexibility in compositional control and coating parameters.

3,795,538

PROCESS FOR LUBRICATING ORGANIC AND INORGANIC FIBERS

John Idris Evans, Penarth, and Ann Margaret Parry, Edgbaston, England, assignors to Midland Silicones Limited, Berkshire, England

No Drawing. Original application June 13, 1968, Ser. No. 736,604, now abandoned. Divided and this application Oct. 1, 1971, Ser. No. 185,847

Int. Cl. C08j *1/44;* **D06m** *15/66*

U.S. Cl. 117—139.5 A **8 Claims**

A process for lubricating organic and inorganic fibers comprising applying to the fibers an aqueous diorganopolysiloxane emulsion.

3,795,539

WATER-BASED BINDER FOR MAGNETIC TAPE

Alfonso DiMino, Woodcliff Lake, N.J., assignor to ADM Tronics, New York, N.Y.

No Drawing. Filed June 23, 1971, Ser. No. 156,030

Int. Cl. H01f *1/26, 1/113*

U.S. Cl. 117—235 **2 Claims**

A magnetic recording tape in which magnetic material, such as iron oxide particles, is mixed with a binder to create a dispersion which is coated on a base. The dispersion includes a water-based binder and wetting agent, whereby the dispersion may be applied and dried without creating noxious fumes, to produce a coating which is highly flexible and smooth and has lubricating properties.

3,795,540

CABLE SHIELDING TAPE

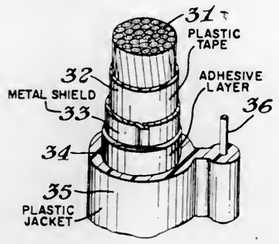
Raymond C. Mildner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 509,814, Nov. 26, 1965, which is a continuation-in-part of application Ser. No. 325,701, Nov. 22, 1963, both now abandoned. This application Sept. 30, 1966, Ser. No. 587,367

Int. Cl. B32b *15/08, 15/20;* **B44d** *1/09*

U.S. Cl. 117—226 **20 Claims**

A metal element and a plastic element in a cable are securely bonded together by means of an adhesive thermoplastic polymer comprising a copolymer of ethylene and an ethylenically unsaturated carboxylic acid such as acrylic acid. The metal element can be in the form of a tape or metal strip of aluminum having one or both sides coated with or laminated to the adhesive thermoplastic polymer. The tape including the coated or laminated adhesive thermoplastic polymer is disposed within a cable at the desired location such that the adhesive thermo-



plastic polymer forms a strong bond with an adjacent element in the cable.

3,795,541

FERROMAGNETIC MATERIAL

Kenneth Lee, Saratoga, Erich Sawatzky, San Jose, and James C. Suits, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,604

Int. Cl. C04b *35/00*

U.S. Cl. 117—235 **3 Claims**

A room temperature stable ferromagnetic permanent magnet material with a large Faraday rotation and having a Curie temperature in the region of substantially 180–220° C. of a mutual solid solution having atomic proportions indicated by the formula:

$$Mn_{.8-1.0}Al_{1.3-1.6}Ge_{.8-1.0}O_{0.05-.3}$$

In the film form, the magnetization is normal to the film plane.

3,795,542

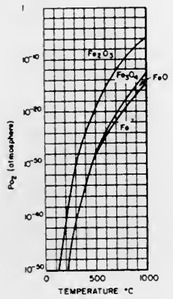
METHOD OF MAKING A MAGNETIC RECORDING AND STORAGE DEVICE

Sami A. Halaby, Raleigh, N.C., and Neal S. Kenny, Horseheads, and James A. Murphy, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 9, 1971, Ser. No. 151,356

Int. Cl. C22c *39/00*

U.S. Cl. 117—237 **17 Claims**



A method of making a magnetic recording and storage device comprising the step of forming an alpha ferric oxide film or an iron film on a surface of an inorganic and non-magnetic substrate or support member. The substrate and film combination are then subjected to a controlled atmosphere at an elevated temperature, which converts the film to magnetite suitable for use in magnetic recording and storage devices. The magnetite film may then be further converted to a film of gamma ferric oxide, also suitable for use in magnetic recording and storage devices, by subjecting the substrate and magnetite film to an oxidizing atmosphere at a second predetermined elevated temperature.

3,795,543

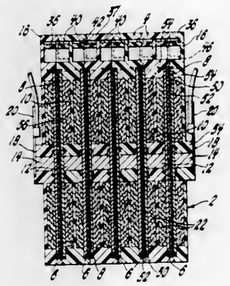
BI-POLAR LEAD-ACID STORAGE BATTERY

David T. Poe, Gaston, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 29, 1972, Ser. No. 267,503

Int. Cl. H01m *39/06*

U.S. Cl. 136—10 **1 Claim**



A bi-polar, mat-immobilized-electrolyte, lead-acid storage battery having hydrogen relief ports through the negative plate to reduce hydrogen film polarization of the negative plate.

3,795,544

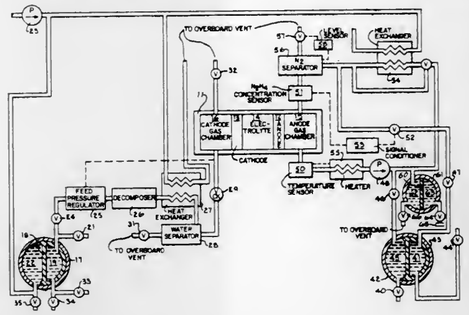
PRESSURE BALANCED FUEL CELL SYSTEM FOR UNDERWATER VEHICLE

Joseph V. Clausi, Portland, Michael B. Landau, Hartford, Loren H. Otter, Bolton, and Richard D. Sawyer, Canton, Conn., assignors to the United States of America as represented by the Secretary of the Navy

Filed Mar. 30, 1972, Ser. No. 239,580

Int. Cl. H01m *27/00, 27/12*

U.S. Cl. 136—86 B **5 Claims**



A pressure balanced fuel cell system for an underwater vehicle having at least one fuel cell module for supplying electrical power for said vehicle. A first compartmented tank having a resilient separator is provided for supplying fuel for an oxygen generation system, and a second compartmented tank having a resilient separator is provided for supplying enriched anolyte to the fuel cell. Pressure balance is maintained in the first compartmented tank by sea water and in the second compartmented tank by the spent anolyte recovered from the fuel cell module.

3,795,545

LEAK-PROOF ZINC CHLORIDE DRY CELL

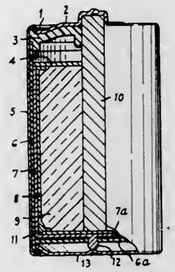
Toshiso Kamai, Midorigaoka Mansion 703, Midorigaoka 1-chome 19–7, Tokyo, Japan

Filed Oct. 19, 1970, Ser. No. 82,050

Claims priority, application Japan, Oct. 27, 1969, 44/85,704; Jan. 28, 1970, 45/1,864

Int. Cl. H01m *21/00*

U.S. Cl. 136—107 **9 Claims**



The invention relates to a leak-proof dry cell in which the zinc cathode canister is enclosed in a plastics casing and the electrolyte solution consists mainly of zinc chloride with a small proportion of ammonium chloride whereby the production of fine complex crystals is avoided. The zinc canister is thin-walled so that it is consumed by the time the cell voltage drops below its useful voltage. This avoids the production of hydrogen gas as well as a saving of zinc. The zinc canister is connected to its outer terminal by a zinc peg or rivet on its base which passes through a hole in the bottom of the plastics casing.

3,795,546

RINSING COATED METALLIC SURFACES

Wilbur S. Hall, Plymouth Meeting, and Lester Steinbrecher, Southampton, Pa., assignors to Amchem Products, Inc., Ambler, Pa.

No Drawing. Continuation-in-part of applications Ser. No. 791,762, Jan. 16, 1969, now Patent No. 3,592,699, and Ser. No. 791,801, Jan. 16, 1969, now Patent No. 3,585,084, which is a continuation-in-part of application Ser. No. 554,336, June 1, 1966, now abandoned. This application June 14, 1971, Ser. No. 152,993

The portion of the term of the patent subsequent to July 13, 1988, has been disclaimed

Int. Cl. C23f *7/26*

U.S. Cl. 148—6.2 **10 Claims**

A metallic surface is coated with a polymeric resinous coating by immersing the surface in an acidic aqueous coating composition comprising polymeric resinous coating-forming material and an oxidizing agent. The corrosion resistance and/or the surface appearance of the resinous coating is modified by rinsing the coating with an aqueous rinse solution containing hexavalent chromium or an aqueous rinse solution containing hexavalent chromium and reduced forms of chromium.

3,795,547

METHOD OF IMPROVING ELECTRICAL CHARACTERISTICS OF HIGH PURITY GERMANIUM OR SILICON

Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 13, 1972, Ser. No. 314,541

Int. Cl. B01j *17/38, 17/40;* **H01l** *7/34*

U.S. Cl. 148—1.6 **12 Claims**

The electrical conduction properties of high purity semiconductor material particularly with regard to free-

dom from lattice defects are improved by heating or annealing a large ingot of high purity semiconductor in a molten bath of selected high purity metal or metal alloy at elevated temperatures for times of the order of 400 to 1000 hours.

3,795,548
PROCEDURE FOR SURFACE TREATMENT OF IRON AND STEEL
Hans Hansen, Karben, Peter Jorns and Josef Rones, Frankfurt am Main, and Wolfgang Wuttke, Erzhausen, Germany, assignors to Oxy Metal Finishing Corporation, Warren, Mich.
No Drawing. Filed Jan. 10, 1972, Ser. No. 216,722
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 R **3 Claims**

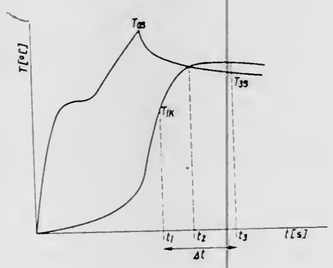
A process for treating iron or steel surfaces comprising the steps of:

(1) cleaning the metal surfaces with an aqueous alkaline solution,
(2) contacting the cleaned metallic surfaces with an aqueous solution having a pH between 4 and 5.5 and containing lactic acid and an non-ionic wetting agent,
(3) applying a phosphate deposit to the metallic surfaces and,
(4) applying an organic deposit to the thus treated metallic surfaces with an electro-immersion process.

3,795,549
CONVERSION COATING SOLUTION FOR METALLIC SURFACES
Yasunobu Matsushima, Tokyo, Shigeo Tanaka, Yokohama, and Haruyoshi Terada, Tokyo, Japan, assignors to Oxy Metal Finishing Corporation, Warren, Mich.
No Drawing. Filed Dec. 9, 1971, Ser. No. 206,528
Int. Cl. C23f *7/26*
U.S. Cl. 148—6.16 **13 Claims**

A chromate conversion coating composition useful for applying to metallic surfaces comprising an effective corrosion reducing amount of a water-soluble partially esterified alkyl phosphate.

3,795,550
HEAT TREATMENT PROCESS FOR NON-ALLOYED LOW-CARBON STRUCTURAL STEEL
Ludwig Ettenreich, Wien, Austria, and Otto Reimann, Dusseldorf-Oberkassel, and Klaus Greulich, Erkrath, near Dusseldorf, Germany, assignors to Bau-Stahlgewebe G.m.b.H.
Filed Apr. 29, 1971, Ser. No. 138,657
Claims priority, application Germany, Apr. 30, 1970, P 20 21 245.7; Mar. 13, 1971, P 21 12 103.9
Int. Cl. C21d *1/18*
U.S. Cl. 148—12.4 **19 Claims**



A low carbon steel can be heat treated to improve either its physical properties or its elongation without detriment to the other by heating a shell region of the steel quickly and then allowing heat transfer to take place until the shell temperature preferably drops to the value of the core temperature whereupon the steel is intensively quenched in water.

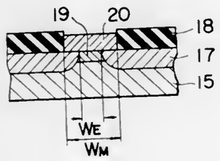
3,795,551
CASE HARDENING STEEL
Alan R. Swirnow, Brooklyn, N.Y., assignor to Curtiss-Wright Corporation
No Drawing. Filed May 12, 1972, Ser. No. 252,720
Int. Cl. C21d *1/46;* **C23c** *11/12*
U.S. Cl. 148—15 **16 Claims**

A method of carburizing and case hardening steels which require subsequent heat treatment at a temperature above the carburizing temperature, which would normally diminish surface carbon and surface hardness and increase case depth by diffusion. The present method gas carburizes the steel at about 1700° F., furnace cools to about 1450° F. with continued carburization, quenches in oil, tempers, hardens at about 1850° F., and martempers in salt.

3,795,552
PRECIPITATION HARDENED AUSTENITIC FERROUS BASE ALLOY ARTICLE
Wesley R. Kegerise, Oley, and Donald R. Muzyka and Peter R. Barbis, Reading, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.
No Drawing. Continuation-in-part of abandoned application Ser. No. 743,621, July 10, 1968. This application Apr. 14, 1971, Ser. No. 134,028
Int. Cl. C22c *39/14, 39/20*
U.S. Cl. 148—37 **5 Claims**

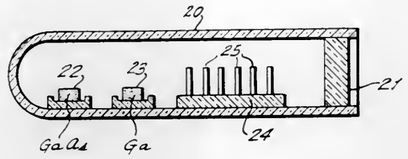
A precipitation hardened article formed from an austenitic Cr-Ni-Mo-Ti ferrous base high temperature alloy of a type designated as A-286 (AISI 660) containing 1.6–2.3% titanium, 0.10–0.30% silicon and 0.15–2% manganese.

3,795,553
SEMICONDUCTOR DEVICE AND A METHOD FOR FABRICATING THE SAME
Akio Hayasaka, Kokubunji, and Kenji Taniguchi, Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 15, 1971, Ser. No. 162,859
Claims priority, application Japan, July 15, 1970, 45/61,335
Int. Cl. H01l *7/34*
U.S. Cl. 148—187 **8 Claims**



A transistor having a narrow emitter width is fabricated by forming a circular shaped first mask on an n-type Si layer, diffusing B into the Si layer, thereby forming the first diffusing region, forming SiO_2 on the exposed surface of the Si layer, removing the first mask, diffusing B whose impurity concentration is lower than that of the first diffused region utilizing the SiO_2 as a second mask, thereby forming the second diffused region, and diffusing P into the Si layer utilizing the second mask, thereby forming the third diffused region. The Si layer, the second diffused region, and the third diffused region are operated as the collector, the base, and the emitter of the transistor, respectively.

3,795,554
PROCESS FOR SIMULTANEOUS DIFFUSION OF GROUP III–GROUP V INTERMETALLIC COMPOUNDS INTO SEMICONDUCTOR WAFERS
William H. Tarn, Culver City, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.
Filed Dec. 20, 1972, Ser. No. 316,870
Int. Cl. H01l *7/44*
U.S. Cl. 148—189 **11 Claims**



A monocrystalline silicon wafer is covered with a silicon dioxide coating, and windows are selectively formed in the silicon dioxide coating. The wafer is then loaded into a diffusion chamber which contains a gallium arsenide compound in pure stoichiometric form as well as a mass of pure gallium. The temperature of the diffusion vessel is then raised to cause diffusion into the water to form a plurality of junctions of given shape therein with a single diffusion step.

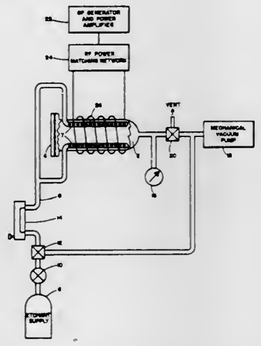
3,795,555
STABILIZED AMMONIUM PERCHLORATE
David O. Depree, Loomis, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
No Drawing. Filed June 22, 1970, Ser. No. 48,777
Int. Cl. C06b *11/00*
U.S. Cl. 149—76 **4 Claims**

The present patent describes novel ammonium perchlorate is stabilized with an effective stabilizing amount of an ammonium, alkali or alkaline earth metal trimetaphosphates, tetrametaphosphates and polymetaphosphates. Typical stabilizers are $(NaPO_3)_x$ linear (sodium polymetaphosphate), $Na_4P_4O_{12}$ (sodium tetrametaphosphate), $Na_3P_3O_9$ (sodium trimetaphosphate), $Ca_2P_4O_{12}$ (calcium tetrametaphosphate) and $(NH_4)_4P_4O_{12}$ (ammonium tetrametaphosphate).

3,795,556
GELLED GASOLINE INCENDIARY COMPOSITIONS CONTAINING TRIETHYL ALUMINUM AND A METAL
Nathan J. Sippel, China Lake, and Richard K. Young, San Jose, Calif., assignors to the United States of America as represented by the Secretary of the Navy
No Drawing. Filed Apr. 23, 1964, Ser. No. 363,675
Int. Cl. C10l *7/00*
U.S. Cl. 149—109 **9 Claims**

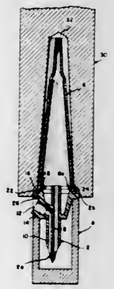
1. A pyrophoric composition comprising a mixture of
(a) an organic-metallic self-igniting compound;
(b) an extending agent; and
(c) a gelling agent.
said compound being a member selected from the group consisting of triethylaluminum, trimethylaluminum, tri-n-propyl aluminum, tri-isobutyl aluminum, diethyl aluminum chloride, ethyl aluminum dichloride, ethyl aluminum sesquichloride, methyl aluminum sesquichloride, triethylborane and diethylzinc; and mixtures thereof;
said extending agent being a member selected from the group of liquid hydrocarbon fuels consisting of motor gasoline, aviation gasoline, jet fuel, jet kerosine and mixtures thereof; and
said gelling agent being a member selected from the group consisting of silicon dioxide, activated carbon, calcium sulfate, colloidal sulfur, polyisobutylene and mixtures thereof.

3,795,557
PROCESS AND MATERIAL FOR MANUFACTURING SEMICONDUCTOR DEVICES
Adir Jacob, West Roxbury, Mass., assignor to LFE Corporation, Waltham, Mass.
Filed May 12, 1972, Ser. No. 252,863
Int. Cl. C23f *1/02;* **H01l** *7/50*
U.S. Cl. 156—8 **12 Claims**



A process step and material for use in the manufacture of semiconductor devices. To facilitate the etching of unmasked silicon dioxide, silicon nitride, silicon monoxide, bare silicon layers, or various refractory metals on preselected portions of a semiconductor slice, the material is exposed to a low pressure RF generated "cold" plasma (under 325° C.) produced from a homogeneous gaseous binary mixture of oxygen and a halocarbon. The halocarbon is preferably a gas having one carbon atom per molecule and is preferably fully fluorine-substituted.

3,795,558
METHOD OF ULTRASONIC SEALING HOLLOW MEMBERS
William C. Dabney and Samuel H. Goodenough, Oakland, and Harold B. Queen, Walnut Creek, Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.
Filed Nov. 8, 1971, Ser. No. 196,505
Int. Cl. B32b *31/16;* **F16l** *25/00, 13/14*
U.S. Cl. 156—73 **10 Claims**



A method for connecting a relatively rigid member and a relatively flexible member by employing ultrasonic energy, characterized in that an annular axial projection on the rigid member is softened by the application of ultrasonic energy thereto and is simultaneously deformed

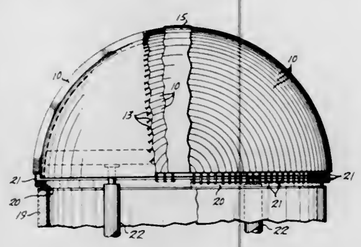
around a corresponding annular transverse flange on the other member to permanently bond said members together to define a hermetically sealed joint. The invention also relates to the resultant product, which comprises an entry spike-drip barrel device adapted for connection with a container for parenteral solutions, said device including a relatively rigid spike member that is bonded by a hermetic seal with a relatively flexible drip barrel member.

3,795,559

AIRCRAFT FLUTED CORE RADOME AND METHOD FOR MAKING THE SAME

Victor I. Horn, Bellevue, and Henry A. Kangas, Renton, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 1, 1971, Ser. No. 185,491
Int. Cl. B31c *13/00;* **B65h** *81/00;* **B64c** *1/10*
U.S. Cl. 156—152 **7 Claims**



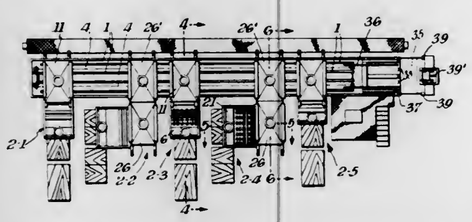
A complex contoured fluted core radome structure for aircraft utilizing a relatively high temperature and high pressure cure cycle for laminated fiber material. The method further includes the utilization of removable and reusable flexible silicone rubber mandrels adaptable to complex contour configurations. The use of the flexible silicone rubber mandrels permits the use of high curing pressures to completely and uniformly fill the flutes of the fluted core panel structure and produce a structural product with very low void content which is necessary for meeting the radar electrical requirements combined with improved mechanical properties for the structural requirements.

3,795,560

METHOD FOR MAKING PLYWOOD

Masaichiro Matsumoto, Shimizu, Kiyoshi Tsuruta, Kodaira, Tokyo, and Hideo Miyata, Shizuoka, Japan, assignors to Honen Seiju Kabushiki Kaisha and Fuji Kogyo Kabushiki Kaisha, Kariyado, Fujie, Japan, and Shizuoka Prefecture, Japan, respectively

Filed July 22, 1971, Ser. No. 165,140
Claims priority, application Japan, July 25, 1970, 45/64,793
Int. Cl. B32b *31/00;* **B27g** *11/00*
U.S. Cl. 156—300 **2 Claims**



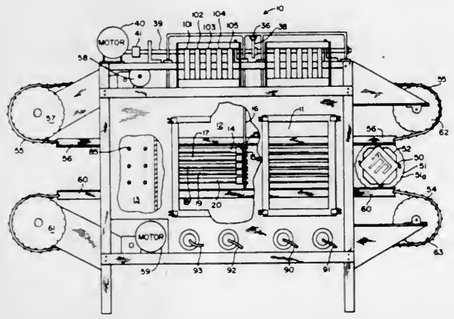
Method for producing plywood comprises steps of delivering first veneer with adhesive on upper surface thereof from first station to main conveyor running transverse to direction of delivery of first veneer. Method also includes step of delivering second veneer with adhesive on upper surface thereof and grain thereof transverse to grain of first veneer from second station independent of first station to main conveyor. Second veneer is compiled on top of first veneer, and thereafter several additional veneers with adhesive on upper surfaces thereof are independently delivered from additional stations to main conveyor. Additional veneers have alternating grain directions and are compiled on top of one another and first and second veneers. Finally, uppermost veneer without adhesive thereon is delivered from final station to main conveyor, and thereafter uppermost veneer is compiled on top of other veneers so that grain thereof is transverse to grain of adjacent veneer.

3,795,561

VERTICAL ETCHERS FOR MINUTE PARTS

Herbert M. Bond and Michael E. Rucinski, St. Paul, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.

Filed July 24, 1972, Ser. No. 274,346
Int. Cl. C23f *1/02*
U.S. Cl. 156—345 **12 Claims**



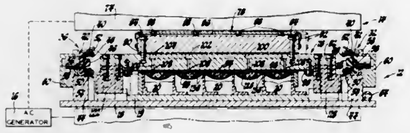
A vertical etcher is provided having means for controlling the angular velocity as well as the linear velocity of a part as it passes through a multiple nozzle spray etching chamber. Further means are included for spacing and adjusting the etchant spray nozzles to produce a uniform spray of etchant over the part to be etched as well as etchant wipers located at the entrance and exit to the etchant chambers to stop the etching action as quickly as possible.

3,795,562

DIELECTRIC EMBOSSING APPARATUS

Kenneth A. Smith, Washington, and William Stempnik, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 24, 1972, Ser. No. 274,664
Int. Cl. B32b *31/00*
U.S. Cl. 156—380 **4 Claims**



A dielectric embossing apparatus for forming a decorative trim assembly with a plurality of risers and including a lower electrode having a series of parallel upstanding blades and an upper electrode including a support member and a plate member. The plate member is

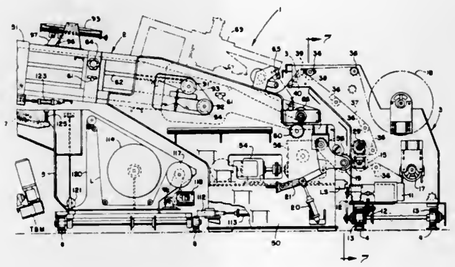
formed with a flat lower face and cooperates with the blades for compressing a sheet of filler material and causing the latter to be split into a plurality of strips which serve to form the risers. Means are located between the support member and the plate member for allowing the latter to reciprocate relative to the support member in a plane parallel to the lower face of the plate member so as to clear the area above the blades of any particles of the filler material remaining after the splitting operation and assure dielectric bonding of the cover sheet to the base sheet of the panel.

3,795,563

TIRE BUILDING MACHINE SERVICER

George E. Enders, Salem, and Armindo Cantarutti, Akron, Ohio, assignors to NRM Corporation, Akron, Ohio

Filed June 19, 1972, Ser. No. 264,158
Int. Cl. B29h *17/10, 17/20, 17/30*
U.S. Cl. 156—406 **20 Claims**



A tire building machine servicer characterized in the provision of a stock storage and conveyor means which is loaded with tire components from a series of stock let-off units which are successively indexed to positions in alignment with one end of said conveyor means, said let-off units in the case of a radial truck tire, for example, comprising successive first and second cordless gum ply stock rolls and a cord ply stock roll, said conveyor means being equipped with drive means for driving the respective stock rolls and with severing means to cut the respective plies to exact lengths as required for application on the tire building drum. Said conveyor means is further characterized in that it has centering means to center the stock loaded thereonto from said let-off units and to center the stock as it is dispensed from said conveyor means onto the tire building drum.

The servicer herein is further characterized in that another series of let-off units carrying stock rolls of other tire components are indexed along a path parallel to the longitudinal axis of the tire building drum for successive application of, for example, the finishing strips, a belt cushion strip, and first, second, and third belts to the tire building drum as the tire building operation proceeds. During the operation of the last-mentioned series of let-off units, the storage and conveyor means may be loaded with stock for storage therein until the next tire is ready to be built.

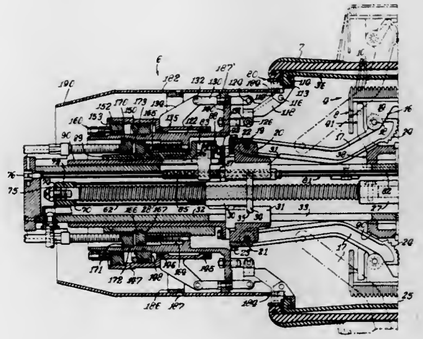
Yet a further characterizing feature of the present servicer is that the tread and side wall components of the tire are stored on carriers which are in alignment with the conveyor means but disposed at the opposite side of the tire building drum, said carriers being advanced toward and away from the tire building drum for application of the respective components thereto, said tread components in the case of a radial tire building machine being stored in a looped configuration to shorten the length of the tread carrier.

3,795,564

TIRE BUILDING APPARATUS

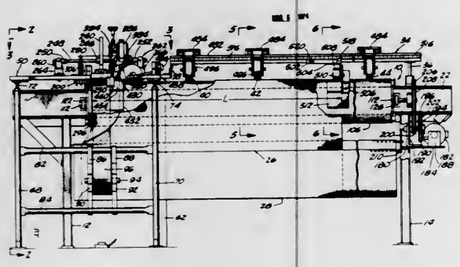
Edwin E. Mallory, Niles, Mich., assignor to National-Standard Company, Niles, Mich.

Filed Sept. 24, 1971, Ser. No. 183,440
Int. Cl. B29h *17/16, 17/26*
U.S. Cl. 156—417 **17 Claims**



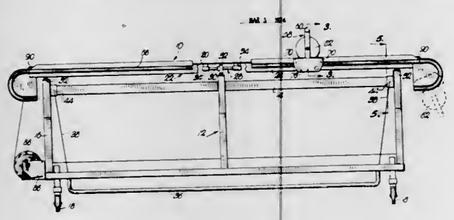
A tire building apparatus embodying an expandable and contractable intermediate drum, inboard and outboard end drum assemblies at opposite ends of the intermediate drum for initially supporting loosely thereon a cylindrical tire carcass having tire beads embedded at opposite ends thereof, tire bead supporting and locating means at the inner ends of the end drums in an arrangement including first carrier means and in which the tire bead supporting and locating means may be positioned with respect to the first carrier means in equidistant axially spaced apart relation with respect to the transverse centerline of the intermediate drum, stop means providing for initial slipping engagement of the tire bead supporting and locating means with the tire carcass material at the tire beads to center the cylindrical tire carcass material and encased tire beads to center both radially and axially the tire carcass and the tire beads on the tire building apparatus, holding pin means for holding the tire carcass material and the tire beads in such centered position as that upon expansion of the intermediate drum the tire carcass material and tire beads remain in the aforesaid centered position and the tire carcass material is maintained under tension between the tire beads. A tire building machine having such additional features as the provision of preliminary tire carcass locating means at the inner end of the inboard drum for preliminarily positioning a tire carcass generally centrally on the apparatus, tapered shroud means at the outer end of the outboard end drum for facilitating position of a tire carcass, and resilient stop means associated with the outboard drum assembly for limiting inward movement of the intermediate drum.

3,795,565
MACHINE FOR SIZING AND PROCESSING DRAPERY MATERIAL
Enrique Soto, 1638 W. Washington Blvd., Los Angeles, Calif. 90015
Continuation-in-part of abandoned application Ser. No. 841,246, July 14, 1969. This application June 21, 1971, Ser. No. 155,022
Int. Cl. B29d *31/00*
U.S. Cl. 156—465 **7 Claims**



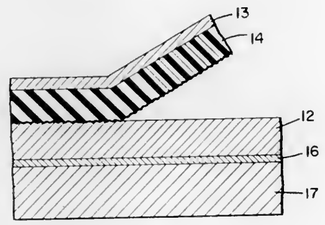
An endless belt of substantial width carries a measured length of drapery material through the machine and through a processing appliance at one end of the machine. Fabric is tumbled from a holder, at the entrance side of the machine through it into a holder at the exit side of the machine. The material passing through the machine comprises several widths seamed together. An accurately measured total width is held by pressure rollers over the endless belt, the measured width being the accurately measured length of a drape being formed. At the end of the machine, the edge of the material which will be the top edge of the drape passes under and then is folded over a plate in an accurate amount, the excess material being continuously cut off by a cutter. A strip of stiffening buckram leads from a roll underneath the plate into a position between the folded over edge. The stiffening material is impregnated with adhesive. A steamer head is provided which is lowered to apply heat to the adhesive to bond folded edges and stiffening material together.

3,795,566
APPARATUS FOR ATTACHING LINER MATERIAL TO A BASE SHEET
Lee R. Epley, Kansas City, Mo., assignor to Construction Plastics, Incorporated, Kansas City, Kans.
Filed June 10, 1971, Ser. No. 151,828
Int. Cl. B30b *9/00*
U.S. Cl. 156—58 **3 Claims**



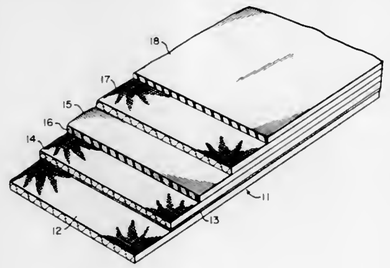
Apparatus for attaching liner material, such as fiber glass or the like, to a base sheet, such as metal, the apparatus including a table having a base frame and a top pivotally interconnected with the base frame, there being means for permitting swinging movement of the top about the pivot means whereby to tilt the top and therefore, the material carried thereby being a pressure roller assembly carried by the top frame of the table and spanning the same whereby, in either a horizontal or a tilted position, the pressure roller may be utilized to press the liner material against the base sheet.

3,795,567
ALUMINUM FOIL WALL COVERING
Harold Robert Hoffman, San Francisco, Calif., assignor to Winfield Design Associates, Inc., San Francisco, Calif.
Continuation of abandoned application Ser. No. 733,729, Apr. 30, 1968. This application Aug. 27, 1971, Ser. No. 175,718
Int. Cl. B32b *3/00, 7/06*
U.S. Cl. 161—53 **2 Claims**



A paper backed aluminum foil wall covering contains a thin layer of polyethylene film between the aluminum foil sheet and the paper backing. The polyethylene film laminates the foil to the paper and serves as a moisture barrier to prevent water from the paste used in hanging the wall covering from contacting the back side of the foil. The film adheres to only the surface fibers on a smooth surface of the paper backing to permit the foil and polyethylene film to be stripped as a unit from the paper backing after the wall covering has been installed.

3,795,568
COMPRESSIBLE PRINTING BLANKET AND METHOD OF MANUFACTURE
Thomas C. Rhodarmer, Canton, and Wayne W. Easely and Billy Pryor, Waynesville, N.C., assignors to Dayco Corporation, Dayton, Ohio
Filed Feb. 24, 1972, Ser. No. 228,989
Int. Cl. B32b *5/00*
U.S. Cl. 161—87 **1 Claim**

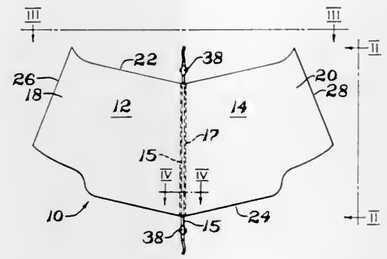


A printing blanket and method of manufacture, in which the blanket has a base fabric, an elastomeric surface layer, and a compressible intermediate layer. The intermediate layer is formed of an elastomeric matrix into which fine latex foam rubber particles have been incorporated to create microcellular voids, resulting in a closed cell structure in the layer.

3,795,569
PATTERNED FABRICS HAVING RELIEF PATTERNS AND METHOD OF PRODUCING THE SAME
Bohumil Piller, Jiri Suchanek, Josef Minarik, and Drahoslav Lev, Brno, and Vladimir Lacko, Svit, Czechoslovakia, assignors to Vyzkumny Ustav Pletarsky, Brno, Czechoslovakia
No Drawing. Filed Sept. 2, 1971, Ser. No. 177,444
Claims priority, application Czechoslovakia, Dec. 14, 1970, 8,416/70
Int. Cl. D02g *3/02, 3/04*
U.S. Cl. 161—72 **6 Claims**

Patterned fabrics having relief patterns consisting of at least two types of yarn each having a different shrinkability and different dye affinity, the less shrinkable yarn forming the relief pattern while the more shrinkable yarn forms the base or ground of the fabric.

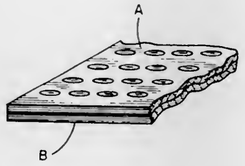
3,795,570
METHOD OF SHAPING GLASS SHEETS TO SHARP BENDS AND SHAPED GLASS SHEETS PRODUCED THEREBY
Robert A. Jansson, Pittsburgh, and Dean L. Thomas, Glenshaw, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Mar. 29, 1972, Ser. No. 239,031
Int. Cl. B32b *3/30;* **C03b** *23/02;* **C03c** *27/00*
U.S. Cl. 161—125 **15 Claims**



Simultaneously bending a pair of glass sheets having a sharply bent portion extending across a portion of the sheet, using a combination of general overall heating with additional resistance heating in said sharply bent portion in such a manner that breakage is avoided and the pair of glass sheets bent simultaneously do not fuse together and can be separated after they are shaped, then assembled with a layer of plastic interlayer material therebetween and laminated.

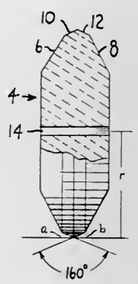
3,795,571
LAMINATED NON-WOVEN SHEET
James S. Prentice, Baytown, Tex., assignor to Esso Research and Engineering Company
Original application Oct. 9, 1969, Ser. No. 864,994, now Patent No. 3,715,251. Divided and this application Sept. 21, 1972, Ser. No. 291,127
Int. Cl. B32b *7/14;* **D04h** *11/00*
U.S. Cl. 161—148 **10 Claims**

A laminated non-woven sheet is made from non-woven mats of melt-blown thermoplastic polymer fibers. The non-woven sheets may be produced by either point welding or using adhesives to laminate at least one non-woven mat having a high strip tensile strength to at least one



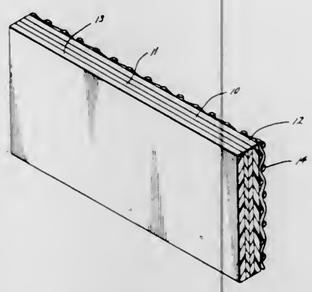
non-woven mat having a high tear resistance so that the sheets have both high strip tensile strength and high tear resistance.

3,795,572
METHOD OF CUTTING GLASS AND ARTICLE MADE THEREBY
Robert P. De Torre, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of applications Ser. No. 57,574, July 23, 1970, and Ser. No. 68,735, Sept. 1, 1970, both now abandoned. This application May 26, 1972, Ser. No. 257,104
Int. Cl. C03b *33/00*
U.S. Cl. 161—149 **32 Claims**



Pieces of glass are cut to desired size without the necessity of grinding to size and polishing. Edges of the piece are cut in accordance with a procedure involving the use of a blunt scoring wheel of larger-than-usual diameter and a greater-than-usual applied pressure, to produce a fissure 1.5 millimeters deep or more, followed by the application of a bending moment to sever the glass or of heat along the length of the score to cause the glass to become nearly severed. In the latter instance a thin glass layer remains that is easily severed. Light seaming of the tops and bottoms of the edges completes the preparation of those edges. In a further aspect, a curved deep fissure is produced by a blunt scoring wheel of larger-than-usual diameter under greater-than-usual pressure, in the same manner as above. However, a top center tap is used to propagate a fracture, leaving only a thin glass layer which is then severed. Light seaming completes the preparation of the curved edge.

3,795,573
LINER
Ernest L. Smith, P.O. Box 1612, Shreveport, La. 71102; Arthur R. Duffy, 260 Hardy Way, Worthington, Ohio 43085; and Eugene S. Lyman, Rte. 1, Box 215, Northfield, Minn. 55057
Continuation-in-part of abandoned application Ser. No. 862,788, Oct. 1, 1969. This application Sept. 27, 1971, Ser. No. 184,263
Int. Cl. B32b *5/24, 33/00*
U.S. Cl. 161—165 **1 Claim**



This invention relates to a laminate for use in lining a cryogenic tank comprising of multiple layers of woven polyester fibers such as woven polyethylene terephthalate fibers and stress-oriented polyethylene terephthalate films, and aluminum.

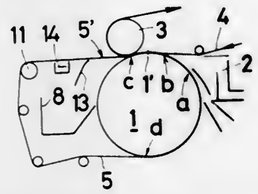
3,795,574
IMPREGNATION OF WOOD WITH A FORMALDEHYDE FREE ALKALINE SOLUTION OF SODIUM HYDROXIDE AT A pH BETWEEN 12.4 AND 13
John Hans Kalisch, George Tombler, Fernand Guy Hurtubise, and Jordan Kopanidis, Hawkesbury, Ontario, Canada, assignors to Canadian International Paper Company, Montreal, Quebec, Canada
No Drawing. Continuation-in-part of abandoned application Ser. No. 762,578, Sept. 25, 1968. This application July 27, 1971, Ser. No. 166,631
Int. Cl. D21c *3/26*
U.S. Cl. 162—86 **7 Claims**

A process involving impregnation of wood with a formaldehyde free alkaline solution containing sodium hydroxide at a pH of from about 12.4 to about 13 and sodium sulfite at temperatures below 80°C., followed by draining the solution, adding sulfur dioxide and cooking the wood in accordance with the bisulfite process to produce increased yields of pulp having high unbleached brightness.

3,795,575
CELLULOSIC SHEET MATERIAL AND PROCESS FOR ITS PREPARATION
Lam H. Gouw, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed May 2, 1972, Ser. No. 249,587
Claims priority, application Netherlands, May 3, 1971, 7105985
Int. Cl. D21h *5/12*
U.S. Cl. 162—146 **3 Claims**

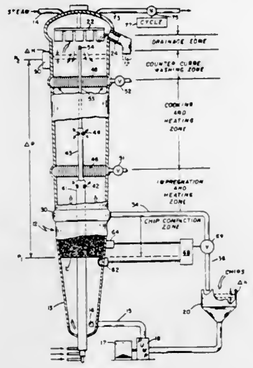
A cellulosic sheet material (paper) which exhibits improved wet strength comprises about 5–75% by weight polymer fibers obtained by fibrillating a cold-stretched multilayered film comprising two or more layers of different polymer compositions and 25–95% by weight cellulosic fibers. The novel cellulosic sheet material is made by incorporating the polymer fibers into the cellulosic fibers then heating to a temperature above the melting point of the lowest melting polymer but below the temperature of the highest melting polymer. This cellulosic sheet material is used in the preparation of paper articles.

3,795,576
CYLINDRICAL SCREEN METHOD FOR PAPER MANUFACTURING
Kazumasa Watanabe, Fuji, Japan, assignor to Mitsuoki Iron Works Co., Ltd., Fuji, Japan
Filed Dec. 27, 1971, Ser. No. 212,080
Claims priority, application Japan, June 21, 1971, 46/43,915
Int. Cl. D21f *1/60, 11/06*
U.S. Cl. 162—214 **1 Claim**



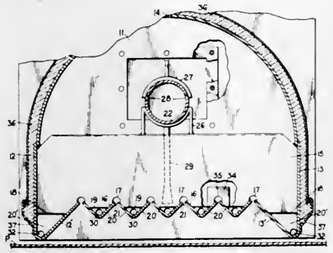
A cylindrical screen-type machine for paper manufacture is operated such that white water which filters to the interior of a cylindrical screen does not splash onto a paper layer formed on the outer surface of the cylindrical screen when the white water is later thrown off by centrifugal force. The effectiveness in operation of the present machine in preventing the paper produced from being soiled by splashing white water increases with increasing speed of rotation of the screen cylinder.

3,795,577
CONTINUOUS DIGESTER WITH PRESSURE RELIEF OUTLET VALVE CYCLING
Rohe Vester Pennington, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.
Continuation of application Ser. No. 132,589, Apr. 8, 1971, which is a continuation of application Ser. No. 37,435, May 14, 1970, which in turn is a continuation of application Ser. No. 641,793, May 29, 1967, all now abandoned. This application May 1, 1972, Ser. No. 248,974
Int. Cl. D21c *7/12, 7/14*
U.S. Cl. 162—237 **7 Claims**



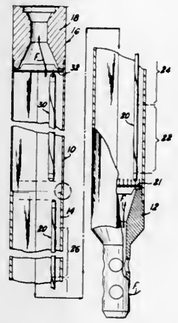
Apparatus for the continuous pulping of a compacted mass of wood chips in an upright elongated reaction vessel having an inlet for feeding wood chips substantially continuously into the lower end of the vessel and an outlet for discharging them substantially continuously from the upper end of the vessel, the mass of wood chips being advanced upwardly through the vessel for treatment in liquid submergence by generating liquid propelling pulses by utilizing a top steam outlet having a valve and a cycling timer for operating it, such propelling pulses causing the rate of movement of the submergence liquid relative to the wood chips in the mass to vary cyclically to produce a cyclic advancing movement of the liquid at a rate at least not less than that of the alternating intervening movement of the liquid, such advancing movement of the liquid advancing the wood chips throughout the length of the column from the input to the output end thereof.

3,795,578
COMPOSITE STEAM CHAMBER FOR USE ON A TRAVELING PULP MAT
Joseph Henry Dupasquier, 5855 NW. Skyline Drive, West Linn, Oreg.
Filed May 30, 1972, Ser. No. 257,842
The portion of the term of the patent subsequent to Apr. 10, 1990, has been disclaimed
Int. Cl. D21f *5/18*
U.S. Cl. 162—290 **5 Claims**



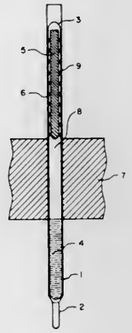
An elongated chamber, mounted to extend transversely above a pulp mat, includes parallel end walls connected by bottom side walls and a rounded top wall. Cross plates extend between the side walls, and a plurality of troughs, forming the bottom of the chamber, are supported from the cross plates with their top edges spaced a slight distance apart for the discharge of steam therethrough. A steam delivery pipe extends along in the chamber supported above the cross plates. Water collecting in the valleys of the troughs is discharged through drain caps at the end walls.

3,795,579
NUCLEAR FUEL ASSEMBLY COMPRISING A SLEEVE OF VARIABLE THICKNESS
Jean-Claude Chenal, Karl Schaller, and Jean Skok, Aix-en-Provence, and Henri Venobre, Vinon-sur-Verdon, France, assignors to Commissariat a l'Energie Atomique
Filed Apr. 25, 1972, Ser. No. 247,361
Claims priority, application France, May 5, 1971, 7116155
Int. Cl. G21c *3/06*
U.S. Cl. 176—78 **4 Claims**



The fuel assembly comprises at least one bundle of canned-fuel pins of substantial length which are disposed on a uniform lattice and enclosed within a sleeve through which the coolant flows in a general direction parallel to the fuel pins. The thickness of the sleeve in the downstream portion is smaller than in the upstream portion as considered in the direction of coolant flow.

3,795,580
FUSE FOR NUCLEAR REACTOR
Dixon P. Schively, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 19, 1972, Ser. No. 298,984
Int. Cl. G21c *7/22*
U.S. Cl. 176—86 M **5 Claims**



A fuse for nuclear reactor shutdown is provided which employs a fusible metal plug disposed within an elongated capsule at its upper extremity to upwardly displace, upon fusing at a preselected reactor excursion temperature, a liquid neutron absorber from the bottom portion of the capsule into the central portion which substantially corresponds to the core region of the reactor. The present fuse is placed within a core duct of the reactor.

A method for shutting down a nuclear reactor is also provided wherein liquid neutron absorbing poison is introduced into the reactor core region by volume displacement.

3,795,581
METHOD OF MAINTAINING OR RESTORING THE 2,3-DIPHOSPHOGLYCERATE CONTENT OF HUMAN RED CELLS
Fred H. Deindoerfer, Northridge, and Jon M. Brake, Burbank, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
No Drawing. Filed Nov. 1, 1971, Ser. No. 194,689
Int. Cl. A61k *27/10*
U.S. Cl. 195—1.8 **10 Claims**

Viable human red cells are contacted with an aqueous solution of dihydroxyacetone (DHA), and held in contact with the DHA solution to maintain and/or increase their 2,3-diphosphoglycerate (2,3-DPG) content. The method is particularly useful in the storage and preservation of whole blood.

3,795,582
INHIBITION OF AGGREGATION OF BLOOD PLATELETS
Don N. Harris, Somerset, and Marie B. Phillips, Highland Park, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
No Drawing. Filed Jan. 31, 1973, Ser. No. 328,185
Int. Cl. A61k *27/00*
U.S. Cl. 195—1.8 **5 Claims**

The activity of PGE_1 in inhibiting aggregation of blood platelets is enhanced by employing the PGE_1 in combination with 1-ethyl-4-isopropylidenehydrazino-1H-pyrazolo-[3,4-b]pyridine-5-carboxylic acid, ethyl ester

3,795,583
PROCESS FOR PREPARING L-SERINE
Kiyoshi Nakayama, Sagamihara, and Hiroshi Kase and Hajime Yoshida, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 134,626, Apr. 16, 1971. This application Nov. 6, 1972, Ser. No. 303,937
Claims priority, application Japan, Apr. 17, 1970, 45/32,359
Int. Cl. C12d *1/00*
U.S. Cl. 195—29 **14 Claims**

The present invention relates to a process for preparing L-serine by fermentation using a microorganism, wherein said fermentation employs a medium which contains at least one compound selected from the group consisting of L-threonine and L-homoserine so as to accumulate a substantial amount of L-serine in the medium, which is thereafter recovered.

3,795,584
PROCESS FOR PRODUCING HIGH PURITY MALTOSE
Masakazu Mitsuhashi and Kazuo Masuda, Okayama, Makoto Shiosaka, Fukuoka, Mamoru Hirao and Kaname Sugimoto, Okayama, Yasuyuki Yokobayashi, Osaka, and Shokichi Yuen and Mikihiko Yoshida, Okayama, Japan, assignors to Hayashibara Co., Okayama, Japan
No Drawing. Continuation of abandoned application Ser. No. 735,988, June 11, 1968. This application Sept. 3, 1971, Ser. No. 177,829
Claims priority, application Japan, June 30, 1967, 42/41,581
Int. Cl. C12d *13/02*
U.S. Cl. 195—31 R **2 Claims**

According to to the present invention, starch is first liquified with acid or enzyme, the pH of the resulting liquified starch is adjusted to about 6, the liquified starch is saccharified by the use of beta-amylase and alpha-1, 6-gluco-sidase or in addition alpha-amylase during the saccharifying step to produce a maltose with purity of about 99%.

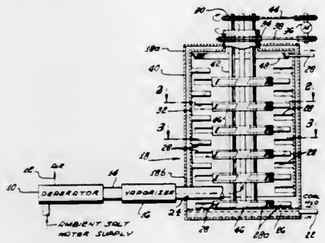
3,795,585
METHOD FOR MANUFACTURE OF ALPHA-GALACTOSIDASE
Hideo Suzuki, Harumi Kobayashi, and Akira Kamibayashi, Chiba, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
No Drawing. Filed Aug. 31, 1972, Ser. No. 285,510
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 **1 Claim**

A higher fatty acid, a higher alcohol, a higher aldehyde or a functional derivative thereof having 12 or more carbon atoms is incorporated as an agent for accelerating the formation of α-galactosidase into a basic culture medium containing carbon sources, nitrogen sources and inorganic salts. When an α-galactosidase producing mold is cultured in the culture medium thus prepared, α-galactosidase is produced in high yields in a short period of culturing time.

3,795,586
RECOVERY OF ENZYMES
Jack Ziffer, Milwaukee, Wis., assignor to Pabst Brewing Company, Milwaukee, Wis.
No Drawing. Original application Aug. 11, 1969, Ser. No. 849,148, now Patent No. 3,700,561. Divided and this application June 14, 1972, Ser. No. 262,558
The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 **8 Claims**

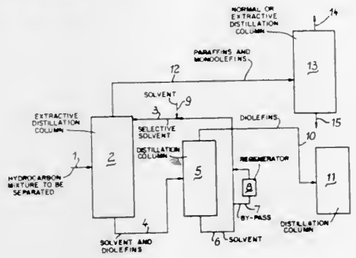
Bacterial amylase, bacterial protease and mixtures thereof are recovered from a bactrial whole culture fermentation medium by a process which involves the addition of an inorganic sulfite, preferably sodium sulfite, which enhances the yield of enzyme as measured by the enzyme activity, produces a whiter product, and inhibits spoilage of a concentrated aqueous solution of the enzyme.

3,795,587
OBTAINING INCREASED HEAD IN WATER SYSTEMS
Glenn D. James, 1200 Encino Ave., Arcadia, Calif. 91006
Continuation of abandoned application Ser. No. 741,662, July 1, 1968. This application July 19, 1971, Ser. No. 164,136
Int. Cl. B01d *3/10;* **F28b** *5/00*
U.S. Cl. 202—185 A **4 Claims**



In a water supply system in which water vapor is generated such as a desalinization system, head may be gained, useful in the generation of power, by combining condensation of the vapor with transport of condensing water to an elevated position. Thus driving relatively cool water droplets upward through a water vapor filled chamber and collecting the droplets and condensate at the top of the chamber provides an increase in water head to the system.

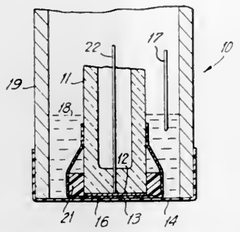
3,795,588
PROCESS FOR SEPARATING HYDROCARBON MIXTURES COMPRISING PARAFFINS, MONOOLEFINS, DIOLEFINS AND SMALL AMOUNTS OF MORE HIGHLY UNSATURATED HYDROCARBONS BY EXTRACTIVE DISTILLATION
Gerhard Preusser, Essen, Martin Schulze, Neviges, and Klaus Richter, Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Mar. 27, 1970, Ser. No. 23,302
Claims priority, application Germany, Mar. 29, 1969, P 19 16 255.1
Int. Cl. C07c *7/08*
U.S. Cl. 203—25 **11 Claims**



Process for separating hydrocarbon mixtures composed of paraffins, monoolefins, diolefins and small amounts of more highly unsaturated hydrocarbons by extractive distillation in which the diolefins together with the selective

solvent are taken off from the sump of the extractive distillation column characterized in that morpholine and/or substituted morpholine is used as the selective solvent.

3,795,589
METHODS FOR ELECTROCHEMICAL ANALYSIS
Harald Dahms, 22 Lakeview Road, Ossining, N.Y. 10562
Continuation-in-part of abandoned applications Ser. No. 718,032, Apr. 2, 1968, and Ser. No. 841,745, July 15, 1969. This application Nov. 30, 1970, Ser. No. 93,753
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **17 Claims**



A measuring cell for determining the concentration of a selected component (e.g. SO_2, CO, NO_2, O_3, H_2O_2 or ethanol) in a mixture. The cell includes an electrode covered with a thin layer of electrolyte containing a redox system (e.g. Cu^{++} for SO_2 measurement) which reacts with the selected component to form an electroactive species. At the electrode the electroactive species thus formed gains or loses electrons, giving a current which is a measure of the concentration of the selected component.

3,795,590
PROCESS FOR COLORING ALUMINUM AND ALLOYS OF ALUMINUM HAVING AN ANODIZED SURFACE
Jos Patrie, Grenoble, France, assignor to Cegedur GP, Paris, France
No Drawing. Filed Dec. 18, 1969, Ser. No. 886,330
Claims priority, application France, Dec. 23, 1968, 179,790
The portion of the term of the patent subsequent to May 23, 1989, has been disclaimed
Int. Cl. C23b *9/02;* **C23f** *5/00, 17/00*
U.S. Cl. 204—35 N **24 Claims**

The production of corrosion resistant reproducible colors on the surface of aluminum and alloys of aluminum wherein an aluminum oxide layer is formed on the surface by anodization and the colored particles of a metal or compound of a metal are deposited in the porous surface by alternating current electrolysis with the object mounted as an electrode in an electrolyte containing the constituent metal and wherein the object with the colored particles deposited therein is subjected to anodic treatment in an electrolyte containing an alkali metal or ammonium thiosulphate, without and preferably with subsequent sealing.

3,795,591
ELECTRODEPOSITION OF BRIGHT NICKEL IRON DEPOSITS EMPLOYING A COMPOUND CONTAINING A SULFIDE AND A SULFONATE
Richard J. Clauss, Allen Park, and Robert A. Tremmel, Woodhaven, Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.
No Drawing. Filed July 3, 1972, Ser. No. 268,349
Int. Cl. C23b *5/32, 5/46*
U.S. Cl. 204—43 T **31 Claims**

An aqueous bath suitable for the electrodeposition of a bright iron nickel electrodeposit onto a substrate susceptible to corrosion comprising iron ions, nickel ions, a bath soluble primary nickel brightener, an effective amount of a bath soluble complexing agent containing at least two complexing groups, said groups being independently selected from the group consisting of carboxy and hydroxy, provided at least one group is a carboxy group; the bath having a pH from 2.5 to about 5.5 and an ion of the formula:

$$^{-}O_3S—R—S—A$$

wherein A may be hydrogen, $—R_1—SO_3—$,

$$—S—R_2—SO_3^{-} \text{ or } R_3;$$

R, R_1 or R_2 may be a saturated alkylene, arylene, or aralkylene; and

R_3 may be alkyl, aryl or aralkyl.

3,795,592
NICKEL ELECTROPLATING COMPOSITION AND PROCESS
Roy W. Klein, St. Clair Shores, Robert A. Tremmel, Woodhaven, and Richard J. Clauss, Allen Park, Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.
No Drawing. Continuation-in-part of application Ser. No. 97,346, Dec. 11, 1970, now Patent No. 3,719,568. This application Feb. 28, 1973, Ser. No. 336,588
Int. Cl. C23b *5/08, 5/46*
U.S. Cl. 204—49 **18 Claims**

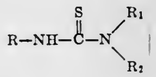
An aqueous acidic nickel electroplating bath comprising a coumarin compound and an effective leveling and brightening amount of a bath soluble 1-propynoxy sulfonate compound effective to carry the degradation product of coumarin.

3,795,593
CHROMIUM PLATING
Henry Brown, Huntington Woods, Mich., and William A. Boycott, Old Castle, Ontario, Canada, assignors to Oxy Metal Finishing Corporation, Warren, Mich.
No Drawing. Filed Feb. 21, 1973, Ser. No. 334,311
Int. Cl. C23b *5/06*
U.S. Cl. 204—51 **16 Claims**

An aqueous acidic chromium electroplating bath comprising a source of chromium ions and an effective microcracking amount of a halo-nitrobenzoic acid or its bath soluble salts.

3,795,594
ELECTROPLATING
Josef Hartenstein, Hilden, and Monika Nee, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany
No Drawing. Filed Apr. 13, 1972, Ser. No. 243,827
Claims priority, application Germany, Apr. 16, 1971, P 21 18 512.6
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—55 R **13 Claims**

Novel acid aqueous electroplating baths for forming lustrous zinc deposits containing a water-soluble zinc salt, usual lustering agents and wetting agents, optionally an additional conducting salt, a thiourea derivative of the formula



(I)

wherein R is selected from the group consisting of alkyl of 6 to 22 carbon atoms, a mono- or polynuclear aryl which may optionally be substituted with an aliphatic or aromatic group, arylalkyl and cycloalkyl, R_1 is selected from the group consisting of hydrogen and hydroxyalkyl of 2 to 6 carbon atoms which may optionally be interrupted by an ether oxygen and R_2 is hydroxyalkyl of 2 to 6 carbon atoms which may be optionally interrupted

by an ether oxygen, and an aromatic carbonyl compound selected from the group consisting of

$$R_3-\underset{\underset{O}{\|}}{C}-R_4 \text{ and } R_3-A-\underset{\underset{O}{\|}}{C}-R_4$$

wherein R_3 is aryl such as phenyl and lower-alkyl phenyl with alkyl of 1 to 7 carbon atoms, A is selected from the group consisting of saturated alkylene with 1 to 7 carbon atoms and unsaturated alkylene with 2 to 7 carbon atoms, and R_4 is lower alkyl with 1 to 7 carbon atoms optionally substituted with keto, carboxy, and carbalkoxy of 1 to 7 carbon atoms, and to a novel electroplating method for forming improved lustrous zinc deposits with good ductility and zinc deposits formed by said method.

3,795,595

ELECTROLYTIC PRODUCTION OF TIN AND LEAD SALTS USING ANION PERMSELECTIVE MEMBRANES

Harold P. Wilson, Sewickley, Pa., assignor to Vulcan Materials Company, Birmingham, Ala.

No Drawing. Filed July 29, 1971, Ser. No. 167,495

Int. Cl. C01b *9/08, 17/96, 35/00*

U.S. Cl. 204—86 **9 Claims**

Tin and lead salts, e.g., stannous sulfate, are produced electrolytically by anodically dissolving tin or lead into an electrolyte in which the tin or lead salt is soluble while simultaneously substantially preventing migration of tin or lead cations from the anode to the cathode by maintaining an anion permselective barrier between the anode and the cathode, and then recovering the tin or lead salt from the electrolyte.

3,795,596

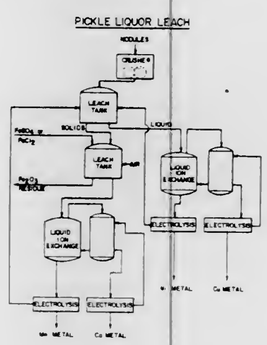
METHOD FOR SELECTIVELY LEACHING METAL VALUES FROM OCEAN FLOOR NODULES

William S. Kane, Newport News, and Paul H. Cardwell, Zanoni, Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Continuation of application Ser. No. 40,585, May 26, 1970. This application July 17, 1972, Ser. No. 272,226

Int. Cl. C22d *1/14, 1/24*

U.S. Cl. 204—105 M **9 Claims**



Method for recovering metal values from ocean floor nodules of the type containing iron, manganese, copper, cobalt and nickel comprising grinding the nodules into particles, subjecting the ground nodules to a first leaching step which dissolves copper and nickel, after which the solids are separated, then subjecting the leach liquor to liquid ion exchange and electrolyzing so as to obtain copper and nickel values.

Subjecting the solids to a second leach, using ferrous sulfate or ferrous chloride, removing the iron oxide and subjecting the solids to a liquid ion exchange for separating cobalt and manganese and then electrolyzing to recover independently the cobalt and manganese values.

3,795,597

METHOD OF PRODUCING AN ULTRA-CLEAN, BRIGHT SURFACE ON TITANIUM

Owen M. Katz, Pittsburgh, and Charles E. Campbell, Elizabeth, Pa., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Mar. 15, 1973, Ser. No. 341,617

Int. Cl. C23b *3/02*

U.S. Cl. 204—141.5 **4 Claims**

This invention relates to the treatment of titanium or titanium-base alloy articles for the purpose of effecting an ultra-clean, bright surface thereon. The method involves treating the surface with a solution of methyl alcohol, sulfuric acid, and hydrofluoric acid which is maintained at about −45° C. and through which is passed an electric current.

3,795,598

PHOTOPOLYMERIZATION PROCESS FOR THE MANUFACTURE OF ALTERNATING COPOLYMERS OF BUTADIENE AND ACRYLONITRILE

Toshio Yukuta, Koulchi Iwami, and Akira Onishi, Tokyo, and Yutaka Iseda, Kyoto, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,252

Claims priority, application Japan, Oct. 14, 1969, 44/81,548, 44/81,549

Int. Cl. C08d *1/00, 1/12;* **C08f** *1/16*

U.S. Cl. 204—159.24 **19 Claims**

Alternate copolymers of acrylonitrile and butadiene are manufactured by means of photopolymerization in the presence of (A) a catalyst comprising at least one compound selected from a group consisting of certain metal halides and organic metal halides and organometallic compounds and (B) a photosensitizer comprising at least one compound selected from a group consisting of benzene aromatic haydrocarbons and halides thereof, some polynuclear aromatic hydrocarbons and halides thereof, some heterocyclic compounds, aromatic or aliphatic hydrocarbon compounds, some ketone, glyoxal and aldehyde compounds, some sulfonic compounds. Thereby the alternating copolymers can be obtained in higher yield and with lesser gel formation. As occasion demands (C) an anti-gelling agent is added to the reactants which agent comprises at least one compound selected from a group consisting of aliphatic halogenated hydrocarbons, alicyclic halogenated hydrocarbons, iodine, sulfide or disulfide hydrocarbons, thiol or dithiol hydrocarbons, aromatic ethylenic hydrocarbons, some transition metal compounds.

3,795,599

SULPHOXIDATION OF ALIPHATIC HYDROCARBONS USING ULTRAVIOLET LIGHT AND A BORON COMPOUND

David John Rees, Kennington, England, assignor to United States Borax & Chemical Corporation, Los Angeles, Calif.

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,931

Claims priority, application Great Britain, Mar. 11, 1971, 6,559/71

Int. Cl. B01j *1/10*

U.S. Cl. 204—162 SA **10 Claims**

Sulphoxidation of aliphatic hydrocarbons is improved by addition of small amount of boron compound to the reaction mixture.

3,795,600

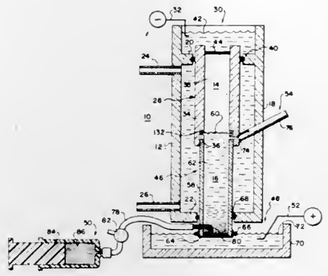
ELECTROPHORESIS AND METHOD APPARATUS

William B. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Continuation-in-part of application Ser. No. 226,016, Feb. 14, 1972. This application Mar. 23, 1973, Ser. No. 344,144

Int. Cl. B01k *5/00*

U.S. Cl. 204—180 G **19 Claims**



To prepare electrophoresis apparatus for operation, a wire mesh and an expandable plug are inserted into a first of two sections of a housing for two different anticonvection media and an unpolymerized gel is pipetted above the expandable plug into the first section, with the first section being inverted and the wire mesh being above the plug. When the unpolymerized gel reaches a level slightly above the mesh, it is polymerized with another plug or a layer of water above it to cause it to have a smooth surface extending beyond the wire mesh. The first and second housings are then fastened together with the gel in the first section above the second section and a density gradient column is formed in the second section in contact with the gel. After the different molecular species have been electrophoresed from the gel into the density gradient column, the second section is removed and the liquid in the density gradient column is moved by bulk flow past a scanning device which may scan it with different frequencies during successive motions of the liquid, the liquid being returned and the second section refastened to the first section for further electrophoresis if the scanning indicates the desirability of further electrophoresis.

3,795,601

ELECTRODIFFUSED PROTECTIVE COATING SYSTEM

George E. F. Brewer, Novi, Robert A. Swider, Livonia, and Warren A. Rentz, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,644

Int. Cl. B01k *5/02;* **C23b** *13/00*

U.S. Cl. 204—181 **14 Claims**

A process for producing articles resistant to high temperature corrosion which comprises the combination of (a) controlled electrodeposition of particulate metal, particularly aluminum, aluminum alloy, a mixture of aluminum and at least one other metal or metal oxide or a mixture of aluminum and at least one alloy, and a heat-fugitive, chemically ionizable organic film-former upon the surface of a substrate selected from nickel alloys, cobalt alloys, and iron alloys, and (b) controlled heat treatment of the thus coated substrate in an ambient essentially inert to the particles deposited to remove the organic film-former and to diffuse the metal or metals of the deposit into a surface of the alloy substrate.

3,795,602

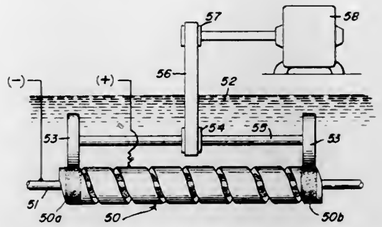
HELICAL ACTIVATOR FOR ELECTRODEPOSITION

Carl H. Rowe, Scotia, N.Y., assignor to Norton Company, Troy, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,047

Int. Cl. C23b *5/68*

U.S. Cl. 204—209 **6 Claims**



An activator device for use in a process wherein mechanical activation of the electrodeposit is carried out during the electrodeposition reaction, such activator device being formed in the configuration of a helix having as the outer portion thereof a firm backing capable of deformation into and retention of a desired shape and a coextending inner laminate of porous, compressible, resilient, hard particle-carrying material.

3,795,603

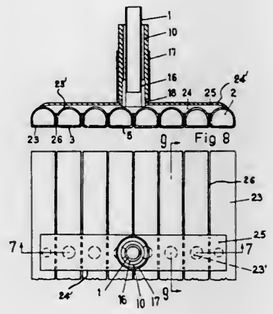
APPARATUS FOR THE ELECTROLYSIS OF ALKALI METAL CHLORIDE SOLUTIONS WITH MERCURY CATHODE

Franz Glos, Salzgitter-Lebenstedt, and Joachim Mischke, Dortmund-Hochsten, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Original application Aug. 26, 1971, Ser. No. 175,066, now Patent No. 3,746,631. Divided and this application Feb. 13, 1973, Ser. No. 332,225

Int. Cl. B01k *3/04;* **C22d** *1/04*

U.S. Cl. 204—219 **7 Claims**



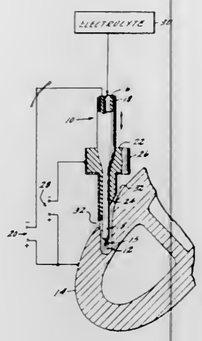
An apparatus for the electrolysis of alkali metal chloride solutions with mercury cathode. Fresh brine is delivered through a hollow shaft and uniformly distributed to a plurality of passages in the anode. Small openings in the passages on the active side of the anode enable brine to pass into the narrow electrolysis gap between the anode and mercury cathode. Small openings in the solid part of the anode or between the passages enable the weakened brine charged with small chlorine gas bubbles to flow into the cell chamber.

3,795,604

ELECTROLYTIC MACHINING ELECTRODE

Lloyd J. McKinney, Lebanon, Ohio, and Wayne W. Ferrin, Greenfield, Wis., assignors to General Electric Company

Filed Apr. 19, 1972, Ser. No. 245,375
Int. Cl. B23p *1/02;* **C23b** *5/74*
U.S. Cl. 204—224 M **2 Claims**



An improved electrode having dual mode capability for use in electrolytic machining, particularly small holes, comprises a dielectric electrolyte guide member having a hollow interior adapted to receive and to discharge electrolyte toward a conductive workpiece. Within the hollow interior is a first electrode and carried by the guide member outwardly of its dielectric wall is a second electrode, conveniently shaped as a collar, and having a tool surface facing the workpiece.

Apparatus adapted for electrolytic machining using such a cathode-tool includes means to supply to the first electrode electric current at a first potential sufficient to create in the electrolyte directed from the guide member a condition at least of incipient glow, and means to supply to the second electrode electric current at a second potential less than the first potential to provide electrolytic machining in the normal electrolysis range below incipient glow.

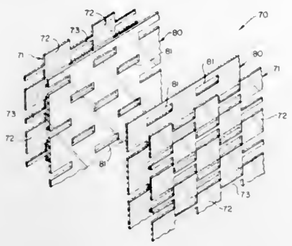
3,795,605

METHOD AND APPARATUS FOR REMOVING AND/OR SEPARATING PARTICLES FROM FLUID CONTAINING THE SAME

James T. Candor, 5440 Cynthia Lane, Dayton, Ohio 45429

Continuation-in-part of application Ser. No. 53,402, July 9, 1970, which is a continuation-in-part of application Ser. No. 25,938, Apr. 6, 1970, which is a continuation-in-part of application Ser. No. 864,851, Oct. 8, 1969, which in turn is a continuation-in-part of application Ser. No. 811,421, Mar. 28, 1969, all now abandoned. This application June 16, 1972, Ser. No. 263,605
The portion of the term of the patent subsequent to Aug. 29, 1989, has been disclaimed
Int. Cl. B03c *5/00;* **C02** *1/78*
U.S. Cl. 204—299 **20 Claims**

Method and apparatus having electrostatic means for removing particles from a fluid containing the same, the electrostatic means comprising charged electrode means electrically insulated from the fluid so that the electrostatic field thereof draws the particles into exit means of a passage defining means having the fluid moved therethrough. Such charged electrode means create a plurality of alternately arranged non-uniform fields across the fluid in the passage means so that the particles enter the exit means adjacent the more intense portions of the non-uniform fields, such electrodes being either externally charged or electrets. Such passage means can comprise means for straight laminar flow of the fluid therethrough by being disposed adjacent or in another passage means



having a particle receiving fluid stream flow therethrough. Such other passage means can receive particles of opposite polarity to neutralize the electric field created by charged particle separation.

3,795,606

HYDROTHERMAL METHOD OF MANUFACTURING A NOVEL CATALYTIC MATERIAL, CATALYSTS CONTAINING SAID MATERIAL, AND PROCESSES USING SAID CATALYSTS

Joseph Jaffe, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 763,922, Sept. 30, 1968, now Patent No. 3,652,457. This application May 19, 1970, Ser. No. 38,888
The portion of the term of the patent subsequent to May 23, 1989, has been disclaimed
Int. Cl. B01j *1/40;* **C10g** *11/02*
U.S. Cl. 208—111 **11 Claims**

(a) Hydrothermal conversion method for manufacturing a novel catalytic material, comprising a novel synthetic layered crystalline clay-type aluminosilicate mineral, preferably in an intmiate admixture with an amorphous cogel comprising silica and alumina, said material being useful as a catalytic cracking catalyst and as a cracking component of a catalyst containing at least one additional component, said method comprising subjecting to conditions of elevated temperature and pressure a hydrogel or hydrogel slurry, said slurry comprising water, a component selected from fluorine and compounds of fluorine, and an amorphous cogel starting material comprising silica and alumina in a silica/alumina molar ratio above 3.3, until a substantial amount of said synthetic mineral is formed, preferably in an intimate admixture with a substantial amount of unreacted amorphous cogel comprising silica and alumina; (b) the novel catalytic material so manufactured, including said synthetic mineral as such and in said intimate admixture with unreacted amorphous cogel; (c) catalysts comprising said novel catalytic material, including catalysts containing said synthetic mineral in said intimate admixture with unreacted amorphous cogel; and (d) hydrocarbon conversion processes using said catalysts.

3,795,607

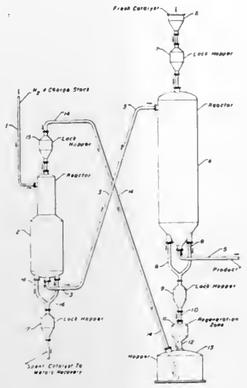
METAL, SULFUR AND NITROGEN REMOVED FROM HYDROCARBONS UTILIZING MOVING BED REACTORS

Frank H. Adams and Robert F. Anderson, La Grange Park, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 23, 1972, Ser. No. 282,999
Int. Cl. C10g *23/08*
U.S. Cl. 208—210 **27 Claims**

Hydroprocessing of hydrocarbon charge stocks which contain sulfur and various metals is performed using two

moving bed reactors connected in series; intermittently fresh catalyst is added to and used catalyst is removed



from the second reactor, the used catalyst is regenerated and charged to the first reactor for use in metals removal and initial hydrotreating of the charge stock.

3,795,608

PROCESS FOR SEPARATING AROMATIC HYDROCARBONS BY EXTRACTION

Susumu Fujiyama and Seizi Uchiyama, Niigata, Japan, assignors to Mitsubishi Gas-Chemical Company, Inc., Tokyo, Japan

Filed Nov. 5, 1971, Ser. No. 196,095
Claims priority, application Japan, Nov. 5, 1970, 45/96,844
Int. Cl. C07c *7/10*
U.S. Cl. 208—324 **6 Claims**

Aromatic hydrocarbons are separated from a mixture containing the aromatic hydrocarbons and non-aromatic hydrocarbons by contacting the mixture with a complex solution consisting of hydrogen fluoride, boron fluoride and m-xylene and/or polymethylbenzene of C_9 or higher as an extracting solvent at a temperature of 30° to −20° C. under a pressure of 0.5 to 5 kg./cm.^{2} g. The complex solution has a molar ratio of boron fluoride to hydrogen fluoride of 0.05–0.20:1 and a molar ratio of m-xylene and/or polymethylbenzene of C_9 or higher to boron fluoride of 0.6–0.9:1.

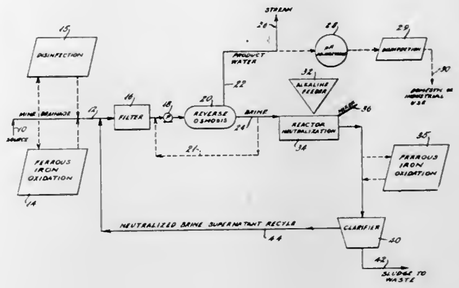
3,795,609

REVERSE OSMOSIS-NEUTRALIZATION PROCESS FOR TREATING MINERAL CONTAMINATED WATERS

Ronald D. Hill, Batavia, Ohio, and Roger C. Wilmoth and Robert B. Scott, Elkins, W. Va., assignors to the United States of America as represented by the Administrator of the Environmental Protection Agency

Filed Dec. 28, 1971, Ser. No. 213,117
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **15 Claims**

The present invention relates to the treating of mineral matter contaminated drain waters, particularly acid mine drainage and comprises an integrated system wherein the contaminated water is optionally pre-treated to make it more suitable for reverse osmosis separation, then separated by reverse osmosis into a purified water stream containing at least about 90% of the feed water, the balance being a brine stream heavily concentrated in the mineral contaminants, thereafter chemically treating the brine stream as, for example, by neutralization to produce a sludge product and a re-cycle brine stream, the re-cycle brine stream being returned to the reverse osmosis treatment. Desirably the ultimate products of the process



are purified water and a relatively small volume of inert sludge.

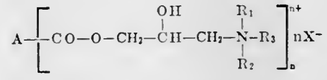
3,795,610

POWDERY SOFTENING RINSING AGENT COMPOSITIONS

Hans-Werner Eckert, Dusseldorf, and Claus Werner, Haan, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,721
Claims priority, application Germany, Mar. 24, 1971, P 21 14 129.7
The portion of the term of the patent subsequent to Apr. 24, 1990, has been disclaimed
Int. Cl. D06m *13/38*
U.S. Cl. 252—8.8 **4 Claims**

A powdery softening rinsing agent composition comprising a combination of (1) an unsaturated carboxylic acid ester of the formula



wherein R_1 and R_2 are selected from the group consisting of alkyl and alkenyl having from 10 to 24 carbon atoms, R_3 is alkyl having 1 to 4 carbon atoms, A is selected from the group consisting of alkenyl and alkenylene having from 2 to 5 carbon atoms, X is an anion selected from the group consisting of halide and the anion of an organic, non-surface-active acid and *n* is an integer of 1 or 2, (2) non-ionic dispersing agents, (3) at least one solid diluent and (4) optionally other customary ingredients of solid softening rinsing agents for washed laundry, where component (1) is present (a) in a homogenous mixture with the other components, or (b) in finely distributed form on the surface of component (3).

3,795,611

FABRIC SOFTENING COMPOSITIONS

Harold Eugene Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,111
Int. Cl. C11d *3/32;* **D06m** *13/40*
U.S. Cl. 252—8.75 **8 Claims**

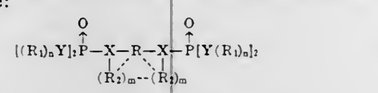
A fabric softening composition comprising the higher alkyl amides of 2-amino-2-methyl-1-propanol or 2-amino-2-ethyl-1,3-propandediol either alone or in combination with detergent materials and a method of softening fabrics utilizing said composition.

3,795,612
LUBRICANTS CONTAINING CYCLIC ORGANO-PHOSPHORUS COMPOUNDS
Stamoulis Stournas, Trenton, Robert F. Bridger, Hopewell, and El Ahmadi I. Heiba, Princeton, N.J., assignors to Mobil Oil Corporation
No Drawing. Filed Nov. 2, 1971, Ser. No. 195,002
Int. Cl. C10n *1/48*
U.S. Cl. 252—46.6 **9 Claims**

Cyclic organic phosphorus compounds are provided in which phosphorus is a component of the ring system and is either in the P^3 or P^5 valence state. Organic compositions comprising the compounds have excellent antioxidant properties.

3,795,613
LUBRICATING COMPOSITION
Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Aug. 7, 1972, Ser. No. 278,850
Int. Cl. C10m *1/44, 1/46, 1/48*
U.S. Cl. 252—49.9 **14 Claims**

A lubricating composition having improved low-wear properties is disclosed and comprises a mixture of an oil of lubricating viscosity and a bisphosphoramide having the structure:

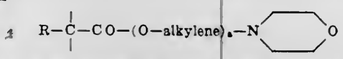


wherein:

X is the same or different nitrogen or oxygen;
Y is the same or different oxygen, sulfur or nitrogen and nitrogen when both X's are oxygen;
R is a hydrocarbylene or dihydrocarbylene having from 2 to 12 carbon atoms;
R_1 is a hydrocarbyl having from 1 to 24 carbons;
R_2 is the same or different R_1 or a hydrocarbylene having from 2 to 18 carbon atoms with one end of each R_2 bonding to the other R_2 or to said R dihydrocarbylene;
n is 1 when Y is oxygen or sulfur and 2 when Y is nitrogen; and
m is $n-1$.

3,795,614
LUBRICATING OIL ADDITIVES
Takehiko Fujimoto, Mikio Nishimura, and Shoji Takigawa, Kyoto, Japan, assignors to Sanyo Chemical Industries, Ltd., Kyoto, Japan
No Drawing. Original application Aug. 22, 1969, Ser. No. 852,485, now Patent No. 3,651,029. Divided and this application Oct. 8, 1971, Ser. No. 187,849
Claims priority, application Japan, Aug. 26, 1968, 43/61,061
Int. Cl. C10m *1/32*
U.S. Cl. 252—51.5 A **9 Claims**

Copolymers having as an essential unit thereof the radical



where *a* is an integer of 1 or higher and R is hydrogen or methyl, are added to lubricating oils to improve the detergency, dispersancy and viscosity index thereof.

3,795,615
HYDROGENATED COPOLYMERS OF BUTADIENE WITH ANOTHER CONJUGATED DIENE ARE USEFUL AS OIL ADDITIVES
James J. Pappas, 10 Trouville Drive, Parsippany, N.J. 07054; Henry S. Makowski, 2045 Winding Brookway, Scotch Plains, N.J. 07076; and Albert Rossi, 23 Roundtop Road, Warren, N.J. 07060
No Drawing. Filed July 28, 1972, Ser. No. 276,109
Int. Cl. C10m *1/18*
U.S. Cl. 252—59 **8 Claims**

A hydrogenated copolymer of butadiene with a different conjugated diene, in which the diene monomer units in the polymer are predominantly in the 1,4-configuration, may be incorporated into mineral oil, in small amounts, to improve the viscosity index and depress the pour point of the oil.

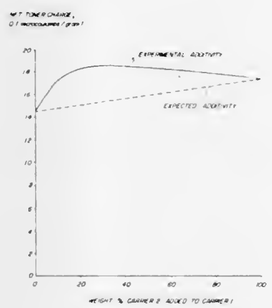
3,795,616
SHEAR STABLE, MULTIVISCOSITY GRADE LUBRICATING OILS
William J. Heilman, Allison Park, and Thomas J. Lynch, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Continuation-in-part of abandoned application Ser. No. 152,505, June 14, 1971. This application Apr. 18, 1972, Ser. No. 245,116
Int. Cl. C08f *15/04;* **C10m** *1/16*
U.S. Cl. 252—59 **18 Claims**

Compounded lubricating oils having improved properties, including viscosity properties, are obtained by the use of higher alpha-olefin polymers of controlled molecular size and narrow molecular weight distribution. A shear stable, multiviscosity grade lubricating oil is produced by adding the alpha-olefin polymer to a lubricating oil.

3,795,617
ELECTROGRAPHIC CARRIER VEHICLE AND DEVELOPER COMPOSITION
John M. McCabe, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Mar. 21, 1972, Ser. No. 236,765
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **8 Claims**

An electrographic carrier vehicle and developer composition containing said carrier vehicle are described. The carrier vehicle is composed of magnetically-attractable core particles having a resinous vinylidene chloride-containing copolymer coating thereon.

3,795,618
ELECTROGRAPHIC CARRIER VEHICLE AND DEVELOPER COMPOSITION
George P. Kasper, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 21, 1972, Ser. No. 236,614
Int. Cl. G03g *9/02*
U.S. Cl. 252—62.1 **9 Claims**



A "blended" carrier vehicle for use in electrographic developers, particularly magnetic brush developers, is described. The carrier vehicle is composed of mixtures of (a) finely-divided core particles having a resinous coating of a metal ion-linked α-olefin-carboxylic acid copolymer and (b) core particles having a resinous coating of a vinylidene chloride-containing copolymer. Electrographic developers containing toner particles admixed with such "blended" carrier vehicles are also disclosed.

3,795,619
FIRE-RESISTANT FUNCTIONAL FLUID COMPOSITIONS
Martin B. Sheratte, Reseda, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
No Drawing. Filed July 26, 1971, Ser. No. 166,312
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 **23 Claims**

Production of functional fluids particularly aircraft hydraulic fluids, of improved fire resistance, and also reduced tendency to corrode metals, comprising (1) a functional fluid base stock, such as a phosphate ester, e.g., tri-n-butyl phenyl phosphate, or mixtures of such base stocks, such as a mixture of tri-n-butyl phosphate and tricresyl phosphate, (2) a small amount of a selenophene or a tellurophene compound, preferably a chlorinated selenophene or a chlorinated tellurophene, e.g. tetrachloroselenophene or tetrachlorotellurophene, and (3) a small amount of a tertiary organic phosphine, e.g. triphenyl phosphine.

3,795,620
FUNCTIONAL FLUID COMPOSITIONS
Martin B. Sheratte, Reseda, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
No Drawing. Filed Mar. 29, 1971, Ser. No. 129,270
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 **12 Claims**

Production of functional fluids for aircraft, industrial and marine use, having good fire resistance, desirable viscosity characteristics, low density and which are relatively inexpensive, especially useful as aircraft hydraulic fluids, comprising a mixture of a phosphorus ester, such as a phosphate, e.g., tributyl phosphate, and an alkyl diester of phthalic acid, such as diisodecyl phthalate, and which may also contain an alkyl diester of adipic or sebacic acid, such as diisodecyl adipate.

3,795,621
FIRE-RESISTANT FUNCTIONAL FLUIDS
Martin B. Sheratte, Reseda, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
No Drawing. Filed July 26, 1971, Ser. No. 166,310
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 **20 Claims**

Production of functional fluids, particularly aircraft hydraulic fluids, of improved fire resistance, and also reduced tendency to corrode metals, comprising (1) a functional fluid base stock, such as a phosphate ester, e.g., tri-n-butyl phenyl phosphate, or mixtures of such base stocks, such as a mixture of tri-n-butyl phosphate and tricresyl phosphate, (2) a small amount of an aryl selenide compound, preferably a chlorinated aryl selenide, e.g., 4,4'-dichlorodiphenyl diselenide, and (3) a small amount of a tertiary organic phosphine, e.g. triphenyl phosphine.

3,795,622
PRE-ETCH TREATMENT OF ACRYLONITRILE-BUTADIENE-STYRENE RESINS FOR ELECTROLESS PLATING
Oleh Borys Dutkewych, 22 Evergreen Way, Medfield, Mass. 02052, and William A. Conlan, Jr., 34 Summer St., Attelboro, Mass. 02703
No Drawing. Original application June 14, 1971, Ser. No. 152,995. Divided and this application July 31, 1972, Ser. No. 276,674
Int. Cl. C09k *3/00;* **C23d** *1/00*
U.S. Cl. 252—79.1 **10 Claims**

Aqueous solution are provided containing at least one five-membered heterocyclic compound having a nuclear carbonyl group and at least one heterocyclic oxygen atom. The solutions are used primarily as a pre-treatment prior to etching for the electroless metal plating of acrylonitrile-butadiene-styrene resins (ABS resins) to improve adhesion between an ABS resin substrate and a deposited electroless metal. An overall process for metal plating on ABS substrate would include the steps of pre-etching with the solution of this invention, oxidizing with a strong oxidizing agent, preferably, a chromic acid conditioning solution having a high hexavalent chromium content, catalyzing the so-treated substrate to make the same catalytic to deposition from an electroless plating solution and depositing electroless metal over the substrate.

3,795,623
MINERAL OIL BASE CLEANING COMPOSITION
Edmund Gagnon, Fort Kent, Maine, assignor to Vy-Nola Corporation
No Drawing. Filed June 20, 1972, Ser. No. 264,480
Int. Cl. C11d *17/04*
U.S. Cl. 252—91 **8 Claims**

A cleaning composition, particularly effective on vinyl, leather and upholstered surfaces, comprises a mixture of mineral oil and sodium bicarbonate having proportions, by volume, of sodium bicarbonate to mineral oil in the range from 1:10 to 1:20.

3,795,624
MEANS FOR REMOVING COSMETICS
Wolffe Harry Feinstone, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
No Drawing. Filed Apr. 7, 1972, Ser. No. 242,140
Int. Cl. C11d *17/04*
U.S. Cl. 252—91 **9 Claims**

Disclosed herein is a woven pad impregnated with an anhydrous composition comprising specified non-ionic surface active agents in an oleogenous base. This pad is useful as a versatile cosmetic makeup-removing means.

3,795,625
BLEACHING COMPOSITIONS
Xavier Kowalski, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed June 3, 1971, Ser. No. 149,855
The portion of the term of the patent subsequent to Oct. 16, 1990, has been disclaimed
Int. Cl. C01b *15/00*
U.S. Cl. 252—186 **6 Claims**

Bleaching compositions, useful for bleaching textile fibers, which are an alkaline aqueous solution containing a peroxy compound, an alkali metal silicate and a stabilizer for reducing the decomposition of said peroxy compound and which is, for example, a combination of nitrilotriacetic acid, 1 - hydroxy ethylidene-1, 1-diphosphonic acid, and a magnesium or calcium salt.

3,795,626
WEATHER MODIFICATION PROCESS
Rudolf Kuhne, Frankfurt am Main, Helmut Diery, Kelkheim, Taunus, and Siegbert Rittner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,695
Claims priority, application Germany, Sept. 2, 1970, P 20 43 519.2
Int. Cl. B01d *17/00*
U.S. Cl. 252—319 **3 Claims**

Condensation products of naphthalene sulfonic acids and aliphatic aldehydes or furfural or compounds capable of setting free such aldehydes are effective in influencing the weather, i.e. they remove fog or clouds or cause rain.

3,795,627
STABLE LIQUID EMULSIFIER COMPOSITIONS
Roy K. Langhans, Newark, and Gary A. Sunshine, Wilmington, Del., assignors to ICI America Inc.
No Drawing. Filed June 4, 1971, Ser. No. 150,194
Int. Cl. B01f *17/34*
U.S. Cl. 252—356 **8 Claims**

Temperature-stable, clear liquid emulsifier baking compositions consisting essentially of an ethoxylated fatty acid ester of a glycerol, hexitol, a hexitan, or an iso-

hexide as a conditioner and a monoglyceride as a softener in combination with a small amount of a clarifier, propylene glycol monooleate, have been found more suitable for the continuous manufacture of baked goods. The liquid emulsifier compositions may be metered into the shortening or directly into the dough or sponge for batch methods of preparation or into the liquid brew or sponge in continuous processes.

3,795,628
DAYLIGHT FLUORESCENT PIGMENTS AND PROCESS FOR PREPARING THEM
Siegfried Noetzel, Mainz, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfort am Main, Germany
No Drawing. Filed Nov. 9, 1971, Ser. No. 197,151
Claims priority, application Germany, Nov. 11, 1970, P 20 55 449.8
Int. Cl. C09k *1/02*
U.S. Cl. 252—301.2 R **2 Claims**

New daylight fluorescent pigments which contain an organic fluorescent dyestuff and as resin a condensation resin consisting of copolymerizates of (meth)-acrylates containing groups capable of being cross-linked and vinyl compounds capable of being copolymerized, which copolymerizates are cross-linked with unplasticized, alcohol-modified urea- or aminotriazine formaldehyde resins and a process for their preparation which comprises incorporating the organic fluorescent dyestuff into the condensation resin. These daylight fluorescent pigments may be employed for preparing fluorescent paints, for example air-drying lacquers on the basis of alkyd resin or physically drying lacquers on the basis of acrylic resins, as well as for preparing fluorescent printing inks such as inks for screen printing, intaglio printing, book printing and offset-litho printing. Due to their high resistance to heat, they are articularly suitable for fluorescent dyeing of plastics and enamels.

3,795,629
REDUCTION OF COPPER OXIDE WITH NICKEL
John D. Newkirk, Downers Grove, and Louis A. Goretta, Naperville, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed June 5, 1972, Ser. No. 259,731
Int. Cl. B01j *1/40*
U.S. Cl. 252—455 R **9 Claims**

A method of reducing an aqueous slurry comprising cupric oxide and cupric hydroxide and mixtures thereof which comprises reacting said slurry in the presence of hydrogen and a supported nickel catalyst for a period of about 1–6 hours at 80–150° C., and moderate superatmospheric pressure (5–10 atmospheres).

This method produced a convenient product of reduced copper oxide for input to a commercial hydrolysis of nitriles (such as acrylonitrile) to amides.

3,795,630
CHEMICALLY STABLE, NON-SEPARATING ORGANIC PEROXIDE COMPOSITIONS
Hans Jaspers, Diepenveen, and Reinder Torenbeek, Twello, Netherlands, assignors to Koninklijke Industrieele Maalschappij Noury & Van der Lande N.V., Deventer, Netherlands
No Drawing. Filed Jan. 6, 1972, Ser. No. 215,947
Claims priority, application Netherlands, Jan. 14, 1971, 7100494
Int. Cl. C07c *73/00*
U.S. Cl. 252—426 **2 Claims**

Chemically stable, non-separating compositions are disclosed comprising an organic peroxide which is solid at room temperature, or a mixture of such peroxides, a liquid phlegmatiser in which the peroxide or peroxide mixture does not dissolve or hardly dissolves, a hydrophobic alkyl group-containing silica compound, and, if desired, water, pigments, dyes and/or other additives.

3,795,631
GLASS-FIBER-REINFORCED ZEOLITE GRANULATES
Gerhard Heinze, Schildgen, and Gerhard Reiss, Friedrich Schwochow, and Günter Ulisch, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed May 5, 1971, Ser. No. 140,607
Claims priority, application Germany, May 27, 1970, P 20 25 893.9
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **7 Claims**

Glass fibers in the amount of about 0.3 to 10% by weight of solids are included in a suspension of zeolite and amorphous binder, such as silica sol, which is gelled and converted into granulates in known manner. If the nature of the binder permits, it can be converted to zeolite in the granulates, as by treatment with sodium aluminate, so that the granulates comprise only zeolite and glass fiber. The novel zeolite granulates shrink less during drying and are characterized by high impact strength and by resistance to breaking under fluctuating thermal stresses.

3,795,632
HYDROCONVERSION CATALYST PREPARATION METHODS
Barry S. Morgan, Concord, and Joseph Jaffe, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Nov. 5, 1971, Ser. No. 196,205
Int. Cl. B01j *11/40;* **C10g** *23/02*
U.S. Cl. 252—455 R **2 Claims**

In a hydroconversion process wherein a hydrocarbon feedstock is contacted with solid catalyst particles prepared by forming a hydrogel and then shaping the hydrogel into a pellet, and wherein said contacting is carried out at a temperature between 400 and 900° F., and a hydrogen partial pressure between 100 and 10,000 p.s.i.g., the improvement which comprises preparing said catalyst by adding to said hydrogel a catalyst fines-water mixture containing at least 10 weight percent free water and at least 80 percent total water, before the hydrogel is shaped into a pellet.

3,795,633
RECOVERY OF THERMOPLASTIC FOAM
Amos Golovoy, Westland, and Robert H. Beck, Jr., Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich.
No Drawing. Filed Dec. 17, 1971, Ser. No. 209,344
Int. Cl. C08f *47/24*
U.S. Cl. 260—2.3 **7 Claims**

A method for converting scrap thermoplastic foam to useful material comprises particularizing said scrap, passing the particulate scrap through a vented and heated extruder to which a vacuum of between 0 and 140, preferably between 5 and about 50 mm. Hg is applied to yield a non-porous, essentially void-free, solid resin. In a preferred embodiment, the particularized scrap is mixed with about 5 to about 50 weight percent virgin resin pellets prior to extrusion.

3,795,634
VINYL CHLORIDE FOAM CONTAINING SILICONE POLYMERS
John M. Nielsen, Scotia, N.Y., assignor to General Electric Company
No Drawing. Filed May 3, 1972, Ser. No. 250,034
Int. Cl. C08j *1/18, 1/20*
U.S. Cl. 260—2.5 P **17 Claims**

Composition for producing foams containing vinyl chloride polymer, plasticizer and reaction products of certain silicones with an ether having the formula:

$$ZO(C_nH_{2n}O)_fR^2$$

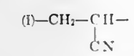
wherein Z is H, or $CH_2{=}CHCH_2{-}$, or

$$CH_2{=}CH(CH_2)_pC(=O)-$$

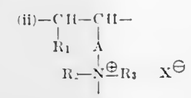
R^2 is lower alkyl radical; f has a value of at least 4; n has a value of from 2 to 4, inclusive; and p is 0 to 18.

3,795,635
ACRYLONITRILE COPOLYMERS
Xavier Marze and Jean-Pierre Quentin, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Sept. 29, 1971, Ser. No. 184,897
Claims priority, application France, Oct. 1, 1970, 7035526
Int. Cl. C08f *15/02, 19/00*
U.S. Cl. 260—2.1 E **14 Claims**

Unshaped or shaped, crosslinked copolymers which comprise a carbon-carbon linear chain comprising recurring units of the formula:

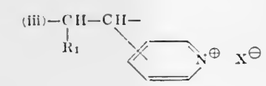


and of formula:



(I)

and/or



(II)

in which

R_1 represents a hydrogen atom or a lower alkyl radical; each of R_2 and R_3, which may be the same or different, represents an alkyl radical having 1 to 10 carbon atoms or R_2 and R_3 together form a divalent alkylene or alkenylene radical;

A represents a divalent aromatic or arylaliphatic radical, or a radical of formula $-CO-O-(CH_2)_m-$ in which m is a positive integer, the terminal methylene group being attached to the nitrogen atom;

the pyridine nucleus is optionally substituted by one or more hydrocarbon radicals R_4 having at most 10 carbon atoms, optionally substituted by functional groups;

X represents an inorganic or organic anion; and the nitrogen atoms are connected to one another by polyvalent organic radicals R, are provided from which membranes having useful ion-exchange properties and permeation properties can be obtained.

3,795,636
PROCESS FOR THE PREPARATION OF POLYURETHANE FOAMS AND MICROCELLULAR ELASTOMERS WITH INTEGRAL SKINS AND POLYOL EXTENDER SYSTEM FOR THE PREPARATION THEREOF
George W. Huffman, Crystal Lake, and Norman E. Rustad, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.
No Drawing. Filed Jan. 12, 1972, Ser. No. 217,282
Int. Cl. C08g *22/08, 22/48*
U.S. Cl. 260—2.5 AZ **2 Claims**

This invention relates to a method for preparing polyurethane foams and microcellular elastomers with integral skins which are substantially non-porous, said method comprising contacting a mixture of specified polyols with a specified quasi-prepolymer of toluene diisocyanate in the presence of a blowing agent and a catalyst system consisting of a tetraalkylguanidine and specified organometallic compounds.

3,795,637
FIRE-PROOFING AGENTS FOR POLYURETHANES
Joachim Kandler and Franz-Josef Dany, Lechenich, and Klaus Komorniczyk, Turnich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany
No Drawing. Continuation-in-part of abandoned application Ser. No. 82,494, Oct. 20, 1970. This application Apr. 26, 1972, Ser. No. 247,725
Claims priority, application Germany, Nov. 10, 1969, P 19 56 406.8
Int. Cl. C08g *22/44, 51/44*
U.S. Cl. 260—2.5 AJ **6 Claims**

Polyurethanes or polyurethane foam plastics are rendered fireproof by means of a blend of fire-proofing agents comprising an ammonium polyphosphate component and a tris-(halogenoalkyl)-phosphate component having from 1 to 4 carbon atoms in the alkyl group. The tris-(halogenoalkyl)-phosphate component preferably is tris-(β-chloroethyl)-phosphate.

3,795,638
STABILIZED POLYURETHANE COMPOSITIONS
Gerhard Grögler, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Feb. 2, 1972, Ser. No. 222,981
Claims priority, application Germany, Feb. 12, 1971, P 21 06 726.5
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.9 R **3 Claims**

Polyester containing compositions particularly polyesterurethanes, stabilized against hydrolysis and aging are prepared by incorporating therein a stabilizing amount of a N,N'-disubstituted N-(2-hydroxyalkyl)-urea or thiourea.

3,795,639
POLYESTER POLYCONDENSATION CATALYZED BY ANTIMONY AND GERMANIUM COMPOUNDS AND PHOSPHORIC ESTERS
Kazuya Chimura, Kazuo Ito, Shunichi Takashima, Mizuo Shindo, and Yoshihiro Shimoshinbara, Otake, Japan, assignors to Mitsubishi Rayon Company Limited, Chuo-ku, Tokyo, Japan
No Drawing. Filed May 10, 1971, Ser. No. 141,955
Claims priority, application Japan, May 26, 1970, 45/44,983
Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R **10 Claims**

A process for preparing a linear polyester wherein polycondensation of glycol terephthalate is performed in the presence of (1) antimony compound, (2) germanium compound and (3) phosphoric ester. A used amount of the Sb compound is such that mole number of Sb atom contained therein is no less than 0.035% based on one mole of the recurring unit of the polyester. A used amount of the Ge compound is such that mole number of Ge atom contained therein is no more than 0.02% based on one mole of the recurring unit of the polyester and an atomic ratio of Ge/Sb is no more than 0.5. The polyester is characterized as containing reduced amounts of diethylene glycol and metallic antimony and exhibiting excellent whiteness and transparency.

3,795,640
FURFURYL, ALLYL AND METHYLOL ACRYLAMIDE ESTERS OF POLYMERIC ACIDS
Kailash C. Pande, Farmingdale, and Richard J. Stattel, East Rockaway, N.Y., assignors to Powers Chemco, Inc., Glen Cove, N.Y.
No Drawing. Filed Jan. 7, 1971, Ser. No. 104,806
Int. Cl. C08f *27/12*
U.S. Cl. 260—78.5 R **11 Claims**

Light-sensitive film forming polymers are disclosed which comprise furoate-, allyl- or methylol acrylamide-esterified polymeric acids. Their use in photolithography and photomechanical processes is also disclosed.

3,795,641
STORAGE-STABLE OXYGENATED POLYFUNCTIONAL ACRYLIC ESTER COMPOSITIONS FOR ANAEROBIC SEALANTS

William Arthur Lees, Chandlers Ford, David John Bennett, Portsmouth, John Richard Swire, Fair Oak, and Peter Harding, Southampton, England, assignors to The Borden Chemical Company (U.K.) Ltd., North Baddesley, Southampton, England

No Drawing. Filed Sept. 21, 1972, Ser. No. 290,818
Claims priority, application Great Britain, Sept. 27, 1971, 44,983/71
Int. Cl. C08f *3/64, 3/66*
U.S. Cl. 260—89.5 R **8 Claims**

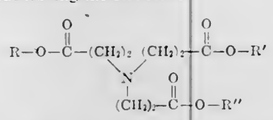
Oxygenation of polyfunctional acrylate monomers, typified by triethylene glycol dimethacrylate, in the presence of minor amounts of an organic tertiary amine and/or an imido compound and in the presence of a conventional amount of polymerization inhibitor yields storage-stable compositions useful as adhesive sealants curing anaerobically. In a preferred procedure, oxygenation is carried out successively in the presence of o-benzoic sulfimide and then in the presence also of N-N-dimethyl-p-toluidine.

3,795,642
TRIS(HYDROXYALKYL)-3,3,3-NITRILOTRIPROPIONATES

Ben A. Tefertiller and James I. Nevill, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 24, 1972, Ser. No. 299,869
Int. Cl. C07c *101/20*
U.S. Cl. 260—482 P **9 Claims**

Compounds having the structure



where R, R′ and R″ are monohydroxyalkyl groups of two to four carbon atoms, are prepared by reacting the corresponding monohydroxyalkyl acrylates with ammonia. The compounds may be used as cross-linking agents in polyurethanes and polyesters and for the removal of acid gases from gas streams.

3,795,643
PROCESS FOR THE CONTINUOUS PRODUCTION OF β-METHOXY ALDEHYDES

Albert Bouniot, Melle, Deux-Sevres, France, assignor to Melle-Bezons, Melle, Deux-Sevres, France

Filed Mar. 25, 1971, Ser. No. 128,016
Claims priority, application France, Apr. 30, 1970, 7015829
Int. Cl. C07c *47/18*
U.S. Cl. 260—602 **25 Claims**

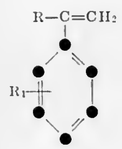
The preparation of β-methoxy aldehyde by catalytic condensation of methanol with an α,β-olefinic aldehyde having from 4 to 5 carbon atoms using a slaked lime catalyst on an adsorbent carrier through which the liquid mixture is passed.

3,795,644
HOT MELT ADHESIVE COMPOSITION

Winston J. Jackson, Jr., Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,930
Int. Cl. B32b *15/08;* **C08g** *17/04, 17/14*
U.S. Cl. 260—22 D **9 Claims**

Hot melt adhesive compositions having low melt viscosity and high adhesive strength, especially to metals. The composition includes a copolyester comprising 1,4-butanediol, terephthalic acid and dimer acid, blended with a polymeric material comprising a vinyl aromatic polymer derived from a monomer of the formula



wherein R is hydrogen or an alkyl group containing 1 to 4 carbon atoms and R_1 is hydrogen, chlorine, alkyl from 1 to 4 carbon atoms or phenyl.

3,795,645
METHOD OF IMPROVING THE LEVELING OF AN EMULSION WAX SYSTEM

Jerry H. Hunsucker, 600 S. 25th St., Terre Haute, Ind. 47803, and Daniel G. Mudd, 121 N. Franklin, Brazil, Ind. 47834

No Drawing. Original application May 12, 1971, Ser. No. 142,779, now Patent No. 3,748,309. Divided and this application Jan. 29, 1973, Ser. No. 327,551
Int. Cl. C08f *45/52;* **C08g** *51/52*
U.S. Cl. 260—28 **7 Claims**

Resinous polyester compositions having particular utility in emulsion wax preparations to promote leveling. The resin is the product of the dehydration reaction of an aminoalkanediol or triol with phthalic acid.

3,795,646
CROSS-LINKING POLYETHYLENE COMPOSITIONS WITH SILICONE ADDITIVE

Burton Thornley MacKenzie, Jr., Monroe, and Charles Frank Wallace, Jr., Fairfield, Conn., assignors to General Electric Company

No Drawing. Continuation of abandoned application Ser. No. 794, Jan. 5, 1970. This application Apr. 21, 1972, Ser. No. 246,153
Int. Cl. C08g *51/04, 51/22*
U.S. Cl. 260—29.1 SB **20 Claims**

A curable composition, especially adaptable for use as insulation for wire and cable, comprising an ethylene-containing polymeric member, a curing agent, and a silicone fluid having a viscosity not greater than about 100 centistokes at 25° C. A filler such as carbon black or a mineral filler may be incorporated into the system.

3,795,647
AGGLOMERATING LATICES OF DIENE POLYMERS

Basil Alexander Ripley-Duggan, Old Harlow, England, assignor to Doverstrand Ltd.

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,550
Int. Cl. C08d *7/18;* **C08j** *1/00*
U.S. Cl. 260—29.7 SQ **5 Claims**

Latices of conjugated aliphatic diene polymers containing hydrophilic functional groups are agglomerated by subjecting them to high velocity shear in the presence of small amounts of the ammonium or alkali metal salts of N-(higher alkyl) sulphosuccinamates.

3,795,648
SURFACTANT-FREE AMPHOLYTIC POLYMERIC LATICES

Carlos M. Samour, Wellesley Hills, and Philip A. Mitchell, East Walpole, Mass., assignors to The Kendall Company, Walpole, Mass.

No Drawing. Continuation of abandoned application Ser. No. 720,462, Apr. 11, 1968. This application Apr. 27, 1971, Ser. No. 137,979
Int. Cl. C08f *15/20*
U.S. Cl. 260—29.6 HN **11 Claims**

Single-species polymeric latices of enhanced wet strength as bonding agents are prepared by copolymerizing a major portion of ethylenically-unsaturated monomer or monomers with a minor portion of an ampholytic monomer in the form of half-ester or acid-amide derivatives of maleic, itaconic, and citraconic acids. The latter are prepared by reacting the appropriate acid anhydride with certain diamines or amino alcohols.

3,795,649
PLASTISOL PROCESS

William Peter May, North Coventry Township, Chester County, Pa., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,261
Int. Cl. C08f *45/38*
U.S. Cl. 260—31.8 R **6 Claims**

Vinyl chloride or a mixture thereof with copolymerizable material is polymerized in a liquid organic medium in the presence of a polymeric dispersing agent. The medium is then evaporated off and, either before, during or after the evaporation, a plasticizer is added, so as to produce a plastisol.

3,795,650
CLAY THIXOTROPE FOR POLYESTER RESINS AND USE THEREOF

Robert A. Burns, Long Valley, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.

No Drawing. Filed Oct. 16, 1972, Ser. No. 297,701
Int. Cl. C08g *51/50*
U.S. Cl. 260—33.4 R **5 Claims**

A thixotrope in the form of a gelatinous paste is produced by dissolving a small amount of a liquid polyol in a liquid unsaturated polyester resin, thereafter adding approximately 20 percent by weight of a finely divided grade of colloidal clay, preferably powdered attapulgite clay, and then applying mechanical work (shear) to the mixture. The ratio of clay to polyol in the paste is in the range of about 3 to 6:1. To impart thixotropy to a cut polyester resin, the gelatinous paste is added in amount such that the clay content of the resulting thixotropic composition is less than about 3 percent by weight and the free polyol content is less than 0.5 percent by weight.

3,795,651
NOVEL RUBBERY COPOLYMER COMPOSITIONS

Koretaka Yamaguchi, 181 Kami-Odanaka, Kawasaki, Japan; Kazuo Toyomoto, 504 Ohkubo-cho, Minami-ku, Yokohama, Japan; Kuniaki Sakamoto, 1–134 Chofumine-machi, Ota-ku, Tokyo, Japan; and Toshio Ibaragi, 181 Kami-Odanaka, Kawasaki, Japan

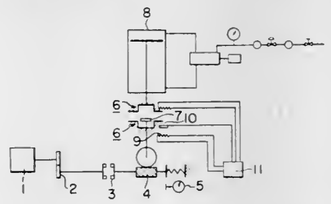
Continuation-in-part of abandoned application Ser. No. 874,640, Nov. 6, 1969. This application July 3, 1972, Ser. No. 268,495
Claims priority, application Japan, Nov. 14, 1968, 43/82,877
Int. Cl. C08c *11/18, 11/22;* **C08d** *3/08*
U.S. Cl. 260—33.6 AQ **3 Claims**

Rubber compositions suitable for tire tread with improved processability comprise from 25 to 75 parts by weight of a process oil having a viscosity-specific gravity constant not less than 0.850 and from 40 to 100 parts by weight of carbon black per 100 parts by weight of a rubber component containing at least 30% by weight of rubbery butadiene-styrene random copolymer polymerized with a lithium based catalyst, said copolymer containing from 5 to 30% by weight of styrene and at least 60% of 1,4-linkage in butadiene units thereof and having a Mooney viscosity from 40 to 150 and a relaxation time from 20 to 200 sec. as measured by a Mooney viscometer.

3,795,652
NOVEL RUBBERY COPOLYMER COMPOSITIONS

Koretaka Yamaguchi, Kawasaki, Kazuo Toyomoto, Yokohama, Kuniaki Sakamoto, Tokyo, and Toshio Ibaragi, Kawasaki, Japan

Continuation-in-part of abandoned application Ser. No. 874,640, Nov. 6, 1969. This application July 3, 1972, Ser. No. 268,682
Int. Cl. C08c *11/18, 11/22;* **C08d** *9/08*
U.S. Cl. 260—33.6 AQ **3 Claims**



Rubber compositions suitable for tire tread with improved processability comprise from 25 to 75 parts by weight of a process oil having a viscosity-specific gravity constant not less than 0.850 and from 40 to 100 parts by weight of carbon black per 100 parts by weight of a rubber component comprising at least 30% by weight of a copolymer mixture having a Mooney viscosity from 40 to 150 and a relaxation time from 20 to 200 sec. as measured by a Mooney viscometer.

3,795,653
LIGHTWEIGHT CONCRETE AND METHOD OF MANUFACTURING IT

Alois Aignesberger and Hans Günter Rosenbauer, Trostberg, Germany, assignors to Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft, Trostberg, Germany

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,617
Claims priority, application Germany, Oct. 7, 1970, P 20 49 159.2
Int. Cl. C04f *13/26, 13/28;* **C08g** *9/22*
U.S. Cl. 260—39 SB **5 Claims**

Lightweight concrete is prepared by premixing and coating lightweight filler particles with a melamine formaldehyde condensation product containing sulfonic acid groups and thereafter admixed with cement.

3,795,654

DEGRADABLE POLYOLEFIN FILM

George Fred Kirkpatrick, Downers Grove, Ill., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,152

Int. Cl. C08f *45/60;* **C08g** *51/60*

U.S. Cl. 260—45.9 NC **10 Claims**

Degradable polyolefin film is disclosed. The film contains a material capable of advancing oxidative degradation of the polyolefin, and a water-soluble stabilizer. The stabilizer prevents degradation of the film during processing, normal storage, and use, but it is leached out of the film upon exposure to moisture, thereby permitting the film to degrade after use and disposal.

3,795,655

SULFUR-VULCANIZABLE ELASTOMER MIXTURES AND OXIDATION-RESISTANT VULCANIZATES THEREOF

Claire D. Le Claire and John C. Baker, Dover, Del., assignors to Polysar International, S.A., Fribourg, Switzerland

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,789

Int. Cl. C08c *11/44, 11/54;* **C08d** *5/00*

U.S. Cl. 260—45.8 N **9 Claims**

A sulfur-vulcanizable elastomer mixture capable of forming vulcanizates, which substantially retain their elastic and tensile properties upon prolonged exposure to high temperatures under oxidative conditions, comprising (a) a sulfur-vulcanizable elastomer, (b) sulfur, (c) a bivalent metal oxide activator system containing magnesium oxide and another bivalent metal oxide, (d) tetra-C_{1-4}-alkyl thiuram disulfide and (e) an antioxidant system comprising a mixture of polyether polythioether and aryl amine.

3,795,656

ORGANOSILICON COMPOSITIONS CONTAINING AMMONIUM PLATINUM ADDUCTS

Eugene Ray Martin, Onsted, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Filed Jan. 2, 1973, Ser. No. 319,594

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 E **23 Claims**

Organosilicon compositions which contain ammonium platinum adducts. The compositions are prepared by reacting chloroplatinic acid with aminofunctional organosilicon compounds. These compositions are useful as catalysts for the addition of silicon bonded hydrogen groups to unsaturated organic compounds. The new catalysts have better solubility in the reaction media and are effective at very low concentrations.

3,795,657

EPOXY RESIN COMPOSITIONS CONTAINING AROMATIC BIGUANIDES AS LATENT CURING AGENTS THEREFOR

Robert William Howsam and Paul Alan Larson, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,494

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **10 Claims**

New compounds useful as latent curing agents for epoxy resins are prepared by reacting an aromatic diamine, e.g. methylenedianiline, with dicyandiamide. These latent curing agents will cure epoxy resins with or without accelerators in shorter times than accelerated dicyandiamide cured systems and at lower temperatures than unaccelerated dicyandiamide systems.

3,795,658

EPOXY RESINS FROM DIMETHYLADAMANTANE BISPHENOLS

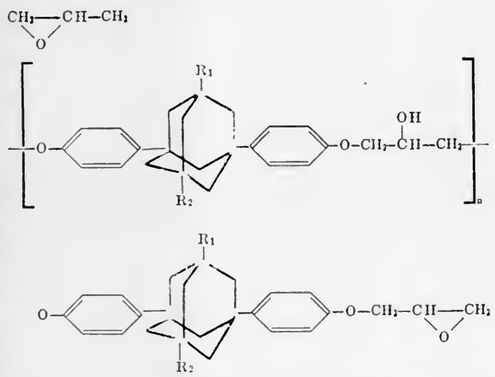
Robert M. Thompson, Wilmington, Del., and Irl N. Duling, West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,420

Int. Cl. C08g *30/04*

U.S. Cl. 260—47 EP **5 Claims**

Novel epoxy resins having the structure:



where R_1 and R_2 are hydrogen or hydrocarbyl radicals having 1 to 20 carbon atoms and n represents the number of repeating units. These resins are valuable in the manufacture of coatings, molding resins, adhesives, potting and encapsulation applications and the like.

3,795,659

CURING OF EPOXIDE COMPOSITIONS CONTAINING ENAMINES

Gordon M. Renwick, Sydney, New South Wales, Australia, assignor to Minnesota Mining and Manufacturing Company

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,243

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **5 Claims**

An anhydrous, curable epoxide composition containing an enamine as a latent curing agent.

3,795,660

METHOD OF ISOLATING AROMATIC POLYSULPHONES

Ronald George Feasey, Knebworth, and Alan Branford Newton, Enfield, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,233

Claims priority, application Great Britain, Jan. 5, 1971, 457/71

Int. Cl. C08g *23/10*

U.S. Cl. 260—49 **5 Claims**

A method is provided for improving the isolation of aromatic polysulphones from the reaction mixture in which they are formed comprising adding to the reaction mixture an inert solvent for the aromatic polysulphone, the inert solvent being liquid at the polymerization temperature but solid at the temperature at which the reaction mixture is subsequently processed.

3,795,661

HALOGEN CATALYZED DIRECT ESTERIFICATION PROCESS FOR POLY(ETHYLENE TERPHTHALATE)

Brian Armstead Dementi, Richmond, Joseph Donald De Caprio, Hopewell, and Stanley David Lazarus, Petersburg, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,960

Int. Cl. C08g *17/013*

U.S. Cl. 260—75 R **9 Claims**

The manufacture of linear high-molecular weight, film and fiber forming polyester wherein the reaction of polycarboxylic acid with a polyol takes place in the presence of an element, or a compound which produces said element in said reaction from Group VII–B, of Periodic Chart of the Atoms by Henry D. Hubbard, Welch Scientific Co. (1959) to improve processing and end product characteristics.

3,795,662

PROCESS FOR THE POLYMERIZATION OF α-OLEFINS

Manfred Engelmann, Augsburg, Wolfgang Gordon, Hofheim, Taunus, and Kurt Rust, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 22, 1972, Ser. No. 291,388

Claims priority, application Germany, Sept. 24, 1971, P 21 47 654.0

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—878 B **12 Claims**

The invention relates to a process for the polymerization of α-olefins, for the copolymerization or block copolymerization of these olefins among each other, with or without ethylene, in the presence of a catalyst system consisting of a solid titanium-containing reaction product obtained by the reaction of $TiCl_4$ with $Al(C_2H_5)_2Cl$ or $Al_2(C_2H_5)_3Cl_3$, the preliminary treatment with a further amount of $Al(C_2H_5)_2Cl$ and the subsequent treatment with alkali chloride in the absence of the monomer(s), and of a further amount of $Al(C_2H_5)_2Cl$ as activator.

The process makes it possible to prepare polyolefins having a particularly low atactic proportion, in a high space-time yield.

3,795,663

RECOVERY OF BACITRACIN

Guido Max Miescher, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed May 1, 1972, Ser. No. 248,872

Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*

U.S. Cl. 260—112.5 **1 Claim**

An improved process for the recovery of bacitracin from a fermented beer containing it by the steps of extracting the bacitracin with n-butanol, extracting the bacitracin with 10% water and sufficient phosphoric acid to pH 2, separating the water layer containing the bacitracin, adding sufficient calcium hydroxide to pH 6.5 thereby precipitating calcium phosphate, filtering same, concentrating the filtrate by evaporation and recovering the bacitracin therefrom.

3,795,664

PROCESS FOR PREPARING PEPTIDES OR PROTEINS

Geoffrey William Tregear, Heidelberg, and Kevin John Catt, Middlepark, Victoria, Australia, and Hugh David Niall, Los Altos, Calif., assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

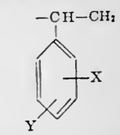
No Drawing. Continuation of abandoned application Ser. No. 761,863, Sept. 23, 1968. This application Oct. 12, 1971, Ser. No. 188,487

Claims priority, application Australia, Sept. 21, 1967, 27,545/67

Int. Cl. C07c *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **11 Claims**

A process for preparing peptides or proteins by (1) reacting a protected amino acid with a graft copolymer having a chemically inert polymeric backbone and grafted-on side chains of the formula:



wherein X is at least one amino acid reactive group forming a bond with the first amino acid which is not cleaved during subsequent reaction of the first amino acid with a second amino acid and wherein Y stands for one or more optional substituents which is non-reactive to amino acids, to form a stable linkage between the protected amino acid and the copolymer; (2) deprotecting the resulting amino acid-copolymer complex; (3) coupling another amino acid or peptide to the deprotected group of the complex; (4) optionally repeating steps (2) and (3) and optionally cleaving the desired peptide from the resulting peptide-copolymer.

3,795,665

POLYOXYALKYLENE LIGNIN COMPOSITIONS AND PROCESS FOR PRODUCING SAME

Charles H. Ludwig, Bellingham, Wash., assignor to Georgia-Pacific Corporation, Portland, Oreg.

No Drawing. Filed Nov. 13, 1972, Ser. No. 305,909

Int. Cl. C07g *1/00*

U.S. Cl. 260—124 R **22 Claims**

Water-soluble compositions of lignin cross-linked with polyoxyalkylene linkages are described. The compositions are prepared by reacting lignin with a polyoxyalkylene di-ester of a monosulfonic acid or a polyoxyalkylene dihalide to obtain high molecular weight compositions which are effective as thickening and flocculating agents.

3,795,666

METHOD OF SYNTHESIZING PEPTIDES IN THE PRESENCE OF A CARBODIIMIDE AND OF 3-HYDROXY - 4 - OXO - 3,4 - DIHYDRO - 1,2,3-BENZOTRIAZINE

Wolfgang Konig, Langenhain, Taunus, Rolf Geiger, Frankfurt am Main, and Erhard Wolf, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 28, 1970, Ser. No. 59,005

Claims priority, application Germany, Aug. 1, 1969, P 19 39 187.8

Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*

U.S. Cl. 260—112.5 **5 Claims**

Improved synthesis of peptides by the carbodiimide method in which an amino-protected amino acid or pep-

tide having a reactive carboxy group is condensed with a carboxy-protected amino acid or peptide having a reactive amino group in the presence of 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine as well as in the presence of a carbodiimide such as dicyclohexyl carbodiimide.

3,795,667

NOVEL PEPTIDE INTERMEDIATES IN THE PREPARATION OF SECRETIN

Miguel A. Ondetti, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 658,327, Aug. 4, 1967. This application Sept. 30, 1970, Ser. No. 77,005

Int. Cl. C07c *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **11 Claims**

This invention relates to novel intermediates to be employed in the preparation of the gastrointestinal hormone, secretin. More particularly, this invention relates to compounds of the formula

X-L-histidyl-L-seryl-L-aspartylglycyl hydrazide

wherein X is an N-terminal amino protecting group, to intermediates in the preparation of these compounds, and to salts of such intermediates.

3,795,668

POLYAMINE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

James C. French, St. Clair Shores, Lucia E. Anderson, Harper Woods, Richard H. Bunge, Mount Clemens, and John D. Howells, Grosse Pointe Woods, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Nov. 15, 1971, Ser. No. 198,827

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **5 Claims**

The antibacterial substance myomycin including its individual components A, B, and C and acid-addition salts. The products can be produced by fermentation of Nocardia sp. J327 under artificial conditions. They have a wide spectrum of antibacterial activity. By chemical degradation studies, myomycin B sulfate is converted to a variety of structural fragments including myo-inositol and 3-amino-3-deoxy-D-mannose.

3,795,669

DERIVATIVES OF SPIRAMYCIN AND A PROCESS FOR PRODUCING THEREOF

Yasuo Fujimoto, Yokohama, and Kinichi Nakano, Tokyo, Japan, assignors to Rhone-Poulenc S.A., Paris, France

Filed July 9, 1971, Ser. No. 161,195

Claims priority, application Japan, July 9, 1970, 45/59,484

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 AB **1 Claim**

The present invention relates to novel derivatives of spiramycin which are useful as medicants for animal and plant diseases, as well as starting materials for the production of such medicants. More particularly, it relates to novel hydrazones of spiramycin and salts thereof.

Novel hydrazones of spiramycin of the present invention are the following and esters and acid addition salts thereof:

Spiramycin dimethylhydrazone
Spiramycin N,N-dinormalamylhydrazone
Spiramycin N,N-diisopropylhydrazone
Spiramycin N,N-diallylhydrazone
Spiramycin N-β-hydroxyethyl-N-methylhydrazone
Acetylspiramycin dimethylhydrazone
Spiramycin 1-amino-4-methylperazinehydrazone
Spiramycin N-phenyl-N-methylhydrazone
Spiramycin N-cyclohexyl-N-methylhydrazone
Acetylspiramycin N-aminopiperidinehydrazone
Spiramycin N-aminomorpholine hydrazone

3,795,670

PROCESS FOR MAKING STARCH TRIACETATES

Arthur M. Mark and Charles L. Mehltretter, Peoria, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Mar. 5, 1973, Ser. No. 337,790

Int. Cl. C08b *19/04*

U.S. Cl. 260—233.5 **5 Claims**

An improved process for the esterification of starches such as high-amylose starches and amylose under conditions of minimum depolymerization of the polysaccharide to obtain high molecular weight starch triacetates soluble in organic solvents for fiber and film manufacture is described.

3,795,671

EPOXYPROPYL STARCH

Robert E. Wing, Peoria, and William M. Doane, Morton, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,549

Int. Cl. C08b *19/04*

U.S. Cl. 260—233.3 R **5 Claims**

A process is described for preparing novel epoxypropyl starch compounds from starches and starch derivatives. At epoxypropyl D.S. levels of up to 0.09 the compounds are water-soluble and increase both wet and dry strength of paper at a 1-percent level of addition.

3,795,672

PROCESS FOR THE PREPARATION OF Δ^2-CEPHEM-4-CARBOXYLIC ACID ESTERS

Charles F. Murphy, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 759,490, Sept. 12, 1968. This application June 9, 1971, Ser. No. 151,555

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **8 Claims**

Esters of Δ^2-cephem-4-carboxylic acids are prepared from Δ^3-cephem-4-carboxylic acids by first converting the Δ^3 acid to the corresponding acid chloride and treating this acid with a tertiary amine base and an alcohol.

3,795,673

PROCESS FOR PRODUCING BENZODIAZEPINE DERIVATIVES

Kanji Meguro, Hyogo, Hiroyuki Tawada, Kyoto, and Yutaka Kuwada, Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

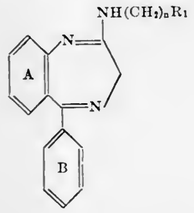
No Drawing. Continuation of abandoned application Ser. No. 68,486, Aug. 31, 1970. This application Aug. 30, 1972, Ser. No. 284,989

Claims priority, application Japan, Sept. 1, 1969, 44/69,153

Int. Cl. C07d *53/06, 99/04*

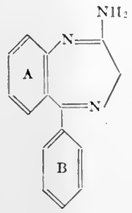
U.S. Cl. 260—239 BD **4 Claims**

A process for producing a compound of the general formula



or the corresponding 4 N-oxide thereof wherein n represents an integer of 1 to 3 inclusive, and R_1 represents hydrogen, alkoxy, dialkoxy, alkylamino, dialkylamino, alkoxycarbonyl or furyl, and the rings A and B independently are unsubstituted or substituted by one or more of the same or different substituents from the group of nitro, trifluoromethyl, halogen, alkyl or alkoxy, is provided.

A compound of the general formula



or the corresponding 4 N-oxide thereof wherein rings A and B are unsubstituted or substituted as indicated above or the corresponding 4 N-oxide thereof is reacted with a compound of the general formula

$$R_1(CH_2)_nNH_2$$

wherein R_1 and n have the same meanings as defined above. The final product compounds are useful as tranquilizers.

3,795,674

CERTAIN 2-SUBSTITUTED-4,6-DIAMINO-5-PYRIMIDINECARBOXALDEHYDES

Arthur A. Santilli, Havertown, and Dong H. Kim, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application June 18, 1970, Ser. No. 47,571, now Patent No. 3,725,405. Divided and this application Aug. 7, 1972, Ser. No. 278,316

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 N **3 Claims**

Novel 2,4,7 - trisubstituted-pyrido[2,3-d]pyrimidine-6-carboxamides have been produced which have central nervous system depressant activity and are useful pharmacological agents in the calming of animals.

3,795,675

PAPAVEROLINE SULFONIC ACID MONOHYDRATE AND SALTS

Umberto Laguzzi, 52 Via Cadore, Milan, Italy

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,805

Claims priority, application Italy, Sept. 15, 1970, 29,749/70

Int. Cl. C07d *35/28*

U.S. Cl. 260—283 S **2 Claims**

Papaveroline sulfonic acid monohydrate of empirical formula $(C_{16}H_{12}NO_4)SO_3H.H_2O$ and its sodium and N-methylglucamine salts are described. They are particularly valuable in the therapy of particular arteriopathic disturbances, because they retain the physiological and clinical properties of papaveroline and yet are water soluble.

3,795,676

7-SUBSTITUTED PLEIADENES AND 8-SUBSTITUTED DIBENZOHEPTALENES

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application Oct. 1, 1970, Ser. No. 77,373, now Patent No. 3,719,280. Divided and this application Nov. 14, 1972, Ser. No. 306,442

Int. Cl. C07d *29/12*

U.S. Cl. 260—293.62 **5 Claims**

Pleiadenes substituted at the 7-position, e.g. 1,2,3,7-tetrahydro-7-(1-methyl-4-piperidyl)pleiadene and 1,2,3,7,12,12a-hexahydro-7-(1 - methyl-4-piperidyl)pleiaden-7-ol, and dibenzoheptalenes substituted at the 8-position, e.g. 1,2,3,4-tetrahydro-8 - (1-methyl-4-piperidyl)-8H-dibenzo[b,ef]heptalene, prepared from a corresponding ketone and Grignard reagent, are useful as central nervous system stimulants.

3,795,677

ARYL 4-PIPERIDYL KETONE DERIVATIVES

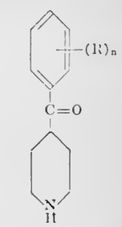
Albert A. Carr and Donald R. Meyer, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Nov. 9, 1971, Ser. No. 197,116

Int. Cl. C07d *29/20*

U.S. Cl. 260—293.62 **3 Claims**

Novel compounds having the formula



wherein n is a positive whole integer of from 1 to 3; R represents phenyl, a straight or branched alkyl chain of from 1 to 4 carbon atoms attached to the phenyl ring at the ortho, meta, or para positions, or a difunctional 1,4-butadienylene moiety which together with the phenyl ring forms a naphthyl ring with the proviso that when R represents a difunctional 1,4-butadienylene moiety, n is equal to 1; or pharmaceutically acceptable acid salts thereof, are useful as analgesic and as anticoagulant agents.

3,795,678

ALPHA-2-METHYLHYDRAZINE-PYRIDINOTOLUIDIDES AND DERIVATIVES

Werner Bollag, Basel, Hugo Gutmann, Reinach, Balthasar Hegedus, Binningen, Ado Kaiser, Lausen, Basel-Land, Albert Langemann, Binningen, Marcel Muller, Frenkendorf, and Paul Zeller, Allschwil, Basel-Land, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application June 4, 1970, Ser. No. 43,572, now Patent No. 3,711,543, which is a division of application Ser. No. 571,690, Aug. 11, 1966, now Patent No. 3,534,100, which in turn is a division of abandoned application Ser. No. 200,059, June 5, 1962. Divided and this application Nov. 21, 1972, Ser. No. 308,615

Claims priority, application Switzerland, June 9, 1961, 6,734/61

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM **2 Claims**

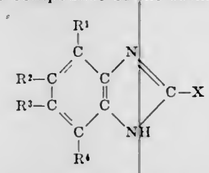
Benzene-ring substituted (2-methylhydrazino)-methylbenzene compounds and intermediates therefor are de-

scribed. The former compounds are useful as cytostatic agents and, particularly, inhibit the growth of transplantable tumors in both mice and rats. Thus, they are active, for example, against Walker tumors, Ehrlich carcinoma and Ehrlich ascites carcinoma.

3,795,679
1,2,4-4H-TRIAZOLE DERIVATIVES
Michael C. Seidel, Levittown, William C. von Meyer, Willow Grove, and Stanley A. Greenfield, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.
No Drawing. Continuation-in-part of abandoned application Ser. No. 67,198, Aug. 26, 1970, which is a continuation-in-part of application Ser. No. 847,481, July 3, 1969, now Patent No. 3,701,784, which in turn is a continuation-in-part of application Ser. No. 757,490, Sept. 4, 1968, now Patent No. 3,769,411, dated Oct. 30, 1973. This application June 8, 1972, Ser. No. 263,726
Int. Cl. C07d *91/46*
U.S. Cl. 260—305 **1 Claim**
Substituted 1,2,4-4H-triazoles of the formula

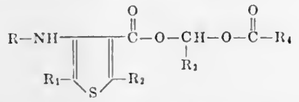
wherein R^2 is a heterocyclic radical. These compounds are fungicides and are particularly useful for the control of cereal rusts.

3,795,680
2-TRIFLUOROMETHYLBENZIMIDAZOLES
Dennis Ernest Burton, Ickleton, near Saffron Walden, Alan James Lambie, Kidderminster, and Geoffrey Tatttersall Newbold, Saffron Walden, England, assignors to Fisons Limited, London, England
No Drawing. Continuation-in-part of application Ser. No. 476,185, July 30, 1965, which is a continuation-in-part of application Ser. No. 343,225, Feb. 7, 1964, both now abandoned. This application May 3, 1971, Ser. No. 139,826
Claims priority, application Great Britain, Feb. 16, 1963, 6,372/63
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **5 Claims**
Benzimidazole compounds of the formula:



and salts thereof, where in the above formula R^1, R^2, R^3 and R^4 may be the same or different and are selected from the group comprising hydrogen, alkyl (for example 1–6 carbon atoms such as methyl, ethyl or propyl), hydroxy, alkoxy (for example methoxy, ethoxy or butoxy), nitro, halogen (for example chloro, bromo or fluoro), pseudohalogen (for example cyano, thiocyano, isothiocyano or azido), substituted alkyl (for example, trifluoromethyl, chloromethyl, bromoethyl, trichloromethyl, hydroxymethyl, 2-chloroethyl, 2-hydroxyethyl or 2-methoxyethyl), carboxy, carboxy ester, carboxy amide, N-substituted carboxy amide, N-disubstituted carboxy amide, amino (for example methylamino, dimethylamino, acetylamino, trifluoroacetylamino, benzenesulphonamido, paratoluenesulphonamido, methanesulphonamido), thiol, alkylthiol, and oxygenated derivatives thereof (for example —SOR^5 or —SO_2R^5 where R^5 is alkyl), sulphonic acid and esters and amides thereof, substituted amide (for example, phenylsulphamyl, ethylsulphamyl, chloroethylsulphamyl), radicals and where X is trifluoromethyl or pentafluoroethyl, possess physiological activity and are useful in the formulation of physiologically active compositions.

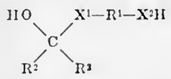
3,795,681
AMINOTHIOPHENE-CARBOXYLIC ACID ESTERS
Heinrich Ruschig, Bad Soden, Taunus, Willi Meixner, Hofheim, Taunus, and Hans Georg Alpermann, Schneidhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed May 26, 1972, Ser. No. 257,180
Claims priority, application Germany, May 28, 1971, P 21 26 597.4
Int. Cl. A61k *27/00;* **C07d** *63/16*
U.S. Cl. 260—332.2 C **12 Claims**
Novel aminothiophene-carboxylic acid esters are described as well as a process for their manufacture and their antiphlogistic and antipyretic action. The novel compounds correspond to the Formula I



(I)

wherein R represents phenyl which may carry 1, 2 or 3 substituents selected from halogen, trifluoromethyl, low molecular alkyl and alkoxy, aralkoxy being low molecular in the alkylene moiety, and cycloalkyl having 5–6 members, and wherein two vicinal substituents may be members of a condensed alicyclic ring system, and wherein R_1 and R_2 each represents hydrogen or low molecular alkyl, R_3 represents hydrogen or low molecular alkyl and R_4 represents alkyl or aryl in which case the aryl group may contain 1 or 2 hetero atoms, such as nitrogen, oxygen or sulfur.

3,795,682
SYNTHESIS OF CYCLIC KETALS
Serge Y. Delavarenne, Wemmel, Belgium, assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed July 27, 1970, Ser. No. 58,696
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **2 Claims**
Cyclic ketals are produced by contacting a dehydrating agent with a compound of the formula:



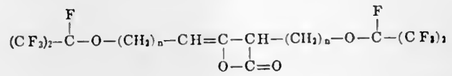
wherein X^1 represents oxy, thio, or nitrilo, wherein X^2 represents oxy, thio, or imino, provided that at least one of X^1 and X^2 represents oxy, wherein R^1 represents an alkylene group of from 2 to 4 carbon atoms or a 2-butenylene group, and wherein R^2 and R^3 individually represent halogenated alkyl groups the alpha carbon atoms of which are free of hydrogen and have at least one fluoro group, the remainder of the halo groups on the alkyl being fluoro, chloro, or bromo. The cyclic ketals produced are represented by the formula:

wherein X^1, R^2, and R^3 are as defined above, and wherein R^4 represents alkylene of 2 to 4 carbon atoms or substituted alkylene. The dehydrating agents employed include carbodiimides and alpha-aminoacetylenes. The process of the invention is useful for the preparation of 1,3-dioxolanes, 1,3 - dioxanes, 1,3 - dioxepanes, and their

analogues wherein one of the oxygen atoms in the heterocyclic ring is replaced by either a sulfur atom or a nitrilo group.

3,795,683
2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES
Arnold Brossi, Verona, Benjamin Pecherer, Montclair, and Robert Sunbury, Wayne, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Aug. 19, 1970, Ser. No. 65,340
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 **7 Claims**
A process for the preparation of heterocyclic compounds containing one nitrogen atom and novel 2,3,4,5-tetrahydro-1H-3-benzazepines prepared by this process are disclosed. The resulting heterocyclic compounds, including the novel 2,3,4,5-tetrahydro-1H-3-benzazepine derivatives, exhibit analgesic, appetite suppressant, and anti-edema activity.

3,795,684
KETENE DIMERS FROM LONG CHAIN ALKANOIC ACIDS WITH PERFLUOROALKYL TERMINAL SEGMENTS
Elemer Domba, Olympia Fields, Ill., assignor to Nalco Chemical Company, Chicago, Ill.
No Drawing. Continuation-in-part of abandoned application Ser. No. 146,439, May 24, 1971. This application Oct. 27, 1972, Ser. No. 301,392
Int. Cl. C07d *3/00*
U.S. Cl. 260—343.9 **3 Claims**
Polyfluorinated ketene dimers having the structure:

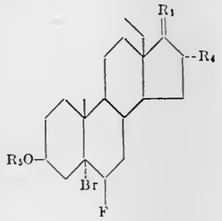


where n=an integer from 1–12. These compounds exhibit unusual water repellancy where n=7–12.

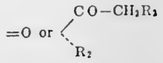
3,795,685
PROCESS FOR PREPARING N-ALKYL-DIMETHYLAMINES
Enrico Sianesi, Milan, Italy, assignor to Recordati SA Chemical and Pharmaceutical Company, Lugano, Switzerland
No Drawing. Filed July 15, 1971, Ser. No. 163,048
Claims priority, application Italy, Oct. 19, 1970, 31,155/70
Int. Cl. C07d *7/24*
U.S. Cl. 260—345.2 **3 Claims**
N-alkyl- and N-(substituted alkyl)-dimethylamines are prepared by reacting an unsubstituted or substituted alkyl halide with dimethylamine in an aqueous medium free from organic solvent and at a temperature not higher than about 30° C.

3,795,686
STEROID INSECTICIDE EXTRACTED FROM KALADANA AND PROCESS FOR PRODUCING SAME
Giorgio Ferrari and Luigi Canonica, Milan, and Bruno Danieli, Cesano Maderno, Italy, assignors to Dauten S.A., Roveredo, Switzerland
No Drawing. Filed July 26, 1972, Ser. No. 275,169
Claims priority, application Italy, July 29, 1971, 7,805/71
Int. Cl. C07c *167/40, 169/62*
U.S. Cl. 260—397.2 **2 Claims**
Muristerone, namely 2β,3β,5β,11α,14α,20R,22R-eptahydroxy-5β-cholest-7-en-6-one, a new polyhydroxylated steroid, has been extracted from kaladana, namely *Ipomoea calonyction* (Choisy) Hallier f. sp. nova. The invention relates also to the production process and to the powerful insecticidal activity of the muristerone.

3,795,687
PROCESS FOR THE PRODUCTION OF 6-FLUORO-5-BROMO-13-ETHYL STEROIDS
Ulrich Kerb, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany
No Drawing. Filed Dec. 29, 1971, Ser. No. 213,734
Claims priority, application Germany, Dec. 30, 1970, P 20 64 860.6
Int. Cl. C07c *167/00*
U.S. Cl. 260—397.4 **6 Claims**
6β-fluoro-5α-bromo-13-ethyl steroids, especially those of the formula

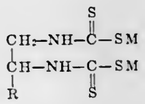


wherein R_1 is

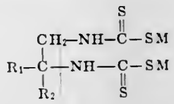


in which R_2 and R_3 are hydrogen, hydroxy or acyloxy; R_4 is hydrogen or methyl; and R_5 is hydrogen or acyl, are prepared by simultaneously reacting the corresponding 13-ethyl-Δ^5-steroids with a fluorination reagent and a bromination reagent.

3,795,688
REACTION PRODUCTS OF ZINC SALTS WITH ALKYLENE BISDITHIOCARBAMATES
Keiji Aoyama, Rokuro Akahira, and Yuichi Katoh, Tokyo, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha and Kanesho Kabushiki Kaisha, both of Tokyo, Japan
Filed Apr. 13, 1971, Ser. No. 133,645
Claims priority, application Japan, Apr. 22, 1970, 45/34,536
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **4 Claims**
A zinc salt is reacted with a first alkylene bisdithiocarbamate having the formula



and a second alkylene bisdithiocarbamate having the formula



wherein R and R_1 are each independently selected from the group consisting of H and lower alkyl having 1 to 3 carbon atoms, R_2 is lower alkyl having 1 to 3 carbon atoms, and M is a monovalent base or metal. The first and second alkylene bisdithiocarbamates are present in respective molar ratios of 3:7–7:3. The resultant multiplied compound exhibits a synergistic fungicidal effect.

3,795,689

PROCESS FOR PREPARING FLUOROPERHALOALKYL ISOCYANATES

Wilhelmus M. Beyleveld. Deventer, Netherlands, and Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 9, 1971, Ser. No. 161,769
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 P **6 Claims**

Fluoroperhaloalkyl isocyanates are prepared by reacting the corresponding fluoroperhaloalkylidene imine with carbonyl fluoride in the presence of an ionizable fluoride salt.

3,795,690

p-ALKYL - N - BIS(ALKYLXANTHYLALKYLENE) AMINO-2,6-DINITROANILINE AND p-ALKYL-N-HALOGENOALKYLENEAMINO, N - ALKYLXANTHYLALKYLENEAMINO - 2,6-DINITROANILINE HERBICIDES

Donald W. Kaiser, New Haven, Conn., and Kenneth J. May, Weslaco, Tex., assignors to The Ansul Company, Marinette, Wis.

No Drawing. Continuation-in-part of abandoned application Ser. No. 877,508, Nov. 17, 1969. This application Nov. 10, 1971, Ser. No. 197,500
Int. Cl. C07c *154/02*
U.S. Cl. 260—455 B **12 Claims**

Novel-p-alkyl-N-bis(alkylxanthylalkylene)amino - 2,6-dinitroaniline and p-alkyl-N-halogenoalkyleneamino, N-alkylxanthylalkyleneamino-2,6-dinitroaniline derivatives are disclosed as well as their use as pre-emergent herbicides for the elimination of broadleaf weeds and grasses.

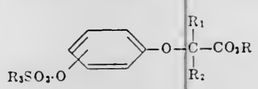
3,795,691

CHOLESTEROL-LOWERING AGENTS

George H. Douglas, Paoli, and Charles J. Guinosso, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed June 23, 1971, Ser. No. 156,136
Int. Cl. A61k *27/00;* **C07c** *143/68*
U.S. Cl. 260—456 P **7 Claims**

This invention is concerned with novel cholesterol reducing agents which have the general formula:



wherein R is (lower)alkyl; R_1 and R_2 are selected from the group consisting of hydrogen and (lower)alkyl or taken together may form a cycloalkyl group; R_3 is aryl or substituted aryl or (lower)alkyl and with intermediates for their production.

3,795,692

COMPOUNDS AND PROCESSES

Peter Kulsa, Scotch Plains, and Frank S. Waksmunski, South River, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,934
Int. Cl. C07c *129/00*
U.S. Cl. 260—465 E **7 Claims**

1-(p-nitrobenzilidineamino)-3-(substituted benzilidineamino) guanidine compounds are active anti-coccidial agents. Said compounds are prepared by successively reacting a diaminoguanidine with appropriately substituted aldehydes or ketones. Compositions employing the above compounds for the treatment and prevention of coccidiosis are also disclosed.

3,795,693

OMEGA CYANOPERFLUOROALKANOYL FLUORIDES

Edwin Dorfman, William E. Emerson, and Russell L. K. Carr, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 56,671, July 20, 1970, which is a continuation-in-part of application Ser. No. 661,242, Aug. 17, 1967, now Patent No. 3,557,165, dated Jan. 19, 1971. This application July 28, 1972, Ser. No. 275,986
Int. Cl. C07c *121/16*
U.S. Cl. 260—465.4 **3 Claims**

Omega cyanoperfluoroalkanoyl fluorides are prepared in high yields by reacting omega cyanoperfluoroalkanoates in the presence of a Lewis acid. The fluorides are useful intermediates in the preparation of perfluoroalkylenetriazine polymers.

3,795,694

PREPARATION OF CYANO COMPOUNDS

Olav Torgeir Onsager, Suffern, N.Y., assignor to Halcon International, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 198,987, Nov. 15, 1971, Ser. No. 285,271 and Ser. No. 285,272, both Aug. 31, 1972, and Ser. No. 286,784, Sept. 6, 1972. This application Oct. 16, 1972, Ser. No. 298,115
Int. Cl. C07c *121/02, 04*
U.S. Cl. 260—465.8 R **18 Claims**

The present invention is concerned with an improved method for the preparation of an adiponitrile precursor and especially to the production of 1,4-dicyanobutenes from 2-methylene glutaronitrile in one or more processing steps, thus providing a convenient overall process whereby adiponitrile may be prepared with a high degree of efficiency starting with acrylonitrile as the basic beginning material. Additional aspects of this invention include formation of 1,2,4-tricyanobutane from 2-methylene glutaronitrile by hydrogen cyanide addition and dehydrocyanation of 1,2,4-tricyanobutane.

3,795,695

CAGED ACIDS

John R. E. Hoover, Glenside, and Robert John Stedman, Paoli, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Application Oct. 4, 1966, Ser. No. 584,077, now Patent No. 3,536,761, which is a continuation-in-part of abandoned application Ser. No. 408,360, Nov. 2, 1964. Divided and this application Oct. 7, 1970, Ser. No. 78,929
Int. Cl. C07c *61/12*
U.S. Cl. 260—468 G **6 Claims**

Hexachloro[6.2.1^{3,6}.0^{2,7}.0^{4,10}.0^{5,9}]dodecane - 1 - (and-2-) carboxylic acids have been prepared.

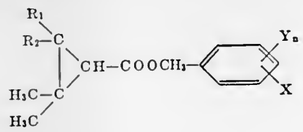
3,795,696

ALKYNYLBENZYL CYCLOPROPANECARBOXYLATES

Yoshio Katsuda, Osaka, and Toru Kawanami, Kobe, Japan, assignors to Sumitomo Chemical Company, Limited, and Dainippon Jochugiku Co., Ltd., both of Osaka, Japan

No Drawing. Filed June 3, 1971, Ser. No. 149,841
Claims priority, application Japan, June 13, 1970, 45/51,442
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 H **5 Claims**

Novel cyclopropanecarboxylic acid esters represented by the formula,



wherein when R_1 is hydrogen atom, R_2 is methyl group, isobutenyl group, or 2-carbomethoxy-1-propenyl group, and when R_1 is methyl group, R_2 is methyl group; X is a lower alkynyl group; Y is hydrogen atom, methyl group, methoxy group, or chlorine atom; and *n* is 1 or 2; provided that the case where Y and R_1 are hydrogen atom, R_2 is isobutenyl group, and X is propargyl group is excluded. The compound is used as an insecticide having low toxicity but not harmful to mammals and is produced at low cost.

3,795,697

PGE_2 ESTERS AND ALKANOATES

Sune Bergstrom and Jan Sjovall, both % Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Continuation of abandoned application Ser. No. 115,113, Feb. 12, 1971, which is a continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of abandoned application Ser. No. 199,209, Apr. 9, 1962, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. This application Aug. 23, 1972, Ser. No. 283,045
Int. Cl. C07c *69/16, 69/74, 69/78*
U.S. Cl. 260—468 **10 Claims**

Alkanoates and hydrocarbyl esters of the prostaglandins PGE_2 and PGE_3 are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,795,698

ACETOXY METHYL AND PIVALOYLOXYMETHYL 5-ACETAMIDO - 2,4,6 - TRIIODO-N-METHYLISOPHTHALAMATES

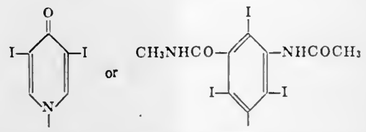
Maurice John Soulal, Long Ditton, and Kenneth Utting, Lower Kingswood, England, assignors to Beecham Group Limited, Brentford, England

No Drawing. Filed Sept. 8, 1971, Ser. No. 178,843
Claims priority, application Great Britain, Sept. 9, 1970, 43,070/70
Int. Cl. C07c *79/46*
U.S. Cl. 260—471 R **2 Claims**

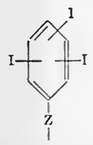
Iodine-containing organic acids of the formula

XYCH·COOR

wherein R is an electron-attracting group and either X is hydrogen and Y is a group of the formula:



or X is $CH_3 \cdot (CH_3)_n$ wherein *n* is 0 to 6 and Y is a group of the formula:



wherein Z is oxygen, sulphur or $(CH_2)_m$ wherein *m* is 0 to 6 and when Z is CH_2 there may be a NH_2 group in the 3-position, are useful as X-ray contrast agents. Acetoxymethyl 5-acetamido-2,4,6-triiodo-N-methylisophthalamate, pivaloyloxymethyl 5-acetamido-2,4,6-triiodo-N-methylisophthalamate, acetoxymethyl 3-amino-α-ethyl-2,4,6-triiodohydrocinnamate, and pivaloyloxymethyl 3-amino-α-ethyl-2,4,6-triiodohydrocinnamate are also useful as X-ray contrast agents.

3,795,699

PRODUCTION OF UNSATURATED COMPOUNDS

Donald Wright and Samuel Gardner, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,184
Claims priority, application Great Britain, Jan. 12, 1971, 1,480/71
Int. Cl. C07c *69/14, 69/82*
U.S. Cl. 260—475 N **6 Claims**

Unsaturated esters are produced by reacting an acyclic conjugated diolefine such as butadiene with a carboxylic acid, particularly orthophthalic acid, in the presence of a platinum or iridium compound and carbon monoxide or a metal carbonyl. The esters produced are oligomers of butadiene, the carbon monoxide giving enhanced catalyst stability and life.

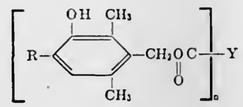
3,795,700

ESTERS OF 4-ALKYL-2,6-DIMETHYL-3-HYDROXYBENZYL ALCOHOL

John Song, Bound Brook, and Henry Richmond, Whitehouse Station, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,001
Int. Cl. C07c *69/76, 69/82*
U.S. Cl. 260—475 P **5 Claims**

Compounds of the formula:



wherein R is a branched chain alkyl group containing three to about twelve carbon atoms; Y is the residue of the carboxylic acid $Y(COOH)_n$, provided that when Y is alkyl and *n* is one, Y contains more than ten carbon atoms; and *n* is one to four. These compounds are useful as antioxidants in organic substrates, such as polyolefines, rubber, etc.

3,795,701

COPOLYMERS OF EPOXIDES AND LACTONES

Victor Frederick Jenkins, St. Albans, Michael John Beeken, Luton, and Stephen Pennington, Formby, England, assignors to Laporte Industries Limited, London, England

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,332
Int. Cl. C08g *17/007, 17/017*
U.S. Cl. 260—484 A **19 Claims**

A process for the production of a copolymer comprising oxyalkylene and carboxyalkylene units. A lactone and an epoxide are reacted with a chain initiator in the presence of a catalyst. The lactone and epoxide are added simultaneously to the chain initiator at such rates that each of the lactone and the epoxide react with the chain initiator or growing chain at substantially constant rate during the total addition.

3,795,702

2-SUBSTITUTED-p-NITRO-ANILINES

Rodney Ian Fryer, North Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Sept. 30, 1970, Ser. No. 76,989, now Patent No. 3,707,473, which is a division of application Ser. No. 629,921, Apr. 11, 1967, now Patent No. 3,562,251. Divided and this application Oct. 3, 1972, Ser. No. 295,741
Int. Cl. C07c *103/26*
U.S. Cl. 260—500.5 H **4 Claims**

Novel 2-substituted-p-nitro-anilines are disclosed. These compounds are useful as intermediates in the preparation of pharmacologically useful 2,3-dihydro-3-(N-substituted carbamoyl)-7-nitro-1,4-benzodiazepines.

3,795,703
PROCESS FOR PREPARING UNSATURATED CARBOXYLIC ACIDS

Akihiko Niina, Kiyomori Oura, and Kuniyoshi Tashiro, Takaoka, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

No Drawing. Filed Nov. 28, 1972, Ser. No. 309,962
Claims priority, application Japan, Nov. 30, 1971, 46/95,949, 46/95,950; Dec. 16, 1971, 46/102,054; Dec. 27, 1971, 47/3,268
Int. Cl. C07c *57/04, 51/26;* **B01j** *11/82*
U.S. Cl. 260—530 N **6 Claims**

A process for the preparation of an unsaturated carboxylic acid which comprises reacting an unsaturated aldehyde with molecular oxygen at an elevated temperature in the vapor phase, in the presence of an oxidation catalyst represented by the following empirical formula

$$Mo_aP_bQ_cR_dO_e$$

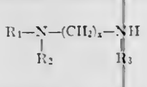
wherein Q is at least one element selected from the group consisting of Tl, Rb, Cs and K; and R is at least one element selected from the group consisting of Cr, Si, Al, Ge and Ti; and *a, b, c, d* and *e* each represent the number of atoms of each element: the atomic ratio of *a*:*b*:*c*:*d* is 1:1–0.01:1–0.01:2–0.01; and *e* is the number of oxygen atoms determined by the valence requirements of the other elements present.

3,795,704
ANTI-MICROBIALLY ACTIVE SURFACE-ACTIVE COMPOUNDS

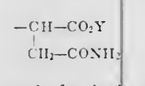
Helmut Diery, Kelkheim, Taunus, Karl Seeger, Hofheim, Taunus, Gerhart Schneider, Frankfurt am Main, and Hans-Walter Bücking, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengeseilschaft vormals Meister Lucius & Bruniag, Frankfurt am Main, Germany

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,974
Claims priority, application Germany, Mar. 5, 1971, P 21 10 602.5
Int. Cl. C07c *103/50*
U.S. Cl. 260—534 R **4 Claims**

Ampholytic compounds of the Formula I



in which R_1 is a lipophilic group, *x* is 2 or 3, one of the radicals R_2 and R_3 stands for a moiety of the Formula II



and the other one stands for hydrogen or also for the moiety of the Formula II, and Y is hydrogen or an alkali metal ion, and the use of these ampholytic compounds as anti-microbially active surface-active substances.

3,795,705
PROCESS FOR MAKING ARYLSULFONYL HALIDES

James H. Chan, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 786,474, Dec. 23, 1968. This application Aug. 28, 1972, Ser. No. 284,187
Int. Cl. C07c *143/70*
U.S. Cl. 260—543 R **17 Claims**

Arylsulfonyl halides such as beneznesulfonyl chloride are produced by reacting a sulfonic acid and a carbonyl halide in the presence of dimethylformamide and a small percentage of a tertiary amine. The reaction of benzenesulfonic acid with phosgene in the presence of 15% dimethylformamide and 1% triethylamine to produce benzenesulfonyl halide in high yields and having a high degree of purity is representative.

3,795,706
FLUOROPERHALODIAZAOLEFINS AND THEIR METHOD OF PREPARATION

Bryce C. Oxenrider, Florham Park, N.J., Wilhelmus M. Beyleveld, Deventer, Netherlands, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 9, 1971, Ser. No. 161,349
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R **6 Claims**

Novel fluoroperhalodiazaolefins are prepared by reacting a fluoroperhaloalkylidene imine with a fluoroperhaloazaolefin in an aprotic, polar liquid reaction medium in the presence of an ionizable fluoride salt. For example, perfluoro-2,4,4,6-tetramethyl-3,5-diaza - 2,5 - heptadiene is prepared by reacting hexafluoroisopropylidene imine with perfluoro-2,4-dimethyl-3-aza-2-pentene in acetonitrile in the presence of potassium fluoride. The fluoroperhalodiazaolefins are useful as liquid dielectrics and as intermediates in the preparation of other fluorinated organic compounds.

3,795,707
MANUFACTURE OF α-6-DEOXYTETRACYCLINES

Franco Paolo Luciano, Bassi, Italy, assignor to Rachelle Laboratories Italia S.p.A., Milan, Italy

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,094
Int. Cl. C07c *103/19*
U.S. Cl. 260—559 AT **4 Claims**

α-6-deoxytetracyclines are recovered in purified form by reacting the corresponding α-6-deoxytetracycline sulfosalicylates with at least about two equivalents of a base at a pH of about 5.5 to about 9.0 and at a temperature of less than about 90° C.

3,795,708
PROCESS FOR PREPARING 2,3,6-TRIMETHYLHYDROQUINONE

Ludwig Rappen, Duisburg-Meiderich, Werner Fickert, Mannheim, Winfried Orth, Schifferstadt, Manfred Maurer, Dirmstein uber Frankenthal, Pfalz, and Heinrich Micle, Viernheim, Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed June 23, 1970, Ser. No. 49,193
Claims priority, application West Germany, June 26, 1969, P 19 32 362.7
Int. Cl. C07c *37/00, 37/06*
U.S. Cl. 260—621 H **1 Claim**

According to the invention 2,3,6-trimethylhydroquinone is prepared from 2,3,6-trimethylphenol by sulfonation of 2,3,6-trimethylphenol, oxidation of the 2,3,6-trimethylphenol-4-sulfonic acid formed and direct reduction of the trimethylquinone in aqueous solution to trimethylhydroquinone; said sulfonation is carried out in an organic solvent which is not miscible with water and is inert to the sulfonating agent. The oxidation is carried out in aqueous phase in the presence of an organic solvent which is inert to the oxidizing agent, and in which the quinone formed is soluble and the hydroquinone formed by reduction is insoluble.

3,795,709
BENZOBENZAZULENES

Albert J. Frey, Essex Fells, and Eugene E. Galantay, Morristown, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Division of application Ser. No. 724,654, Feb. 7, 1968, now Patent No. 3,526,665, which is a division of application Ser. No. 606,007, Dec. 30, 1966, which is a continuation-in-part of application Ser. No. 516,781, Dec. 27, 1965, which in turn is a continuation-in-part of application Ser. No. 378,931, June 29, 1964, all now abandoned. Divided and this application Apr. 15, 1970, Ser. No. 28,975
Int. Cl. C07c *35/22*
U.S. Cl. 260—618 F **5 Claims**

2 - amino - 1,2,6,7 - tetrahydro - (11bH) - benzo[j]benz[c,d]azulenes are useful as antihypertensives and useful as sedative-tranquilizers. Such final compounds are prepared from suitable, 10,11-dihydro-5H-dibenzo[a,d] cyclohepten-5-ones or suitable 1,2-diphenyl-ethanes, e.g., by conversion thereof to the corresponding 1,2,6,7-tetrahydro-(11bH)-benzo[j]benz[c,d]azulen-2-one which is then either converted to the corresponding final compound, or to a 2-hydroxy, 2-halo or 2-oxime intermediate which is subsequently converted to the corresponding final compound.

3,795,710
PROCESS FOR PREPARING FLUORO-HALOGENATED PROPANE DERIVATIVES AND USE THEREOF

Laurent Seigneurin, Salindres, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Continuation of application Ser. No. 313,444, Oct. 3, 1963. This application Apr. 16, 1968, Ser. No. 721,600
Claims priority, application France, Oct. 9, 1962, 911,675
Int. Cl. C07c *17/28, 19/08*
U.S. Cl. 260—653 **5 Claims**

The reaction of fluorinated or fluorinated-chlorinated ethylene compounds with chlorinated methane compounds in the preparation of fluoro-chlorinated propane compounds by the use of gallium chloride or gallium bromide or mixtures thereof as the catalyst at a temperature within the range of 60° to 150° C. and a pressure within the range of 6 to 30 kg./cm.^{2} to effect substantially complete conversion to the fluoro-chlorinated propane compounds with minimum side reactions.

3,795,711
SORPTION OF PARAXYLENE VAPOR IN PRESENCE OF GASEOUS MODIFIER

George R. Worrell, Media, and James T. O'Toole, Philadelphia, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed June 30, 1972, Ser. No. 268,067
Int. Cl. C07c *7/12;* **C10g** *25/04*
U.S. Cl. 260—674 SA **10 Claims**

A sorbent containing significant amounts of crystalline, alumino silicate desirably ion exchanged in the ammonium form such as ammonium faujasite preferentially sorbs paraxylene from a process stream containing vapors of a mixture of C_8 aromatic isomers. A gaseous modifying agent, such as ammonia, is included in said process stream, whereby the selectivity of the crystalline alumino silicate for the paraxylene is enhanced. After some of the sorbent particles have adsorbed paraxylene, they are treated with a gaseous desorbing agent to provide a vapor stream comprising paraxylene.

3,795,712
ALKYLATION OF HYDROCARBONS WITH OLEFINS IN THE PRESENCE OF AN ACID CATALYST

Bernard Torck, Chatou, Georges Vidouta, Neuilly-sur-Seine, Pierre Pariot, Colombes, and Michel Hellin, Andresy, France, assignors to Institut Francais des Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

No Drawing. Original application Nov. 13, 1970, Ser. No. 89,462, now abandoned. Divided and this application Aug. 1, 1972, Ser. No. 277,083
Claims priority, application France, Nov. 24, 1969, 6940466
Int. Cl. C07c *3/54*
U.S. Cl. 260—671 C **10 Claims**

For alkylating an aromatic or aliphatic hydrocarbon with an olefin, there are employed liquid catalyst compositions containing, optionally in an inert hydrocarbon solvent, a Lewis acid or a Brönsted acid and a sulfone of formula R—SO_2—R′, wherein R and R′ are each separately a monovalent radical containing from 1 to 8 carbon atoms or form together a divalent radical having from 3 to 12 carbon atoms, the acid concentration being at least 10^{-5} moles per liter of sulfone and at most the saturation concentration without exceeding 5 moles per liter of sulfone.

3,795,713
THERMAL CRACKING OF LIQUID HYDROCARBONS

Koichi Washimi and Masaaki Kanbayashi, Fukushima, Toshio Kanai, Kanagawa, and Kiyoju Ozaki, Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 13,239, Feb. 21, 1969. This application Aug. 2, 1972, Ser. No. 277,198
Claims priority, application Japan, Feb. 21, 1969, 44/12,544
Int. Cl. C07c *11/24, 3/00*
U.S. Cl. 260—679 R **3 Claims**

A process for thermally cracking a heavy liquid hydrocarbon oil by spraying the hydrocarbon oil into a reactor maintained at a temperature higher than 800° C., and a pressure between atmospheric and 10 kg./sq. cm., which process comprises preheating the heavy hydrocarbon oil to temperatures of 200–500° C., and then spraying said hydrocarbon oil into the reactor through a nozzle or nozzles at a pressure higher than 20 kg./sq. cm., to flash-evaporate more than 5% by weight, preferably above 5 to about 50% by weight, of said hydrocarbon oil, whereby the hydrocarbon oil is finely atomized to form droplets of from 10–15 microns and preferably, 18–50 microns.

3,795,714
ISOPARAFFIN ALKYLATION PROCESS AND CATALYST FOR USE THEREIN

Paul Eugene Pickert, Katonah, and Anthony Peter Bolton, Valley Cottage, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application June 26, 1968, Ser. No. 740,049, now Patent No. 3,549,557, dated Dec. 22, 1970. Divided and this application May 6, 1970, Ser. No. 35,242
Int. Cl. C07c *3/52*
U.S. Cl. 260—683.43 **10 Claims**

The catalytic alkylation of isobutane with an olefin containing from two to five carbon atoms is carried out using a crystalline zeolitic molecular sieve having a low monovalent metal cation content and having a greatly reduced content of OH exhibiting infrared absorption in the region from 3480 to 3670 cm.$^{-1}$.

3,795,715
THERMOPLASTIC MOULDING COMPOSITIONS ON THE BASIS OF POLYACETAL AND PROCESS FOR THEIR PREPARATION

Harald Cherdron and Karlheinz Burg, Wiesbaden, and Klemens Gutweiler, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 830,089, June 3, 1969. This application Aug. 20, 1971, Ser. No. 173,691
The portion of the term of the patent subsequent to Dec. 28, 1988, has been disclaimed
Int. Cl. C08d *9/02;* **C08f** *29/12*
U.S. Cl. 260—823 **14 Claims**

The impact strength of thermoplastic polyacetals is improved by admixing small amounts of polymers which have a softening temperature below the crystallite melting point of the polyacetal and a second order transition temperature within the range of from −120° to +30° C. and which are present in the mixture in the form of parti-

cles of diameters within the range of from 0.1 to 5 microns. The polyacetals so modified are suitable for the manufacture of finished or semi-finished products.

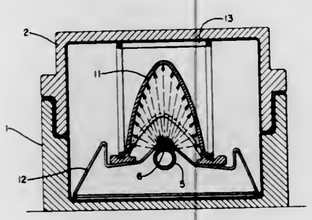
3,795,716
BLENDED TRANS-PIPERYLENE AND MALEIC ACID ADDUCT POLYESTER COMPOSITIONS
Takeo Hokama, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.
No Drawing. Filed Apr. 19, 1972, Ser. No. 245,630
Int. Cl. C08g *39/10*
U.S. Cl. 260—860 **10 Claims**

This invention discloses a polyester composition comprising from about 20 to about 50 parts by weight of a first linear polyester which comprises from about 10 to about 40 mole percent of an adduct of trans-piperylene and maleic acid or its anhydride, from about 10 to about 40 mole percent of dicarboxylic compound selected from the group consisting of maleic acid, maleic anhydride, fumaric acid and mixtures thereof, and from about 50 to about 70 mole percent glycol; and from about 50 to about 80 parts by weight of a second unsaturated polyester.

3,795,717
PROCESS FOR PRODUCING IMPROVED POLYESTER RESINS BY BLENDING MAGNESIUM OXIDE THEREWITH
Silvio Vargiu, Sesto S. Giovanni, Beppino Passalenti, and Ugo Nistri, Milan, Italy, assignors to Società Italiana Resine S.p.A. Milan-Via Breno, Milan, Italy
No Drawing. Filed June 30, 1971, Ser. No. 158,610
Claims priority, application Italy, July 1, 1970, 26,849/70
Int. Cl. C08f *21/02*
U.S. Cl. 260—865 **2 Claims**

Unsaturated polyester compositions are blended with 0.001 to 0.05% by weight magnesium oxide and maintained at 40° to 70° C. for 0.2 to 3.0 hours to render them stable for storage and regulate the gel time.

3,795,718
METHOD OF RETARDING DEGRADATION OF MOLD SURFACE
William J. Hampshire, Peninsula, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 10, 1972, Ser. No. 216,442
Int. Cl. B08b *3/02*
U.S. Cl. 264—39 **2 Claims**



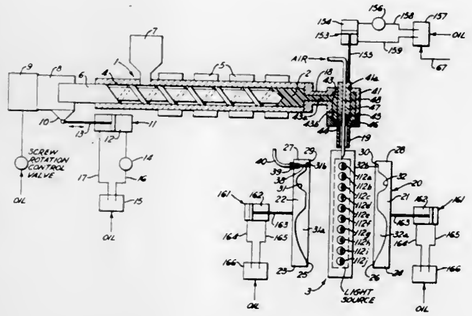
Method for retarding the fouling or degradation of the surface of a concave mold and removing resulting deposits therefrom, where said mold and deposits are formed by contacting mold surface in presence of water and carbon dioxide with a polyamine having primary amino groups and comprising the sequential steps of:

(A) positioning said mold in a substantially enclosed container, said container having an internal spray source positioned therein and directed into the mold cavity,

(B) actuating a high velocity jet of liquid organic wash from said spray source to forcibly impinge upon the mold surface with sufficient velocity characterized by providing a turbulent condition of the wash in at least about 80 percent of the cavity when the mold is submerged in the wash, where said organic acid is selected from formic acid, acetic acid, and propionic acid, and.

(C) Removing treated mold from container.

3,795,719
METHOD OF CONTROLLING THE BLOW MOLDING OF HOLLOW SHAPED PLASTIC ARTICLES
Andrew S. Morecroft, deceased, by Janet E. Morecroft, administratrix, Bridgeville, and Simon A. D. Visser, Braddock, and Frank J. Limbert, Pittsburgh, Pa.; said Limbert and said Visser assignors to Baychem Corporation, New York, N.Y.
Continuation of abandoned application Ser. No. 785,810, Dec. 20, 1968. This application Sept. 9, 1971, Ser. No. 228,407
Int. Cl. B29c *17/07;* **B29d** *23/04*
U.S. Cl. 264—40 **3 Claims**



An extrusion method for molding plastic articles of either constant or variable wall cross-sections. Electronic control circuitry is adapted to control the movement of a movable die core and the speed of the axial movement of a rotatable ram screw whereby articles of constant or variable wall cross-section are molded under substantially constant rheological conditions. A plurality of photocells and a programmable function generator are utilized to systematically energize the components of the electronic control circuitry.

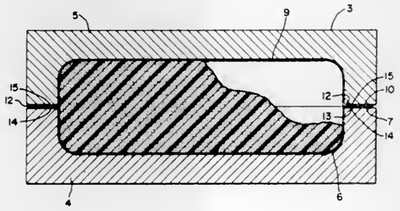
3,795,720
METHOD OF PRODUCING A LOW DENSITY COMPOSITE SHEET MATERIAL
Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Original application Dec. 31, 1969, Ser. No. 889,481. Divided and this application Mar. 17, 1972, Ser. No. 235,538
Int. Cl. B29h *7/20*
U.S. Cl. 264—41 **4 Claims**

An opaque microporous film suitable as paper and capable of being printed. The film has at least two polymers which are incompatible with each other and one polymer which is in excess has a glass transition temperature at least 40° C. lower than that of another polymer with which it is incompatible. Drawing at about the glass transition temperature of the polymer in excess results in film opacity.

3,795,721
METHOD FOR MOLDING SIMULATED BRICK AND MOLD THEREFOR
Jack J. Gilbert and William P. Kinneman, Jr., Suffern, N.Y., assignors to Brick It Corporation, Spring Valley, N.Y.
Filed Mar. 13, 1972, Ser. No. 233,890
Int. Cl. B29h *7/20*
U.S. Cl. 264—42 **6 Claims**

Process for producing simulated brick or stone in which a wet mixture of Portland cement and sand, either with or without filler and coloring materials, an aerating agent and calcium chloride is placed in a water impervious mold having a face wall with the desired pattern thereon and a re-entrant wall upstanding from the face wall and the mixture is cured in the mold for at least five hours at a relative humidity of 100% before the mold is removed. Also, a plastic mold therefor for forming a module of brick units with intervening mortar lines having nailing cavities therein.

3,795,722
METHOD OF MAKING A SKIN COVERED FOAM ARTICLE AND SAID ARTICLE
William O. Sassaman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 2, 1970, Ser. No. 77,494
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **3 Claims**



A cellular article having a unitary skin thereon devoid of seam lines and a method of making said article.

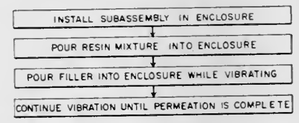
3,795,723
BETA ALUMINA PRODUCTION
Ronald L. Clendenen, Orinda, and Eugene E. Olson, Oakland, Calif., assignors to Shell Oil Company, Houston, Tex.
No Drawing. Filed Mar. 29, 1972, Ser. No. 236,162
Int. Cl. C01f *7/04*
U.S. Cl. 264—65 **8 Claims**

When a mixture of powders of an oxidic aluminum compound, an oxidic sodium compound and optionally additives, is hot-pressed into a solid body at a temperature of from about 1000° C. to about 1800° C. and a pressure of greater than about 1000 p.s.i. and the body is then hot-forged at similar conditions a sodium beta alumina having an oriented crystal structure and thus a high ionic conductivity results.

3,795,724
METHOD OF MAKING ALUMINA REFRACTORY GRAIN
David E. Paul, Pleasanton, and Lloyd M. Housh, Santa Clara, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 109,065, Jan. 22, 1971. This application June 26, 1972, Ser. No. 266,411
Int. Cl. C04b *35/64*
U.S. Cl. 264—65 **20 Claims**

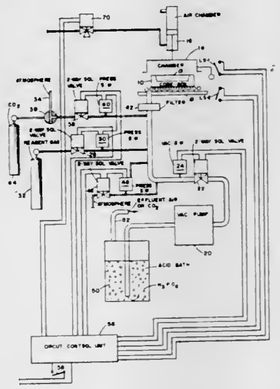
A dense, high purity alumina refractory grain is made from gibbsite (aluminum trihydrate) by compacting the dry hydrate under a pressure of at least 60,000 p.s.i., and firing. Preferably, the material is subjected to shear stresses during compaction, as in a roll-type briquetting press.

3,795,725
METHOD OF ENCAPSULATING ELECTRICAL EQUIPMENT
Edward G. Bulin, Reedsburg, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.
Filed Feb. 3, 1972, Ser. No. 223,178
Int. Cl. B29c *6/00*
U.S. Cl. 264—71 **15 Claims**



A method of encapsulating electrical equipment comprises the steps of (a) placing the electrical equipment into an enclosure or casing, (b) pouring a fluid resin-catalyst mixture into the enclosure, (c) pouring a filler into the enclosure while vibrating the enclosure, and (d) continuing the vibration of the enclosure until the resin-catalyst mixture permeates the filler.

3,795,726
REDUCTION OF RESIDUAL NOXIOUS GASES IN GAS HARDENED MOLDS AND CORES
Lothar Robert Zifferer and Lester F. Stump, Jr., York, Pa., assignors to Alphaco, Inc., York, Pa.
Continuation-in-part of application Ser. No. 22,586, Mar. 25, 1970. This application Aug. 17, 1971, Ser. No. 172,524
Int. Cl. B22c *9/12*
U.S. Cl. 264—82 **13 Claims**



A process and apparatus to produce foundry cores and molds by the use of toxic and noxious basic, i.e., alkaline, reagent gases, such as an amine gas, to cure certain mixtures of sand and resin binders, the binders being cured by the reagent gases to stabilize the cores and molds. The cores and molds may also, if desired, include a combination of two different binder systems including a relatively expensive resin binder, especially to produce precise working surfaces on fine sand surfaces and a more economical back-up mass of coarser sand bonded by less expensive binders such as sodium silicate. The noxious and toxic gases are removed from the products to a sufficient degree for tolerance from a health and comfort standpoint. This result is accomplished by using air to force

the amine gas into the interior of the mold or core and a combination of vacuum and air purging steps.

ERRATUM

For Class 264—54 see:
Patent No. 3,795,729

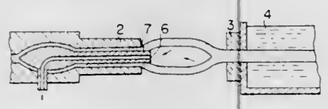
3,795,727
PROCESS FOR RECOVERING PURE AQUEOUS SOLUTION OF FERRIC CHLORIDE AND AQUEOUS SOLUTION OF METAL CHLORIDES FREE OF FERRIC CHLORIDE
Toshio Yamamura, Yuichi Omote, Shiro Sato, and Tomochika Hiyama, Shibukawa, Japan, assignors to Kanto Denka Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Original application Sept. 15, 1969, Ser. No. 858,173. Divided and this application Oct. 4, 1971, Ser. No. 186,417
Claims priority, application Japan, Sept. 19, 1968, 43/67,838; Sept. 20, 1968, 43/68,070
Int. Cl. C01g *23/04, 49/10*
U.S. Cl. 423—70 **2 Claims**

An aqueous solution of metal chlorides is subjected to liquid-liquid contact with an alkyl, aryl or aralkyl ketone or ether having 4 to 10 carbon atoms so that the ferric chloride is transferred to the organic ketone or ether extractant phase and the remaining metal chlorides remain in the aqueous phase. The extractant phase is contacted with water to transfer the ferric chloride into a second aqueous phase.

3,795,728
PROCESS FOR MANUFACTURING PHOSPHORIC ACID AND SUBSTANTIALLY ALKALISILICO-FLUORIDE-FREE GYPSUM
Kurt Scheel, Hamburg, Germany, assignor to Gebr. Knauf West-deutsche Gipswerke
No Drawing. Filed Mar. 1, 1972, Ser. No. 231,027
Claims priority, application Germany, Mar. 2, 1972, P 21 09 715.4
Int. Cl. C01f *1/00;* **C22b** *29/00*
U.S. Cl. 423—166 **5 Claims**

Process for the manufacture of phosphoric acid and the obtaining of an essentially alkali-silico-fluoride free gypsum as a byproduct.

3,795,729
PROCESS FOR THE PRODUCTION OF FOAMED POLYSTYRENE MATERIALS
Hiroshi Asakura, Kanagawa, and Koshi Takano, Yashuaki Arai, and Masaharu Kusaka, Kamakura, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Yuraku-cho, Chiyoda, Tokyo-to, and Toyo Kagaku Kabushiki, also known as Toyo Chemical Co., Ltd., Kamakura-shi, Kanagawa-ken, Japan
Continuation-in-part of abandoned application Ser. No. 789,511, Jan. 7, 1969. This application Nov. 29, 1971, Ser. No. 202,985
Int. Cl. B29d *27/00;* **B29f** *3/03*
U.S. Cl. 264—54 **5 Claims**



A polystyrene resin containing a foaming agent is extruded through a die with a simple aperture which will not cause irregular resin flow such that resin foams to a cross sectional area at most 6.5 times that of the die aperture, the resulting foamed material is forced through a sizing gate of a cross sectional area 1.5 to 6.5 times that of the die aperture while the foaming agent is still actively decomposing, and the foamed material thus sized is then cooled and set.

3,795,730
CARBON ADSORPTION-REDUCTION PROCESS FOR NITRIC OXIDES
John Joseph Kalvinskas, 354 S. Spring St., Suite 400, Los Angeles, Calif. 90013
Filed Mar. 29, 1971, Ser. No. 128,918
Int. Cl. C01b *5/00, 21/00;* **B01g** *9/04*
U.S. Cl. 423—239 **3 Claims**

Nitrogen oxides are adsorbed from gas mixtures containing them by adsorbent carbon in which there is dispersed intermetallic metal or metal oxide at a temperature of about 100° C., and subsequently reduced at a temperature of about 300° C., with recycling for reuse the adsorbent materials.

3,795,731
PROCESS FOR THE COMBUSTION OF AMMONIUM SULFATE
Herbert Furkert, Grosskonigsdorf, Germany, assignor to Chemiebau Dr. A. Zieren GmbH & Co. KG, Cologne, Germany
No Drawing. Filed Feb. 22, 1972, Ser. No. 228,258
Claims priority, application Germany, Feb. 19, 1971, P 21 07 910.7
Int. Cl. C01b *21/02, 17/50, 5/00*
U.S. Cl. 423—351 **18 Claims**

A process for converting particulate ammonium sulfate into a decomposition product consisting essentially of sulfur dioxide, steam, and molecular nitrogen substantially free of nitrogen oxides, comprising:

(a) burning a carbonaceous fuel in a combustion chamber in the presence of sufficient combustion air to maintain an oxygen concentration of from 1 to 10% by volume in gases exiting from the combustion chamber;
(b) feeding a stream of particulate ammonium sulfate having a particle size of from 0.01 to 1.0 mm. diameter into said combustion chamber; and
(c) burning said ammonium sulfate in said combustion chamber at a temperature of from 800 to 1250° C. to form a decomposition product consisting essentially of sulfur dioxide, steam, and molecular nitrogen substantially free of nitrogen oxides.

3,795,732
DESULFURIZATION OF FLUE GASES
Joseph W. Fleming, Upper St. Clair Township, Allegheny County, Pa., assignor to Koppers Company, Inc.
Filed Dec. 17, 1971, Ser. No. 209,250
Int. Cl. C01b *17/00*
U.S. Cl. 423—242 **7 Claims**

A process and apparatus for removing sulfur oxides from combustion gases and the like in which the gases are contacted with vanadium pentoxide to convert any sulfur dioxides present therein to sulfur trioxide and absorbing the sulfur trioxide with lithium sulfate which is converted to lithium pyrosulfate. The lithium pyrosulfate can be converted back to lithium sulfate for reuse in the system and sulfur trioxide liberated thereby used in the production of sulfuric acid.

3,795,733
SUNTAN FORMULATIONS CONTAINING ETHYLENICALLY UNSATURATED DERIVATIVES OF 4-AMINOBENZOIC ACID
Martin Skoultchi, Somerset, and Eric A. Meier, North Brunswick, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Original application Aug. 17, 1970, Ser. No. 64,574, now Patent No. 3,666,732, dated May 30, 1972. Divided and this application Mar. 7, 1972, Ser. No. 232,524
Int. Cl. A61l *23/00;* **A61k** *7/00*
U.S. Cl. 424—47 **4 Claims**

Ethylenically unsaturated derivatives of 4-aminobenzoic acid are prepared by a novel method involving the reaction under controlled conditions of 4-aminobenzoic acid and various derivatives thereof with allyl chloride. The resulting monomers may, thereafter, be copolymerized with a wide variety of conventional ethylenically unsaturated, i.e. vinyl, monomers. The monomeric derivatives as well as the copolymers prepared therefrom are ultraviolet absorbers in the 280–320 millimicrons range and find a particular utility as a sun-screen agent in suntan formulations.

3,795,734
CYCLIC REGIMEN OF HORMONE ADMINISTRATION FOR CONTRACEPTION
Joseph Guy Rochefort, St. Laurent, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,302
Int. Cl. A61k *17/06*
U.S. Cl. 424—238 **2 Claims**

There is disclosed herein a method of administering hormones for providing contraception and regulation of the menstrual cycle wherein consecutive daily dosages of a progestin are given during the early phase of the cycle, consecutive daily doses of an estrogen-progestin combination are given during the midcycle and consecutive daily dosages of a progestin are given during the final phase of the cycle.

3,795,735
ANTIMICROBIAL NITROIMIDAZOLYL-1,2,4-OXADIAZOLES
Goro Asato, Titusville, and Gerald Berkelhammer, Princeton, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Original application Dec. 8, 1969, Ser. No. 883,236, now Patent No. 3,658,832. Divided and this application Jan. 10, 1972, Ser. No. 216,800
Int. Cl. A61k *27/00*
U.S. Cl. 424—248 **3 Claims**

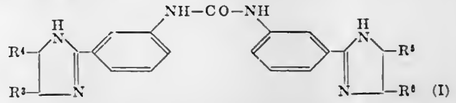
The disclosure describes novel 5-substituted-3-(1-substituted - 5 - nitro - 2 - imidazolyl) - 1,2,4 - oxadiazoles and 5 - substituted-3-(1-substituted-5-nitro-2-imidazolyl)-Δ^2-1,2,4-oxadiazolines, their method of preparation and use in treating bacterial and protozoal infections in warm-blooded animals.

3,795,736
5,5-DIMETHYL - 10 - HYDROXY-8-(3-METHYL-2-OCTYL)-2-(2-PROPYNYL) - 1,2,3,4-TETRAHYDRO-5H-[1] BENZOPYRANO[3,4-d]PYRIDINE AS AN ANALGESIC AGENT
Louis Selig Harris, Chapel Hill, N.C., and Harry George Pars, Lexington, and Raj Kumar Razdan, Belmont, Mass., assignors to Sharps Associates, Cambridge, Mass.
No Drawing. Filed Aug. 24, 1972, Ser. No. 283,435
Int. Cl. A61k *27/00*
U.S. Cl. 424—263 **2 Claims**

A method of relieving pain in mammalian patients comprising administering a therapeutically effective amount of 5,5-dimethyl - 10 - hydroxy-8-(3-methyl-2-octyl)-2-(2-propynyl) - 1,2,3,4 - tetrahydro - 5H - [1]benzopyrano-[3,4-d]pyridine to a patient.

3,795,737
CONTROL OF ANAPLASMOSIS IN CATTLE USING CARBANILIDES
Nicholas McHardy, 10 Downs Road, Beckenham, Kent, England; John Berger, Newton House, Alderley Edge, Cheshire, England; and Ruth M. Simpson, Kabete, Kenya, East Africa (% David Henderson, Esq., St. Saviours Road, Leicester, England)
Filed Mar. 10, 1971, Ser. No. 123,033
Claims priority, application Great Britain, Mar. 13, 1970, 12,347/70
Int. Cl. A61k *27/00*
U.S. Cl. 424—273 **17 Claims**

A method for the stimulation of immunity against anaplasmosis in cattle and for the virtual eradication of the causative organism of anaplasma in cattle which comprises the administration of an effectual amount of a compound of the Formula (I).



or a therapeutically acceptable acid addition salt thereof, wherein R^3, R^4, R^5 and R^6 are the same or different, and each is selected from the class consisting of a hydrogen atom and an alkyl group having from 1 to 4 carbon atoms, to accomplish the above.

3,795,738
USE OF L-PROPYL L-LEUCYL GLYCINE AMIDE TO TREAT PARKINSON'S DISEASE
Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 188,600, Oct. 12, 1971, which is a continuation-in-part of application Ser. No. 174,955, Aug. 25, 1971, both now abandoned. This application Dec. 26, 1972, Ser. No. 318,142
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **4 Claims**

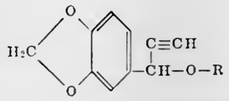
Covers the use of L-prolyl L-leucyl glycine amide in treating Parkinson's disease.

3,795,739
TREATMENT OF PARKINSON DISEASE
Walter Birkmayer and Erwin Neumayer, Vienna, Austria, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
No Drawing. Filed Feb. 6, 1973, Ser. No. 329,986
Claims priority, application Switzerland, Feb. 15, 1972, 2,073/72
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **14 Claims**

Pharmaceutical compositions for treating Parkinson disease which contain as the active anti-Parkinsonism ingredient, L-3-(3,4-dihydroxyphenyl)-alanine (L-dopa) or a pharmaceutically acceptable salt thereof in a mixture with L-tryptophan or a pharmaceutically acceptable salt thereof or L-5-hydroxytryptophan or a pharmaceutically acceptable salt thereof, and as an optional ingredient, a peripheral decarboxylase inhibitor are described. The compositions are useful for the treatment of Parkinson's disease with little or none of the side-effects usually associated with the use of L-dopa itself or in combination with a decaboxylase inhibitor.

3,795,740
METHYLENE DIOXY BENZENE DERIVATIVES AS SYNERGISTS FOR CARBARYL
Don R. Baker, Orinda, and Eugene G. Teach, El Cerrito, Calif., assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 884,685, Dec. 12, 1969. This application Jan. 20, 1972, Ser. No. 219,547
Int. Cl. A01n *9/28*
U.S. Cl. 424—282 **14 Claims**

A composition of matter is described herein which is used as a synergist for carbamate insecticides and methods of use. The composition may be defined by the following generic formula



wherein R can be selected from radicals consisting of N-lower alkyl carbamoyl, N-phenyl carbamoyl, N-halogenated phenyl carbamoyl, benzoyl, acetyl, pyranyl and mixtures thereof.

3,795,741

MARINE ANTIFOULANT COMPOSITIONS EMPLOYING CERTAIN ORGANOTIN COMPOUNDS

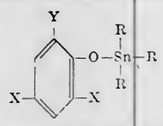
Pasquale Paul Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of application Ser. No. 3,233, Jan. 15, 1970, which is a continuation-in-part of application Ser. No. 708,782, Feb. 28, 1968, both now abandoned. This application Mar. 6, 1972, Ser. No. 232,194

Int. Cl. A01n *9/00*

U.S. Cl. 424—288 **14 Claims**

Marine antifoulant compositions comprise an organic water-resistant film-forming vehicle and an organotin compound that has the structural formula



wherein each R represents an alkyl group having from 4 to 8 carbon atoms or a phenyl group; one of the X substituents represents phenyl or menthyl; the other X substituent represents hydrogen, halogen, nitro, or an alkyl group having from 1 to 4 carbon atoms; and Y represents hydrogen, halogen, or nitro. Particularly satisfactory results have been obtained using an acrylic ester resin as the vehicle and triphenyl (2,4-dichloro-6-phenylphenoxy)tin or triphenyl (2,4-dinitro-6-phenylphenoxy)tin as the antifouling agent.

3,795,742

PHARMACEUTICAL PREPARATIONS

Hannelore Helfer, Basel, Roland Jaques, Allschwil, Basel-Land, and Bernhard Noelpp, Basel, Switzerland, assignors to Ciba-Geigy Corporation

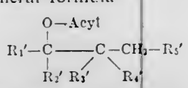
No Drawing. Filed Oct. 6, 1971, Ser. No. 187,199

Claims priority, application Switzerland, Oct. 21, 1970, 15,554/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—311 **15 Claims**

A pharmaceutical preparation which comprises a compound of the general formula



(I)

wherein R_1' denotes an aryl radical, R_2' denotes an aralkyl radical, R_3' denotes the methyl radical and R_4' denotes a hydrogen atom, or R_3' and R_4' together represent a methylene radical and R_5' denotes an aliphatic tertiary amino group, in the free form or in the form of its non-toxic salt in admixture with a 9- or 11-(aminoalkoxy)-9,10-dihydro-9-10-ethanoanthracene or 11-(aminoalkylidene)-9,10-dihydro-9,10-ethanoanthracene or 11- or 9-(aminoalkyl) - 9,10 - dihydro - 9,10-ethanoanthracene or -ethenoanthracene in the free form or in the form of its physiologically tolerable salt, is useful as analgetic.

3,795,743

METHOD OF CONTROLLING MITES USING CHLOROMETHANESULFONAMIDE

Itsuki Okuda, Shimizu, Hiroshi Shinohara and Haruki Ogawa, Ogasa, and Hideo Itoh, Shimizu, Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 13,204, Feb. 20, 1970. This application Mar. 15, 1973, Ser. No. 341,367

Claims priority, application Japan, Feb. 24, 1969, 44/13,772

Int. Cl. A01n *9/16*

U.S. Cl. 424—321 **1 Claim**

A method for controlling mites by applying a miticidally effective amount of chloromethanesulfonamide to an area to be protected from mites.

3,795,744

FLAVOR VARIABLE CHEWING GUM AND METHODS OF PREPARING THE SAME

Koichi Ogawa and Hajime Kakuta, Tokyo, Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

No Drawing. Filed June 25, 1971, Ser. No. 156,998

Claims priority, application Japan, Oct. 21, 1970, 45/92,148

Int. Cl. A23g *3/30*

U.S. Cl. 426—3 **7 Claims**

A chewing gum product having a variable flavor containing different seasonings including different spices in their conventionally available form together with seasonings which have been coated, encapsulated or combined with high molecular compounds such as polyvinyl esters.

3,795,745

PREPARATION OF WORT FOR MAKING BEER

Mortimer Wilkes Brenner, Scarsdale, N.Y., assignor to Schwarz Services International Limited, Mount Vernon, N.Y.

No Drawing. Filed Mar. 22, 1971, Ser. No. 127,037

Int. Cl. C12c *7/00*

U.S. Cl. 426—29 **15 Claims**

There are disclosed processes and compositions for the making of a wort for brewing or for cereal type foodstuffs, comprising the use of a discrete proteolytic enzyme in combination with an enzymically rich unmalted cereal grain, such as barley, to release latent enzymes in the grain. In making a brewers' wort the process and composition permits the use of only 5% to 35% malt for a wort from which a satisfactory beer may be made. The use of sodium metabisulfite as an activator for the protease is also disclosed.

3,795,746

SWEETENING COMPOSITION

Richard W. Walton, Langhorne, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 741,340, July 1, 1968. This application Aug. 27, 1971, Ser. No. 175,737

Int. Cl. A23l *1/26*

U.S. Cl. 426—96 **10 Claims**

A sweetening composition is prepared by intermixing an agglomerated sweetening agent with a liquid solution or suspension of an artificial sweetening agent and drying the resulting mixture.

3,795,747

ALCOHOL-CONTAINING POWDER

William A. Mitchell, Lincoln Park, N.J., and William C. Seidel, Monsey, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,272

Int. Cl. C12g *3/00*

U.S. Cl. 426—192 **4 Claims**

Flowable powders having up to 60% ethyl alcohol content are prepared by the sorption of the alcohol with bulked, low dextrose equivalent dextrins. The resulting products are stable when hermetically packaged and are particularly qualified as alcoholic beverage forming compositions and flavoring materials.

3,795,748

METHOD OF MANUFACTURING LIQUID-FILLED CHOCOLATE CANDIES

Lorenzo Cillario, Turin, Italy, assignor to Karlschloss Anstalt, Vaduz, Liechtenstein

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,853

Claims priority, application Egypt, Sept. 8, 1971, 397/71

Int. Cl. A23g *3/00*

U.S. Cl. 426—282 **5 Claims**

Manufacture of liquid-filled chocolate candies with sugar crust by filling chocolate shells with supersaturated aqueous sugar solution, closing the shells and crystallizing excess sugar from the solution on the inner surface of the chocolate casing. Compactness of the crust is improved by filling into the shells the said solution at a low temperature of at least 0° C., at which the mobility of sugar molecules is substantially blocked, and allowing the temperature of the filing in the casing to rise to above 0° C. thereby to progressively release sugar molecules to form crystallization nuclei adjacent the inner surface of the casing.

3,795,749

PACKAGING LETTUCE IN CARBON DIOXIDE PERMEABLE FILM

Alfred S. Cummin, Westfield, Henryk Daun, New Brunswick, and Seymour G. Gilbert and Yair Henig, Piscataway, N.J., assignors to Borden, Inc., Columbus, Ohio

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,238

Int. Cl. B65b *25/04*

U.S. Cl. 426—316 **5 Claims**

The storage temperature of lettuce can be increased and the period of time the lettuce remains fresh can be extended if the lettuce is packaged in a film which is at least three times as permeable to carbon dioxide as to oxygen, and has an oxygen permeability of at least 2,000, and a carbon dioxide permeability of at least 10,000.

3,795,750

METHOD OF SIMULTANEOUSLY DEFATTING, DEHYDRATING, AND ELIMINATING BACTERIA FROM FOODSTUFFS

Irving E. Levine, Mill Valley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 337,238, Mar. 1, 1973, which is a continuation of applications Ser. No. 65,695, Aug. 20, 1970, and Ser. No. 238,601, Mar. 27, 1972, said Ser. No. 238,601 being a continuation-in-part of application Ser. No. 163,532, July 8, 1971, which in turn is a continuation-in-part of application Ser. No. 65,695, Aug. 20, 1970, all now abandoned. This application Mar. 2, 1973, Ser. No. 337,519

Int. Cl. A22c *18/00;* **A23b** *1/00, 1/04*

U.S. Cl. 426—332 **2 Claims**

Sterilization is accomplished by contacting microorganisms with methoxymethane. Foodstuffs are also defatted and/or dehydrated by solvent extraction with methoxymethane, or dimethyl ether, as it is also called.

3,795,751

FOOD PRODUCT AND METHOD OF MAKING SAME

Howard J. Dunn, Lomita, Marvin Paul Farr, San Pedro, and Otto Schleusner, Wilmington, Calif., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation-in-part of application Ser. No. 767,705, Oct. 15, 1968. This application Sept. 14, 1970, Ser. No. 72,081

Int. Cl. A23l *1/28*

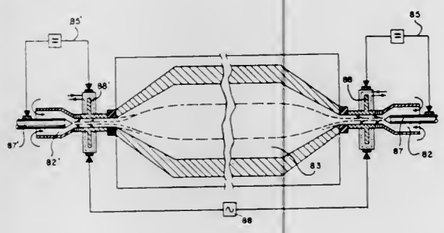
U.S. Cl. 426—221 **15 Claims**

Cooker juice produced by the cooking of fish and, or presswater produced by the pressing of cooked whole fish or cooked fish offal are treated so that a substantially unhydrolyzed defatted fish solubles product is obtained such that the fat content is approximately 1% on a dry weight basis. This product may be used as a flavoring material. In addition, the pH of the defatted fish solubles may be controlled to within the range of 6.0 to 9.0, and the material heated and agitated at a predetermined temperature for a period of time. During the heating and agitation, the volatile amines and additional moisture are being removed from the product. At the same time, a browning reaction occurs, the fishy flavor and odor disappears, and a meat-like flavor forms in the product. If desired, a reducing sugar, such as glucose, is added to the fish solubles prior to heating to enhance the meat-like flavor.

3,795,752
ELECTRIC FURNACE

Pierre Verhoeven, Bruxelles; Jean A. F. Sunnen, Waterloo, and Henry R. P. J. Schoumaker, Bruxelles, all of Belgium, assignors to La Soudure Electrique Aatogene, Procedes Arcos, Anderlecht, Belgium

Division of Ser. No. 279,865, Aug. 11, 1972. This application Apr. 25, 1973, Ser. No. 354,364
Int. Cl. F27b *7/00*; H05b *7/18*
U.S. Cl. 13—1 2 Claims

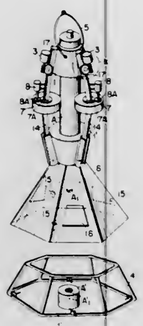


In an electric furnace having an electric contact there are provided inner and outer metallic members carrying electricity, the inner intended to act as an axle or hub for the outer, and one of which is moving and the other stationary. Connecting them together and conducting electricity is a content of molten metal or alloy, typically mercury, an alkali metal or the like. The heat development is carried off by artificial cooling by conducting a liquid or gas through cooling passages.

3,795,753
ELECTRODE CONNECTING DEVICE FOR FURNACE

Masahiro Mori; Atsuhiko Noda, both of Tokyo, and Shigeo Tokunaga, Nagoya, all of Japan, assignors to Daido Seiko Kabushiki Kaisha, Aichi-ken, Japan

Filed Feb. 9, 1973, Ser. No. 331,049
Claims priority, application Japan, Feb. 10, 1972, 47-13944
Int. Cl. H05b *7/14*
U.S. Cl. 13—18 4 Claims

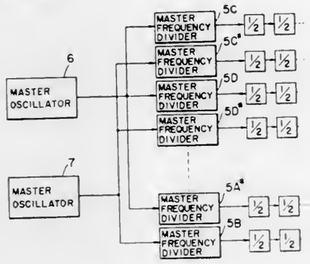


An electrode connecting device for furnaces comprises an upper guide for supporting rods, a lower guide for supporting rods, a plurality of outwardly curved supporting rods connected between said upper and lower guides, driving means each mounted on one end of each of said supporting rods for pulling the respective rods, and wheels each rotatably mounted on the center of each of said supporting rods.

3,795,754
ELECTRONIC MUSICAL INSTRUMENTS WITH TWO MASTER OSCILLATORS

Yasunori Mochida, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Mar. 1, 1972, Ser. No. 230,588
Claims priority, application Japan, Mar. 6, 1971, 46-14335
Int. Cl. G10h *5/06*
U.S. Cl. 84—1.01 3 Claims

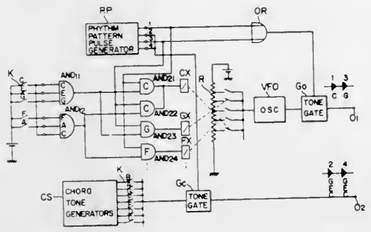


A tone-generator for electronic musical instruments comprising first and second master oscillators of different oscillation frequencies by a semi-tone and 12 master frequency dividers respectively corresponding to 12 notes in an octave, the output of the first master oscillator being applied to first six of the master frequency dividers respectively having frequency dividing ratios to produce every other note along the chromatic scale in an octave, and the output of the second master oscillator being applied to second six of the master frequency dividers respectively having frequency dividing ratios to produce remainder of the notes in the octave.

3,795,755
AUTOMATIC ACCOMPANIMENT DEVICE OF AN ELECTRONIC MUSICAL INSTRUMENT

Yasuji Uchiyama, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed June 23, 1972, Ser. No. 265,697
Claims priority, application Japan, June 24, 1971, 46-45973; June 24, 1971, 46-45974; June 24, 1971, 46-45975
Int. Cl. G10f *1/00*
U.S. Cl. 84—1.03 5 Claims

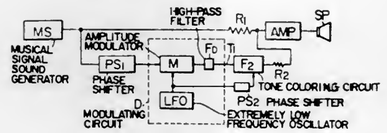


An electronic musical instrument includes an automatic accompaniment device for automatically playing bass tones properly determined for the chords being played. A chord detector tells what chord is now being played. Responsive to the chord detection, a dc voltage generator generates a dc voltage representing the bass tone to be played. The dc voltage is supplied to a voltage controlled variable frequency oscillator which generates a bass tone signal having a frequency determined by the dc voltage. Thus produced bass tone is automatically gated by a tone gate in accordance with a rhythm pattern pulse generated by a rhythm pattern pulse generator.

3,795,756
ELECTRONIC TREMOLO EFFECT PRODUCING DEVICE

Svoichi Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Continuation of Ser. No. 111,449, Feb. 1, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,568
Claims priority, application Japan, Feb. 3, 1970, 45-10387; Feb. 5, 1970, 45-11739
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.22 1 Claim

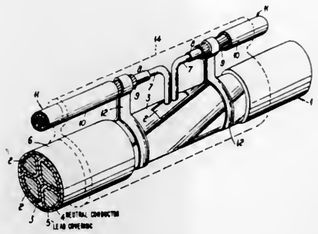


A tremolo effect producing device, wherein a frequency deviated musical sound signal the frequency of which is shifted higher or lower by as much as an extremely low frequency signal, is tone-colored differently from the tone color of the original signal, and the frequency deviated musical sound signal thus tone-colored and an original musical sound signal are mixed at a predetermined level. The resultant mixed signal presents a repeated change in tone color, which results in a so-called tone color tremolo. A tone coloring circuit for the frequency deviated musical sound signal expediently comprises a filter circuit acting as a filter the value of which changes in response to the level of an extremely low frequency signal applied at a control terminal of the filter circuit.

3,795,757
DISTRIBUTION CABLE WITH PERMANENTLY CONNECTED BRANCH CABLES AND METHOD OF EFFECTING SAID CONNECTIONS

Peter Higgins, Hounslow, England, assignor to British Insulated Gallender's Cables Limited, London, England

Filed Oct. 2, 1972, Ser. No. 294,077
Int. Cl. H01r *3/02*, *43/00*
U.S. Cl. 174—72 R 11 Claims

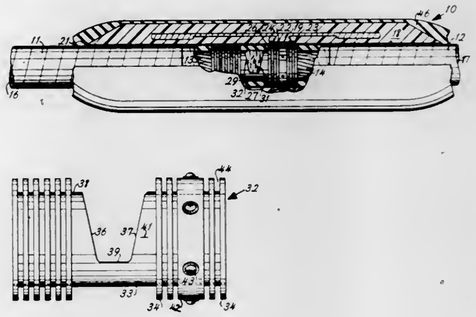


An electrical distribution cable comprises a neutral conductor and a number of insulated power conductors all helically laid up together and having branch cables permanently connected to it at spaced locations along its length before it is installed. Each of the branch cables comprises at least one insulated power conductor which is connected to a power conductor of the distribution cable and a neutral conductor, in the form of an outer concentric conductor which is connected to the neutral conductor of the distribution cable by a metal strip wrapped around the outer concentric conductor of the branch cable and the assembly of cores of the distribution cable and permanently secured to the outer concentric conductor of the branch cable and to the neutral conductor of the distribution cable.

3,795,758
HIGH VOLTAGE CABLE JOINT AND HEAT SINK SLEEVE FOR USE THEREIN

Joseph B. O'Mara, New York, N.Y., assignor to The Anaconda Company, New York, N.Y.

Filed June 8, 1973, Ser. No. 368,395
Int. Cl. H02g *15/24*
U.S. Cl. 174—73 R 8 Claims

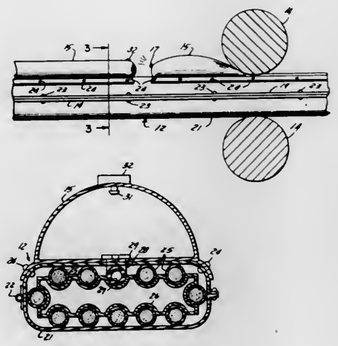


In a joint in high-voltage cables with aluminum conductors a finned sleeve serves as a heat sink for butt welding the conductors and becomes permanently welded to them. The sleeve has a radial projection that makes electrical contact with an electrostatic shield embedded in a thick-walled dielectric cylinder surrounding the weldment.

3,795,759
BUOYANT ELECTRICAL CABLE

William A. Rhyne, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1970, Ser. No. 78,606
Int. Cl. H01b *7/12*
U.S. Cl. 174—101.5 8 Claims

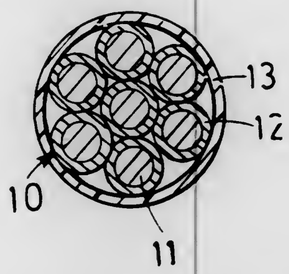


An improved electrical conductor of the buoyant type is herein disclosed. An electrical conductor, or a plurality thereof, is supported in a flat casing co-extensive therewith by a shaped loom. A plurality of inflatable buoyancy devices are supported along one surface of said casing to support said casing on the surface of a body of water. Means are disclosed for inflation of said buoyant means individually as well as collectively.

3,795,760
ELECTRICAL CABLES

Peter Michael Raw, London, and Rodway Albert Robbins, Ickenham, both of England, assignors to British Insulated Gallender's Cables Limited, London, England

Continuation-in-part of Ser. No. 124,058, March 15, 1971, abandoned. This application Feb. 14, 1973, Ser. No. 332,382
Claims priority, application Great Britain, Mar. 16, 1970, 12509/70
Int. Cl. H01b *1/02, 11/02*
U.S. Cl. 174—128 9 Claims

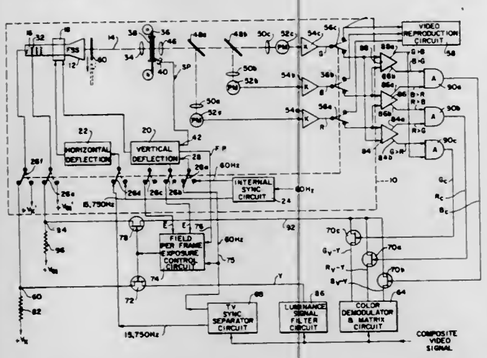


A single wire cable conductor consists of an inner part (constituting the major proportion of the cross-sectional area of the conductor) of an aluminium alloy of the kind known as "non-heat-treatable" and having a tensile strength within a range from 155 to 463 MN/m²(10–30 tonf/in²) and an electrical conductivity within the range 26.5% to 44.2% IACS, and, bonded to the inner part, an outer part (constituting the minor proportion of the cross-sectional area of the conductor) of copper or a high conductivity copper alloy and having an electrical conductivity of at least 80% IACS. The single wire conductor may constitute the wire or one of the wires of a single or multiple wire conductor of an electric cable, such as a wiring cable, an aircraft cable or a telecommunication cable.

3,795,761
COLOR VIDEO FILM RECORDING WITH SEGMENTED COLOR FILTER

Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 3, 1972, Ser. No. 268,294
Int. Cl. H04n *9/00, 5/84*
U.S. Cl. 178—5.2 D 8 Claims

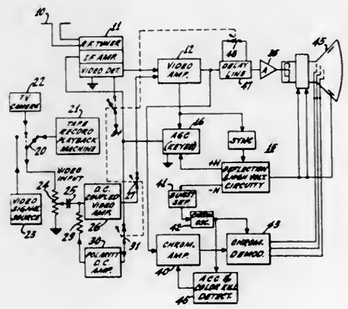


Method and apparatus for recording video information derived from composite video field signals including horizontal and vertical synchronizing and blanking signals, luminance signals, and red, blue and green chrominance signals as color pictorial information in frames on photosensitive motion picture film advanced through a film scanning zone. A flying spot scanner responds to the luminance signal and the horizontal and vertical deflection and blanking signals to generate a scanning beam of white light comprising the red, blue and green colors of light and to direct the beam along a predetermined path to expose the motion picture film in the film scanning zone. An optical filter disposed in the predetermined path comprises a repetitive pattern of successive red, blue and green color stripe filters to impart color to the scanning beam. Optical-to-electrical signal transducer circuits respond to the red, blue and green color of light transmitted by the respective red, blue and green stripe filters for producing corresponding red, blue and green color control signals, and first, second and third respective switches respond to the respective color control signals for applying the red, blue and green chrominance colors in the video information to a grid of the flying spot scanner to control the instantaneous intensity of the beam of light as a function of the instantaneous intensity of the corresponding chrominance signal.

3,795,762
PLURAL OPERATING MODE TELEVISION RECEIVERS

Donald Henry Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 832,291, June 11, 1969, abandoned. This application Jan. 17, 1972, Ser. No. 218,109
Int. Cl. H04n *9/00, 5/44*
U.S. Cl. 178—5.4 R 7 Claims



A television receiver is disclosed which is capable of operating in any one of a plurality of modes.

The receiver has circuitry enabling it to respond to a conventional radio frequency transmission in one mode. An external monitor mode is available by disabling the receiver's front end processing circuitry and switching an input terminal of the receiver's video amplifier to an output terminal of an external amplifier, whose bias is controlled by the receiver's own keyed AGC circuit. The external biased controlled amplifier injects a signal into the receiver's video amplifier of a magnitude comparable to the magnitude of a signal appearing in the video amplifier during a radio frequency transmission mode, enabling the receiver circuitry to perform substantially similar.

The external amplifier includes peaking circuitry for enabling the receiver to respond to externally injected composite color signals.

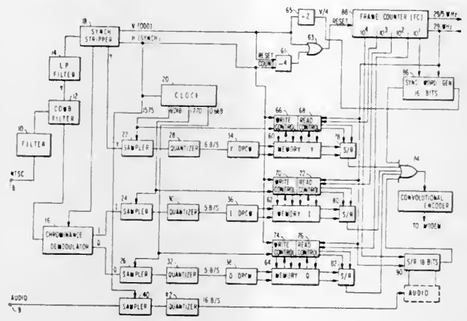
The external monitor mode further includes provisions for changing the filter bandpass in the horizontal phase control loop to enable the receiver to follow taped horizontal sync.

A recording amplifier circuit is provided to enable the user to record on suitable apparatus, a composite signal available in the receiver during an RF transmission, for later playback through the receiver in the monitor mode.

3,795,763
DIGITAL TELEVISION TRANSMISSION SYSTEM

Leonard S. Golding, Rockville; Ronald K. Garlow, Damascus; Marvin D. Ginsberg, Baltimore; Wilfred G. Maillet, Oxon Hill, all of Md.; Pradman P. Kaul, Wshington, D.C.; Melville L. Heiges, Jr., Rockville, Md.; Bruce J. Merrihew, District Heights, Md., and Henry F. Mueller, Wheaton, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Apr. 18, 1972, Ser. No. 245,129
Int. Cl. H04n *7/12, 9/02*
U.S. Cl. 178—5.6 6 Claims

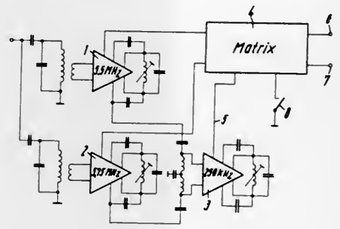


A digital television transmission system for transmitting television signals at substantially reduced bit rate and bandwidth. Frequency interleaving techniques reduce the sampling rate,and digital differential PCM with edge recoding techniques reduce the number of bits per sample. Further, reduction in bit rate is accomplished by eliminating approximately half the chrominance data and all the sync pulses from the transmitted signal. Periodic sync words are transmitted to allow reconstruction of the sync pulse format at the receiver. All transmitted bits are multiplexed in accordance with a particular format which provides proper alignment of the luminance and chrominance lines at the receiver.

3,795,764
TELEVISION RECEIVER WITH AN AUDIO SECTION CONSTRUCTED TO AUTOMATICALLY RECEIVE TWO CHANNEL AND STEREOPHONIC SIGNALS

Albrecht Altmann, Sibbesse, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Sept. 13, 1972, Ser. No. 288,787
Claims priority, application Germany, Sept. 14, 1971, 2145803
Int. Cl. H04n *5/60*
U.S. Cl. 178—5.8 R 7 Claims

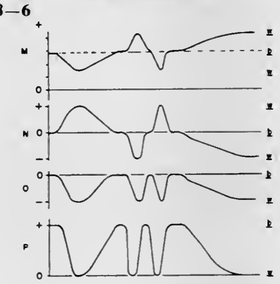


A first audio channel is generated at a predetermined frequency; a second audio channel is generated at a first frequency which is the predetermined frequency plus a first odd multiple of half the line frequency of the television signal; a second audio channel is generated at a second frequency which is the predetermined frequency plus a second odd multiple of half of the line frequency, the difference between the first and second frequency being summed with respect to the predetermined frequency; in the receiver the predetermined frequency and the mean between the first and second frequencies are discriminated and decoded in a third discriminator tuned to the difference frequency between the predetermined frequency and substantially the mean between the first and second frequencies, and a characteristic voltage is derived from the third discriminator representative of whether the first or second, or first or third frequencies are received by the receiver to energize audio circuits accordingly.

3,795,765
ALTERNATE ANALOG ENCODING METHOD AND APPARATUS

Paul H. DeGroat, Webster; Allan J. Bell, Fairport, both of N.Y., and King Y. Cheng, Tustin, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1971, Ser. No. 213,697
Int. Cl. H04b *1/66*
U.S. Cl. 178—6 7 Claims

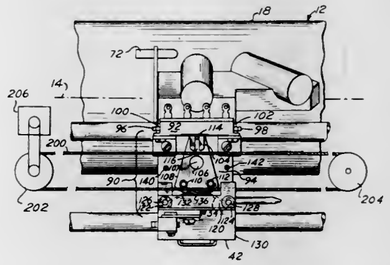


This invention relates to an analog encoding method, whereby the polarity of a train of video signal waves are alternated to compress the bandwidth of the video signals before transmission, and to an alternate analog encoding apparatus which includes means for alternating the polarity of a train of black and white threshold level video signals to compress the bandwidth of the video signals, and means for transmitting the compressed black, white, and gray video signals in an analog form. This invention also relates to an alternate analog decoding apparatus which decodes and recovers the white, black, and gray video signals.

3,795,766
MODE SELECTION AND CARRIAGE CLUTCHING ASSEMBLY FOR FACSIMILE

Jan M. Farlow, Fort Wayne, Ind., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 29, 1972, Ser. No. 319,340
Int. Cl. H04n *1/14*
U.S. Cl. 178—6.6 R 7 Claims



Mode selection and belt-clutching device for a carriage assembly for use in a drum-type facsimile machine. The drum is

rotatably mounted in the facsimile machine and is adapted to receive and carry a sheet of paper wrapped around an outer surface of the drum. A carriage is mounted for movement along the drum parallel to the axis of rotation of the drum. A print transducer and a scan transducer are mounted on the carriage for printing or scanning the sheet. An endless belt is arranged to move parallel to the axis of rotation in order to transport the carriage. The facsimile device can operate in a send mode in which information on the sheet is transmitted to a remote location, a receive mode in which an image is produced on the sheet in accordance with information received from a remote location, and a neutral mode used during loading or unloading of the sheet when the drum remains stationary. These operating modes are determined by the position of a mode selection switch. A rotatable actuator plate mounted on the carriage bears two clutching pins that engage or disengage the belt and a third pin which simultaneously operates the mode selection switch so that the carriage is transported along the drum at appropriate times.

3,795,767

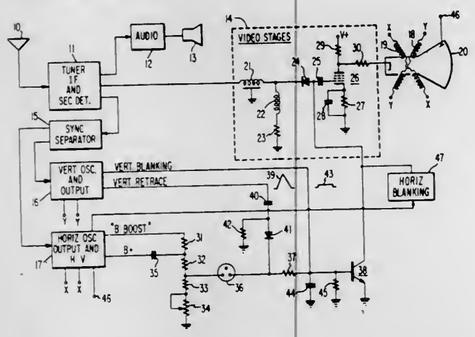
HIGH VOLTAGE PROTECTION CIRCUIT

Ronald Keith Waltner, and Marvin Neil Norman, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 25, 1972, Ser. No. 283,730

Int. Cl. H04n *5/44*

U.S. Cl. 178—7.5 R **4 Claims**



A high voltage protection circuit for a television receiver for sensing increases in the kinescope ultor voltage above a predetermined level and for blanking the video signals applied to the kinescope during the time the ultor voltage exceeds the predetermined level. Automatic resetting of the video blanking circuit is accomplished during the television retrace intervals to restore displayed video when the ultor voltage drops below the predetermined level.

3,795,768

HOLOGRAPHIC IMAGE SCANNER/RECORDER SYSTEM

John William Locke, Don Mills, Ontario, Canada, assignor to Communication Satellite Corporation, Washington, D.C.

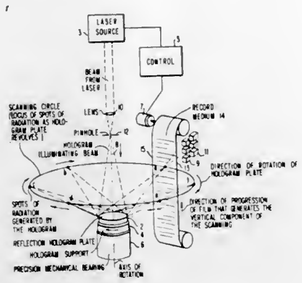
Filed Dec. 15, 1971, Ser. No. 208,302

Int. Cl. H04n *1/22*

U.S. Cl. 178—7.6 **15 Claims**

A holographic image recording and scanning system using a rotating reflection hologram to produce rotating reconstructed image spots. Recording is accomplished by securing a record medium about the circular path traveled by the reconstructed image spots and varying the intensity of the illuminating beam. To record color images, both the intensity and spectral content of the illuminating beam are varied with time. To provide registration between the reconstructed image spots rotating in a scanning circle and the images on the record medium, the medium is curved to correspond to the circumference of the scanning circle.

Image reproduction is accomplished by situating a record medium containing prerecorded images in registration with the scanning circle and scanning the medium with reconstructed image spots. Variations in the intensity of the beam transmitted through the record medium when the medium is



transparent, or reflected from the medium when it is opaque, are detected by suitable photodetector means. When color images are to be detected, the variations in both the intensity and spectral content of either the transmitted light or the reflected light are detected.

3,795,769

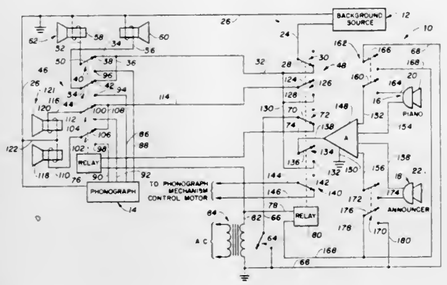
SWITCHING SYSTEM FOR PLURALITY OF AUDIO INPUT

Durval F. Nowka, Wrightwood, and William J. May, San Bernardino, both of Calif., assignors to Tex-Row Music, Inc., San Bernadino, Calif.

Filed Sept. 23, 1970, Ser. No. 74,579

Int. Cl. H04r *27/00*

U.S. Cl. 179—1 SW **11 Claims**



Through an electrical switching circuit, electrical signals are transmitted from a source of background sound to a first speaker system. Upon activation of a phonograph, a first relay is activated causing operation of the switching circuit resulting in non-transmission of the background sound and transmission of the phonograph sound to the first speaker system and a second speaker system. A third and fourth source of sound capable of producing electrical signals, when caused to be transmitted through the switching circuit, causes activation of a second relay and deactivation of the first relay. This results in transmission of only the third or fourth source of sound to both the first and second speaker systems. The fourth source of sound is capable of overriding the third source of sound.

3,795,770

ACOUSTICAL FILTRATION METHOD AND APPARATUS FOR OBTAINING INSTRUMENTAL TONES

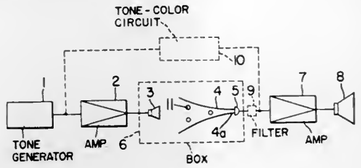
Hirukazu Kato, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Aug. 30, 1971, Ser. No. 176,102

Claims priority, application Japan, Aug. 28, 1970, 45-75365

Int. Cl. G10h *1/02*

U.S. Cl. 179—1 J **9 Claims**



Electrical signals containing a large number of high-frequency components from a tone generator are amplified and converted by a small loudspeaker into audible-tones, which are led through an acoustical horn disposed in an enclosure, said accoustical horn having a multiplex-resonance characteristic to a microphone at the throat of the horn thereby to be converted again into electrical signals, which are amplified and finally converted by a second loudspeaker into audible tones.

3,795,771

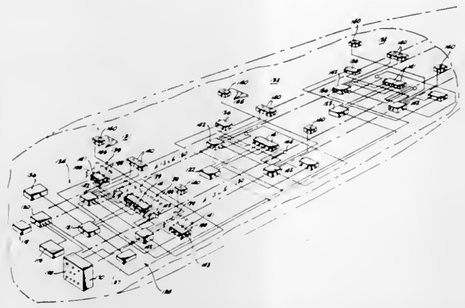
PASSENGER ENTERTAINMENT/PASSENGER SERVICE AND SELF-TEST SYSTEM

James L. Gundersen, Carson; Richard L. Julian, Pacific Palisades; Thomas J. Kosco, Harbor City; Dan E. Lewis, Culver City, and Richard E. Sklar, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 15, 1970, Ser. No. 37,832

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 A **12 Claims**



A time multiplexed passenger entertainment and service combined system suitable for distribution throughout compartments of super airplanes. Common power supplies, cabling, and boxes, and hybrid microelectronics and/or medium or large scale MOSFET integrated circuit chips are employed. A main multiplexer receives passenger address or tape deck analog signals and converts them to a pulse code modulated digital bit stream which is time shared between channels. A coaxial cable transmits the bit stream to compartment submultiplexers. Each submultiplexer receives the digital bit stream, optionally inserts into the bit stream bits representing analog-to-digital converted movie audio or compartment introduced passenger address and distributes the data stream along four columns of seat group units on individual column coaxial cables. At each seat group unit a demultiplexer of a seat group demultiplexer/encoder converts the bit stream into the original analog signals, amplifiers the analog signals and drives individual seat transducers for passenger listening. A passenger control unit provides channel and volume level selection. The passenger service system provides control functions comprising reading light, stewardess call (aisle and control panel lights and chimes). The service system comprises a section timer/decoder to generate binary logic pulses which are transmitted by cable sequentially down and up the seat columns from seat group unit to seat group unit. A similar cable connects the corresponding overhead unit containing the reading lights, etc. to the section timer/decoder. The seat encoder of each seat group demultiplexer/encoder receives digital interrogating signals, processes them relative to switch positions determined by the passenger and sends out results to the section timer/decoder. The overhead decoder of each seat group receives the retransmitted digital signals from the section timer/decoder and performs switching functions conforming to seat encoder commands. The system incorporates a self-test subsystem comprising a test signal generator and circuits operating in conjunction with the entertainment and service system circuits.

3,795,772

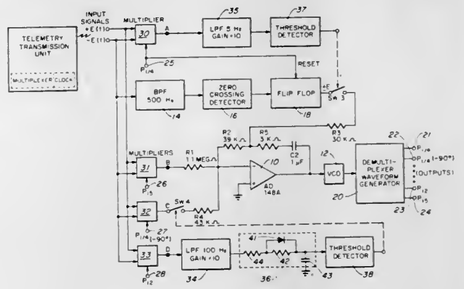
SYNCHRONIZATION SYSTEM FOR PULSE ORTHOGONAL MULTIPLEXING SYSTEMS

Eugene R. Hill, Thousand Oaks, and Harlan H. Mansnerus, Newbury Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 1, 1972, Ser. No. 249,337

Int. Cl. H04j *7/00*

U.S. Cl. 179—15 BS **3 Claims**



A synchronization system having a plurality of control loops operative together to optimize the rate of frequency acquisition and synchronization. A first loop acquires the frequency of the unknown signal. A coarse phase-lock loop then adjusts the system to provide a phase-error signal. A fine phase-lock loop then makes the final adjustments to the system. As each step in the synchronization sequence is achieved, the circuitry which is no longer needed is switched out of operation.

3,795,773

CIRCUIT ARRANGEMENT FOR CENTRALLY CONTROLLED TELEPHONE EXCHANGE INSTALLATIONS HAVING COMMON MEMORY FACILITIES

Justus Konig, Munich; Josef Rohrig, Oberhaching, and Gunther Seidl, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 14, 1971, Ser. No. 189,091

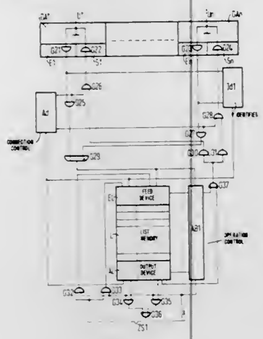
Claims priority, application Germany, Nov. 11, 1970, 2055535

Int. Cl. H04q *3/54*

U.S. Cl. 179—18 ES **4 Claims**

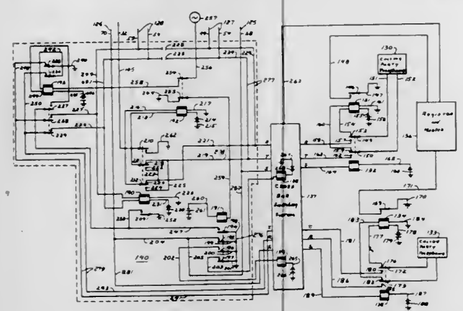
A telephone exchange, centrally controlled by data processing techniques is described. Individual apparatus, such

as engagement devices connecting units, dial receivers and the like, are grouped into operating areas. Each operating area has associated with it an operating area control means, including buffer memory and code transformer, which connect the operating areas with a central control unit. A common memory means is interposed between the central control and the operating area controls, and the common memory scans the operating area controls in succession.



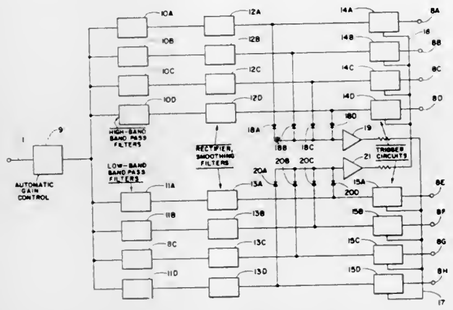
The common memory receives and stores information and the appropriate addresses from the operating data controls. This data is grouped for transmission in multiples to the central control. The common memory, likewise, receives and stores information and addresses from the central control and transmits same to the operating area controls. Data transmission apparatus is provided for transmitting the foregoing data to other central controls alternately with the data transmissions to the common memory.

3,795,774
TELEPHONE COMMUNICATION SYSTEM WITH AUXILIARY UNIT FOR CALL TRACING
Earl J. Talbot, 930 S. Atlantic Ave., Cocoa Beach, Fla. 32931
Filed Dec. 9, 1971, Ser. No. 206,278
Int. Cl. H04m *3/42*
U.S. Cl. 179—18 FH **26 Claims**



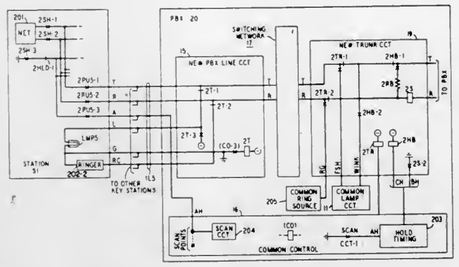
A telephone communication system has an alarm system that includes an auxiliary unit for locking up the central office equipment involved in a completed telephone call and which is actuatable by the called party by dialing a predetermined number while the communication circuits are complete. A switch responsive to the relay in the called party's energized circuit is used in sensing pulse signals emanating from the called party telephone to actuate the alarm system and a tone signal responsive relay may also be used. The line locking unit has a self locking relay and appropriately responsive switches that complete circuits for maintaining the sleeve circuits of the parties and other circuits which short out the ring and tip lines of each party to prevent equipment release due to opening of the telephone hook switches. The alarm system contemplates a monitoring system and which is coupled to the talking circuits when the alarm system is actuated.

3,795,775
DUAL TONE RECEIVER
Michael C. J. Cowpland, Ottawa, Ontario, Canada, assignor to Microsystems International, Limited, Montreal, Quebec, Canada
Filed Dec. 7, 1972, Ser. No. 313,106
Claims priority, application Canada, Oct. 16, 1972, 153991
Int. Cl. H04m *1/50;* **H04q** *9/12*
U.S. Cl. 179—84 VF **14 Claims**



A dual tone receiver which provides a pair of individual output signals corresponding to the input signal frequencies of each of the received tones. The sensitivity of the receiver to each of the tones is affected by the relative amplitudes of each of the tone components of the input signal, in an inverse relationship.

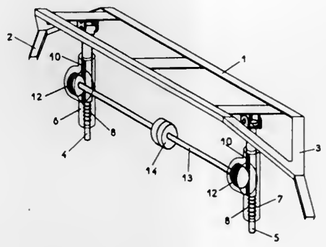
3,795,776
COMBINED PBX AND KEY TELEPHONE ARRANGEMENT
Alexander Feiner, Rumson, and Allan Martyn Gerrish, Little Silver, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 23, 1972, Ser. No. 282,921
Int. Cl. H04m *3/02*
U.S. Cl. 179—99 **17 Claims**



In key telephone arrangements it is standard procedure to provide a key telephone line circuit as a buffer between the private branch exchange (PBX) and the stations. The purpose of the circuit is to forward ringing signals, to generate lamp signals, and to provide the hold function for the associated station. By arranging each PBX trunk with a hold bridge and with a lamp signal generator and distributor, the key telephone line circuit has been eliminated. The lamp flash rate indicative of a calling connection and the lamp wink rate associated with a

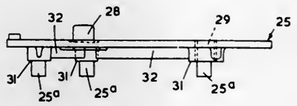
connection on hold are generated on the trunk side of the PBX switching network and transmitted through the network to the associated station over the audio pair. The PBX switching network controller, in response to signals from a key station, functions to enable the hold bridge in any trunk circuit associated with that station.

3,795,777
HIGH SPEED CURRENT COLLECTION
Roland Leger, Paris, France, assignor to Faiveley S.A., Saint Ouen, France
Filed May 8, 1972, Ser. No. 250,993
Claims priority, application France, May 10, 1971, 71.16881
Int. Cl. B60l *5/22*
U.S. Cl. 191—66 **10 Claims**



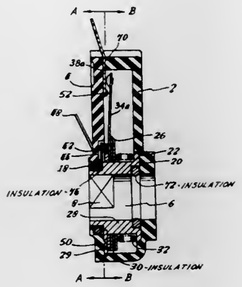
The coupling between a high speed electrically powered vehicle and an overhead catenary wire current distribution system is enhanced by elastic coupling means which parallels and thus provides for uniformity of movement of oppositely disposed ends of a support portion of a pantograph-bow collector linkage system when the inclination of the system to the horizontal exceeds a predetermined limit.

3,795,778
IGNITION DISTRIBUTOR WITH CONTACT BREAKER ASSEMBLY MOUNTING PLATE
Alfred Rees, Birmingham, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England
Filed Jan. 15, 1973, Ser. No. 323,382
Claims priority, application Great Britain, Jan. 15, 1972, 2011/72
Int. Cl. H01h *19/62*
U.S. Cl. 200—19 R **2 Claims**



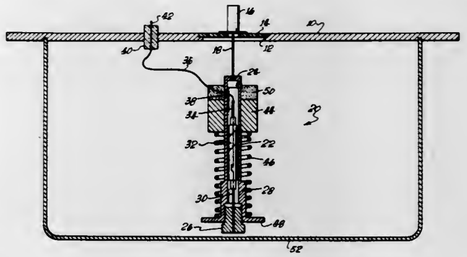
An ignition distributor for an internal combustion engine spark ignition system includes a hollow casing having journalled for rotation therein a cam shaft having a cam portion. Secured within the casing is a contact breaker assembly mounting plate, the mounting plate being spaced from the level of the cam portion of the cam shaft. Mounted on the mounting plate is a spacer member, and secured to the mounting plate by way of the spacer member is a contact breaker assembly. The dimensions of the spacer assembly are such that a cam follower of the contact breaker assembly is aligned with, and engageable with the cam portion of the cam shaft.

3,795,779
STEERING SHAFT, GEAR SHIFT LEVER SWITCH ASSEMBLY
Gordon Grieves, Newcastle upon Tyne, and Raymond Holmes, Durham, both of England, assignors to Burgess Micro Switch Company, Limited, Durham, England
Filed Apr. 19, 1972, Ser. No. 245,446
Claims priority, application Great Britain, Apr. 19, 1972, 10000/72
Int. Cl. H01h *21/76*
U.S. Cl. 200—61.88 **8 Claims**



A rotary switch arrangement may be associated with an automatic gear selector mechanism to inhibit operation of the engine starting circuit at certain positions of the mechanism and at other positions to operate reversing lights and a seat belt warning system. The switch arrangement comprises a plurality of rotary members urged axially towards fixed contact elements and having radial arms carrying contact buttons on their outer ends to engage said elements. The arms bear on a raised arcuate track when the contact buttons are out of registration with the contact elements, to hold the buttons in an air gap then.

3,795,780
ACCELERATION SENSOR WITH MAGNETIC OPERATED, OSCILLATING REED SWITCH
George S. Lawrie, Thornhill, Ontario, Canada, assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Aug. 11, 1972, Ser. No. 280,004
Int. Cl. H01h *35/02*
U.S. Cl. 200—61.45 R **10 Claims**



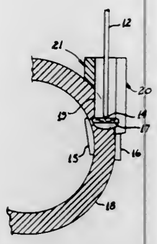
A magnetized seismic mass is annular in form, disposed around an elongated hollow tubular body which encloses a magnetic switch. A helical coil spring disposed around the body biases the mass toward one end of the body which is flexibly suspended from a support by a flexible cable.

3,795,781

PROCESS FOR ELECTROSLAG WELDING OF CIRCUMFERENTIAL JOINTS

William John Coulter, and Brian Anthony Graville, both of Lasalle, Quebec, Canada, assignors to Dominion Bridge Company, Limited, Montreal, Quebec, Canada

Filed Jan. 3, 1973, Ser. No. 320,697
Claims priority, application Canada, Jan. 7, 1972, 131960
Int. Cl. B23k *9/18, 9/12*
U.S. Cl. 219—73 9 Claims



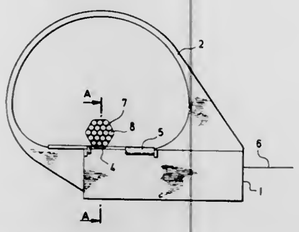
A method is disclosed for electroslag welding a circumferential seam. The method includes feeding a consumable electrode through a vertical stationary consumable nozzle downwardly into the seam to deposit weld metal in a metal melt pool beneath molten slag, rotating the circumferential seam as the weld metal is deposited in the metal melt pool at a speed sufficient to maintain a reasonably constant level in the metal melt pool relative to the axis of rotation of the circumferential seam, and maintaining a reasonable constant distance between the nozzle and the level in the metal melt pool, the improvement which comprises stopping the rotating circumferential seam after one complete rotation, continuing the feeding of the electrode downwardly into the seam through the vertical stationary consumable nozzle so that the level of the metal melt pool rises and consumes the nozzle thus completing a circumferential welded seam.

3,795,782

SUPPORTING WELDING PLATE FOR A BINDING MACHINE FOR BINDING TOGETHER A PLURALITY OF OBJECTS WITH A STEEL TAPE

Ladislav Bursik; Jan Bursik, and Jan Lany, all of Ostrava, Czechoslovakia, assignors to Vitkovicke Zelezarny Klementa Gottwalda, Narodni podnik, Ostrava, Czechoslovakia

Filed Oct. 18, 1972, Ser. No. 298,509
Claims priority, application Czechoslovakia, Oct. 20, 1971, 7338-71
Int. Cl. B23k *11/10*
U.S. Cl. 219—86 4 Claims



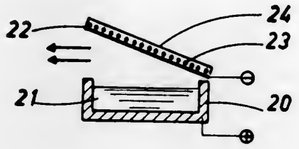
A supporting welding plate for the spot welding of a steel tape binding together a plurality of longitudinal objects, the plate supported on a pivotable lever, thus enabling its lateral removal after finished welding and thus enabling a free manipulation with the formed packet of bound objects without any danger of damaging the formed hoop or the welding plate.

3,795,783

APPARATUS FOR SURFACE COATING ARTICLES

Emile Plumat, Gilly, and Jose Lelong, Fleurus, both of Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

Division of Ser. No. 758,334, Sept. 9, 1968, Pat. No. 3,673,006. This application Dec. 9, 1971, Ser. No. 206,413
Claims priority, application Great Britain, June 26, 1968, 30531/68
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB 14 Claims



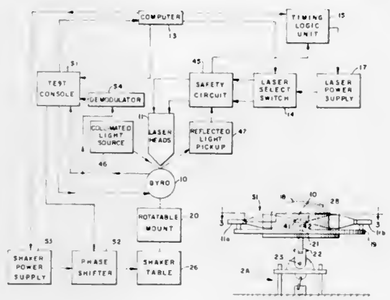
Apparatus for applying a substance vaporizable by electron bombardment to a surface to form a coating thereon. The substance is vaporized in a vacuum by being bombarded with electrons. The vapor, thus formed, travels from where it is formed and is deflected onto such surface to coat the same.

3,795,784

BALANCING SYSTEM FOR A ROTATING MASS

Dean H. Moll, Wayne, and Alan Greiner, Cedar Grove, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Aug. 6, 1971, Ser. No. 169,661
Int. Cl. B23h *27/00*
U.S. Cl. 219—121 L 14 Claims



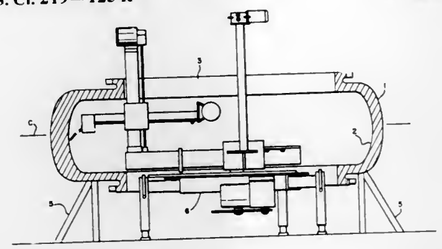
Three different types of unbalance are detected and corrected while a gyroscopic inertial flywheel is continuously spinning. The gyroscope is mounted in an integrated test and correction apparatus comprising an angularly positionable mount supported on a shaker table. The mount supports a test chamber in which the spinning gyroscope is located in a low viscosity, low density atmosphere. Windows are formed in the chamber on opposite sides permitting lasers fixed on the mount to be aimed at the flywheel to burn off selected portions of its mass. A safety system is arranged within the chamber to detect whether the spot at which a given laser beam is aimed has already received a laser burn. Mass unbalance is determined, with the spin axis polar, by rotating the gyroscopic reference axes 90° and recording the drift at two orientations. Radial unbalance is determined by imparting a reciprocating motion along the spin axis by means of the shaker table at the same rate as the rotation of the flywheel. By shifting the phase of the vibratory motion relative to the rotation of the flywheel, a maximum signal proportional to the radial unbalance is sensed by one of the gyro pick-offs. Modulation is determined directly by detecting the amplitude of a modulating signal on the pick-off signal. An automated closed-loop procedure determines the correct pattern of laser burns on the flywheel to minimize the unbalances.

3,795,785

SUCCESSIVE AUTOMATIC DEPOSITION OF GENERALLY HORIZONTAL CONTIGUOUS WELD BEADS UPON NON-PLANAR SURFACES

Edward E. Smith, Upper St. Clair Township, Allegheny City, Pa., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Nov. 17, 1972, Ser. No. 307,745
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R 10 Claims



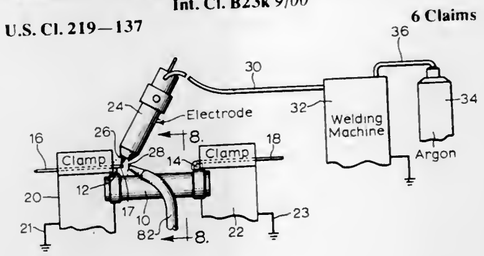
Apparatus and method for automatic arc welding deposition of generally horizontal weld beads upon non-planar surfaces and more specifically upon the interior surface of the housing for a dredge pump, the apparatus including a rotatable, radially extensible horizontal boom mounted on a vertical shaft, weld metal depositing means mounted on an outboard end of the boom, means for rotating and for controlling the boom extension during rotation to automatically regulate conformance of the weld metal depositing means to the interior surface of the housing and means for controlling the rotational speed of the boom so that as the boom extends the speed of movement of the weld metal depositing means relative to the interior surface of the housing remains approximately constant during well bead deposition.

3,795,786

METHOD OF TUNGSTEN INERT GAS WELDING ELECTRONIC COMPONENTS AND BURNING AWAY CONTAMINANTS

Harry Chanowitz, Skokie, Ill., assignor to Pico-Matic, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 115,177, Feb. 16, 1971, abandoned. This application June 5, 1972, Ser. No. 259,841
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 6 Claims



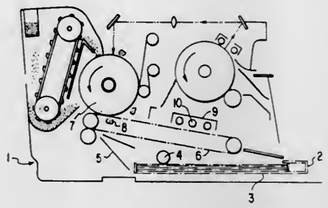
A method and apparatus wherein linear metallic elements such as copper wire leads are welded to workpieces, such as terminal lugs of electrical and electronic components. An electric arc welding method is used to produce an electrical or electronic component with copper wire leads rigidly and reliably attached, without requiring prior cleaning of the terminal lugs of the component. In the welding step a surplus of heat energy greater than that necessary to melt and coalesce the weld material is applied to the welding zone in order to burn away contaminents at the area to be welded.

3,795,787

HEAT FIXING SYSTEM IN AN ELECTROPHOTOGRAPHIC COPYING MACHINE HAVING A TEMPERATURE CONTROL DEVICE

Tadao Nogaito, 2-17-56, Iruma-cho, Chofu-shi, Tokyo; Yasuhiro Fujita, 1-239, Tennuma-cho, Oomiya-shi, Saitama, and Kenichi Watabiki, 245-2, Hiyoshi-cho, Koohoku-ku, Yokohama-shi, Kanagawa, all of Japan

Filed Aug. 18, 1972, Ser. No. 281,926
Claims priority, application Japan, Aug. 19, 1971, 46-73883[U]
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 1 Claim



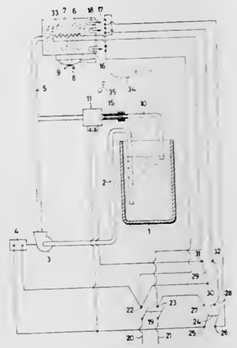
A heat fixing system in an electrophotographic copying machine having a temperature control device, the device comprising means for generating a sensing signal proportional to the average radiant temperature produced by the heat fixing system, means responsive to the sensing signal for generating a control signal comprising a pulse train of variable width, constant period pulses, the width of the pulses being an inverse function of the average radiant temperature, and controllable means responsive to the control signal for regulating the power supplied to the heat fixing system.

3,795,788

MACHINE FOR BREWING HOT BEVERAGES, ADAPTED TO PRODUCE STEAM

Pietro Perucca, Milan, Italy, assignor to Omre Costruzioni Elettromeccaniche S.a.S., Milan, Italy

Filed Mar. 20, 1972, Ser. No. 236,246
Claims priority, application Italy, Mar. 24, 1971, 22190/71
Int. Cl. F22b *1/28*; F24h *1/00*
U.S. Cl. 219—272 6 Claims



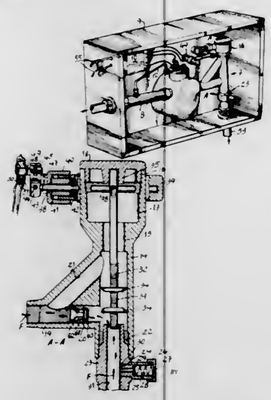
In a coffee machine of the kind having a heat exchanger for producing steam intended to heat beverages not brewed directly by the machine, in which a calibrated passageway allows the flow of a portion of the total rate of flow of water

towards the exchanger, so as to produce steam when the rate of flow through the exchanger is reduced, whereas hot water is produced when said rate of flow is allowed to remain at the normal value. Thermostatic means are provided to govern the temperature in the heat exchanger.

3,795,789
RESIDENTIAL WATER HEATERS

Tulio Malzoni, Av. Cons° Nebias 725, and Manoel Valentino Lopes, Av. Sigueria Compos 575, both of Santos, Brazil

Filed Sept. 21, 1971, Ser. No. 182,433
Int. Cl. H05b *1/02*; **F24h** *1/10*
U.S. Cl. 219—309 **6 Claims**



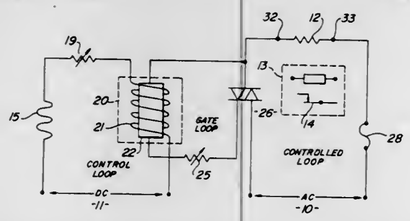
Water from a cold water feed pipe passes through a control valve assembly to a small container which is provided with an electric resistance heater. The control valve assembly has a member which occupies a rest position in the water flow path and is movable to a displaced position outside the flow path to energize the electric heater when water is flowing toward a tap outlet. The displaceable member moves in a vertical tubular body, and its movement is transmitted to a heater-actuating liquid metal switch by a linkage which includes an axially movable rod connected to the displaceable member, a pin which engages the rod, said pin extending from a shaft which is pivoted in and extends outside the tubular body. The liquid metal switch is supported by the shaft outside the chamber.

Return of the displaceable member to its rest position is by gravity and by fluid pressure applied to the displaceable member through a counterflow conduit.

3,795,790
CONTROL CIRCUIT

Willis E. Rieman, Skaneateles, N.Y., assignor to Gulf & Western Systems Company, New York, N.Y.

Continuation-in-part of Ser. No. 212,016, Dec. 27, 1971. This application Aug. 22, 1972, Ser. No. 282,828
Int. Cl. H05b *1/02*
U.S. Cl. 219—490 **10 Claims**

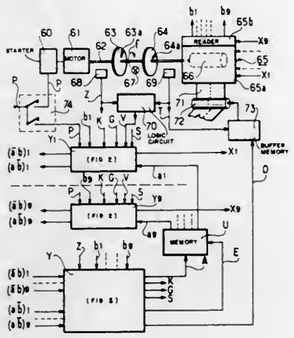


A temperature sensitive responsive loop and a heater element control loop are functionally connected by a gate control loop combining to form a three loop temperature control circuit. The temperature sensitive responsive loop is magnetically coupled to the gate control which is coupled across a gate controlled switching element in the heater control loop.

3,795,791
AUTOMATIC CODE-CORRECTING DEVICE

Marcel-Louis Boyer, Chatillon, France, assignor to Compagnie Industrielle des Telecommunications CIT-ALCATEL, Paris, France

Filed Dec. 14, 1971, Ser. No. 207,907
Claims priority, application France, Dec. 14, 1970, 70.45009
Int. Cl. G06k *1/02*
U.S. Cl. 235—61.1 **6 Claims**

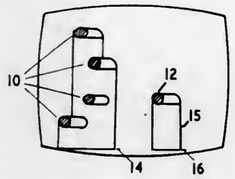


Device for automatically correcting a code, forming an improvement to a device which combines, in a single unit, means for perforating a paper tape which moves step-by-step, and for reading the code which has just been perforated during the preceding step, this improvement consisting of automatically correcting any code which has been erroneously perforated by causing the tape to step back to the location of the error and either correcting the error or voiding and re-perforating the code at a new location.

3,795,792
FEATURE ASSOCIATION IN IMAGE ANALYSIS

John Michael Gibbons, The Grange, and William Ralph Knowies, 40 Flambauls Cir., both of Meldreth, Royston, England

Filed May 8, 1972, Ser. No. 251,495
Claims priority, application Great Britain, May 6, 1971, 13590/71
Int. Cl. G06m *11/04*
U.S. Cl. 235—92 PC **25 Claims**



Methods and apparatus are described by which detected signal pulses arising from features in a field can be associated to thereby generate so-called agglomerates of features, in dependence on the relative spacing of the features in the field. In this way it is possible to link up the detected signal pulse information relating to small features arranged approximately in straight lines.

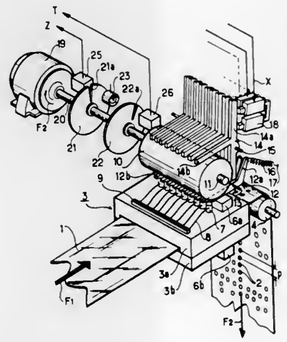
The invention generates capture zones from each feature one extending in the line scan direction and the other generally perpendicular thereto.

The invention envisages the combination therewith of an associated parameter computer whereby information may be obtained relative to a parameter of each detected feature. The information from features within an agglomerate may be suppressed or collated and released as a single information signal relating to the agglomerate. Thus where a count pulse is generated for each feature these may be inhibited from all features within an agglomerate and the latter counted as a single feature. Alternatively where a signal proportional to the area of each feature is generated by the associated parameter computer, these may be combined for features within an agglomerate and a total area signal released for the agglomerate proportional to the total of the individual areas of the features within the agglomerate.

3,795,793
DEVICE FOR PUNCHING AND/OR READING A TAPE

Marcel-Louis Boyer, Chatillon, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed July 30, 1971, Ser. No. 167,601
Claims priority, application France, Oct. 26, 1970, 70.38596
Int. Cl. G06k *1/02, 7/14*
U.S. Cl. 235—61.1 **12 Claims**



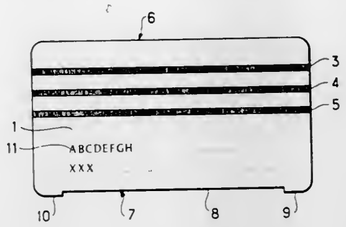
A tape punching and reading device having a series of punches which are selectively controlled by a cam element common to all of the punches. A three-armed lever is provided, one arm of which engages the cam element, the second arm is electro-magnetically coupled to an electormagnet, and the third arm has an additional lever pivotally mounted thereon which is interposed between the cam element and the individual punches to effect the punching operation. A photoelectric scanner is provided to read a perforation receiving line of the tape one increment of tape advance beyond the individual punch elements.

3,795,794
MAGNETIC CARD HAVING SLOT FOR STRAIN RELIEF

Juan Figuls, Saint-Michel-sur-Orge, France, assignor to Compagnie, Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed Feb. 28, 1972, Ser. No. 229,967
Claims priority, application France, Feb. 26, 1971, 7106747
Int. Cl. G06k *19/04*; **G11b** *5/80*
U.S. Cl. 235—61.12 M **9 Claims**

A magnetic card comprising a plasticized rectangular support equipped on or under one of the surfaces thereof with at least one magnetic track, the two edges of which are essentially parallel with respect to each other and to the longitudinal edges of the card characterized in that the contour thereof includes at least one longitudinal notch in one of the

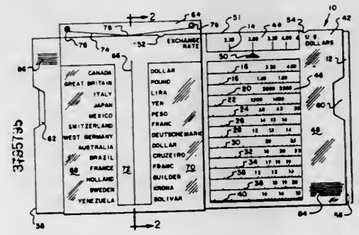


longitudinal edges whose depth is in the order of several tenths of millimeters.

3,795,795
CURRENCY CONVERTER

Capron R. Gulbransen, Jr., Saint Charles, Ill., assignor to Graphic Calculator Company, Barrington, Ill.

Filed Dec. 13, 1972, Ser. No. 314,832
Int. Cl. G06g *1/02*
U.S. Cl. 235—70 A **7 Claims**



An improved combination fixed and fluctuating currency converter for converting the value of currency of one country to an equivalent value of currency of another country irregardless of the fluctuation of currency from one country to another. The new and novel slide rule type converter has fixed currency ratios imprinted thereon and can also be utilized to convert curency values when the ratios fluctuate. The slide rule type calculator can also be quickly used to convert currency values ranging from approximately one dollar of United States currency to approximately one million dollars of United States currency.

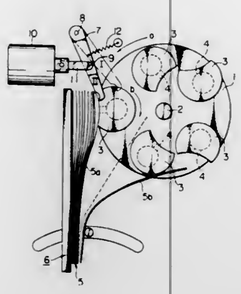
3,795,796
STOP-MOTION FOR SHEET COUNTERS

Hideto Shigemori, and Masahiro Abe, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Himeji-shi, Japan

Filed Dec. 29, 1971, Ser. No. 213,248
Claims priority, application Japan, Dec. 29, 1970, 45-121647
Int. Cl. G06m *3/02*
U.S. Cl. 235—92 SB **3 Claims**

In a sheet counter in which the operations of a motor and a vacuum pump are stopped by an output signal of a comparison circuit produced when the number of sheets counted thereby agrees with a present number, a stop-motion is comprised of electromagnet means, a stop swingably supported at one end, and a link extending therebetween. Upon application of the

signal from the comparison circuit to the control circuit of the sheet counter, the electromagnet means is energized to pull



the link, which, in turn, moves the stop into contact with a stack of sheets to be left uncounted in the sheet counter.

3,795,797

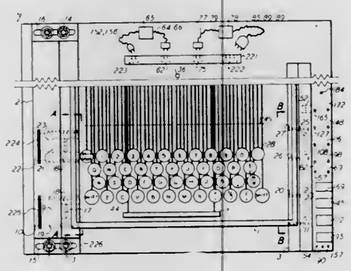
COUNTING SYSTEM FOR PRINTED MATERIAL

Harold Chaskin, 131 Bennett Ave., New York, N.Y. 10033

Filed July 11, 1972, Ser. No. 270,804

Int. Cl. B41j *9/24*

U.S. Cl. 235—102 **14 Claims**



A typewriter or any other device that will set up lines of type or printed matter, is mounted on a base board, housing essential electrical equipment and recording meters, which are adapted, in conjunction with the mechanical operations of the typing machine, to register, stroke by stroke of the typing device, a precise analysis of the production of typed material for any selected project.

3,795,798

HYBRID COMPUTING SYSTEM OF AUTOMATIC CONNECTION TYPE

Takeyuki Endo, Hachioji; Norio Yokozawa, Fuchu; Shigeru Watanabe, Kodaira, and Kunihiro Okada, Tanashi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

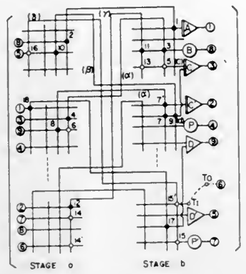
Filed Sept. 1, 1972, Ser. No. 285,648

Claims priority, application Japan, Oct. 22, 1971, 46-83318

Int. Cl. G06j *1/00*

U.S. Cl. 235—150.5 **4 Claims**

In a hybrid computing system in which a plurality of analog operating elements are selectively automatically connected to each other through a switch matrix for constituting a desired analog operating circuit, the analog operating elements are divided into a plurality of groups each called a module and the desired analog operating elements are selected from these modules to constitute the desired analog operating circuit. In the system, the modules are numbered in the order of sequence and the analog operating elements are successively



selected in one direction starting from the module having the smallest or largest ordinal number.

3,795,799

ARRANGEMENT FOR CONTROLLING PROCESSES

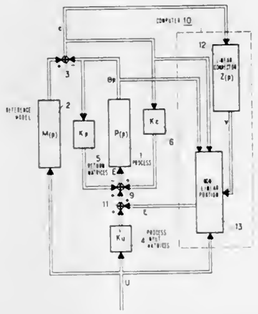
Bernard Courtiol, Grenoble, France, assignor to Societe Generale De Constructions Electriques Et Mechniques (Alsthom), Paris, France

Filed July 5, 1972, Ser. No. 269,144

Claims priority, application France, July 5, 1971, 71.24570

Int. Cl. G05b *13/02*

U.S. Cl. 235—150.1 **10 Claims**



A control arrangement for processes involving a plurality of control variables and an output variable depending in a complex manner on the various control variables wherein the deviation between the output vectors of a reference model and of the process is employed and on the basis of this deviation the synthesis of the control vector is formed so that the output variables of the process will follow the output variables of the reference model without it being necessary to know the relationships between the input variables and the output variables.

3,795,800

WATCHDOG RELOAD INITIALIZER

John L. Nimmo, Natick, and Peter I. Morley, Bellingham, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

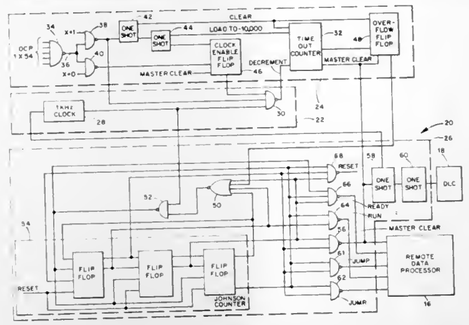
Filed Sept. 13, 1972, Ser. No. 288,634

Int. Cl. G06f *11/04*

U.S. Cl. 235—153 AK **13 Claims**

A watchdog reload initializer is disclosed which monitors communication between a remote processing system and a central processing system. Upon detection of a condition which may indicate that a malfunction has occurred in the remote processing system, the watchdog reload initializer

causes the remote processing system to disconnect from a communications link for a predetermined period of time. Subsequently, the watchdog reload initializer initiates a series of operations which normalize the system and reestablishes communication with the central processing system.



3,795,801

ULTRASONIC DATA-PROCESSING SYSTEMS

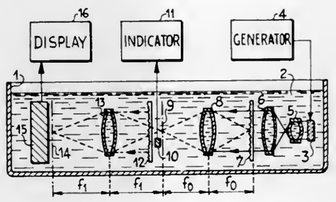
Georges Broussaud, Paris, France, assignor to Thomson-CSF, Paris, France

Filed June 8, 1972, Ser. No. 261,104

Claims priority, application France, June 15, 1971, 71.21602

Int. Cl. G06g *7/19*; **B06b** *3/04*

U.S. Cl. 235—181 **24 Claims**



The present invention relates to data-processing systems based upon the diffraction properties of a coherent radiation near a focus.

The data-processing system in accordance with the invention comprises at least one ultrasonic tank containing a fluid wherein coherent ultrasonic radiation propagates; this tank contains a modulating object on which there are transcribed the data being processed; ultrasonic focussing means provides by means of a Fourier transform the spatial frequency spectrum of said object.

ERRATUM

For Class 235—164 see:
Patent No. 3,795,880

3,795,802

SCANNING SYSTEM USING RADIOACTIVE RADIATION IN CIGARETTE ROD MAKING MACHINE

Gordon Francis Wellington Powell, London, England, assignor to Molins Limited, London, England

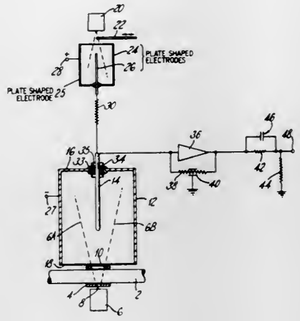
Filed May 14, 1971, Ser. No. 143,357

Claims priority, application Great Britain, May 14, 1970, 23528/70

Int. Cl. G01n *23/10*

U.S. Cl. 250—83.3 D **19 Claims**

A scanning system for a cigarette-making machine or other continuous rodnmaking machines has a radiation source passing a beam into an ionisation chamber comprising a positive rod electrode surrounded by a tubular negative electrode.



and the output current is fed via a responsive-correction circuit which compensates for the slowness of the response of the ions in the ionisation chamber.

3,795,803

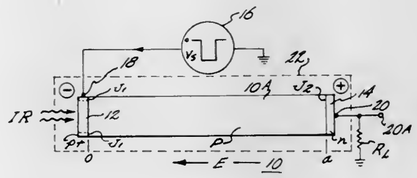
RADIANT ENERGY OPTICAL DETECTOR AMPLIFIER

Betsy Ancker-Johnson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sept. 21, 1972, Ser. No. 290,993

Int. Cl. H03k *3/38*

U.S. Cl. 250—338 **11 Claims**

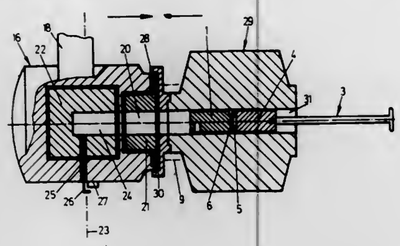


A semiconductor device of certain p-type materials, such as indium antimonide (InSb), is capable of impact ionization initiated by injection of electrons if maintained within a certain temperature range, e.g., 50°– 120° K. A long npp+ InSb diode is maintained in a controlled temperature environment at 77°K. An external biasing source reverse biases the diode's p+—p junction to block injection of electrons from the source and creates a relatively high electric field within the diode. When electrons are optically injected into the cathode end of the diode adjacent the p+—p junction by, for example, exposing the cathode region to infrared radiation, they initiate an impact ionization wave which travels the length of the diode in the very short time. When the impact ionization wave reaches the diode's anode, the resultant current through the diode is many times higher than the current initiated by the photoelectric effect without impact ionization. This current is used to signify fast detection of infrared radiation in small quantities and may also be used, in conjunction with the known applied electric field, to indicate the amount of incident radiation.

3,795,804
DEVICE FOR CHARGING AND DISCHARGING HEADS OF RAY EMITTERS

Ludwig Scheininger, and Otto Nette, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed July 15, 1971, Ser. No. 162,917
Claims priority, application Germany, Aug. 17, 1970, 2040779
Int. Cl. G21h *5/00*; G21f *3/00*
U.S. Cl. 250—498 3 Claims

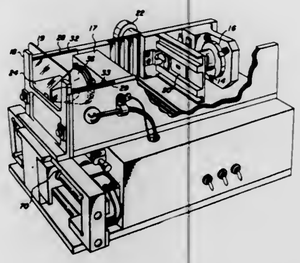


A device is provided for charging and discharging heads of ray emitters through the outlet for the cone of useful rays. The device has a source carrier with a radioactive element, a transporting container for the source carrier and a charging rod for moving the source carrier which provides protection against rays in its cross-sectional range. The device is particularly characterized in that the source carrier can be firmly held in the head of the ray emitter without moving and can be firmly coupled with the charging rod at the front side in the direction of movement, the source carrier carrying the radioactive element in the center of the coupling surface.

3,795,805
APPARATUS FOR TESTING A CREDIT CARD

Melvin E. Swanberg, Upland, and James M. Wilson, San Dimas, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed May 18, 1973, Ser. No. 361,742
Int. Cl. G01n *21/30*; G06k *9/08*; G07f *1/06*
U.S. Cl. 250—209 10 Claims



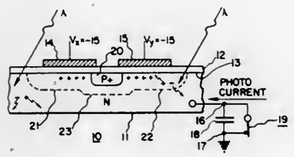
Apparatus for testing a credit card having a coating of a substance which when treated sufficiently permanently and irreversably changes from a first state having one characteristic of reflectivity for visible light components incident thereon to a second state having a second characteristic of reflectivity for the light components. Preferably, in the first state the substance is highly light reflective and reflects light of different wavelengths unequally, and in the second state the substance is light transparent. Treating of the substance is accomplished by heating the substance, preferably with a high intensity light beam. Authenticity of the credit card is achieved by first measuring the amplitude of visible light components (colors) reflected by the substance when the substance is treated initially, and by a later spectral reflectance test after additional treating which, by sensing the change in amplitude of a previously highly reflected visible light component, indicates that the substance has changed to the second state in response to the additional treating.

The authentification apparatus includes a light source for treating a selected area of the coating and a plurality of photoresponsive elements each responsive to light of a selected wave length and connected in electrical integration networks. The integration networks transforms the amplitude representative signals supplied thereto to time amplitude varying signals which are supplied to flip-flop circuits of a logic circuit which also includes at least one nor gate and a latch circuit. If the credit card is authentic, the amplitudes of the output signals of the integration networks increase and decrease in the proper sequence to control the logic circuit such that it produces an acceptance or "authentic" signal. The latch circuit holds the "authentic" signal until circuitry responsive to the "authentic" signal performs a desired function, after which the credit card is indexed to a new position such that a different selected area of the coating of the credit card is processed to determine its authenticity.

3,795,806
METHOD AND APPARATUS FOR SENSING RADIATION AND PROVIDING ELECTRICAL READOUT

Charles W. Eichelberger, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,301
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J 5 Claims

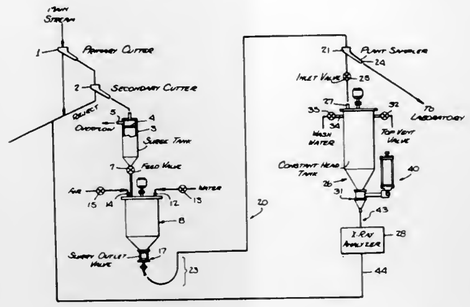


A plurality of radiation sensing and storage sites are provided on a substrate of semiconductor material arranged in a plurality of rows and columns. Each site includes a row oriented plate and a column oriented plate to form a pair of closely coupled capacitive cells with the substrate. A plurality of row conductor lines are provided, each connected to the row oriented plates of a respective row. A plurality of column conductor lines are also provided, each connected to the column oriented plates of a respective column. In operation, application of appropriate voltages to the capacitive cells form depletion regions therein with charge permitted to flow between closely coupled cells depending on the voltage on the plates thereof. Selective read out of charge stored in a row of sites is accomplished by changing the potential on the row line to cause charge stored in the row-oriented cells to flow into the column-oriented storage cells thereof. The read out of charge stored in the column-oriented cells is accomplished by changing the potential on each of the column lines in turn to cause injection of carriers stored therein into the substrate and sensed across an integrating capacitor. Reestablishment of depletion producing potentials on the column-oriented plates causes previously injected carriers which have not had time to recombine or diffuse sufficiently far away to be recollected. Such recollected charge is periodically injected at the end of a row of scan, when the depletion regions of the row oriented plates have been collapsed, by collapsing the depletion regions underlying all of the column oriented plates for a time sufficient to assure complete disappearance of injected carriers from the regions of storage thereof.

3,795,807
PNEUMATIC CONVEYING SYSTEM FOR TRANSFERRING SLURRY SAMPLES TO AN ANALYZER

Gary D. Johnson, and Larry A. Matthews, both of Tucson, Ariz., assignors to The Anaconda Company, New York, N.Y.

Continuation of Ser. No. 89,842, Nov. 16, 1970, abandoned. This application Oct. 11, 1972, Ser. No. 296,542
Int. Cl. G01n *23/22*
U.S. Cl. 250—273 10 Claims

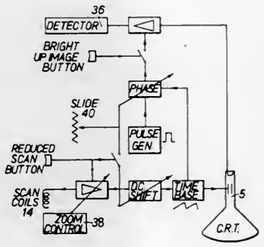


A pneumatic slurry transfer system for intermittently transferring a slurry sample from a pressure tank, through a conduit and to a discharge tank for subsequent chemical analysis whereby a liquid medium is initially introduced into the conduit and confined therein and whereby the slurry sample is forced by gas pressure to contact the liquid medium and slowly permeate thereinto while the slurry and liquid medium are simultaneously transported through the conduit to the discharge tank by the gas pressure.

3,795,808
ELECTRON MICROSCOPES

William Barry Dymock Drayton, 55 Glisson Rd., Cambridge, and Paul Marshall Knights, 69 Station Rd., Willingham, both of England

Filed May 17, 1972, Ser. No. 254,133
Claims priority, application Great Britain, May 18, 1971, 15522/71
Int. Cl. H01j *37/26*
U.S. Cl. 250—310 4 Claims

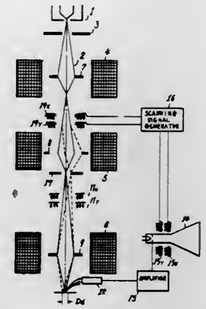


In a scanning electron probe instrument such as a scanning electron microscope or X-ray micro-analyser the two-dimensional display of the image can have a manually controlled bright-up region or spot and the direct current signals which movement of this region generates can be switched in at will to the primary beam deflection to shift the scanning to the selected region without mechanically shifting the specimen; then by reducing the scanning amplitude automatically this region is magnified to fill the screen.

3,795,809
SCANNING ELECTRON MICROSCOPE WITH CONVERSION MEANS TO PRODUCE A DIFFRACTION PATTERN

Susumu Takashima, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Akishima-shi, Japan

Filed Sept. 15, 1972, Ser. No. 289,425
Claims priority, application Japan, Sept. 21, 1971, 46-73581
Int. Cl. H01j *37/26*; G01n *23/20*
U.S. Cl. Akishima-shi 6 Claims

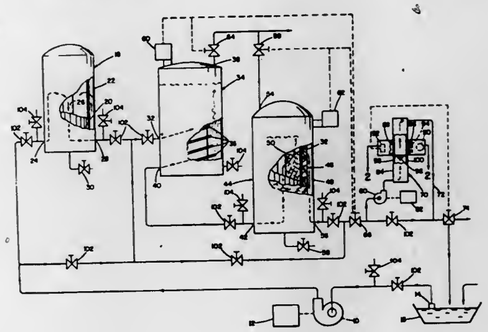


A scanning electron microscope capable of displaying a selected area diffraction pattern of a crystal specimen which corresponds exactly with the selected area of the scanning electron microscope image. The microscope has a field limiting aperture disposed between two adjustable condenser lenses near a specimen and scanning deflecting coils disposed above said aperture.

3,795,810
FLUID ANALYZER

James D. Conley, Tulsa; Donald E. Belden, Sand Springs, and Ralph D. Terhune, Tulsa, all of Okla., assignors to Fram Corporation, East Providence, R.I.

Filed Nov. 27, 1972, Ser. No. 309,796
Int. Cl. G01n *21/26*
U.S. Cl. 250—339 4 Claims

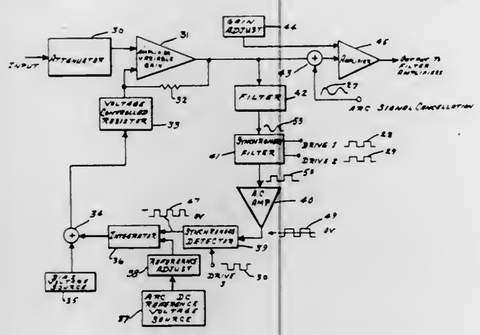


Apparatus for measuring hydrocarbon pollutant concentration in water featuring a sample chamber through which a liquid sample flows continuously, a source of infra-red light having a frequency at half peak intensity no less than 7,500 Angstroms passing through windows in the sample tube, and a photodetector arranged to receive the light transmitted through the sample and to provide an output signal dependent upon the intensity of the received light.

3,795,811
METHOD AND MEANS FOR EQUALIZING THE RESPONSE OF SIGNAL CHANNELS IN A MULTIPLE CHANNEL IMPROVED SYSTEM

Donald E. Weir, Harbor City, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 20, 1973, Ser. No. 343,061
Int. Cl. G01t *1/12*
U.S. Cl. 250—339 **2 Claims**

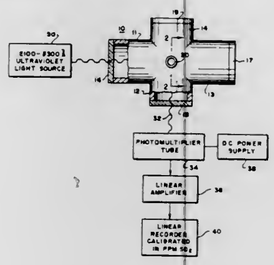


Automatic responsivity control in a multiple channel infrared system is realized by means of reference signals derived from a modulated light source. The light source illuminates both the infrared element array and a separate reference signal detector. The infrared video signal and the reference signals transmitted in each infrared system channel are passed through a variable gain amplifier. The gain of the variable gain amplifier (and hence the magnitude of the reference signal) is controlled by a circuit including a synchronous filter, a synchronous detector, a DC reference voltage source, and a voltage controlled resistor. The separate reference signal detector provides drive signals to control the synchronous filter and also provides a 180° phase shifted reference signal that is used to cancel the reference signal in the output of the variable gain amplifier.

3,795,812
SULFUR DIOXIDE POLLUTION MONITOR

Hideo Okabe, Rockville, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Nov. 27, 1972, Ser. No. 309,868
Int. Cl. G01n *21/26*
U.S. Cl. 250—373 **10 Claims**



A sample stream of air, smokestack gas or the like is flowed through a fluorescence cell where it is irradiated with ultraviolet in the region from about 2100 to 2300 A. The intensity of the resulting SO_2 fluorescence in the region from about 2400 to 4200 A is measured at right angles to the incident beam. The response to various SO_2 concentrations is linear over wide ranges and is negligibly or moderately affected by the presence of water vapor in the sample stream.

3,795,813
CHANGED PARTICLE OPTICAL IMAGING SYSTEM

Wolfgang Kunath, Berlin, Germany, assignor to Max-Planck-Gesellschaft Zur Forderung der Wissenschaften e.v. Gottingen, Gottingen, Germany

Filed Aug. 10, 1972, Ser. No. 279,369
Claims priority, application Germany, Mar. 16, 1973, 2213208
Int. Cl. H01j *37/26*; **G01n** *23/00*
U.S. Cl. 250—396 **7 Claims**

An improved system for charged particle imaging of the type having an objective lens, an annular diaphragm for stopping down the objective lens except for an annular zone, and a first supplementary lens, located behind the annular caustic surface formed by rays of a hollow beam originating from the axis point in the object plane and passing through the objective lens and diaphragm, for focusing this beam at a point on the axis. The improvement includes a second supplementary lens of long focal length compared to that of the objective lens and so located behind the first-mentioned caustic surface as to generate an additional caustic surface in front of the first supplementary lens, thereby reestablishing the original ray order relative to the axis so that the sine condition for imaging an extended, near-axis area in the object plane can be met. The system is achromatic if the three lenses are located to satisfy the condition: $C_{F_{obj}}(ro/fo)^2+C_{F_1}(r_1/f_1)^2-C_{F_2}(r_2/f_2)^2=O$. A third supplementary lens of long focal length may be located behind the first supplementary lens to correct third order spherical errors, provide a real image, and permit an enlarged ring aperture with consequently improved contrast.

3,795,814
X-RAY IMAGE CONVERTERS UTILIZING LANTHANUM AND GADOLINIUM OXYHALIDE LUMINOUS MATERIALS ACTIVATED WITH THULIUM

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

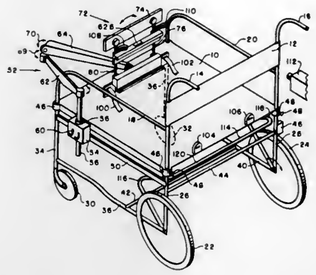
Filed Aug. 16, 1972, Ser. No. 281,217
Int. Cl. H01j *1/62*
U.S. Cl. 250—460 **5 Claims**

Oxyhalides of lanthanum and gadolinium activated with thulium are found to be superior in their conversion efficiency of X-rays to visible light when compared with conventional X-ray phosphors. These phosphors are used as X-ray image converters generally, and can be used in such devices as X-ray image-intensifier tubes, in fluoroscopic screens and in radiographic intensifier screens.

3,795,815
PATIENT RETENTION DEVICE

Miriam E. B. Weinstock, 502 Old Chappaqua Rd., Briarcliff Manor, N.Y. 10510, and William N. Woodruff, 52 Central Hwy., Stony Point, N.Y. 10980

Filed Oct. 19, 1972, Ser. No. 298,883
Int. Cl. G01n *23/04*
U.S. Cl. 250—444 **14 Claims**

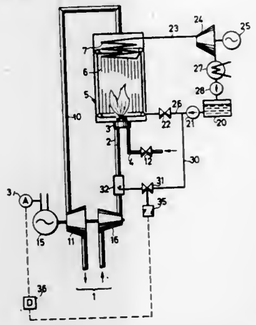


A wheelable chair for retaining a patient in an immobile position for radiographic purposes is provided with an articulated arm and an X-ray cassette holder. The holder is positioned by means of the articulated arm in a manner such that it engages with the chest of the patient in a manner sufficient to support and retain the patient in the proper position. Further retention is provided by means of straps or belts interconnecting the cassette holder with the patient, a set of straps for retaining the hands of the patient in a proper position on the holder, and a chin rest which will properly position the head of the patient during the radiographic exposure. The chair, itself, is manipulatable by means of wheels so as to properly position the patient relative to the X-ray device.

3,795,816
APPARATUS TO PREVENT OVERSPEEDING OF A COMBINATION INCLUDING A SUPERCHARGED STEAM GENERATOR, A GAS TURBINE AND A COMPRESSOR

Hans Frei, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Dec. 20, 1972, Ser. No. 317,053
Claims priority, application Switzerland, May 9, 1972, 6852/72; July 17, 1972, 10698/72
Int. Cl. F01k *13/02*
U.S. Cl. 290—40 B **10 Claims**

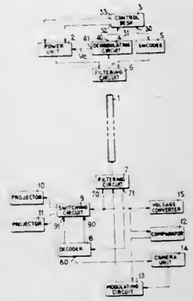


A device for preventing the overspeeding of a machine composed of a compressor connected to a gas turbine which drives an electric generator and supercharges a steam generator, said device being normally in an off position but when a drop in load on the generator occurs the device senses the drop and is activated and sprays water into the gas flowing to the steam generator or into the gas turbine thereby slowing the gas turbine to prevent overspeeding.

3,795,817
POWER TRANSMISSION DEVICE IN PARTICULAR FOR A SUBMARINE CAMERA

Jean Francois Chambaut, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 2, 1973, Ser. No. 337,466
Claims priority, application France, Mar. 3, 1972, 72.07532
Int. Cl. H02j *1/00*
U.S. Cl. 307—38 **2 Claims**



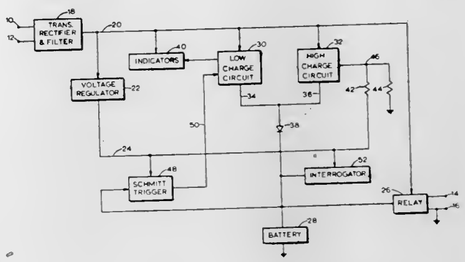
A single cable is used to transfer power in the form of a d.c. current from the first part of a system to a second part as well as control signals for controlling, by means of a switching device, the states of comparatively high-power consuming elements, such as projectors, the changes of state of which temporarily disrupt the operation of the signal transmission circuits.

An inhibiting circuit is provided for preventing the switching device from being actuated again by parasitic signals during such a transition time interval. This inhibiting circuit comprises storing elements respectively connected in parallel with the control inputs of the switching device, for temporarily storing the control signals applied thereto, and blocking circuits serially inserted with those control inputs, each blocking circuit in series with a control input being actuated by the storing elements connected in parallel with the other control inputs.

3,795,818
EMERGENCY POWER SUPPLY

Don L. Beaman, Sunnyvale, and John T. Shoberg, Milpitas, both of Calif., assignors to Shetec, Inc., San Jose, Calif.

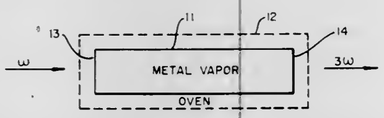
Filed Feb. 9, 1973, Ser. No. 331,068
Int. Cl. H02j *7/00*
U.S. Cl. 307—66 **15 Claims**



The disclosed embodiment of the present invention is an auxiliary power supply which generally includes a battery, a relay for connecting the battery to an output in the absence of line voltage, and a circuit for charging the battery. The charging circuit includes a circuit for providing a relatively low

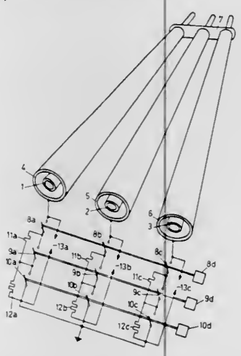
charge rate to the battery and another circuit for providing a relatively high charge rate to the battery. A Schmitt trigger circuit is responsive to the voltage level of the battery for activating and deactivating the low charge rate circuit. A gate compares the voltage level of the battery with a reference voltage level to control the high charge rate circuit. Once the high charge circuit has been rendered inoperative during a particular period between line voltage failures, it remains inoperative. An interrogator circuit periodically draws a relatively small energy current pulse from the battery, thereby placing it under a load condition while the Schmitt trigger is sensing the voltage level of the battery. If, by virtue of the load condition, the voltage level of the battery drops below one of the trigger levels of the Schmitt circuit, the trigger circuit will activate the low charge circuit to charge the battery.

3,795,819
OPTICAL RADIATION FREQUENCY CONVERTER AND METHOD
Stephen E. Harris, 880 Richardson Ct., 03, Palo Alto, Calif. 94306
Filed Nov. 11, 1971, Ser. No. 197,889
Int. Cl. H02m *5/04*
U.S. Cl. 307—88.3 **17 Claims**



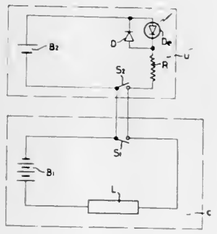
An optical radiation frequency converter including a cell containing a metal vapor or a mixture of a metal vapor and a second metal vapor or gas and a source of monochromatic radiation of one frequency to be converted to another frequency positioned to project the monochromatic radiation through the cell whereby the metal vapor converts the radiation from the one frequency to the other frequency.

3,795,820
CROSS-CONNECTION ARRANGEMENT BETWEEN PHASE-ISOLATED METAL ENCLOSURES OF INSULATING-GAS-FILLED HIGH-VOLTAGE CONDUCTORS
Adolf Eidinger, Nussbaumen, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland
Filed Jan. 10, 1973, Ser. No. 322,388
Claims priority, application Switzerland, Jan. 18, 1972, 697/72
Int. Cl. H02j *3/00*
U.S. Cl. 307—147 **6 Claims**



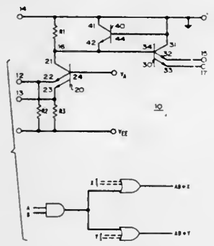
A polyphase high-voltage conductor system in which each phase conductor is enclosed within a metallic sheath filled with insulating gas. The sheaths are sectionalized into lengths which are directly and permanently cross-connected to each other at one end but at the opposite end are cross-connected through variable impedances which enable the currents flowing in the metallic sheaths to be varied between minimum and maximum values in relation to the service current to be transmitted by the conductors such that the conductors operate in a condition approximating the natural tie-line power.

3,795,821
PROTECTIVE DEVICE FOR A LUMINOUS DIODE
Toshikazu Ichiyanagi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 9, 1972, Ser. No. 279,013
Claims priority, application Japan, Aug. 9, 1971, 46-71167
Int. Cl. H03k *17/00*
U.S. Cl. 307—202 **5 Claims**



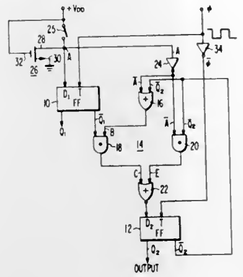
A luminous diode protecting device, which comprising a circuit containing a luminous diode and a means being connected with said luminous diode and being capable to keep the voltage supplied to said luminous diode in an inverse direction under the reverse withstanding voltage of said luminous diode.

3,795,822
MULTIEMITTER COUPLED LOGIC GATE
Zdenek E. Skokan, Milpitas, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Aug. 14, 1972, Ser. No. 280,363
Int. Cl. H03k *19/34, 19/36*
U.S. Cl. 307—215 **4 Claims**



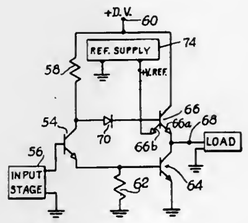
The emitters and bases of two transistors, at least one of which has more than one emitter, are used as inputs, while the collectors and emitters are used as outputs. The collector of the first transistor is connected to the base of the second transistor. The collectors of both transistors are electrically biased. A resistor is connected between the bias source and the collector of the first transistor. A third transistor, connected as a diode, clamps the voltage across the resistor to a selected value even if more than one input to the first transistor is low. With changes in inputs and outputs, the circuit can function as a basic AND-OR gate, a trigger circuit for pulse shaping, an R-S latch, and a gated latch. By combination of basic gates, more complex logic functions can be achieved.

3,795,823
SIGNAL DETECTION IN NOISY TRANSMISSION PATH
David Keith Morgan, Flemington, and Robert Charles Heuner, Bound Brook, both of N.J., assignors to RCA Corporation, Princeton, N.J.
Filed Nov. 9, 1972, Ser. No. 304,892
Int. Cl. H03k *17/56*
U.S. Cl. 307—247 **11 Claims**



Circuit for sensing the presence of a signal on a line preceded by noise on the line, such as noise created by switch bounce. The circuit, which includes flip-flops and logic gates, ignores noise bursts and produces only a single change in direct voltage level at the circuit output terminal, in response to a signal.

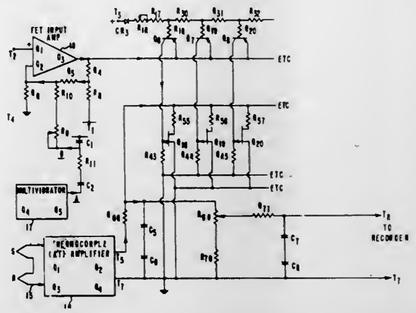
3,795,824
TRANSISTOR SWITCHING CIRCUIT
Joseph E. Monahan, Framingham, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Continuation of Ser. No. 681,411, Nov. 8, 1967, abandoned. This application Sept. 13, 1971, Ser. No. 180,146
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 **10 Claims**



The provision of a base clamp on an emitter-follower transistor enables the transistor to turn on to a selected level in a brief time without saturation.

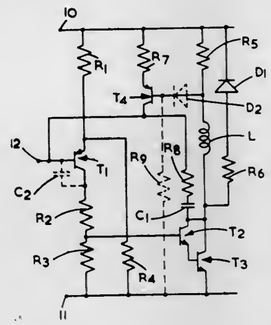
3,795,825
AUTOMATIC GAIN COMPENSATION CIRCUIT
John D. McGhee, Plymouth Meeting, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 28, 1973, Ser. No. 336,767
Int. Cl. H03k *1/14*
U.S. Cl. 307—264 **9 Claims**

A compensating circuit for automatically varying the gain of an electrical system as a continuous function of an independent driven signal is disclosed. The circuit comprises a plurality of resistances, connected in parallel across a current source. The resistances are switched into the circuit by FET switches which are in turn controlled by switch driver transistors. By combining the driven signal with a periodic signal to form a



composite signal used to activate the switch driven transistors, a smooth curve can be obtained.

3,795,826
DRIVE CIRCUIT FOR CONDUCTING DEVICES
Anthony John Adey, Ruislip, England, assignor to C.A.V. Limited, Birmingham, England
Filed July 12, 1972, Ser. No. 271,199
Claims priority, application Great Britain, July 13, 1971, 32697/71
Int. Cl. H03k *5/00*
U.S. Cl. 307—268 **9 Claims**

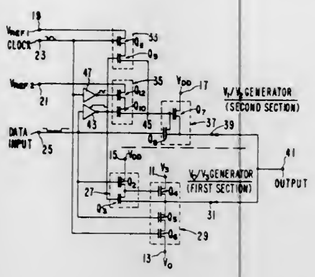


A drive circuit for effecting current flow in an inductive circuit comprising a coil the circuit including a power transistor having its emitter collector circuit connected in series with the coil, an input transistor for controlling the power transistor and a resistor for providing a signal representative of the current flowing in the coil. A feed back transistor is supplied with the signal developed across the resistor and provides feed back to the input transistor whereby the mean value of current flowing in the coil will depend upon the magnitude of the input signal applied to the input transistor.

3,795,827
CONTROLLED SQUAREWAVE VOLTAGE GENERATING ELECTRONIC CIRCUIT
William J. Greger, Cupertino, Calif., assignor to Nortec Electronics Corporation, Santa Clara, Calif.
Filed Aug. 31, 1972, Ser. No. 285,222
Int. Cl. H03k *3/26*
U.S. Cl. 307—279 **4 Claims**

A circuit having a single output includes two sections which each connect to said output a squarewave of different voltage levels but the same period as controlled by a common clock

signal. A common data input signal selects which of the circuit sections is to operate and connect its squarewave with said output. One of the sections includes a source follower MOS



field effect transistor current amplifier and two reference voltage supply circuits having a resistive voltage divider and an MOS device in series therewith to compensate for variations in the current amplifier threshold voltage drop.

3,795,828

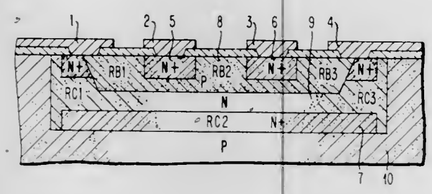
MONOLITHIC DECODER CIRCUIT

Joseph R. Cavaliere, Hopewell Junction, N.Y., and Donald B. Mooney, Northbrook, Ill., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 124,387, March 15, 1971, abandoned. This application Mar. 8, 1973, Ser. No. 339,234

Int. Cl. H01l *19/00*

U.S. Cl. 307—303 **18 Claims**



A monolithic decoder circuit provides a decode function with driving capabilities at opposite ports and requires only a single layer of metallization. The circuit comprises a plurality of gates each including a pair of transistors formed by emitter diffusions in a base area. Current switches are connected to the emitters of the transistors to provide inputs and emitter followers are connected to the bases of the transistors to provide outputs.

3,795,829

ELECTRICAL INFORMATION DELAY LINE

John David Wilcock, Weedon, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

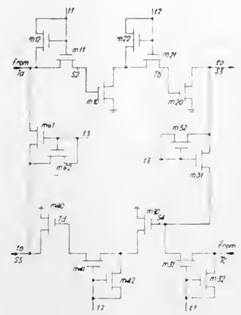
Filed Sept. 21, 1972, Ser. No. 290,926

Claims priority, application Great Britain, Oct. 27, 1971, 49874/71

Int. Cl. H03k *3/26*

U.S. Cl. 307—304 **4 Claims**

An electrical delay line (preferably using metal oxide silicon transistors) in which storage stages alternate with temporary transfer stages, and a bit is progressed between stages by strobing inter-stage amplifiers by interlaced strobing pulses. Reversing links, e.g. from the last transfer stage to the first storage stage, can be operated once to reverse the sequence of



bits present in the delay line. Two operations of the reversing links restore the original sequence.

3,795,830

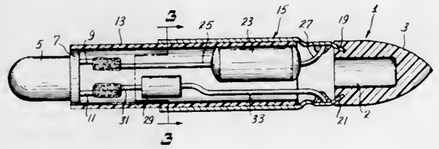
LED SLIDEBASE SWITCHBOARD LAMP

John L. Richardson, Cerritos, Calif., assignor to Jim C. Garrett, Long Beach; Robert H. Johnson, Marine Del Ray and Jack Shelton, Long Beach, all of, Calif., part interest to each

Filed Aug. 17, 1972, Ser. No. 281,402

Int. Cl. H03k *3/42*

U.S. Cl. 307—311 **10 Claims**



A light-emitting diode slidebase switchboard lamp having an LED at one end of an elongated sheath and a rigid, non-conducting base at the other. A resistor and a rectifier positioned in the sheath in axial alignment, each connected to the LED and to terminals positioned along the outside of the sheath. The terminals are cemented to the sheath and have end portions embedded in the base.

3,795,831

MINIATURE TUNING FORK TYPE CRYSTAL VIBRATOR

Kinji Fujita, Shimosuwa-Machi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 75,029, Sept. 24, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,389

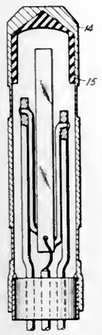
Claims priority, application Japan, Oct. 3, 1969, 44-78866

Int. Cl. H04r *17/00*

U.S. Cl. 310—9.4 **4 Claims**

A crystal vibrator having a tuning fork type vibrator supported by a pair of flexible supporting wires, each of said wires being fixed at one end to opposed sides of said vibrator along the symmetrical axis thereof. The other end of each of said supporting wires is rigidly fixed, with the portion in between extending substantially parallel to said vibrator, said support-

ing wire being dimensioned and positioned so that the center of rotation on said wire is substantially aligned with the center



of gravity of said vibrator when said vibrator is subjected to external shock.

3,795,832

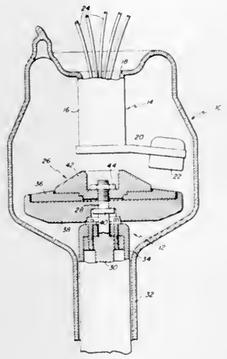
TARGET FOR X-RAY TUBES

William P. Holland, West Redding, Conn., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.

Continuation of Ser. No. 42,375, June 1, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 230,053

Int. Cl. H01j *35/10*

U.S. Cl. 313—60 **8 Claims**



A target for x-ray tubes, which is comprised of separate elements mechanically connected together whereby the element which includes the x-ray generating focal area is of a selected material mechanically attached to at least one element of a second material by means which efficiently permits ready transfer of heat from the first element to the second while permitting free thermal expansion of the elements relative to one another.

3,795,833

ION BEAM DEFLECTION SYSTEM

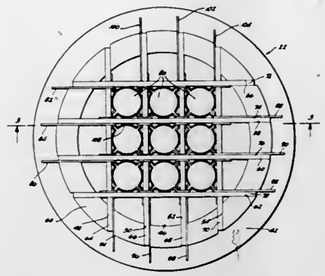
Harry J. King, Woodland Hills, and David E. Schnelker, Northridge, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 9,774, Feb. 9, 1970, abandoned. This application May 25, 1972, Ser. No. 256,987

Int. Cl. F03h *5/00;* **H05h** *5/00*

U.S. Cl. 313—63 **15 Claims**

The accel electrode in a Kaufman-type of electron bombardment ion thrustor is created by interengaging panels of insulative material. These panels are angularly related to each other to define the openings of the accel electrode. Conduc-



tive blades are installed in each opening for electrostatic deflection of the beamlet issuing therethrough.

3,795,834

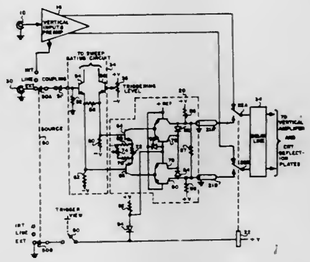
OSCILLOSCOPE HAVING EXTERNAL TRIGGER DISPLAY MODE

Roland Eugene Andrews, Portland, and Robert Edward White, Aloha, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed July 5, 1972, Ser. No. 269,006

Int. Cl. H01j *29/70*

U.S. Cl. 315—26 **9 Claims**



An oscilloscope has an additional vertical display mode to enable the display of an external triggering signal while it is activating the sweep-generating circuit. Triggering source, level, slope, and timing can be verified or examined without reconnection of signal cables or disturbing front-panel controls. When switching between vertical display modes, the displayed external triggering signal is in precise time relationship with signals displayed through normal vertical channels.

3,795,835

HORIZONTAL LINEARITY CORRECTION CIRCUIT

Floyd E. Aldrich, Waterloo, and Martin Fischman, Seneca Falls, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

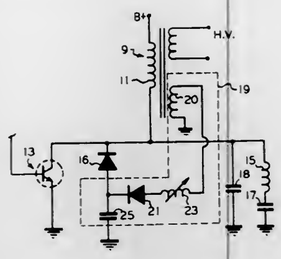
Filed Sept. 8, 1972, Ser. No. 287,419

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **10 Claims**

A cathode ray tube deflection circuit having a flyback transformer coupled to a potential source and via a parallel coupled horizontal output stage and a horizontal deflection yoke to a potential reference level with a damper stage coupled to the junction of the transformer means, output stage, and deflection yoke includes a linearity correction circuit wherein a winding of the transformer means coupled to a potential reference level is also coupled to a series connected switching

means and series resonant circuit connected to the potential reference level and to the damper stages whereby the rate of

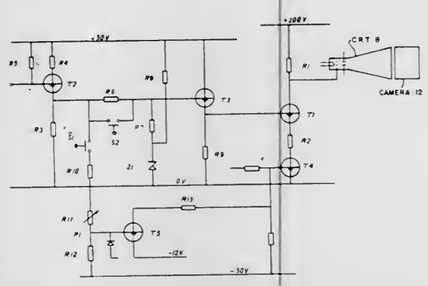


change of current flow through a deflection yoke is altered to enhance linearity of the trace period of a cathode ray tube.

3,795,836
INTENSITY LIMITING MEANS FOR CATHODE RAY OSCILLOSCOPE

Ake Valentin Nilsson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 29, 1972, Ser. No. 230,258
Claims priority, application Sweden, Mar. 1, 1971, 2538/71
Int. Cl. H01j *31/10*
U.S. Cl. 315—30 **3 Claims**



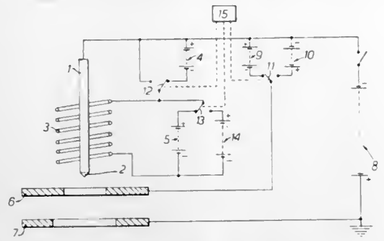
Display apparatus including a cathode ray oscilloscope is provided, primarily but not exclusively for thermography, to obtain photographic records of the oscilloscope image without danger of overexposing the photosensitive film. The apparatus includes means to limit the intensity of the oscilloscope image which means is presettable to modify the image signal (i.e., the signal normally determining intensity) only when its amplitude exceeds a predetermined value, whereby the image intensity is prevented from exceeding a desired maximum corresponding to the characteristics of the film and a given exposure time and aperture. Circuits are described for suppressing the electron beam when its intensity would otherwise exceed the desired maximum.

3,795,837
ELECTRON GUNS

Tai Hon Philip Chang, Yorktown Heights, N.Y., assignor to Cambridge Scientific Instruments Limited, Cambridge, England

Filed Mar. 24, 1972, Ser. No. 237,800
Claims priority, application Great Britain, Mar. 25, 1971, 7,966/71
Int. Cl. H01j *9/50*
U.S. Cl. 315—94 **5 Claims**

In an electron gun for use in electron beam instruments such as electron microscopes and microanalysers the contamination that builds up on the control electrode (grid) is removed periodically and preferably automatically with the instrument out of use, by electron bombardment from a heater and possibly from the cathode itself, the control electrode being made some hundreds of volts positive with respect to the

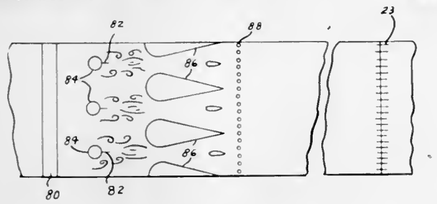


heater during this period. The heater may be one already present for heating the cathode. The bombardment may be in two thirty-second pulses applied immediately after the instrument is switched off.

3,795,838
AERODYNAMIC LARGE VOLUME GASEOUS ELECTRIC DISCHARGE SYSTEM

Alan E. Hill, Box 544 A Rt. 5, Albuquerque, N. Mex. 87112

Division of Ser. No. 128,845, March 29, 1971, Pat. No. 3,735,284, Continuation-in-part of Ser. No. 7,935, Feb. 2, 1970, abandoned. This application June 27, 1972, Ser. No. 266,813
Int. Cl. H01j *7/24*
U.S. Cl. 315—111 **3 Claims**



A large volume gaseous discharge system such as used in lasers has a plurality of electrodes at one end of the channel. A plurality of separate discharges are established adjacent the plurality of electrodes. A fast-moving gas stream within the channel aerodynamically controls the ion spacial distribution, and therefore indirectly the electron spacial distribution within the channel. In one system the geometry of the system and velocity of the stream are made such that the transit time between the plurality of electrodes at one end of the channel, and an electrode at the other end of the channel, is of the order of the diffusion time from one current stream and the next. In another embodiment rods are positioned to rapidly diffuse the plasma with nozzles provided to further aid in the mixing. A transverse folded optical path is used for laser operation.

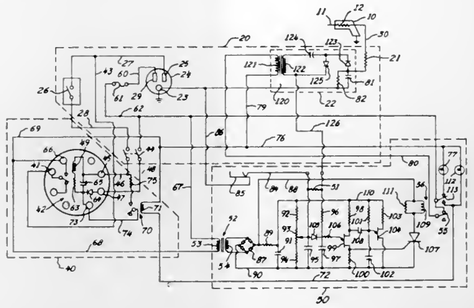
3,795,839
METHOD FOR PREVENTING ARCING IN AN ELECTROSTATIC COATING SYSTEM

Arvid C. Walberg, Lombard, Ill., assignor to Graco Inc., Minneapolis, Minn.

Division of Ser. No. 665,104, Sept. 1, 1967, Pat. No. 3,641,971. This application Nov. 3, 1971, Ser. No. 195,430
Int. Cl. B05c *1/00*
U.S. Cl. 317—3 **9 Claims**

A method for setting up and using a safety circuit for an electrostatic coating system. A sensing circuit is connected to

a source of potential to sense the current flow between the gun electrode and work to be coated. A delay circuit normally delays de-energization of the current to the electrode unless the sensing circuit senses a predetermined value in which case de-energization occurs without delay. A resistance may be connected to the electrode to aid in reducing disruptive arch and also to the sensing circuit. The sensing circuit may be set

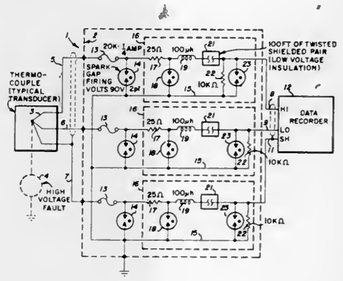


to sense the current through the electrode at different predetermined values after determining the maximum length of disruptive arc between the electrode and work to be coated and also the amount of current that would cause such an arc. Before the predetermined value in the sensing circuit is exceeded, the source of high potential is de-energized. The potential source may be prevented from being energized until control means are recycled.

3,795,840
OVERVOLTAGE PROTECTION NETWORK

Joseph M. Cambra, Santa Clara, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 29, 1972, Ser. No. 310,624
Int. Cl. H02h *3/20*
U.S. Cl. 317—16 **3 Claims**

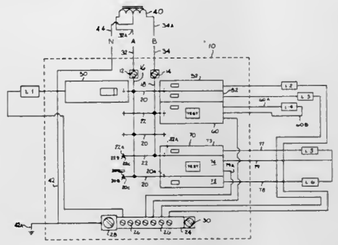


Electrical equipment to be protected from overvoltage is connected with a possible source of overvoltage via an input conductor. A fuse is connected in series with the input conductor and a spark gap is connected between the input conductor and ground for conducting the overvoltage current to ground and for blowing the fuse to open the circuit to the electrical equipment. A pulse attenuator network is provided between the spark gap and the electrical equipment to be protected for attenuating the pulse of energy passing through the fuse and spark gap prior to blowing of the fuse. The pulse attenuator network includes additional shunt spark gaps, series inductance, and a series connection of a twisted shielded pair of conductors having low-voltage insulation.

3,795,841
SHOCK PROTECTING CIRCUIT BREAKER FOR TWO CIRCUITS WITH COMMON NEUTRAL

Keith W. Klein, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed July 19, 1972, Ser. No. 273,306
Int. Cl. H02h *3/28*
U.S. Cl. 317—18 D **5 Claims**

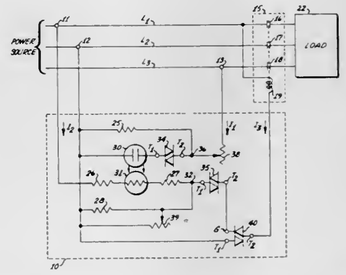


An electrical protective system comprising a panel assembly including an enclosure with two main incoming power bus bars having, in use, a given voltage between them, and a main neutral terminal having, in use, a voltage midway between the voltages of the aforesaid two conductors, combined with a unitary protective device comprising two electric circuit breakers each connected to a different one of the two power bus bars and each having a load terminal for connection to the outgoing load conductor of a separate load circuit to be protected. The protective device also includes a neutral terminal connected to the main neutral terminal and a load return conductor terminal for connection to a load return conductor which is common to the two circuits being protected. The protective device also includes means for monitoring the algebraic sum of the currents in the three load conductors comprising the two outgoing load conductors and the common load return conductor and for causing automatic opening of both of the circuit breakers if and when the algebraic sum of the currents in the three conductors exceeds a predetermined small amount, such, for example, as 5 milliamperes, whereby each of the protected circuits is protected against damage by ground fault currents, and whereby human beings are protected from possibly lethal electric shock by coming in contact with high potential points of either of the two circuits.

3,795,842
CIRCUIT FOR MONITORING VOLTAGES IN A POLYPHASE ELECTRICAL SUPPLY

Frank I. Kovacs, Bisbee, Ariz., assignor to Univ. Amp, Inc., Bisbee, Ariz.

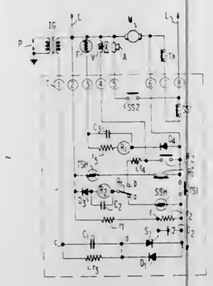
Filed June 9, 1972, Ser. No. 261,351
Int. Cl. H02h *3/24*
U.S. Cl. 317—27 R **2 Claims**



A triac, a pair of diacs, a neon bulb and a photocell monitor all of the voltages in a polyphase electrical supply and discon-

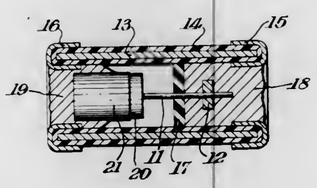
nect a load when any of the voltages decrease below a predetermined threshold value.

3,795,843
HIGH VOLTAGE PULSE GENERATING APPARATUS
Yoshio Ishida, Osaka, Japan, assignor to Diamond Electric Mfg. Co. Ltd., Osaka, Japan
Filed July 25, 1972, Ser. No. 275,006
Int. Cl. F23q *3/00*
U.S. Cl. 317—96 **7 Claims**



A combustion control device for controlling the combustion of a liquid fuel such as petroleum fuel. The device incorporates a capacitor-discharging ignition, a prepurging operation, a post-ignition extending operation and safety means for preventing accidents which may occur due to system faults.

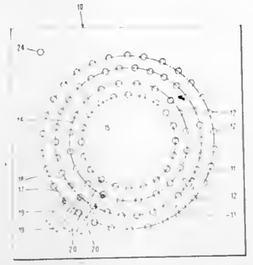
3,795,844
ELECTRONIC COMPONENT PACKAGE
Mark Markarian, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
Filed Feb. 26, 1973, Ser. No. 335,989
Int. Cl. H01g *9/10*
U.S. Cl. 317—230 **6 Claims**



An electronic component package is disclosed comprising a metal tube upon whose surfaces is grown an oxide insulative film. A metal layer covers each end of the tube including a portion of the tube's inside and outside surfaces. A component such as a solid tantalum capacitor, mounted inside the tube is contacted by a conductive plug in each end of the tube. The conductive layers, form the terminals of the package by which the component may be electrically and physically mounted by soldering to a hybrid integrated circuit substrate.

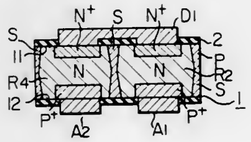
3,795,845
SEMICONDUCTOR CHIP HAVING CONNECTING PADS ARRANGED IN A NON-ORTHOGONAL ARRAY
Eugene E. Cass, Hopewell Junction; Robert M. Gustafson, Poughkeepsie, and Paul M. Young, Pleasant Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 317,902
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **8 Claims**

A semiconductor chip has its pads, which connect circuits on the chip to electrically conductive elements on a support substrate and form the structural connection between the chip and the substrate, arranged in a plurality of concentric circles



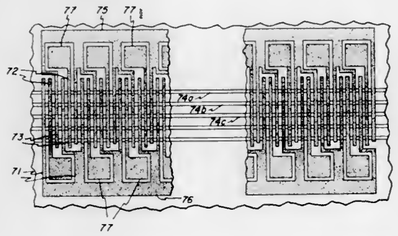
with the pads in each circle being equally angularly spaced from each other.

3,795,846
INTEGRATED SEMI-CONDUCTOR DEVICE HAVING FUNCTIONAL REGIONS ISOLATED BY P-N JUNCTIONS THEREBETWEEN
Takuzo Ogawa; Kenzi Miyata; Hideyuki Yagi, and Takeshi Sasaki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 29, 1972, Ser. No. 293,506
Claims priority, application Japan, Oct. 1, 1971, 46-76344
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **31 Claims**



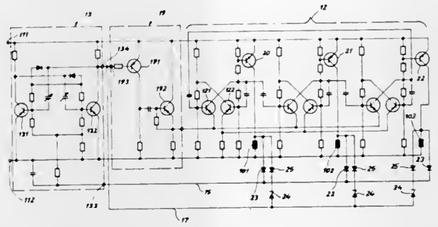
An integrated semiconductor rectifier device comprising a semiconductor substrate having a pair of mutually opposed principal surfaces, said substrate including a plurality of function regions of diodes or thyristors with their end surfaces exposed at said pair of principal surfaces respectively with an isolation region provided therebetween.

3,795,847
METHOD AND APPARATUS FOR STORING AND TRANSFERRING INFORMATION
William E. Engeler, Scotia, and Jerome J. Tiemann, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 56,353, July 20, 1970. This application Mar. 26, 1973, Ser. No. 345,179
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **3 Claims**



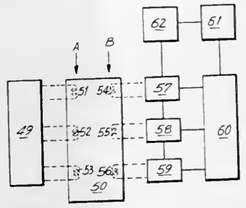
A method and apparatus for storing and transferring information employing a conductor-insulator-semiconductor (CIS) structure as the storage and transfer apparatus is disclosed herein. The CIS structure is initially charged to a predetermined voltage thereby forming a depletion region within the semiconductor beneath the insulated conductor. Minority carriers controllably generated within the semiconductor are stored at the surface of the semiconductor beneath the insulated conductor by an electric field existing in the depletion region, thus changing the predetermined voltage. Means for transferring the stored charge along the surface of the semiconductor are disclosed.

3,795,848
COLLECTORLESS D. C. MOTOR
Gerhard Schaub, Nuremberg, Germany, assignor to Gebr Buhler Nachfolger GmbH, Nurnberg, Germany
Filed Mar. 21, 1972, Ser. No. 236,707
Claims priority, application Germany, Apr. 1, 1971, 2115777
Int. Cl. H02k *29/02*
U.S. Cl. 318—138 **15 Claims**



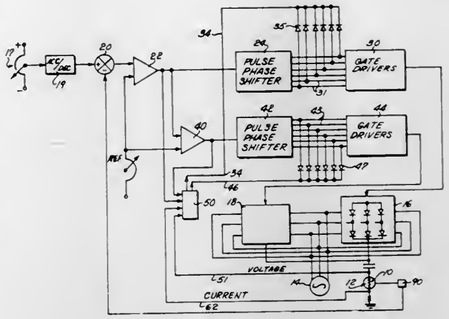
A collectorless D.C. motor includes a rotor, a stator, and a plurality of stator windings arranged on the stator in angularly spaced relationship. Each winding when energized produces a stationary magnetic field having a respective orientation. A control circuit including an oscillator energizes successive ones of the windings for respective time intervals determined by the oscillatory frequency of the oscillator. The resulting magnetic field revolves with an angular velocity determined by the oscillator.

3,795,849
BRUSHLESS DIRECT CURRENT MOTOR
Yoshikiyo Futagawa; Chifumi Komatsu; Yoshihiro Mitsui, all of Suwa, and Hiroshi Kamakura, Matsumoto, all of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo and Shinshu Seiki Kabushiki Kaisha, Suwa-shi, both of, Japan
Filed Dec. 22, 1971, Ser. No. 210,819
Claims priority, application Japan, Dec. 23, 1970, 45/116255
Int. Cl. H02k *29/02*
U.S. Cl. 318—254 **3 Claims**



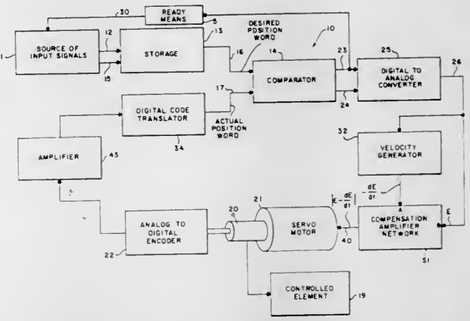
A self-starting brushless direct current motor incorporating a converter circuit for converting the rotational speed of the rotor of said motor into an electrical signal and a control circuit for controlling the current applied to the driving coils in response to said electrical signal.

3,795,850
REGENERATIVE MOTOR CONTROL SYSTEM
James W. Grygera, Racine, Wis., assignor to Eaton Corporation, Cleveland, Ohio
Filed July 26, 1971, Ser. No. 165,983
Int. Cl. H02p *5/06*
U.S. Cl. 318—331 **9 Claims**



Motor control system in which regenerative bridge is conditioned to be conductive when the gating angle for SCR's in the bridge for operating in a motoring direction is such that the SCR's will not fire because of the CEMF of the motor and the regenerative bridge becomes conductive only if the armature current is zero. The CEMF of the motor is compared with the error signal to determine whether the triggering pulses are at a phase which will fire the forward bridge.

3,795,851
DIGITAL SERVOSYSTEM
Theodore A. Gage, and Carl C. Crothers, both of Austin, Tex., assignors to Astro-Mechanics, Inc., Austin, Tex.
Continuation of Ser. No. 2,863, Jan. 14, 1970, abandoned. This application Jan. 3, 1972, Ser. No. 215,018
Int. Cl. G05b *19/28*
U.S. Cl. 318—602 **8 Claims**



Disclosed is a servosystem including a servo motor which shaft is positioned in response to digital command signals. A comparator or error generator produces a pair of digital output signals respectively representative of an error magnitude and direction signal necessary to rotate the shaft in the desired direction to reduce the error, the digital output signals being converted to a bidirectional analog signal which is combined with a time derivative signal, the resultant signal being applied to the servo motor. Also disclosed are novel comparator means having gating circuitry necessary to assure that the minuend signal is always greater than the subtrahend signal, a digital to analog convertor means effecting a unidirectional to

bidirectional analog conversion, and novel compensation network for combining an error analog signal with a velocity analog signal.

3,795,852

DEVICE ENSURING THE AUTOMATIC STOPPAGE OF A GUIDED MOVING BODY AT DESIRED POSITIONS NOT DEFINED BY EXTERIOR REFERENCE OR GUIDE MARKS

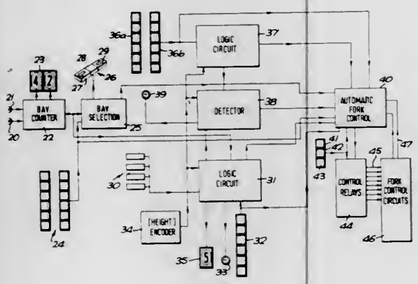
Joseph Favard, 31 Rue du Docteur Finlay, Paris, 15, France

Filed July 24, 1972, Ser. No. 275,090

Claims priority, application France, July 23, 1971, 71.27094

Int. Cl. G05b *19/28*

U.S. Cl. 318—602 **5 Claims**



A system for stopping a body in one of several possible stop zones along a limited path. The system includes a servo, including a drive, controlled by a comparator, and a special position encoding arrangement including a binary disc encoder for giving a fine indication of position and a second disc encoder with tracks defining successive sectors corresponding to the number of stop zones, a track of which the angular segments correspond to the stop zones and are each within one of the sectors and a further track having segments angularly overlapping the stop zone segments. The various tracks can provide signals in anticipation of an approach to a desired stopping position.

3,795,853

SERVOMECHANISMS THAT DECELERATES PROPERLY ON APPROACH TO LIMIT OF TRAVEL

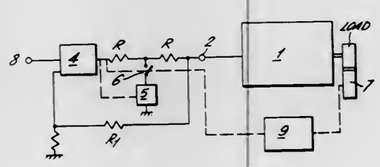
Joseph Colin Whitehouse, Blaby, England, assignor to The Rank Organisation Limited, London, England

Filed Dec. 27, 1971, Ser. No. 212,322

Claims priority, application Great Britain, Feb. 18, 1971, 4959/71

Int. Cl. G05g *5/00*

U.S. Cl. 318—618 **4 Claims**



In a velocity-controlled servomechanism having also a position sensor such as a potentiometer, the invention provides an input circuit responsive to the reaching of a predetermined position for applying a fixed voltage source as the input to the velocity servo to cause the servo actuator to decelerate, suitably as it approaches the limits of its travel.

3,795,854

SYSTEM FOR DRIVING AN ELECTRIC PULSE MOTOR HAVING DUTY CYCLE CONTROL OF WINDING EXCITATION SIGNALS

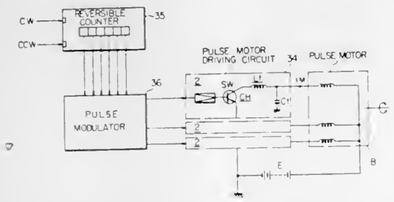
Kengo Kobayashi, Kawasaki, and Mitsuo Manabe, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

Filed Dec. 13, 1971, Ser. No. 207,037

Claims priority, application Japan, Dec. 25, 1970, 45-129759; Feb. 10, 1971, 46-5368; Mar. 19, 1971, 46-15561; Mar. 30, 1971, 46-18898; Mar. 30, 1971, 46-18899

Int. Cl. H02k *37/00*

U.S. Cl. 318—696 **6 Claims**



In a system for driving an electric pulse motor by changing the exciting phase in turn and stepping the rotor of the electric pulse motor, the present invention utilizes a control circuit which repeats the forward and reverse stepping signals in a ratio according to the step position, and stops or vibrates the rotor in a predetermined position between the step positions which are determined by the number of exiting phases and the number of teeth per each phase. According to the present invention, a number of steps per unit distance larger than the number of steps per unit distance which are determined by the number of exciting phases and the number of teeth per each phase can be obtained by suitably determining the sequence of input pulses of a logic circuit which determines the exciting phases. According to the exciting system of the present invention, the number of steps and the quantity of steps are not restricted by the number of phases nor by the driving system. In the driving system, by further detecting the position of the displacement of the mechanical system driven by the pulse motor and providing an error detector circuit which operates on the pulse motor via the above-mentioned control circuit so as to bring detected value into coincidence with the command value, a more precise numerical control system can be provided.

3,795,855

MAGNETIC RESONANCE PROBE SYSTEM

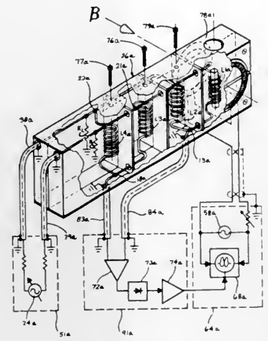
Gordon D. Browning, Castro Valley, Calif., assignor to The Cyclotron Corporation, Berkeley, Calif.

Filed Dec. 8, 1971, Ser. No. 206,074

Int. Cl. G01n *27/78*

U.S. Cl. 324—.5 R **11 Claims**

A magnetic resonance probe system having an impedance bridge wherein a sample containing coil forms one leg of the bridge and is positioned in a magnetic field for producing resonance in the sample; an RF generator connected to bridge



input terminals for exciting the sample; and means differentially comparing the potentials at the midpoint or null terminals.

3,795,856

METHOD AND APPARATUS FOR RECORDING SPIN RESONANCE SPECTRA USING A PULSE MODULATED RF EXCITATION SIGNAL

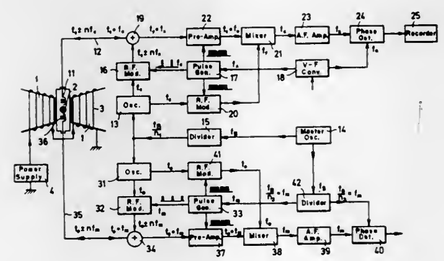
Toni Keller, Pallanden, Switzerland, assignor to Spectrospin A.G., Zurichfallanden, Switzerland

Filed May 19, 1972, Ser. No. 255,173

Claims priority, application Germany, May 28, 1971, 2126744

Int. Cl. G01n *27/78*

U.S. Cl. 324—.5 R **28 Claims**



A method and apparatus are described for performing time shared spin resonance analyses. A sideband of a pulse modulated RF signal is used to excite the spins of a sample, and the signals received from the excited spins are heterodyned with the carrier frequency of the pulse modulated RF signal. The heterodyned signal is detected by mixing it with a signal having a frequency equal to the product of the pulse repetition rate and the ordinal number of the sideband used to excite the spins. The frequency of the sideband used to excite the spins of the sample is swept through a range of frequencies simply by varying the pulse repetition rate. During such variations in the pulse repetition rate, the amplitude of the sideband signal is kept constant by varying the pulse duration or the amplitude of the carrier frequency signal. Apparatus for carrying out the method is described.

3,795,857

ELECTRICAL CONNECTOR TESTING APPARATUS HAVING A PLURALITY OF AND GATES

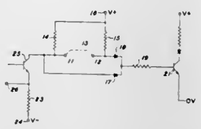
Donald C. Brown, Mitcheldean, England, assignor to Xerox Corporation, Stamford, Conn.

Filed May 26, 1972, Ser. No. 257,270

Claims priority, application Great Britain, June 11, 1971, 27,435/71

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **1 Claim**



The present invention provides method and apparatus for testing electrical connector apparatus. Preferably, the apparatus is arranged to test a plurality of connectors, and comprises a plurality of sets of apparatus as hereinafter set out, a counter, means responsive to the counter for applying in turn the signal to the first terminal of each of the sets, a single indicator connected to the outputs of all the AND gates, and means responsive to the counter for sampling the indicator during each count and stopping the counter when no output from the appropriate AND gate is received.

3,795,858

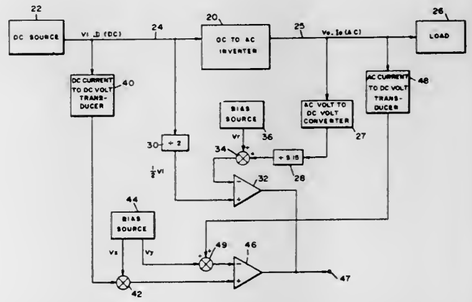
INVERTER RATIO FAILURE DETECTOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Albert P. Wagner, Pasadena, Calif.; Theodore J. Ebersole, King of Prussia, and Robert E. Andrews, Folsom, both of Pa.

Filed May 10, 1973, Ser. No. 359,157

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **10 Claims**

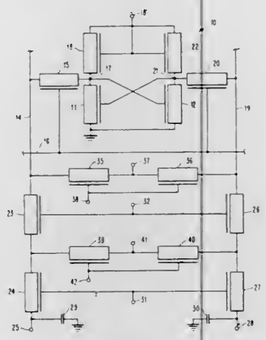


A failure detector which detects the failure of a DC to AC inverter is disclosed. The inverter under failureless conditions is characterized by a known linear relationship of its input and output voltages and by a known linear relationship of its input and output currents. The detector includes circuitry which is responsive to the detector's input and output voltages and which provides a failure-indicating signal only when the monitored output voltage is less by a selected factor, than the expected output voltage for the monitored input voltage, based on the known voltages' relationship. Similarly, the detector includes circuitry which is responsive to the input and output currents and provides a failure-indicating signal only when the input current exceeds by a selected factor the expected input current for the monitored output current based on the known currents' relationship.

3,795,859
METHOD AND APPARATUS FOR DETERMINING THE ELECTRICAL CHARACTERISTICS OF A MEMORY CELL HAVING FIELD EFFECT TRANSISTORS

Joseph F. Benante, Poughkeepsie, N.Y.; Nicholas M. Donofrio, and Richard H. Linton, both of Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1972, Ser. No. 268,370
Int. Cl. G01r *31/00, 31/26*
U.S. Cl. 324—73 R **9 Claims**



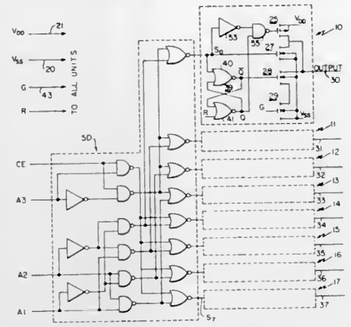
The electrical characteristics of a field effect transistor (FET) of a memory cell connected to a ZERO bit line and of an FET of the memory cell connected to a ONE bit line are determined through applying a substantially constant voltage to one of the ZERO and ONE bit lines while changing the voltage condition on the other of the bit lines. In one embodiment, the FET is a load device of the memory cell and has its source electrode connected to one of the bit lines and also to the drain electrode of another FET, which has its gate electrode connected to the other of the bit lines and functions as an active device of the cell. A substantially constant voltage is applied to the gate electrode through one of the bit lines to inactivate the FET which has its drain electrode connected to the source electrode of the FET having its electrical characteristics determined. The other of the bit lines is discharged for a predetermined period of time and then allowed to charge for another predetermined period of time. The measurement of this charged voltage will indicate whether the FET, which is the load device, is connected to the bit line and has the desired gain and whether the leakage current through the bit line is too high. In the other embodiment, a substantially constant voltage is applied to an FET which is the active device and has its drain electrode connected to one of the bit lines to have a substantially constant voltage applied thereto while its gate electrode is connected to the other of the bit lines to have two different voltages applied thereto. The difference in current flow through the active FET having the two different voltages applied to its gate electrode is employed to determine the threshold voltage of the FET.

3,795,860
NETWORK TESTER EMPLOYING LATCHED TEST SWITCHING UNITS

Tage Peter Sylvan, Milton, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed July 13, 1972, Ser. No. 271,269
Int. Cl. G01r *15/12, 31/02*
U.S. Cl. 324—73 R **11 Claims**

The testing apparatus disclosed herein is adapted to test backplane wiring so as to determine if all desired connections exist and whether any undesired connections may be present. Such backplanes typically comprise a multiplicity of terminal points which may be interconnected in arbitrary manner to form a plurality of networks of connected points. The tester employs an addressable switching and memory unit for each terminal point. When addressed, each point is first connected to a first bus and, when the addressing is terminated, is thereafter connected to a second bus, this second connection being maintained under the control of the memory or latch associated with each switching unit. Prior to being addressed, each point is in effect isolated by the switching unit and allowed to float in potential. As the successive points in a given

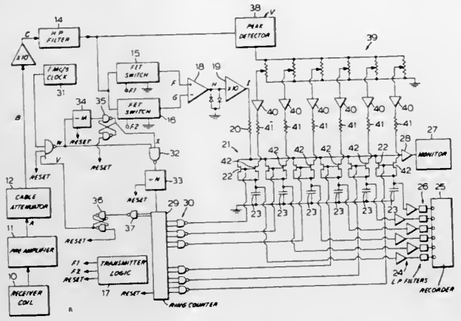


network are addressed, the system tests for continuity between the first and second buses to determine if the desired connections exist. After all terminal points which should be in the selected network have been latched into connection with the second bus, all remaining points are commonly switched into connection with the first bus. Testing for isolation at this time determines whether any undesired connections affecting the selected network are present.

3,795,861
APPARATUS FOR ANALYSING TRANSIENTS IN A PERIODIC SEQUENCE OF SIGNALS

Peter G. Lazenby, 13 Shadylawn Cres., Streetsville, and Hendrik M. Wondergem, 38 Dixington Cres., Weston, Ontario, both of Canada

Filed Feb. 20, 1973, Ser. No. 333,973
Int. Cl. G01r *27/28, 19/00*
U.S. Cl. 324—102 **11 Claims**

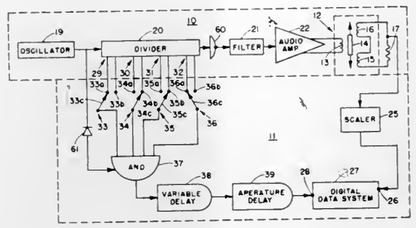


In an apparatus for analysing transients in a periodic sequence of signals, a signal averager is used for averaging sequential portions of a repetitive waveform characteristic of a sequence of the transients. In order to compensate for unwanted transient components determined by spurious variations in the peak amplitudes of the incoming signals, a peak detector having a number of independently adjustable output circuits is used to derive compensation signals from the incoming signals, the compensation signals being compounded with the sequential portions of the repetitive waveform.

3,795,862
DEMODULATOR FOR CARRIER TRANSDUCERS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to a invention of, and Robert F. Roller, McMurray, Pa.

Filed Nov. 24, 1971, Ser. No. 201,700
Int. Cl. G01r *19/22, 27/28*
U.S. Cl. 324—118 **9 Claims**

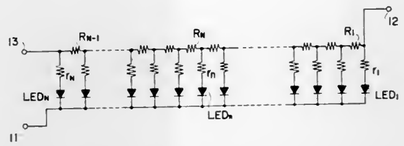


A carrier type transducer is supplied with a carrier wave via an audio amplifier, a filter, a frequency divider and an oscillator. The carrier is modulated in accordance with the parameter being measured by the transducer and is fed to the input of a digital data system which may include a voltmeter. The output of the oscillator and the output of each stage of the divider are fed to an AND or a NAND gate and suitable variable and fixed delay circuits to the command input of the digital data system. With this arrangement, the digital data system is commanded to sample at the proper time so that the average voltage of the modulated carrier is measured and may be utilized with ancillary circuitry for control of the parameter being measured by the transducer.

3,795,863
VOLTAGE INDICATOR EMPLOYING A RESISTIVE NETWORK AND LIGHT EMITTING DIODES

Jun-ichi Umeda; Eiichi Maruyama, both of Kodira, and Kazutoshi Ikegami, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 20, 1971, Ser. No. 135,689
Claims priority, application Japan, Apr. 20, 1970, 45/32992
Int. Cl. G01r *13/02, 31/00*
U.S. Cl. 324—122 **7 Claims**

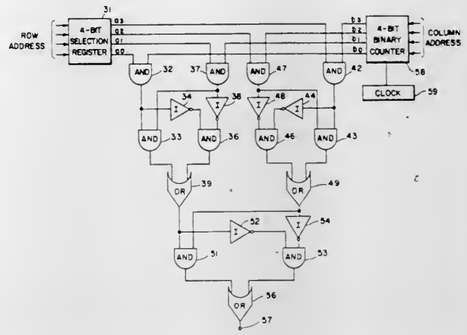


A voltage indicator employs a plurality of light-emitting diodes and a plurality of resistors suitably combined with each other, and the number of the light-emitting diodes to be energized is increased or decreased with the increase or decrease in the voltage to be indicated. Another voltage indicator has a plurality of columns comprising serially connected resistors and light-emitting diodes, the number of said light-emitting diodes being different by said columns, are connected in parallel with each other between two terminals, and the number of columns having illuminating light-emitting diodes is increased or decreased with increase or decrease in the voltage between said two terminals.

3,795,864
METHODS AND APPARATUS FOR GENERATING WALSH FUNCTIONS

James McFerrin Fullton, Jr., Chapel Hill, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,340
Int. Cl. H04j *3/00*
U.S. Cl. 325—38 R **21 Claims**

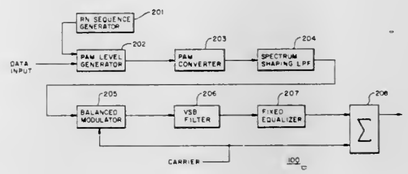


Apparatus for generating digital signals which are representative of the Walsh functions. In a first embodiment, a selection register receives the row address of a given row in a Hadamard array which corresponds to the desired Walsh functions. A binary counter receives the column address at which generation of the Walsh function is to begin and the outputs of the register and counter are selectively "AND"ed and "OR"ed, according to a predetermined procedure, to generate the desired Walsh function.

3,795,865
AUTOMATED REAL TIME EQUALIZED MODEM

Thomas R. Armstrong, Clearwater, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 23, 1972, Ser. No. 228,552
Int. Cl. H04b *7/00, 1/62*
U.S. Cl. 325—42 **20 Claims**

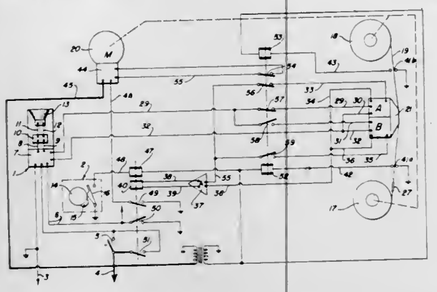


An Automated Real Time Equalized Modem (ARTEM) having multipath equalization by means of adaptive, quadrature matched filters and an adaptive transversal equalizer. ARTEM is a wideband (3kHz) system employing multilevel PAM-VSB (Pulse Amplitude Modulation-Vestigial Side Band) modulation and continuous real-time automatic channel measurement and equalization, wherein the channel pulse response is continually measured and equalized so that the modem receiver adapts itself to the varying HF medium.

3,795,866
COMBINED CLOCK AND AUDIO BROADCAST RECEIVER WITH AUTOMATIC CHIMES

Albert C. Johnson, 616 E. Lake View Ave., Milwaukee, Wis. 53217

Filed May 5, 1971, Ser. No. 140,517
Int. Cl. H04b *1/16*
U.S. Cl. 325—396 9 Claims

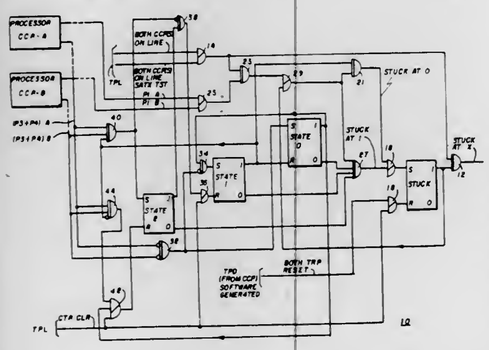


A clock utilized in conjunction with a broadcast receiver is coordinated with a control so that a pre-recorded audible time chime signal is automatically played directly through the loudspeaker of the receiver. The clock and control cause the chime signal to be played through the speaker, whether the receiver switch is in on or off position. When the receiver is on and broadcast material is being directed through the speaker, the control substitutes the chime signal for the broadcast material. The control system is connected between the clock and the audio stage of the receiver and is adapted to by-pass the receiver's on-off switch to provide power to the receiver in the event the switch is in off position. The control is actuated by a switch which is responsive to the position of a clock shaft and, in the embodiment shown, includes a pair of tape reels which are driven in forward and reverse direction in response to control signals on the tape. The tape is four track and includes a pair of control signal channels and a pair of audio chime channels, one of each channel being provided for each direction of tape movement. The tape direction is reversed at either end in response to control signals, to thereby provide a continuously operating automatic system. The chime changes with the change in time to provide the correct time of day.

3,795,867
PULSE DETECTION ARRANGEMENT

Leo V. Jones, Jr., Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 2, 1973, Ser. No. 347,302
Int. Cl. H03d *13/00*
U.S. Cl. 328—133 9 Claims

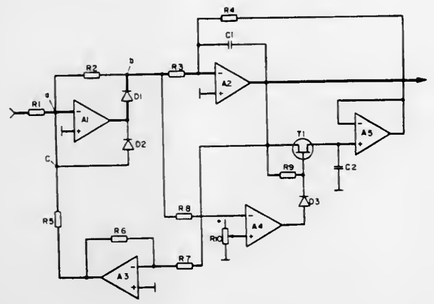


A pulse detection arrangement indicates the malfunctioning of a pair of timing generators producing a series of first and second synchronously recurring timing pulses by generating a stuck-at-one pulse when either one of the first or second pulses is generated and remains in a true condition as a result of a malfunction, and by generating a stuck-at-zero signal when either one of the timing pulses fails to be generated. The arrangement includes a zero bi-stable device responsive to the absence of both of the first and second pulses to generate a zero state pulse, a first bi-stable device responsive to either one of the first or second pulses and to the zero state pulse for generating a state one pulse, the state one pulse causing the zero bi-stable device to terminate its zero state pulse, a second bi-stable device responsive to the coincidence of the first pulse and the second pulse and to the state one pulse for generating a state two pulse, the state two pulse causing the first bi-stable device to terminate its state one pulse upon the lack of coincidence of the first and second pulses, the second bi-stable device terminating its state two pulse upon the occurrence of the state zero pulse or upon the coincidence of the first and second pulses and of the termination of the state one pulse, and a logic circuit for generating the stuck-at-one pulse in response to the absence of the state zero pulse and to the absence of the state one pulse and of the state two pulse after a predetermined time interval, the logic circuit generating the stuck-at-zero pulse in response to the state one pulse after a predetermined timing interval.

3,795,868
APPARATUS FOR THE MEASUREMENT OF RMS VALUES

Wolfgang Ohme, Boblingen; Karl Grund, Sindelfingen, and Jorg Winkler, Schonaich, all of Germany, assignors to Hewlett-Packard GmbH, Boblingen, Germany

Filed July 10, 1972, Ser. No. 270,115
Claims priority, application Germany, July 26, 1971, P 21 37 281.6
Int. Cl. H03k *5/00*; G01v *15/00*
U.S. Cl. 328—144 5 Claims

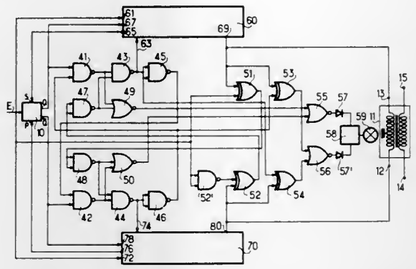


There is disclosed an apparatus including the ensemble of a squaring means and an averaging means for the continuous measurement of RMS values which is especially useful for acoustical applications. A storage means in an averager is discharged by constant current which results in a linear discharge function of the averager so that quickly following input signals are no longer covered by the exponential discharge characteristic of the prior art detectors of this kind. The input signal is directly supplied to the one input of a multiplier and is supplied to the other input of said multiplier via an operational amplifier which has another multiplier in its feedback in order to increase the dynamic range of the circuitry.

3,795,869
FREQUENCY SOURCE INCLUDING FAULT RESPONSIVE CONTROL

Hubert Mionet, Antony; Francois Bronner, Fontenay-le-Fleury, and Pierre Fruteau, Paris, all of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcated, Paris, France

Filed Feb. 14, 1972, Ser. No. 225,897
Claims priority, application France, Feb. 12, 1971, 7104712
Int. Cl. H03f *19/00*
U.S. Cl. 330—2 12 Claims

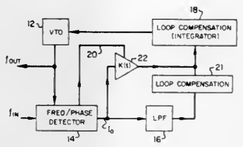


A frequency source including an input circuit connected to receive an input pulse stream and arranged to direct alternate pulses into respective first and second amplifier systems whose outputs are combined in a summation element, and first and second logic circuits connected to receive the outputs of the respective amplifier systems and control signals from the input circuit and arranged to respond to a fault in the respective amplifier system by causing all the input pulses to pass to the other system.

3,795,870
ADAPTIVE BANDWIDTH PHASE LOCK LOOP EMPLOYING HIGH SPEED LOOP LOCK AND FAST PHASE TRANSIENT REDUCTION

Steven Neil Sanders, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 30, 1972, Ser. No. 302,063
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A 7 Claims

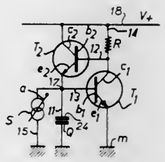


A phase lock loop system employing a frequency-phase detector circuit operating in the frequency detector mode to produce a high level dc control signal to the VCO of the loop to slew the VCO rapidly to lock the loop, the bandwidth of the loop being relatively wide before the loop reaches steady-state lock thereby to reduce the phase transient to the steady-state lock at a rapid rate, the loop bandwidth at steady-state being lower in value and at an optimum value for good noise characteristics. At loop lock, the frequency/phase detector circuit switches to its phase detector mode of operation for normal phase lock loop operation. Speed up of loop lock is accomplished by the enabling of a variable high gain amplifier during off lock to substantially increase the output level of the phase detector to the VCO tuning circuitry.

3,795,871
HIGH FREQUENCY PHASE SHIFT OSCILLATOR UTILIZING FREQUENCY DEPENDENT TRANSISTOR PHASE SHIFTS

Jacques Franquet, Noisy le Roi, France, assignor to Electronique Marcel Dassault, Paris, France

Filed June 6, 1972, Ser. No. 260,145
Claims priority, application France, June 9, 1971, 7120881
Int. Cl. H03b *3/04, 5/00*
U.S. Cl. 331—45 6 Claims

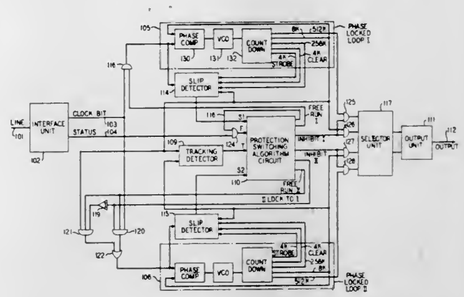


The invention discloses a method and device for generating electrical oscillations in a closed loop circuit comprising an amplifier and a phase shifter, transistors being used as components of the amplifier and phase shifter which transistors are operated above their frequency $f\beta$.

3,795,872
PROTECTION SCHEME FOR CLOCK SIGNAL RECOVERY ARRANGEMENT

Orlando Napolitano, Cliffwood; Gerald Philip Pasternack, Colts Neck, and Burton R. Saltzberg, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 18, 1972, Ser. No. 289,948
Int. Cl. H03b *3/04*
U.S. Cl. 331—49 6 Claims

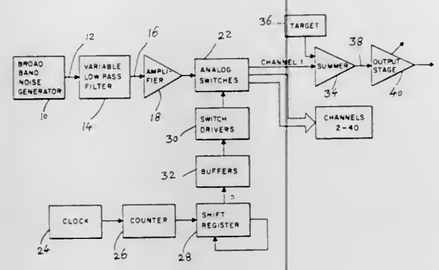


Clocking signals are recovered from an incoming signal train by a master clock oscillator phase locked to the incoming signals and, in the event of failure of the master clock, by a standby clock similarly phase locked to the incoming signals. When an outage of the incoming signal is detected, or when it is presumed that the incoming signals are being improperly received, both clocks are unlocked from the incoming signals and the standby clock is phase locked to the output of the master. If there is subsequent phase slippage of the standby, it is unlocked from the master and both clocks run free. In one operational sequence, both clocks are again phase locked to the incoming signals if signal reception is restored.

3,795,873
MULTICHANNEL NOISE SIMULATOR

Maier O. Fein, East Lyme, and Roy A. Hilt, Uncasville, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,573
Int. Cl. H03b *29/00*
U.S. Cl. 331—78 4 Claims

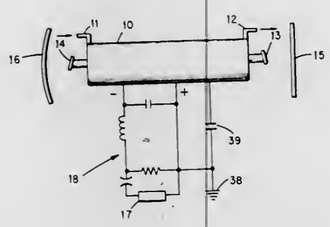


A multichannel noise simulator having a variable interchannel correlation approximates the noise found at the output of an array of hydrophones. The simulator can be adjusted to control interchannel correlation to simulate a real array noise which can vary from being completely uncorrelated to highly correlated. The output of a band limited noise source is switched sequentially from one output line to the next at a fixed sample rate. Since the sample rate has a correlation proportional to the reciprocal of the bandwidth, the correlation is varied by varying the bandwidth of the input noise. The change of sample rate thus permits the noise in various channels of the multichannel simulator to range from uncorrelated to highly correlated.

3,795,874
APPARATUS FOR PUMPING A HIGH PRESSURE LASER SYSTEM

Yu-Li Pan, Oakland; Anthony F. Bernhardt, Piedmont, and Joe R. Simpson, Dublin, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 3, 1972, Ser. No. 303,553
Int. Cl. H01s *3/09*
U.S. Cl. 331—94.5 8 Claims

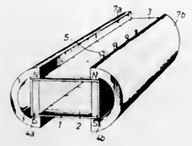


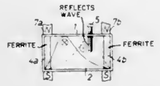
An apparatus for optically pumping a transversely excited, high pressure gaseous laser system by means of a double electrical discharge using a capacitor-bank network and electronic circuitry for implementing the method. Laser energy pulse outputs of approximately 17 Joules/liter at efficiencies of 24% have been obtained by the inventive concept.

3,795,875
REFLEX ISOLATORS AND BRANCHED WAVEGUIDE NETWORKS UTILIZING THE SAME

Kiyohiko Suzuki, Tokyo, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 1, 1972, Ser. No. 285,636
Claims priority, application Japan, Sept. 1, 1971, 46-66643; Mar. 1, 1972, 47-20521
Int. Cl. H01p *1/32, 5/12*
U.S. Cl. 333—9 4 Claims



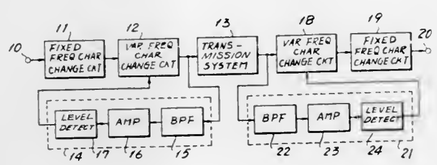


A reflex isolator using a waveguide having an inlet and an outlet, in which at least one ferromagnetic element having a high specific resistance is provided in the waveguide to shift the maximum points of an electric field in the waveguide when a direct-current magnetic field is applied to the electric field displacement element. Stubs are provided at the shifted maximum points of the electric field to reflect microwaves from the outlet. Two reflex isolators are respectively provided at two branching waveguides in a Y-branch waveguide to form a microwave coupler, in which coupling between the two branching waveguides is effectively suppressed.

3,795,876
COMPRESSION AND/OR EXPANSION SYSTEM AND CIRCUIT

Nobuaki Takahashi, Yamato; Kazunori Nishikawa, Fujisawa; Yukinobu Ishigaki, Yamato; Yasuo Itoh, Tokyo, and Yoshitoshi Fujita, Fujisawa, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

Filed Apr. 4, 1972, Ser. No. 241,026
Claims priority, application Japan, Apr. 6, 1971, 46/21258; June 7, 1971, 46/39987; Oct. 19, 1971, 46/82618
Int. Cl. H04b *1/64*
U.S. Cl. 333—14 27 Claims

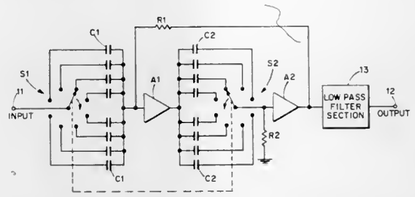


A compression and/or expansion system comprises fixed frequency characteristic changing means having a specific fixed frequency-response characteristic which increases or decreases the level of an input signal in a predetermined frequency band. A variable frequency characteristic changing means has a characteristic which varies so that it approaches a characteristic complimentary with the characteristic of the fixed frequency characteristic change means as the level of the input signal becomes larger and approaches a flat characteristic as the level of the signal becomes smaller. The signal is effectively compressed or expanded according to its level by passing through the fixed and variable frequency characteristic change means.

3,795,877
HIGH Q NOTCH FILTER

Margaret A. Poole, Wayland, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 30, 1973, Ser. No. 355,748
Int. Cl. H03h *7/10, 7/14*
U.S. Cl. 333—70 A 6 Claims

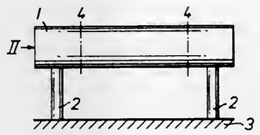


A notch filter having a first group of capacitors which are connected in recurring sequence to an input terminal by a first commutating switch. The other terminals of the first group of capacitors are connected in common through an operational amplifier to a second group of capacitors. A second commutating switch operates in synchronism with the first switch to connect each of the second capacitors in recurring sequence to a second operational amplifier. A first feedback resistance is connected from the output of the second amplifier to the input of the first amplifier, and a second resistance is connected between the input of the second amplifier and ground. A low pass filter section is connected between the output of the second amplifier and an output terminal to provide a smooth output signal. The notch filter provides maximum attenuation at the frequency of the commutating switches.

3,795,878
FLEXURAL VIBRATOR AS RESONATOR FOR MECHANICAL FILTERS

Hans Schussler, Ulm, Danube, Germany, assignor to LICENTIA Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Dec. 27, 1972, Ser. No. 318,935
Claims priority, application Germany, Dec. 30, 1971, P 21 65 552.7
Int. Cl. H03h *9/06, 9/24*
U.S. Cl. 333—71 5 Claims

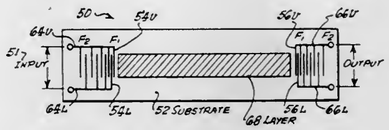


In a mechanical filter employing flexural vibrators as resonators, such a vibrator undergoes flexural vibrations. Each vibrator is mounted within the filter arrangement by one or more holding elements. The holding elements are connected to the respective vibrator at a position spaced from the vibration nodes of the vibrator and are designed so as to constitute a quasi (2n-1/4) λ flexural coupling line for the flexural vibrations established in the vibrator. The cross section of both the vibrators and the holding elements can be circular.

3,795,879
COMPOSITE DISPERSIVE FILTER

Harper John Whitehouse, San Diego, Calif., and Herman Van de Vaart, Harvard, Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 4, 1973, Ser. No. 347,748
Int. Cl. H01v *7/00;* H03h *9/26, 9/30*
U.S. Cl. 333—72 6 Claims



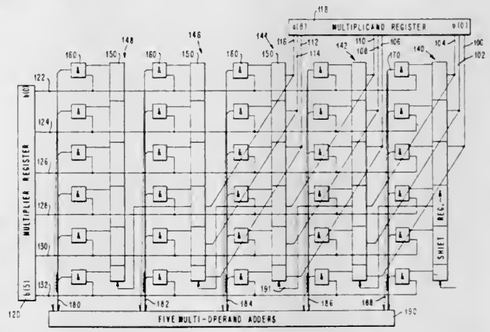
TRANSDUCER DEVICE WITH LINEAR DISPERSION CHARACTERISTICS

A surface-wave device upon whose surface an acoustic wave may be made to propagate by the transduction of an electrical signal, which may be applied to the input of the device, comprising a substrate capable of propagating an acoustic surface wave and a conductive structure disposed upon the substrate. The conductive structure includes at least two pairs of sets of linear electrodes, an input pair and an output pair, one set of each pair being interdigitated with the other set of the same pair; and a pair of bus bars connected to opposite ends of the sets of electrodes, one bus bar for each set of electrodes of the input pair and output pair. The spacing between any two adjacent electrodes of the input pair and of the output pair of sets of electrodes varies in a prescribed manner, the spacing of the output pair being a mirror image of the input pair, the unequal spacing causing a modification of the propagation characteristics of the acoustic wave. A layer of material capable of propagating an acoustic wave is chosen and disposed upon the propagating structure, the layer being disposed at least between the input and output pairs of sets of electrodes. The linear spacing of the electrodes is modified in such a manner as to compensate for the progagation characteristics of the chosen dispersive material subsequently disposed upon the electrodes, resulting in a surface wave device having a larger time-bandwidth product and pulse compression ratio than in a device not including both complementary features.

3,795,880
PARTIAL PRODUCT ARRAY MULTIPLIER

Shanker Singh, Hyde Park, and Ronald Waxman, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

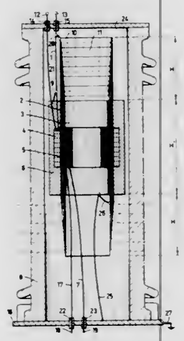
Filed June 19, 1972, Ser. No. 264,082
Int. Cl. G06f *7/54*
U.S. Cl. 235—164 4 Claims



A multiplier comprising a partial product array means for receiving an *m*-bit multiplier and an *n*-bit multiplicand for

generating a partial product array of numbers in a plurality of columns. Each of the columns is connected to a multi-operand adder capable of simultaneously adding m-bits.

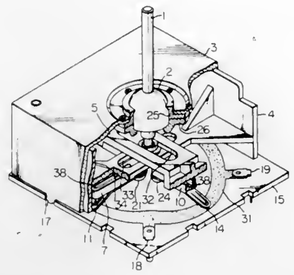
3,795,881
HIGH VOLTAGE CURRENT TRANSFORMER
Vaino Tuure Kalevi, Panu, Vaasa, Finland, assignor to Oy Stromberg Ab, Vaasa, Finland
Filed Mar. 21, 1973, Ser. No. 343,457
Claims priority, application Finland, Apr. 7, 1972, 974/72
Int. Cl. H01f *15/04, 15/14*
U.S. Cl. 336—69 **13 Claims**



A high voltage current transformer comprising a hollow support insulator within which is arranged a main insulator, a magnetic circuit associated with this, at least one primary winding and at least one secondary winding together with necessary conductors. The main insulator is of tubular form and made up of a number of metal foil tube elements located inside each other in such a manner as to overlap each other partially but not completely, with insulator elements of tubular form arranged between them. A first winding (either a primary or a secondary winding) is located around the main insulator and a second winding (either a secondary or a primary winding) is located inside the main insulator approximately opposite to the said first winding. The magnetic circuit comprises two separate core sections, one of which is arranged outside the main insulator and the other one inside it.

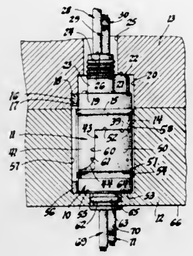
3,795,882
COORDINATED CONTROL DEVICE FOR VARIABLE RESISTORS
Tsugio Tokubo, Yokohama, Japan, assignor to Teikoku Tsushin Kogyo Co., Ltd., Kawasaki-shi, Kanagawa-ken, Japan
Filed Jan. 24, 1973, Ser. No. 326,194
Claims priority, application Japan, May 6, 1972, 47/44740
Int. Cl. H01c *9/02*
U.S. Cl. 338—128 **13 Claims**

A device for coordinatedly controlling a plurality of variable resistors so as to achieve a desired combination of a plurality of variable resistors, said device comprising a first horizontal crosspiece having a lengthwise slot and a lateral plate perpendicular to the length of the crosspiece per se at each end thereof and second crosspiece having the similar slot and lateral plates the underside of which is partly on the same level as the underside of the first crosspiece when it is mounted on the second crosspiece, the two crosspieces being



arranged crosswise and being moved relatively on a plane so that their movement moves a plurality of wipers so as to wipe the corresponding resistor elements.

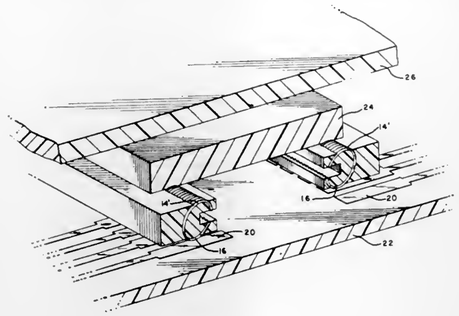
3,795,883
ELECTRICAL DISCONNECT MEANS
Albert C. Ackerman, Troy, and Walter J. Bowman, Detroit, both of Mich., assignors to Mac Valves, Inc., Oak Park, Mich.
Filed Jan. 2, 1973, Ser. No. 320,589
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 P **5 Claims**



A two-piece electrical disconnect means which can be assembled or disconnected in an in-line connection or from two directions 90° apart, or from any angle in between. A female plug has a molded insulating body which carries a plurality of receptacle type female terminals which are each open on the outer end and on one side thereof for the reception of a spade type male terminal, at any angular position between and including an in-line position and a right-angle position. A male plug has a molded insulating body which carries a plurality of spade type male terminals which are adapted to be received in the female receptacle terminals.

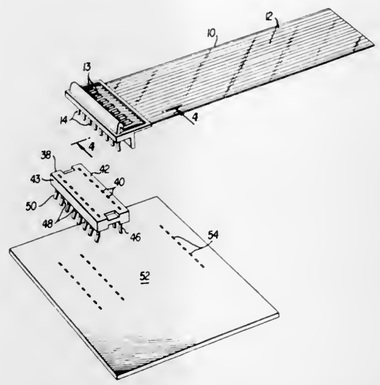
3,795,884
ELECTRICAL CONNECTOR FORMED FROM COIL SPRING
Yasumasa Kotaka, Kawasaki, Japan, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Mar. 6, 1973, Ser. No. 338,492
Int. Cl. H05k *1/12*
U.S. Cl. 339—17 LM **7 Claims**

Connector for connecting conductors on printed circuit board comprises insulating block having coil spring encapsulated therein. The block has an axial cut extending through the spring to separate the individual turns. The turns are exposed



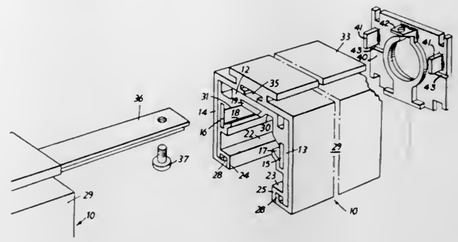
on the upper and lower sides and PC boards are clamped against these sides. The turns serve as conductors extending between the terminal pads on the PC boards.

3,795,885
ADAPTOR FOR CONNECTING FLAT CONDUCTOR CABLE
Jerome Andrew Desso, Steelton, and Homer Ernst Henschen, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 8, 1972, Ser. No. 224,552
Int. Cl. H01r *13/58;* **H05k** *1/04*
U.S. Cl. 339—17 F **5 Claims**



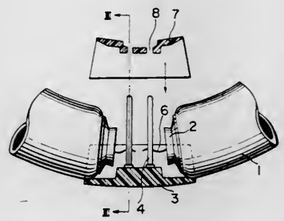
An adaptor for connecting flat conductor cable, especially to a DIP header or a PC board, is prefabricated as a one-piece member having a flat planar surface with parallel slots for receiving one end of the flat cable from one side through one of the slots and then locking it against the flat planar surface by bending the male contact pins of terminal contacts secured to the flat cable through substantially a 90° angle and feeding the same through the other slot, such that the male contact pins project through the other side of the flat planar surface. On the other side, elongate flat surfaces oriented at right angles to each other are provided for positioning the adaptor and its associated conductor cable in proper relation to the DIP header or PC board. Accordingly, the adaptor inherently contains strain relief provisions for the conductor cable.

3,795,886
TRACK COUPLING FOR ELECTRICAL DISTRIBUTION TRACKS
Derek James Hart, London, England, assignor to Thorn Electrical Industries Limited, London, England
Filed Aug. 4, 1972, Ser. No. 278,039
Claims priority, application Great Britain, Sept. 17, 1971, 43,547/71
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **10 Claims**



A couples electrically connecting exposed tracks conductors in neighboring lengths of electrical distribution tracks, the couples having contact elements which are moved by a cam assembly.

3,795,887
BASE FOR ANNULAR LAMP
Noriyasu Higuchi, Takatsuki, Japan, assignor to Matsushita Electronics Corporation, Kadoma-shi, Osaka, Japan
Filed Sept. 20, 1972, Ser. No. 290,582
Claims priority, application Japan, Sept. 20, 1971, 46-86166
Int. Cl. H01r *13/26;* **H01j** *5/62*
U.S. Cl. 339—50 C **2 Claims**

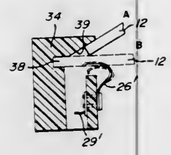


A base for an annular lamp comprising a pair of semicylindrical members and base pins upstanding from one of these members. Each base pin is provided with an axial slit for holding therein an external lead of a glass bulb.

3,795,888
PRINTED CIRCUIT BOARD EDGE CONNECTOR REQUIRING ZERO INSERTION FORCE
Frank L. Nardo, and Edward A. Salners, both of Mt. Prospect, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed June 30, 1972, Ser. No. 267,772
Int. Cl. H05k *1/07*
U.S. Cl. 339—176 MP **2 Claims**

An edge connector for a printed circuit board or the like wherein substantially zero insertion force is required upon inserting such circuit board at a predetermined angle to the connector body, but wherein when the circuit board is pivoted to

a substantially horizontal position, contact spring members included in the connector device engage conventional connection tabs positioned along the inserted edge of the printed circuit board to establish an optimum low resistance connection therebetween. Three embodiments of the edge connector device are shown and described.

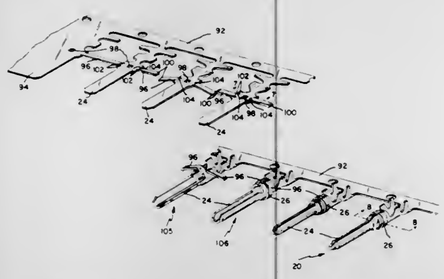


3,795,889

PIN AND SOCKET TYPE ELECTRICAL CONTACT TERMINALS

Warren David Nauman, Elizabethtown; Clair William Yerger, Hershey, and Robert Lee Douty, Millersburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 5, 1972, Ser. No. 259,645
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **12 Claims**



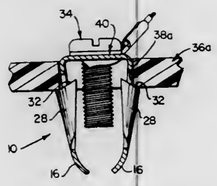
The present invention relates to a pin or socket type contact terminal comprising integrally stamped and formed terminal body and terminal collar. The terminal body includes a formed cylinder having an axially extending open seam and the terminal collar is formed to coaxially encircle the terminal body. The collar provides a surface extending laterally of the cylindrical surface of the terminal body upon which a snap-in retention means associated with a terminal housing acts to prevent unintentional withdrawal of the contact terminal from the housing.

3,795,890

TERMINAL CONNECTOR

Harold S. Van Buren, Jr., Lexington, Mass., assignor to TRW Inc., Cleveland, Ohio

Filed June 7, 1972, Ser. No. 260,643
Int. Cl. H01r *9/10*
U.S. Cl. 339—217 S **3 Claims**



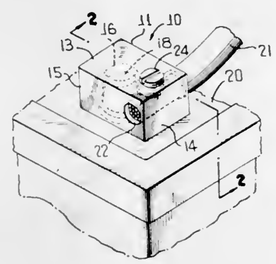
A spring clip for securing a terminal connector to an apertured workpiece includes a shank portion having a pair of opposed legs carrying snap lugs disposed opposite internal openings in the legs. The lugs are compressible into the openings in the legs and toward each other during insertion of the shank portion in a workpiece aperture. Each of the lugs is formed as a U-shaped bight having a longitudinally tapered and transversely arced external surface which facilitates inward, camming compression of the lugs during shank insertion. While the lugs are resilient in the sense that they are compressible as aforesaid and will snap apart to engage the workpiece subsequent to full insertion, the U-shaped bight form provides for substantial rigidity in each lug per se which in turn provides for aggressive snap engagement of the workpiece. The workpiece engaging edges of each of the lugs are disposed at a relatively steep acute angle to the head of the clip to thereby render a given size clip effective for use over a relatively wide range of workpiece thicknesses and aperture widths and to automatically compensate for thickness variations adjacent the aperture of an individual workpiece.

3,795,891

BATTERY TERMINAL

Albert Preston Bailey, P. O. Box 386, Santa Anna, Tex. 76878

Filed May 22, 1972, Ser. No. 255,208
Int. Cl. H01r *11/26*
U.S. Cl. 339—232 **11 Claims**



This disclosure relates to battery terminals utilized for connecting cables to post of batteries. Each battery terminal is in the form of a block having a bore up through the underside thereof for receiving a battery post, the bore being threaded and being interlocked and being engageable with a battery post while the block serves to protect the battery post against corrosion. At the same time, the battery terminal is provided with means whereby one or two cables, without special ends, may be readily secured to the battery terminal.

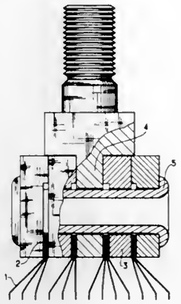
3,795,892

ASSEMBLY ARRANGEMENT FOR ELECTRODE PLATES OF ELECTROCHEMICAL GENERATORS

Jacques Reynier, Eymet, France, assignor to Saft-Societe Des Accumulateurs Fixes Et De Traction, Romainville, France

Filed Apr. 28, 1972, Ser. No. 247,447
Claims priority, application France, Apr. 29, 1971, 7115364
Int. Cl. H01r *7/08*
U.S. Cl. 339—244 R **8 Claims**

Electrochemical generator comprising sets of positive plates and sets of negative plates. The plates of each set are respectively interconnected and connected to at least one terminal, at the level of tabs of said plates, by cross members borne by a common shaft and tightened against one another and with a terminal element extending outwardly from the level of the shaft axis. Each cross member has a recessed lower portion on one of its faces designed when the cross members are assembled on the shaft to define spaces with the unrecessed face of the adjoining cross member so as to provide for clamping of tabs of electrode plates that are inserted into such spaces when the shaft which may be rivet-like means is riveted and tightens the assembled cross members on each shaft together.

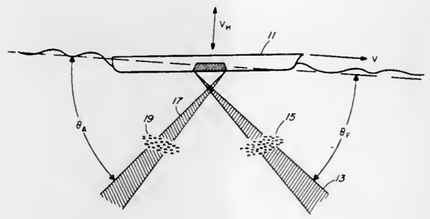


3,795,893

DOPPLER SPEED LOG

Jacob A. Kritz, Westbury, and Seymour D. Lerner, Plainview, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed July 6, 1971, Ser. No. 159,853
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 D **16 Claims**



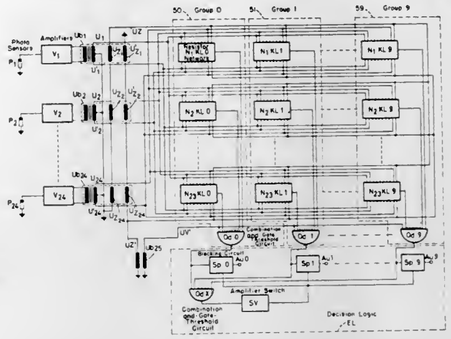
A doppler speed log for marine vessels transmits fore and aft pulses of high frequency sonic energy. The log normally operates in a mode such that a gating pulse permits signal processing circuits to respond only to signals derived from reflections from minute scatterers in the water occurring at a specified distance from the hull of the vessel. If the vessel is in shallow water, a variable threshold comparator permits the signal processing circuits to respond to reflections from the sea bottom when the magnitude of these reflected signals exceeds the threshold level. The processing circuit forms fore and aft enabling pulses each having a duration equal to the time required for the reception of a specified number of cycles of sonic energy reflected from the fore and aft directions, respectively. Pulses from a calibrated clock source are applied to an up-down counter during the time that only one of the enabling pulses exists. The readings corresponding to a specified number of transmitted pulses are accumulated and displayed on a suitable readout means.

3,795,894

METHOD AND APPARATUS FOR COMPARISON

Arthur Klemt, Roggensteiner Strasse 5, Olching 8031, Germany

Continuation of Ser. No. 879,771, Nov. 25, 1969, abandoned. This application Sept. 23, 1971, Ser. No. 183,257
Claims priority, application Germany, Nov. 28, 1968, 1811420
Int. Cl. G06k *9/06*
U.S. Cl. 340—146.3 MA **24 Claims**



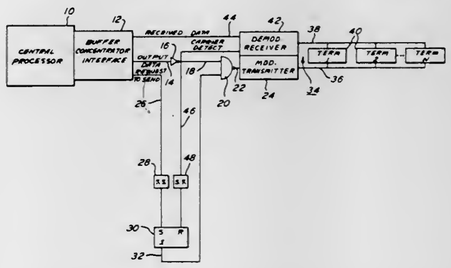
A method of comparison and the apparatus therefor is provided for use in character recognition systems wherein voltages representing the features of an unknown character are applied to resistance networks which produce potential levels in response thereto. The values of the resistors in the resistance networks are determined in accordance with a plurality of predetermined variations among characters. The potential levels produced are compared with predetermined levels and the result of the comparison is representative of the identity of the character.

3,795,895

POLLING INTERRUPT FOR DATA INFORMATION SYSTEM

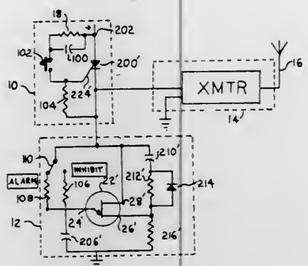
Edward Dillingham, Pacific Palisades, Calif., assignor to Data Source Corporation, El Segundo, Calif.

Filed Mar. 28, 1972, Ser. No. 238,897
Int. Cl. H04q *5/00*
U.S. Cl. 340—163 R **10 Claims**



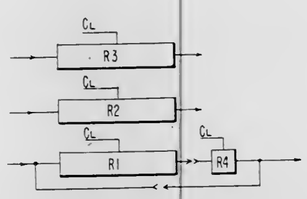
A polling interrupt for a data information system in which a plurality of terminals on a single communication channel may be sequentially polled. The address subsequently transmitted over the communication channel is aborted upon a terminal having information to send recognizing its address and generating a carrier on a subchannel of the full duplex communication channel. Means are provided for generating a mark or "1" condition on the subchannel carrying the polling information wherein each address of the polling information has a space or "0" condition in one of its last bit positions.

3,795,896
WIRELESS ALARM SYSTEM
Roger Isaacs, Staten Island, N.Y., assignor to Avant-Guard Devices, Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,570
Int. Cl. H04b *7/00*
U.S. Cl. 340—171 R **6 Claims**



A wireless alarm system suitable for home and office use which includes transmitter and receiver assemblies. Two types of transmitters are includeable in this system, with one of said transmitters providing an alarm signal of a predetermined duration while the other of said transmitters selectively provides an alarm or an inhibit signal, each having different durations. The second of the transmitters may be portable, and both transmitters can send coded signals to the receiver which includes a decoder or detector means to provide a signal for operation of the receiver. An alarm is connected to the receiver and is actuated thereby upon receipt of a suitable alarm signal.

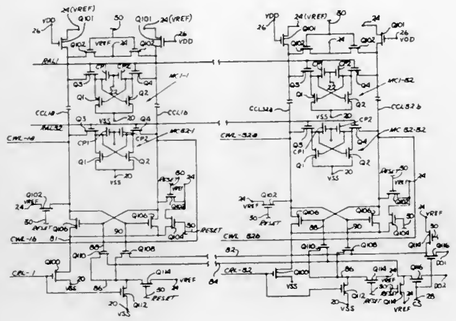
3,795,897
METHOD AND DEVICE FOR TRANSFER OF SERIES PROCESS INFORMATION PARTICULARLY FOR SYNCHRONIZATION IN AN ELECTRONIC COMPUTER
Jean Cazanove, Barentin, France, assignor to Burroughs Corporation, Detroit, Mich.
Filed Aug. 2, 1972, Ser. No. 277,229
Claims priority, application France, Aug. 30, 1971, 71.31333
Int. Cl. G06f *11/00*; **G06k** *17/00*
U.S. Cl. 340—172.5 **11 Claims**



The present invention relates to the series processing of information in electronic calculator circuits.

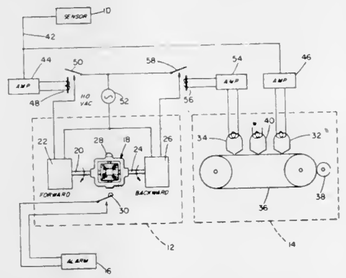
According to the disclosure, an auxiliary shift register looped with an information shift register is used. A special pilot digit is introduced into the auxiliary shift register, and shifting is caused for each digit until the pilot digit returns to the auxiliary register.

3,795,898
RANDOM ACCESS READ/WRITE SEMICONDUCTOR MEMORY
Rustam J. Mehta, Sunnyvale; Mike Geilhufe, Los Gatos, and Thomas L. Palfi, Cupertino, all of Calif., assignors to Advanced Memory Systems, Sunnyvale, Calif.
Filed Nov. 3, 1972, Ser. No. 303,420
Int. Cl. G11c *11/34*
U.S. Cl. 340—173 R **25 Claims**



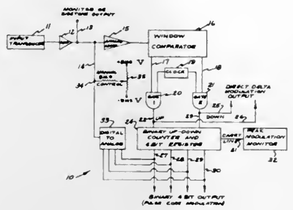
A Random Access Read/Write Semiconductor Memory for fabrication in integrated circuit form using field effect devices. The memory is a dynamic memory having a provision for maintaining DC stability in the four transistor memory cells so as to not require periodic refreshing. Various unique buffer and timing circuitry is also provided for minimizing power consumption, for compatibility with TTL circuitry, and for providing very fast read/write access from a single clock signal.

3,795,899
CONDITION MONITORING APPARATUS
Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.
Filed Mar. 8, 1972, Ser. No. 232,722
Int. Cl. G08b *21/00*; **G06g** *3/02*; **G11b** *5/00*
U.S. Cl. 340—237 S **4 Claims**



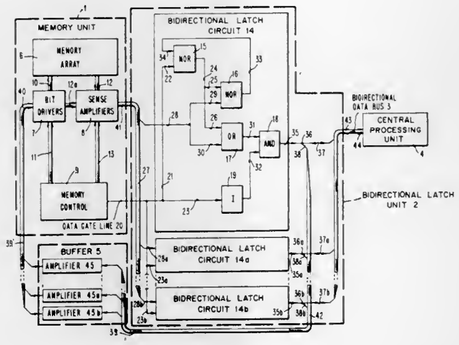
A system for indicating how many minutes of excess smoke emission have occurred during a predetermined time interval, e.g., an hour, includes an accumulator for storing the time duration value of the excess smoke signal. The excess smoke signal is applied to a delay means and the output of the delay means is applied to decrease the time duration value of the signal stored therein.

3,795,900
MULTIFUNCTION AUDIO DIGITIZER
Leo G. Monford, Jr., Texas City, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Nov. 9, 1971, Ser. No. 196,931
Int. Cl. H03k *13/22*
U.S. Cl. 340—347 AD **1 Claim**



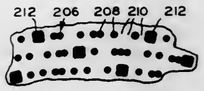
An illustrative embodiment of the present invention includes apparatus which simultaneously produces both direct delta modulation and pulse code modulation. An input signal, after amplification, is supplied to a window comparator which supplies a polarity control signal to gate the output of a clock to the appropriate input of a binary up-down counter depending on whether the slope of the input signal is positive or negative. The control signals provide direct delta modulation while the up-down counter output provides pulse code modulation.

3,795,901
DATA PROCESSING MEMORY SYSTEM WITH BIDIRECTIONAL DATA BUS
Robert Francis Boehm, Wappingers Falls, and Donald Wayne Van Bogelen, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,247
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 **1 Claim**



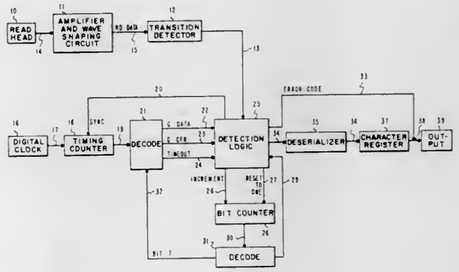
A digital computer memory system having a bidirectional data bus for transmitting information in both directions between the memory unit and a central processing unit associated with the memory system. The system includes a bidirectional latch unit for maintaining on the data bus the integrity of the information previously transmitted to the memory unit during a WRITE operation so that the central processing unit may check the stored information for errors.

3,795,902
METHOD AND APPARATUS FOR SYNCHRONIZING PHOTOGRAPHIC RECORDS OF DIGITAL INFORMATION
James T. Russell, Richland, Wash., assignor to Battelle Development Corporation, Richland, Wash.
Continuation-in-part of Ser. No. 857,474, Sept. 12, 1969, Pat. No. 3,624,284. This application Nov. 26, 1971, Ser. No. 202,539
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM **15 Claims**



An electrical signal recording and playback system is described in which an analog input signal is converted to a digital signal that pulses a light source to form a single, series-recorded track of binary coded digital information including information spots arranged in groups, which track is played back in a similar manner. The photographic film is a compact, permanent record of long, useful lifetime which may be photographically copied to provide a plurality of inexpensive copies. Recorded information is synchronized for playback by detecting a configuration of the digital signal, either from known characteristics of the signal or from information added to the signal during recording. The information thus read out is suitably employed for shifting digital words in a reassembly shift register until proper word synchronization is achieved.

3,795,903
MODIFIED PHASE ENCODING
Royce Darwin Lindsey, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 29, 1972, Ser. No. 293,688
Int. Cl. G11b *5/04*
U.S. Cl. 360—42 **27 Claims**



An encoding and decoding technique for detecting loss of phase and/or bit sync, and resynchronizing following an error. Both detection and resynchronization are accomplished on a per character basis. With seven bits being used per character, the bits making up each character are phase encoded in a conventional manner. For defining each character, an additional ½ bit time is added between bits 7 and 1 and encoded such that a corrective flux reversal may occur at ½ T (where T equals the normal intracharacter bit time), a transition must not occur at T (normal data time), and the 1 bit of the next character must occur at 1½ T. Digital data separation is used to define corrective flux reversals and data bits, and any flux transitions outside the limits defined are considered errors.

During decoding, the data separation logic is resynchronized on each detected data transition by the sync signal. With this method, if either phase or bit sync is lost within any character, an error condition will be detected at least before bit 1 of the next character.

3,795,904

FIRE ALARM WITH IONIZATION CHAMBER

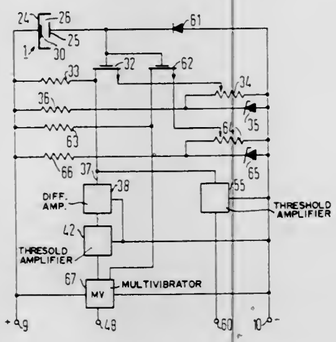
Hartwig Beyersdorf, and Lothar Rims, both of Bad Oldesloe, Germany, assignors to Preussag AG Feuerschutz, Bad Oldesloe, Germany

Filed May 13, 1971, Ser. No. 142,892

Claims priority, application Germany, May 16, 1970, 2024116; Apr. 30, 1971, P 21 21 382.1

Int. Cl. G08b *17/10*; **H01j** *39/28*

U.S. Cl. 340—2.37 S **25 Claims**



In the alarm, a circuit generates a quiescent ionization current between two electrodes in a chamber having a radioactive source. The chamber admits ambient air. Combustion gases from smokeless fires cause additional ionization current. The circuit establishes the quiescent ionization current at a value close to the additional ionization current. Amplifying means in the circuit respond to increases and decreases in the ionization current so as to indicate existance of various types of fires. An alarm device responds to the amplifier. The quiescent current may be within the order of magnitude of the additonal ionization current. Preferably the amplifying means responds to increases and decreases in ionizaton current with an equal quiescent ionization current in a reference chamber.

3,795,905

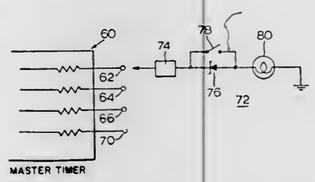
LAMP FAILURE DETECTION SYSTEM

Donald F. Wright, Dundas, Ontario, Canada, assignor to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed Apr. 30, 1973, Ser. No. 356,016

Int. Cl. G08b *21/00*

U.S. Cl. 340—251 **2 Claims**



This application relates to a system of capacitor-discharge flash lamps which are flashed in sequence from a master timer. The invention consists of an apparatus or system for making available at the master timer information as to which lamps are flashing and which lamps are not flashing without adding wiring to the system for this purpose.

3,795,906

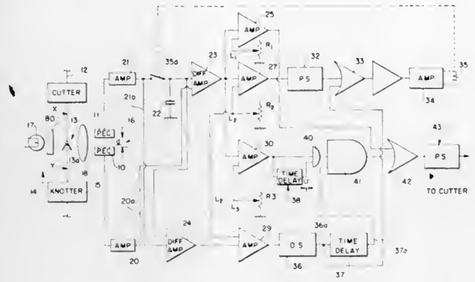
ELECTRONIC SYSTEM DISTINGUISHING BETWEEN GOOD KNOTS AND DEFECTS IN A MOVING STRAND

Robert S. Erbstein, Coventry, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed May 19, 1972, Ser. No. 255,178

Int. Cl. D01h *13/22*

U.S. Cl. 340—259 **11 Claims**



Two photocell detectors are spaced along a path of a moving strand with a gap of known fixed distance therebetween. The photocells view a length of the strand on each side of a knot or defect in the strand when the knot is presented in the gap.

An inspection cycle is started by entry into the detectors of a knot or defect and a defective knot or defect is determined by comparing the dynamic signal status of a photocell spaced some distance behind the knot with the signal taken from a photocell ahead of the defect and stored. The existence of a signal at this position or of an exceptionally large signal indicated by comparison at the time of initiation of the cycle indicates the presence of a defective knot.

3,795,907

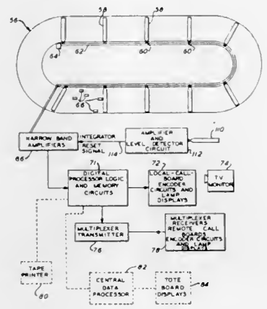
RACE CALLING SYSTEM

Robert A. Edwards, 12 Notch Park Rd., Little Falls, N.J. 07424

Filed Mar. 12, 1973, Ser. No. 340,593

Int. Cl. G08b *23/00*; **G09f** *9/00*

U.S. Cl. 340—323 **14 Claims**



An electronic race-calling system adapted to generate data enabling representation of the order and relative lead of race entries at call points along the race course, and at the finish line of the course. The system includes a plurality of pickup loops stationed at call points around the track, which loops coact with transmitters carried by the several entries and operating on distinct frequencies. The received signals at a given point are furnished to a common transmission line in a random

sequence, are separated, and converted to logic signal levels by individual amplifiers. The amplifier outputs are coupled to logic and memory circuits which are continuously interrogated by scan pulses to determine signal receipt. When a signal is received the channel logic produces a single output scan pulse, which is inputed to an entry encoder, which outputs codes representing the entry number. The entry encoder outputs a scan pulse on a common line whenever one is inputed to it by any channel logic circuit. Such pulse gates discrete sets of timing pulses which thereupon control the signal processing cycle. The lengths between entries are developed by measuring the time interval between each pair of consecutive entry loop crossings, using counting means. The developed information is transferred into appropriate memory circuits, which through decoders and drivers enables the information to be displayed on boards at the race track or enables the corresponding data to be transmitted to a remote utilization point.

3,795,908

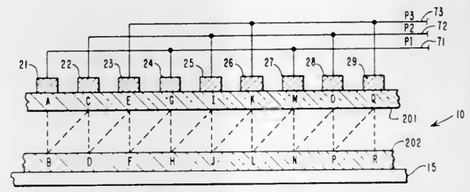
GAS PANEL WITH MULTI-DIRECTIONAL SHIFTING ARRANGEMENT

Allen W. McDowell, Kingston, and Frank M. Lay, Woodstock, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 13, 1972, Ser. No. 262,367

Int. Cl. H01j *11/04*

U.S. Cl. 340—324 M **6 Claims**



A gas panel arrangement for storing, displaying, and selectively shifting information from one place therein to another includes an envelope filled with an illuminable gas, a plurality of vertical conductors disposed in parallel on one side of the envelope, a plurality of horizontal conductors disposed in parallel on the opposite side of the envelope with the regions of illuminable gas in the vicinity of the coordinate intersections of the vertical and horizontal conductors defining gas cells, and a writing arrangement which inserts binary information in a given portion of the envelope by igniting or not igniting the illuminable gas to represent binary ones and zeros. In order to accomplish shifting a sequence of signals is repetitively supplied to sets of the vertical conductors to shift binary information horizontally from one gas cell to another, and a sequence of signals is repetitively supplied to sets of the horizontal conductors to shift binary information vertically from one gas cell to another.

3,795,909

TERRAIN-FOLLOWING RADAR SYSTEM

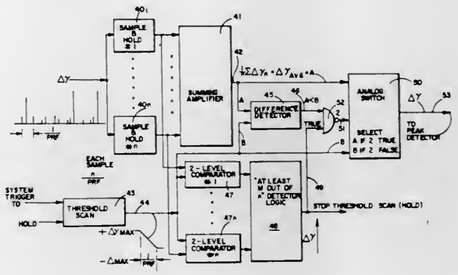
Charles L. Vehrs, Jr., Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Oct. 12, 1971, Ser. No. 188,384

Int. Cl. G01s *9/22*

U.S. Cl. 343—7 TA **15 Claims**

In a terrain-following radar system, spatial filter means for improved indication of discrete terrain obstacles such as towers, Terrain-following samples ($\Delta\gamma$) for a given radar range-time are time averaged over a preselected plurality (n) of successive pulse repetition intervals, the time-averaged samples being thresholded by a time-varied threshold value which varies from a preselected $+\Delta\gamma$ maximum through a null to a preselected $-\Delta\gamma$ maximum over each system pulse repetition period, as to be indicative of a probable terrain warning situation of interest at such sampled range. Non-averaged samples are dual-level thresholded by the time-varied threshold value and tested to determine the occurrence of at least a preselected number (M) of samples of substantially like magnitudes out of n successive pulse repetition intervals as to be indicative of a detected probable discrete obstacle or tower



occurring within the general clutter at such sampled range. The occurrence of such "M out of n samples" condition having a common value larger than (worse than) the time-averaged clutter value $\Delta\gamma_{avg}$ results in substitution of such "-worst" case filtered value for the time-average clutter value, for terrain following purposes. In other words, the worst one of the commonly occurring M out of n tower signal and time-averaged clutter signal is applied as an input to a bipolar peak detector for determining the maximum maneuver or warning signal condition.

3,795,910

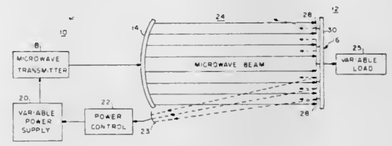
MICROWAVE POWER TRANSMISSION SYSTEM WHEREIN LEVEL OF TRANSMITTED POWER IS CONTROLLED BY REFLECTIONS FROM RECEIVER

William J. Robinson, Jr., Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 13, 1973, Ser. No. 340,871

Int. Cl. G01s *9/02*; **H04b** *3/04*

U.S. Cl. 343—7.5 **3 Claims**

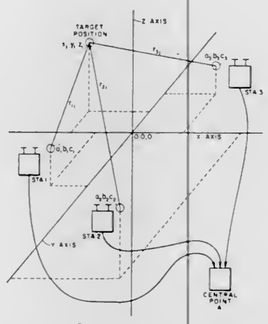


A microwave, wireless, power transmission system in which the transmitted power level is adjusted to correspond with power required at a remote receiving station in which deviations in power load produce an antenna impedance mismatch causing variations in energy reflected by the power receiving antenna employed by the receiving station. The variations in reflected energy are sensed by a receiving antenna at the transmitting station and used to control the output power of a power transmitter.

3,795,911
METHOD AND APPARATUS FOR AUTOMATICALLY DETERMINING POSITION-MOTION STATE OF A MOVING OBJECT

Calvin Miles Hammack, P.O. Box 304, Saratoga, Calif. 95030

Continuation-in-part of Ser. Nos. 86,770, Feb. 2, 1961, Pat. No. 3,706,096, and Ser. No. 278,191, May 6, 1963, abandoned. This application Sept. 21, 1970, Ser. No. 74,180
Int. Cl. G01s *9/44*
U.S. Cl. 343—9 28 Claims

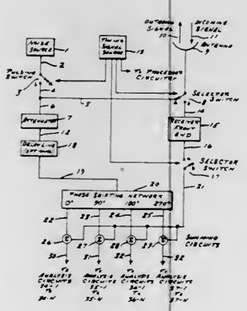


This invention relates to an improvement in the art of detecting and tracking moving objects employing a plurality of stations and variational measurements.

3,795,912
SPECTRUM ANALYSIS RADAR SYSTEM

John N. Pierce, Lexington, and F. Sheppard Holt, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 12, 1973, Ser. No. 323,170
Int. Cl. G01s *9/02*
U.S. Cl. 343—5 SA 4 Claims

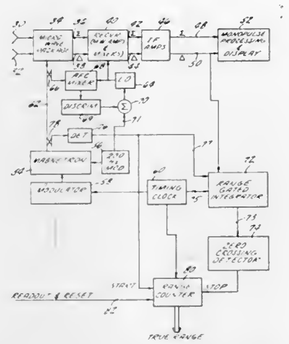


A spectrum analysis radar that detects and ranges by processing the sum of the received signal from a target with each of four quadrature phase-shifted reference signals (attenuated and possibly time delayed samples of the transmitted signal). These four sum signals are power spectrum density analyzed and then differenced in pairs. The resultants, are passed through resistive matrices and summing and squaring circuits to produce separate outputs for each range increment.

3,795,913
LOW ANGLE, AIR TO GROUND RANGING RADAR

Lester H. Kosowsky, Stamford, Conn., and Richard S. Pierro, New York, N.Y., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 15, 1972, Ser. No. 315,714
Int. Cl. G01s *9/22*
U.S. Cl. 343—16 M 2 Claims

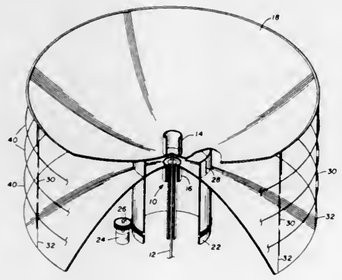


An airborne monopulse track radar employs frequency agility of the transmitted pulse to decorrelate scintillations resulting from the complex re-radiation characteristics of the many individual scatterers which terrain represents, particularly at low grazing angles. This also effectively modulates the return clutter, which normally has a high spectral density below about 100 Hz, to higher frequencies, thereby permitting usage of range gated integration. The invention eliminates the appearance of many false zero-crossings, thereby permitting accurate ranging to the ground from the airborne monopulse radar.

3,795,914
ROTATING BEACON ANTENNA WITH POLARIZATION FILTER

Sidney Pickles, Colusa, Calif., assignor to E-Systems, Inc., Dallas, Tex.

Filed Sept. 20, 1972, Ser. No. 290,563
Int. Cl. H01q *19/00*
U.S. Cl. 343—756 8 Claims

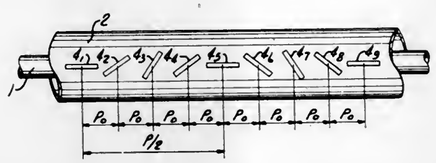


TACAN antennas emit modulated radiation from parasitic reflecting elements associated with a central array having radiating elements coupled to an energizing source. Signal energy from the TACAN antenna is preferably radiated in a plane perpendicular to the surface of the earth. Cross polarization components of the radiated signal are absorbed by resistive wires located in the radiation path from the central antenna array. These resistive wires are mounted around the supporting structure of the TACAN antenna.

3,795,915
LEAKY COAXIAL CABLE

Kenichi Yoshida, Osaka, Japan, assignor to Sumitoma Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 106,343, Jan. 14, 1971, abandoned. This application Oct. 20, 1972, Ser. No. 299,192
Int. Cl. H01q *13/10*
U.S. Cl. 343—771 14 Claims

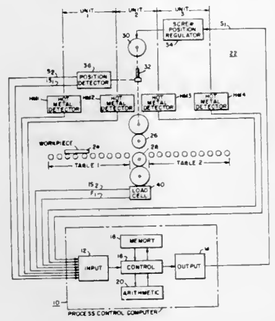


A leaky coaxial cable is disclosed, which is a very preferable transmission line for use in vehicular communication system. It has an outer conductor having a slot array in the direction of the cable axis such that each slot is arranged periodically at a fixed interval and a fixed shape, but with the dimensions thereof or other radiation factors of the slot being changed sinusoidally in another periodicity different from the periodicity of the slots. The leaky coaxial cable according to the present invention has very broad band characteristics in the radiation properties of the leaky wave.

3,795,916
PROCESS OPERATION ERROR MONITOR AND ERROR MESSAGE SYSTEM

Frank E. Wallace, Irwin, and Anthony D. Deramo, Swissvale, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 14, 1969, Ser. No. 876,793
Int. Cl. G06f *15/46, 15/06*
U.S. Cl. 444—1 36 Claims

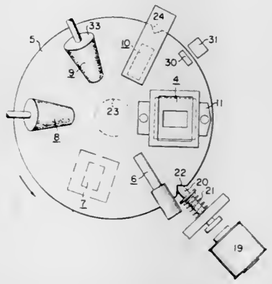


There is here disclosed a method and apparatus for monitoring predetermined happenings, such as defined errors, which occur during the operation of a dynamic process, for example a metallic strip rolling mill. The dynamic process is sequentially operative in a chain of functional units, each of which includes a defined input event and at least one defined response event. In addition, there may be one or more defined input variables associated with that input event and one or more defined response variables associated with each of those response events. An error monitor operation is provided whereby operational checks are established for at least one of a maximum time interval T_{max} and/or a minimum time interval T_{min} for each response event, and a maximum amplitude A_{max} and/or a minimum amplitude A_{min} relative to each of the defined response variables. A software program is disclosed for operation with a general purpose digital computer to effect a special purpose control computer entity for the purpose of accomplishing the desired error monitor function as well as providing output indications and/or process operation corrections where some defined error condition is found to have occurred.

3,795,917
ELECTRONIC PHOTOCOPYING APPARATUS

Keizo Yamaji, and Akira Kurahashi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 37,725, May 15, 1970, abandoned. This application May 5, 1972, Ser. No. 250,805
Claims priority, application Japan, May 22, 1969, 44-40044; May 23, 1969, 44-48233; May 31, 1969, 44-51118
Int. Cl. G03g *15/22*
U.S. Cl. 355—4 3 Claims

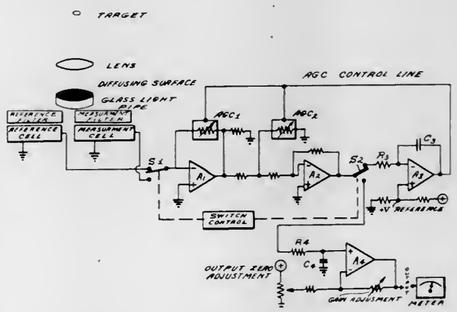


An electronic photocopying apparatus in which a photosensitive member comprising a photosensitive layer of photoconductive material supported on a transparent supporting member and a supporting frame holding the photosensitive layer together with the transparent member is placed on a rotary table rotated for subjecting the photosensitive member to a series of processes for the image pick-up and reproduction, thereby providing a monochromatic or polychromatic image reproduction without staining the supporting frame of the photosensitive member.

3,795,918
ELECTRONIC RATIO INSTRUMENT FOR REMOTE TEMPERATURE MEASUREMENT

John C. Sunderland, New York, N.Y., assignor to Capintec, Inc., Mount Vernon, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,242
Int. Cl. G01j *5/60, 3/42*
U.S. Cl. 356—45 2 Claims

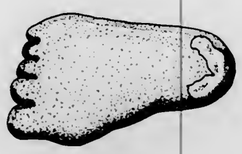


An all electronic instrument for non-contact temperature measurement independent of target emissivity based on measuring the ratio of light energy in two adjacent spectral bands by means of a reference light cell and a measurement light cell switchably connected to a common amplifier chain provided with electronic gain control servoed by the resultant output of the reference light cell.

DESIGNS

MARCH 5, 1974

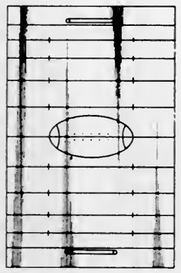
230,536
COOKIE OR THE LIKE
Virginia P. Gordon, 2200 E. Walnut Ave., Goldsboro, N.C. 27530
Filed Feb. 25, 1971, Ser. No. 119,074
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—15



230,537
CANDY BAR
Thomas H. Powers, Westfield, N.Y., assignor to The Quaker Oats Company
Filed Mar. 22, 1972, Ser. No. 237,238
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—21

230,538
TRUNKS
Henning Hansen, 481 SW. 55th Ave., Plantation, Fla. 33314
Filed Nov. 17, 1972, Ser. No. 307,356
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—34

230,539
BED SHEET
Manuel C. Aires, 1253 136th Ave., San Leandro, Calif. 94578
Filed Dec. 27, 1971, Ser. No. 212,876
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D2—264

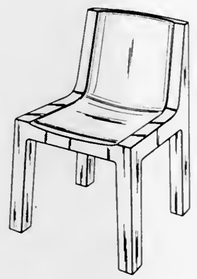


230,540
BELT
Henry Gillman, 100 College Ave., North Tarrytown, N.Y. 10491
Filed Feb. 6, 1973, Ser. No. 330,007
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—388

230,541
SINGLE-ARM CHAIR OR SIMILAR ARTICLE
Odo Klose, Wuppertal-Elberfeld, Germany, assignor to Giroflex-Entwicklungs-AG, Koblenz, Switzerland
Filed Aug. 28, 1972, Ser. No. 284,455
Claims priority, application West Germany Apr. 24, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

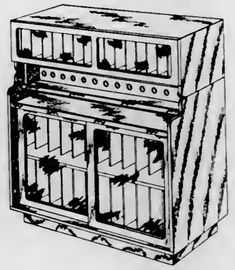
230,542
SEAT
William John Badsey, 5 Chelsea Ave., New Germany, Natal, Republic of South Africa
Filed June 5, 1972 Ser. No. 260,037
Claims priority, application Republic of South Africa Feb. 25, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47

230,543
CHAIR
Bernard A. McDermott and Samuel Scheer, Akron, Peter A. Zorn, Peninsula, and Andrew J. Hanzel, Akron, Ohio, assignors to International Products and Services, Inc., Cleveland, Ohio
Filed July 18, 1972, Ser. No. 272,850
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—66



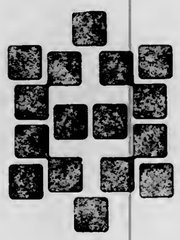
230,544
HANGING DISPLAY SHELF
Henry J. Du Molin, Rte. 1, Highway 23, Port Sulphur, La. 70083
Filed Apr. 4, 1972, Ser. No. 241,103
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—113

230,545
WINE CABINET
Florent L. Mouchon, 23 Hebert St., West Warwick, R.I. 02886
Filed July 31, 1972, Ser. No. 276,359
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189

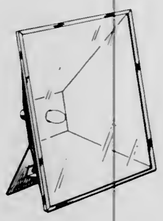


230,546
SET OF BATH TREADS
Roger L. Dean, Geneva, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of abandoned design application Ser. No. 173,731, Aug. 20, 1971. This application Feb. 7, 1972, Ser. No. 224,387
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209

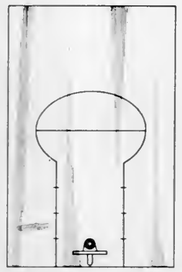
230,547
SET OF BATH TREADS
Roger L. Dean, Geneva, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 22, 1972, Ser. No. 255,918
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



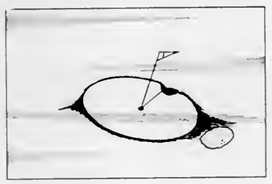
230,548
BACK-LIGHTED DISPLAY FRAME
Earl T. Robinson, Jr., 1269 Williams St., Baltimore, Md. 21230
Filed Aug. 6, 1971, Ser. No. 169,890
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—236



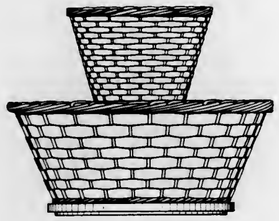
230,549
BED SHEET
Manuel C. Aires, 1253 136th Ave., San Leandro, Calif. 94578
Filed Dec. 27, 1971, Ser. No. 212,877
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—264



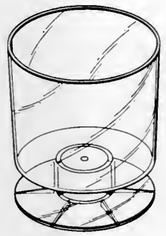
230,550
BED SHEET
Manuel C. Aires, 1253 136th Ave., San Leandro, Calif. 94578
Filed Dec. 27, 1971, Ser. No. 212,879
Term of patent 14 years
Int. Cl. D6—*13*
U.S. Cl. D6—264



230,551
ROTATING NUT BASKET
Jennie Di Tomasso, 10 Pleasant View Drive, North Providence, R.I. 02904
Filed Nov. 27, 1972, Ser. No. 309,799
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—2

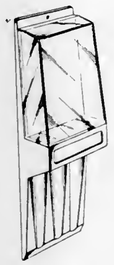


230,552
FRUIT CUP OR THE LIKE
Willis R. Bengert, 2983 Crescent Road, Pebble Beach, Calif. 93953
Filed May 15, 1972, Ser. No. 253,702
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13



230,553
CARVING BOARD
Ernest Terlizzi, Yaphank, N.Y. (17 Canterbury Drive, Coram, N.Y. 11727)
Filed June 2, 1972, Ser. No. 259,354
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—46

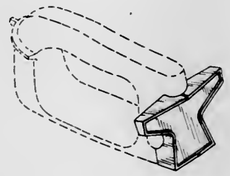
230,554
COMBINED KNIFE HOLDER AND SHARPENER
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co.
Filed Jan. 22, 1973, Ser. No. 325,395
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74



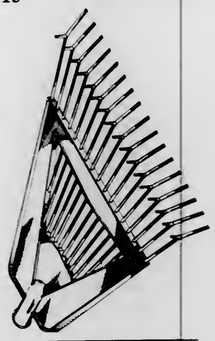
230,555
OUTDOOR COOKER
Leigh A. Taylor, 1616 N. Bryant, Little Rock, Ark. 72207
Filed June 27, 1972, Ser. No. 266,678
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110

230,556
FOOD CONTAINER COVER
Paul C. Mallonn, Wooster, Ohio, assignor to Rubbermaid Sales Corp., Wooster, Ohio
Filed June 29, 1972, Ser. No. 267,631
Term of patent 7 years
Int. Cl. D7—*01*
U.S. Cl. D7—131

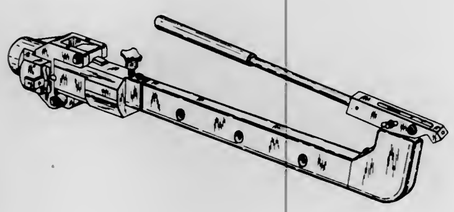
230,557
COMBINED STABILIZER AND END CAP FOR AN ELECTRIC PRESSING IRON HANDLE
Bernard B. Bluestein, Des Plaines, and Norman A. Steinkamp, Chicago Heights, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed July 17, 1972, Ser. No. 272,550
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—204



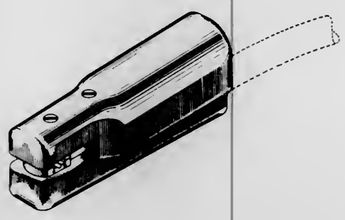
230,558
MULTITINES RAKING TOOL
Ralph L. Laible, 14408 White Dear Lane, Omaha, Nebr. 68112
Filed Apr. 16, 1973, Ser. No. 351,178
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—13



230,559
HAND HELD TOOL FOR COLD PRESSURE WELDING CABLES OR THE LIKE
William E. Good, Cinnaminson, and Arthur S. Davies, Avalon, N.J., assignors to Kelsey-Hayes Company, Romulus, Mich.
Filed Jan. 12, 1972, Ser. No. 217,410
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51

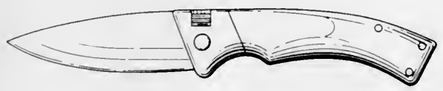


230,560
AIR-CARBON ARC CUTTING AND GOUGING TORCH
Kenneth E. McCall and Donald H. Reese, Lancaster, Ohio, assignors to Arcair Company, Lancaster, Ohio
Filed Feb. 11, 1972, Ser. No. 225,694
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—98



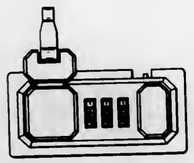
230,561
WIRE STRIPPER
Fred D. Blackwell, 14 Parklin St., North Providence, R.I. 02907
Filed Sept. 13, 1971, Ser. No. 177,188
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

230,562
KNIFE
Fred R. Fellows, Box 464, Big Fork, Mont. 59911
Filed Nov. 15, 1972, Ser. No. 306,697
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

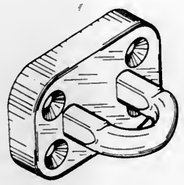


230,563
LETTER OPENER
Alwin John Stabel II, New Brighton, Minn., assignor to The Holes-Webway Co., St. Cloud, Minn.
Filed Aug. 14, 1972, Ser. No. 280,322
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D8—102

230,564
COMBINATION LOCK
Charles S. Gebrie, Montclair, N.J., assignor to Presto Lock Co., Division of Walter Kidde & Company, Inc., Clifton, N.Y.
Filed Dec. 15, 1971, Ser. No. 208,520
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—129

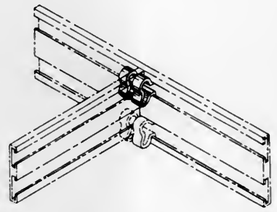


230,565
HASP STAPLE
Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company
Filed May 8, 1972, Ser. No. 251,579
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—137



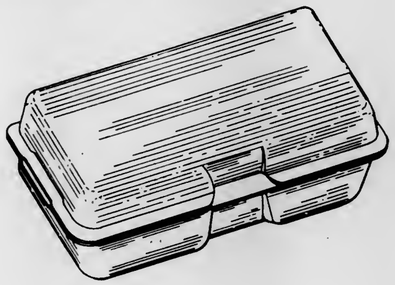
230,566
LOCKER HANDLE PULL
Bob G. Harrell, St. Louis, Mo., assignor to The Jackes-Evans Manufacturing Company, St. Louis, Mo.
Filed Mar. 31, 1972, Ser. No. 240,331
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—148

230,567
RESILIENT HOLDER FOR BINNING DIVIDERS OR THE LIKE
Blair D. Armstrong, Pittsburgh, Pa., assignor to Armstrong Store Fixture Corporation, Pittsburgh, Pa.
Filed Sept. 1, 1972, Ser. No. 285,826
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—259



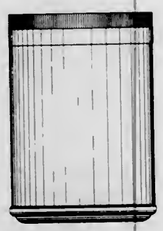
230,568
EYEDROP CONTAINER
David S. Byrne, Atlantic Highlands, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 22, 1972, Ser. No. 255,953
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—2

230,569
FOOD CARTON
Derek Fallowfield, Oakville, Ontario, William Henry Day, Brantford, Ontario, and Stanley Tooke, Burlington, Ontario, Canada, assignors to W. R. Grace & Co., Duncan, S.C.
Filed Dec. 14, 1971, Ser. No. 208,050
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—182



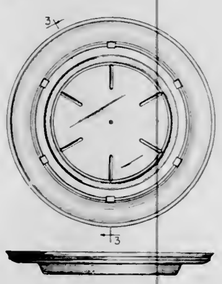
230,570
COLLAPSIBLE TUBE
Eugene L. Hall, 11 Martin Place, Chatham, N.J. 07928
Filed Feb. 7, 1972, Ser. No. 224,412
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—194

230,571
CONTAINER FOR EDIBLE POWDERS OR THE LIKE
Richard C. Allen, 22 W. 341 Balsam, Glen Ellyn, Ill. 60137
Filed July 11, 1972, Ser. No. 270,718
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

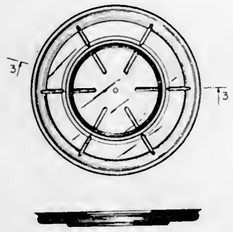


230,572
PACKAGING CONTAINER FOR LIGHT BULBS OR THE LIKE
Joseph R. D'Alessio, Lunenburg, Mass., assignor to Rand-Whitney Packing Corporation, Leominster, Mass.
Filed May 12, 1972, Ser. No. 252,952
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

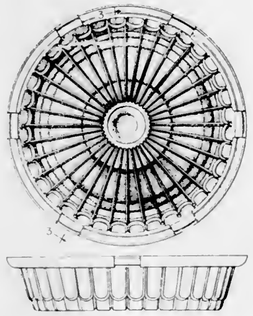
230,573
CONTAINER CLOSURE OR THE LIKE
Nicholas D. Commisso, Victor, N.Y., assignor to Mobil Oil Corporation
Filed June 22, 1972, Ser. No. 265,134
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



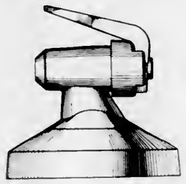
230,574
BOWL COVER OR THE LIKE
Nicholas D. Commisso, Victor, N.Y., assignor to Mobil Oil Corporation
Filed June 22, 1972, Ser. No. 265,381
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



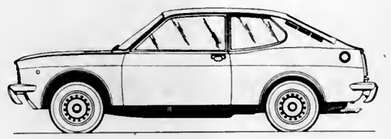
230,575
CONTAINER CLOSURE OR THE LIKE
Nicholas D. Commisso, Victor, Donald A. Haase, Penfield, and Paul H. Nielsen, Rochester, N.Y., assignors to Mobil Oil Corporation
Filed July 14, 1972, Ser. No. 271,865
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



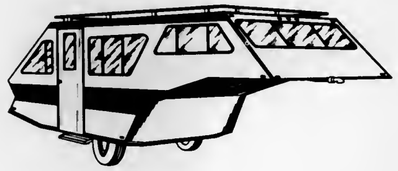
230,576
DISPENSING VALVE FOR A PRESSURIZED CONTAINER
Roger K. Bruce, Mission Viejo, Werner Marhold, Huntington Beach, and Cecil F. Adickes, Playa Del Rey, Calif., assignors to Sterigard Corporation, Santa Ana, Calif.
Filed Aug. 30, 1972, Ser. No. 284,952
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—258



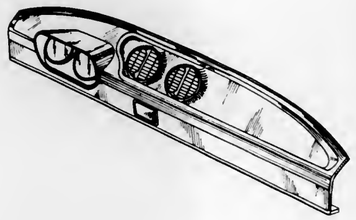
230,577
AUTOMOBILE
Gian Paolo Boano, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Mar. 29, 1972, Ser. No. 239,399
Claims priority, application Italy Oct. 8, 1971
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91



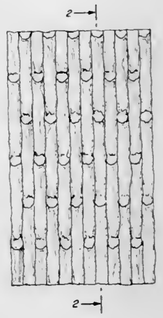
230,578
TRAILER
Harry L. Taylor, Merriam, Kans., assignor to Taylor Industries, Inc., Merriam, Kans.
Filed Jan. 10, 1972, Ser. No. 216,918
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—103



230,579
INSTRUMENT PANEL
Gian Paolo Boano, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Aug. 9, 1971, Ser. No. 170,421
Claims priority, application Italy Feb. 19, 1971
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D12—192

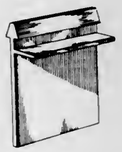


230,580
ARTIFICIAL REED THATCHING, FOR ROOFING OR THE LIKE
Spencer P. Garrett, 4451 Vista del Monte, Sherman Oaks, Calif. 91403
Filed June 16, 1971, Ser. No. 153,929
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J



230,581
EAVE FACING FOR ARTIFICIAL THATCH ROOF
Spencer P. Garrett, 4451 Vista del Monte, Sherman Oaks, Calif. 91403
Filed Aug. 23, 1971, Ser. No. 174,286
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 J

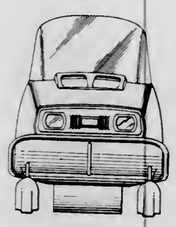
230,582
ALIGNING CLIP
Joseph N. La Borde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Dec. 22, 1971, Ser. No. 211,151
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1 H



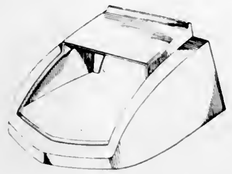
230,583
SNAP-ON PLASTIC MOLDING
Joseph N. La Borde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Dec. 22, 1971, Ser. No. 211,156
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

230,584
COMBINED POST AND BRACKET
William J. Horgan, Jr., 1299 Folkstone Drive, Pittsburgh, Pa. 15243
Original design application July 2, 1969, Ser. No. 18,032. Divided and this application Oct. 13, 1970, Ser. No. 25,471
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—7

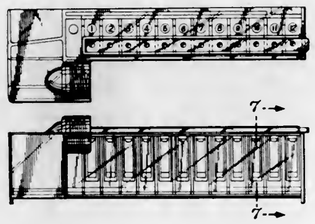
230,585
SNOWMOBILE
Jack H. Rose, Farmington, and Thomas M. Denny, Southfield, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Mar. 17, 1972, Ser. No. 235,889
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24



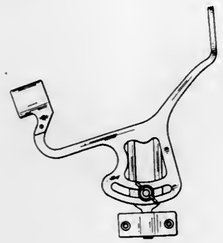
230,586
SNOWMOBILE HOOD
Thomas Scott, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 10, 1972, Ser. No. 252,156
Claims priority, application Canada Apr. 5, 1972
Term of patent 14 years
Int. Cl. D12—*173*
U.S. Cl. D14—24



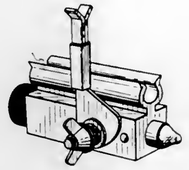
230,587
TRANSPARENT CUVETTE FOR DIVIDING, AND PHOTOMETRICALLY ANALYZING EQUAL QUANTITIES OF LIQUID
Julius Praglin, East Lyme, James E. McKie, Jr., Ledyard, and Alan C. Curtiss, Old Lyme, Conn. (all % Pfizer Inc., 235 E. 42nd St., New York, N.Y. 10017)
Filed Aug. 18, 1972, Ser. No. 281,849
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2 C



230,588
FISHING ROD HOLDER
Robert D. Miller, 5828 Ridgeway St., Peninsula, Ohio 44264
Filed Oct. 13, 1972, Ser. No. 299,955
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22

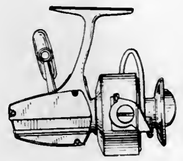


230,589
FISHING SIGNAL DEVICE
Lawrence L. Muehl and Theodore Montgomery, both of Box 113, Frankfort, S. Dak. 57440
Filed Feb. 8, 1973, Ser. No. 330,658
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



230,590
SPINNING REEL
Michael J. Koenecke, Estherville, Iowa, and Richard J. Hughes, Des Plaines, Ill., assignors to Berkley & Company, Inc., Spirit Lake, Iowa
Continuation-in-part of abandoned design application Ser. No. 232,331, Mar. 6, 1972. This application Oct. 4, 1972, Ser. No. 298,777
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

230,591
OPEN FACED SPINNING REEL
Arthur A. Underwood, Cincinnati, Ohio, assignor to Brunswick Corporation, Skokie, Ill.
Continuation-in-part of abandoned design application Ser. No. 184,992, Sept. 29, 1971. This application Apr. 9, 1973, Ser. No. 349,391
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

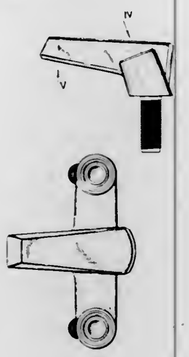


230,592
FISHING LURE OR THE LIKE
Jack E. Davis, Georgetown, Fla., assignor to Victor Comptometer Corporation, Chicago, Ill.
Filed May 1, 1972, Ser. No. 249,483
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

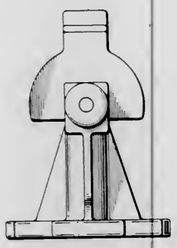
230,593
FISHING LURE
William D. Storm, Norman, Okla., assignor to Storm Plastics, Inc., Norman, Okla.
Filed Mar. 19, 1973, Ser. No. 342,695
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

230,594
FISHING LURE
Charles J. Reda, 2530 Ridgewood Ave., and Arthur A. Bianchini, 1338 E. Summit St., both of Alliance, Ohio 44601
Filed Aug. 15, 1973, Ser. No. 388,384
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

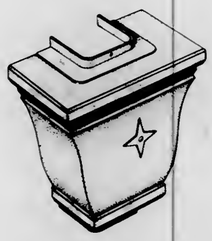
230,595
FAUCET BODY
Martin Omar Rowlands, Epping, England, assignor to IMI Opella Limited, Birmingham, England
Filed Aug. 23, 1971, Ser. No. 174,295
Claims priority, application Great Britain Feb. 25, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



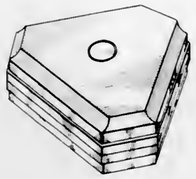
230,596
PUMP HEAD
George P. Edgell, Sr., Harrison, Ark., assignor to W. J. Stout Company, Inc., Western Grove, Ark.
Filed Aug. 25, 1972, Ser. No. 283,767
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D23—34



230,597
HEAD FOR A DOWNSPOUT
Glenn Settle, % Melrose Supply & Metal Co., 1661 Guenther Road, Dayton, Ohio 45427
Filed Oct. 21, 1971, Ser. No. 191,578
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45

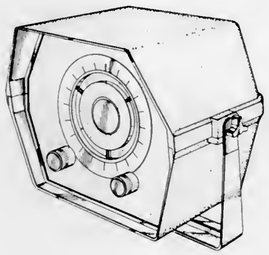


230,598
GOLF BALL HEATER
Robert S. Goodrich, 27901 S. Golden Meadow Drive, Palos Verdes Peninsula, Calif. 90274
Filed Sept. 13, 1972, Ser. No. 288,732
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77

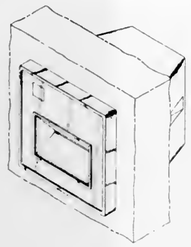


230,599
CONTAINER FOR HOLDING ODOR ABSORBENT IN A REFRIGERATOR
Albert Stubbmann, Franklin Lakes, N.J., assignor to Wecolite Company, Inc., Teaneck, N.J.
Filed Sept. 18, 1972, Ser. No. 289,665
Term of patent 3½ years
Int. Cl. D23—*04*
U.S. Cl. D23—150

230,600
COMBINED DEPTH FINDER AND FISH LOCATOR
Robert F. Turner, El Paso, Tex., assignor to Jetco Electronic Industries, Inc., El Paso, Tex.
Filed Jan. 28, 1972, Ser. No. 221,851
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D26—1 Q

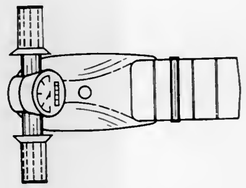


230,601
BADGE READER
Raymond G. Cross, Boynton Beach, and Myron F. Davis and Walter Furlani, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 7, 1972, Ser. No. 232,646
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

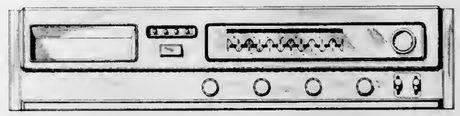


230,602
AUTOMATIC TYPEWRITER CONTROL CONSOLE
John S. Kovacs, East Norriton, and Lewis H. Herr, Lansdale, Pa., and Richard H. Penney, New York, N.Y., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Mar. 27, 1972, Ser. No. 238,756
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

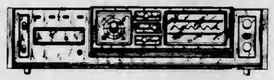
230,603
CONTROL FOR ELECTRICAL VEHICLE
Edwin O. Stastny, 2122 N. Pasadena Ave., Santa Ana, Calif. 92701
Filed Oct. 10, 1972, Ser. No. 296,033
Term of patent 7 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R



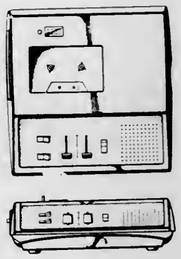
230,604
ESCUTCHEON FOR COMBINED EIGHT TRACK TAPE PLAYER AND TUNER
Richard H. Seager, Manlius, N.Y., assignor to General Electric Company
Filed Apr. 7, 1972, Ser. No. 242,295
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



230,605
COMBINED FOUR-CHANNEL TAPE PLAYER AND RECEIVER
Andrew Kainass, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.
Filed Apr. 7, 1972, Ser. No. 242,296
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B

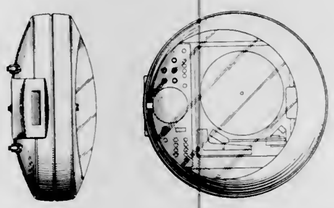


230,606
TRANSCRIBING MACHINE
Edgard R. Wiklund, Dunwoody, Robert N. Fink, Decatur, and John Jamgochian, Jr., and Larry W. Lee, Atlanta, Ga.; said Lee assignor to said Wiklund, said Fink and said Jamgochian, fractional part interest to each
Filed July 17, 1972, Ser. No. 272,161
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

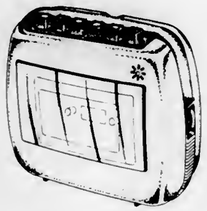


230,607
TELEVISION AERIAL SUPPORT FOR HOUSE TRAILERS
Walter C. Martin, Rte. 1, Box 476A, Casa Grande, Ariz. 85222
Filed Oct. 10, 1972, Ser. No. 296,036
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F

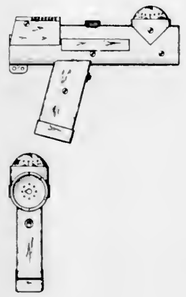
230,608
ELECTRONIC COMMUNICATIONS APPARATUS
J. Pratt Winston, 305 S. Dillard St., Durham, N.C. 27702
Filed Nov. 20, 1972, Ser. No. 307,871
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



230,609
TAPE RECORDER
Takemi Ebata, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 2, 1973, Ser. No. 337,732
Claims priority, application Japan Sept. 16, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

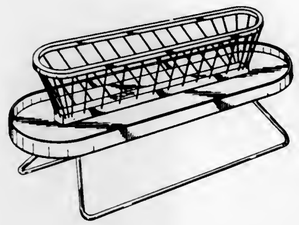


230,610
RADIO DIRECTION FINDER
Maurice A. Warren, Los Angeles, Calif., assignor to Vec/Trak Research & Development Corporation, Elmsford, N.Y.
Filed Mar. 8, 1973, Ser. No. 339,410
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K

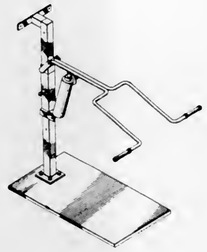


230,611
FIGURINE, OR SIMILAR ARTICLE
Kim A. Halkett, Parks Drive, Sherborn, Mass. 01770
Filed June 29, 1972, Ser. No. 268,190
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 B

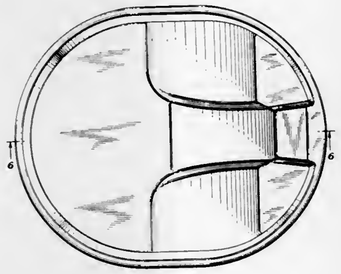
230,612
ANIMAL FEEDING APPARATUS
Arthur L. Williamson, 728 W. Main; and Fred T. Mason, 612 Plaza Drive, both of Moore, Okla. 73160; and Jacky L. Dyer, Sr., Box 149, Yukon, Calif. 73099
Filed June 9, 1972, Ser. No. 261,575
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



230,613
EXERCISER
Cliff J. Coker, Laguna Niguel, and Edward A. Burke, Newport Beach, Calif., assignors to Whittaker Corporation
Filed Mar. 9, 1972, Ser. No. 233,404
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



230,614
ONE-PIECE POOL HAVING SLIDE
Bertram Brooks, Yonkers, N.Y., assignor to Carolina Enterprises, Inc., Tarboro, N.C.
Filed May 17, 1972, Ser. No. 254,342
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—5 F

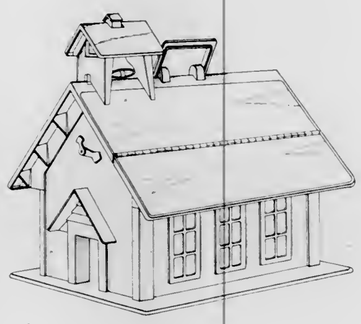


230,615
PUTTER HEAD
Joseph A. Delgadillo, Pico Rivera, Calif., assignor of a fractional part interest to Henry Rivas, Hacienda Heights, Calif.
Filed June 29, 1972, Ser. No. 267,371
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

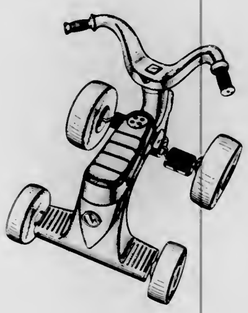
230,616
TOY WHEEL IMPELLER
Randolph Lanier, 3888 N. 16th St., Milwaukee, Wis. 53206
Filed Sept. 18, 1972, Ser. No. 290,133
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 HP

230,617
PLAYING CARD
Ernest W. Ekstrand, Santa Ana, Calif. (240 Chestnut, Apt. 1013, Long Beach, Calif. 90802)
Filed Aug. 19, 1971, Ser. No. 173,354
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—13

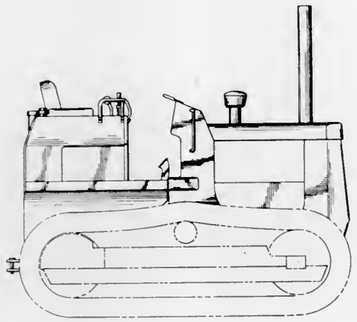
230,618
TOY SCHOOL
Karen F. Venetian, Cincinnati, Ohio, assignor to The Quaker Oats Company, Chicago, Ill.
Filed Jan. 12, 1972, Ser. No. 217,435
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



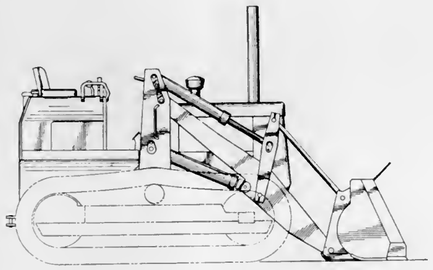
230,619
CHILD'S VELOCIPEDE
Laurie Jay Campbell and Raymond John Lohr, Erie, Pa., assignors to Louis Marx & Co., Inc.
Filed Aug. 15, 1972, Ser. No. 280,916
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AL



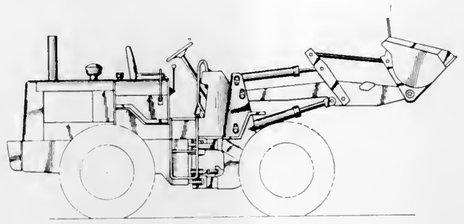
230,620
TRACTOR BODY
William E. Conroy and Floyd A. Derby, Tokyo, Japan, and Yoshimi Hosoda, Aurora, and Fred J. Salzman, Metamora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 25, 1972, Ser. No. 283,852
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5



230,621
TRACTOR LOADER BODY
William E. Conroy and Floyd A. Derby, Tokyo, Japan, and Yoshimi Hosoda, Aurora, and Fred J. Salzman, Metamora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 25, 1972, Ser. No. 283,853
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5

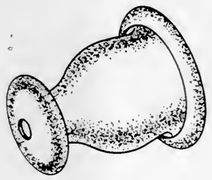


230,622
TRACTOR LOADER BODY
William E. Conroy and Floyd A. Derby, Tokyo, Japan, and Yoshimi Hosoda, Aurora, and Fred J. Salzman, Metamora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 25, 1972, Ser. No. 283,856
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5



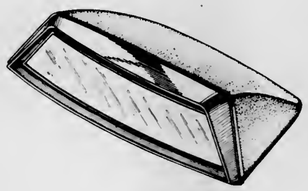
230,623
WRISTWATCH
Jack J. Gillen, P.O. Box 32805, Orlando, Fla.
Filed Feb. 22, 1972, Ser. No. 228,447
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8 R

230,624
EARRING FASTENER
Michael Chernow, New York, N.Y., assignor to Monocraft, Inc.
Filed July 19, 1971, Ser. No. 164,178
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—09



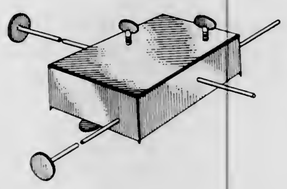
230,625
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Feb. 28, 1972, Ser. No. 230,216
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 A

230,626
AUTOMOTIVE SIGNAL HOUSING
Sidney A. Heenan, Park Ridge, Anthony J. Montalbano, Des Plaines, and Norbert Majewski, Elk Grove Village, Ill., assignors to Amerace Esna Corporation, New York, N.Y.
Filed Sept. 13, 1972, Ser. No. 288,641
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R

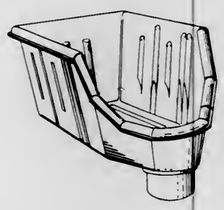


230,627
PAPER TOWEL HOLDER
Clifford F. Carroll, P.O. Box 76, Cave Creek, Ariz. 85331
Filed May 1, 1972, Ser. No. 249,462
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D52—2 C

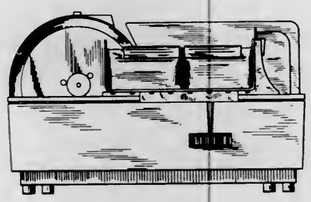
230,628
COMBINED LOCATING AND MARKING GAUGE FOR JUNCTION BOXES
Herschel L. Sunley, 1804 Whittier Ave., Springfield, Ill. 62704
Filed Aug. 23, 1972, Ser. No. 282,928
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



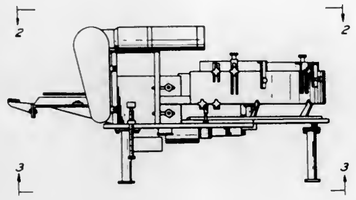
230,629
HAND STUFFER OR SIMILAR DEVICE
Edward Dee Camp and James Edward Camp, both of 1501 36th St. NW., Winter Haven, Fla. 33880
Filed Jan. 7, 1972, Ser. No. 216,338
Term of patent 14 years
Int. Cl. D8—*99*; D7—*99*
U.S. Cl. D55—1 H



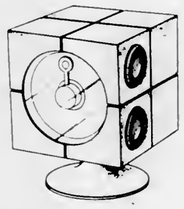
230,630
ELECTRICALLY POWERED MEAT SLICER
Daniel E. McCue, Santa Barbara, Calif., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed Jan. 21, 1972, Ser. No. 219,917
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 A



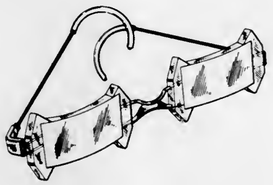
230,631
AUTOMATIC CORE LOADER
James P. Gerhart, 1506 Pheasant Drive, Warminster, Pa. 18974
Filed Feb. 3, 1972, Ser. No. 223,398
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 C



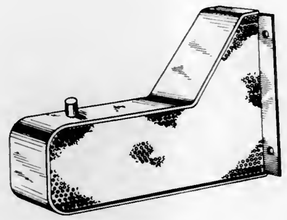
230,632
RADIO RECEIVER
Sakae Nakamoto, Kobe, Nobumitsu Matsumura, Sakurai, and Benito Mishiro, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 10, 1972, Ser. No. 216,896
Claims priority, application Japan July 20, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



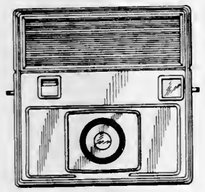
230,633
EYEGLASSES
Blount Ferrell, 2383 Akers Mill Road NW., Apt. J-2, Atlanta, Ga. 30339
Filed Apr. 3, 1973, Ser. No. 347,444
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F



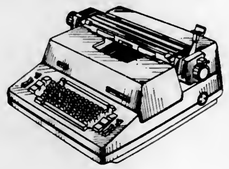
230,634
COMBINED MOUNTING BRACKET AND ENCLOSED DRIVE AND CONTROL UNIT FOR A PANNING CAMERA
Gerald E. Kardach, South Milwaukee, Wis., assignor to Videosonics, Inc., Milwaukee, Wis.
Filed May 11, 1972, Ser. No. 252,535
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 G



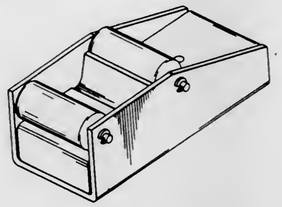
230,635
CAMERA
John M. Mellberg, Chicago, Ill., assignor to Imperial Camera Corp., Chicago, Ill.
Filed Nov. 13, 1972, Ser. No. 306,151
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



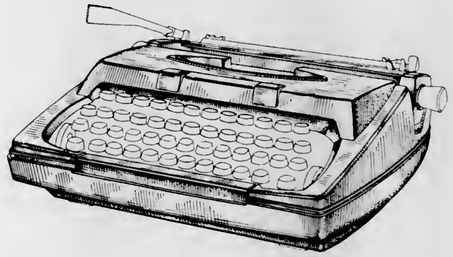
230,636
TYPEWRITER
John S. Kovacs, 907 Senator Road, East Norriton, Pa., and Lewis H. Herr, 122 County Line Road, Lansdale, Pa. 19446
Filed Aug. 14, 1972, Ser. No. 280,717
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



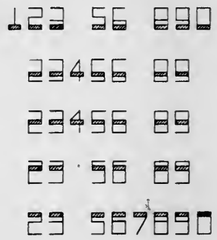
230,637
ROLLER APPLICATOR FOR SPIRIT-TYPE DUPLICATING
Svend Borge Clement, Johannesburg, Transvaal, Republic of South Africa, assignor to S. B. Clement & Company (Proprietary) Limited, Johannesburg, Transvaal, Republic of South Africa
Filed Aug. 18, 1972, Ser. No. 281,982
Claims priority, application Republic of South Africa Mar. 6, 1972
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B



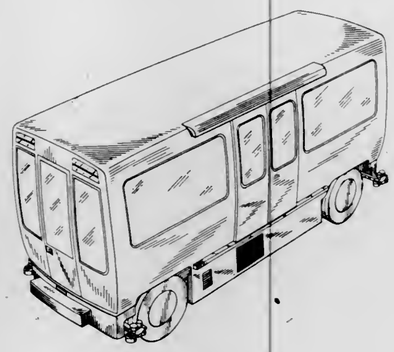
230,638
TYPEWRITER
Karl T. Baughman, Lake Forest, Ill., assignor to Sears, Roebuck & Co., Chicago, Ill.
Filed Jan. 4, 1973, Ser. No. 321,051
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A



230,639
FONT OF NUMERALS
Norman R. Howes, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 6, 1971, Ser. No. 176,379
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B

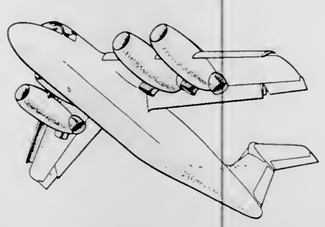


230,640
GUIDEWAY FOLLOWING VEHICLE
Walter C. Albach, Dallas, and Luther J. Hulsey, Fort Worth, Tex., assignors to LTV Aerospace Corporation, Dallas, Tex.
Filed Nov. 29, 1971, Ser. No. 203,121
Term of patent 14 years
Int. Cl. D12—*03*
U.S. Cl. D66—1

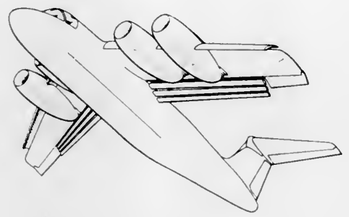


230,641
FUEL NOZZLE UNIT
Dorian Farrar Mowbray, 6 Cheveley Gardens, Burnham, Buckinghamshire, England
Filed Nov. 2, 1970, Ser. No. 25,763
Claims priority, application Great Britain Oct. 14, 1970
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A

230,642
AIRPLANE
Wilfred C. J. Garrard, Marietta, Henry R. Leslie III, Atlanta, and Dallas M. Ryle, Jr., and Francis M. Wilson, Jr., Marietta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Mar. 13, 1972, Ser. No. 234,468
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1 N



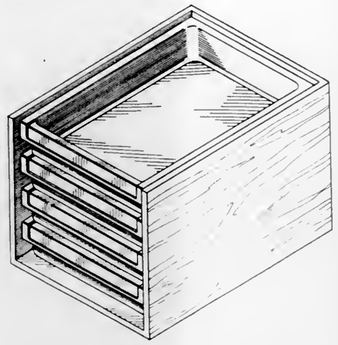
230,643
AIRPLANE
Wilfred C. J. Garrard, Marietta, Henry R. Leslie III, Atlanta, and Dallas M. Ryle, Jr., and Francis M. Wilson, Jr., Marietta, Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Mar. 13, 1972, Ser. No. 234,473
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1 N



230,644
RUDDER GUARD
Henry W. Lange, Waretown, N.J.
(R.F.D. 1, 115 Bloomfield Road, Barnegat, N.J. 08005)
Filed June 13, 1972, Ser. No. 262,277
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1 Z

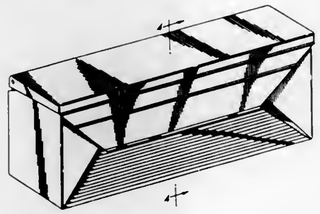
230,645
HOLDER FOR LEDGER SHEETS OR THE LIKE
Allen L. Dixon, Portage, Mich., assignor to Master-Craft Corporation, Kalamazoo, Mich.
Filed Sept. 20, 1971, Ser. No. 182,299
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D74—2 C

230,646
DESK FILE
Steve A. Unger, 343 S. Jefferson, Woodstock, Ill. 60098
Filed Feb. 16, 1972, Ser. No. 227,018
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—2 A

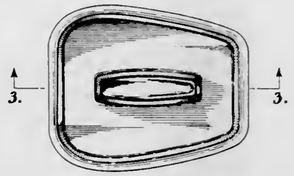


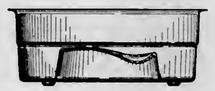
230,647
PEN AND PENCIL HOLDER
Alicia Holly Driks, 4 Carter Lane, Monsey, N.Y. 10952
Filed Sept. 13, 1972, Ser. No. 288,561
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A

230,648
NEWSPAPER BOX
Murray M. Fibus, Youngstown, Ohio, assignor to Steel City Corporation, Youngstown, Ohio
Filed May 25, 1972, Ser. No. 257,070
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D74—9 R

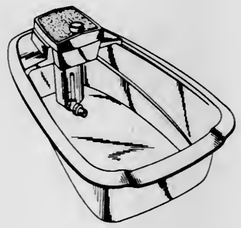


230,649
HYDROTHERAPY FOOT TUB
Samuel L. McNair and Henry J. Talge, Overland Park, Kans., assignors to Dazey Products Company
Filed July 23, 1973, Ser. No. 381,677
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 C

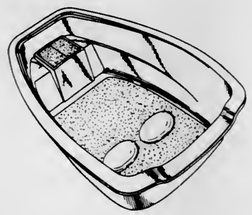




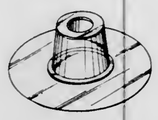
230,650
PORTABLE WHIRLPOOL BATH
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed Mar. 26, 1973, Ser. No. 345,008
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 C



230,651
HYDROTHERAPY BATH
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed Mar. 26, 1973, Ser. No. 345,009
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 C

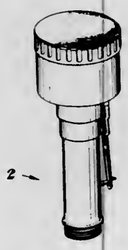


230,652
SEALING CAP FOR INLET BLOOD PLUG OF DIALYSIS COIL
Lester Zimmerman, Hicksville, N.Y., assignor to Vernitron Medical Products, Inc., Deer Park, N.Y.
Filed Apr. 13, 1973, Ser. No. 351,050
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F



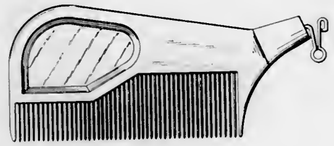
230,653
INLET BLOOD PLUG FOR DIALYSIS COIL
Lester Zimmerman, Hicksville, N.Y., assignor to Vernitron Medical Products, Inc., Deer Park, N.Y.
Filed Apr. 13, 1973, Ser. No. 351,115
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F

230,654
CASE FOR BATTERY POWERED IN-LINE ORTHOPEDIC SURGICAL CUTTING TOOL
Meyer Fishbein, 12020 Saltair Place, Los Angeles, Calif. 90049
Filed Sept. 7, 1971, Ser. No. 178,543
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

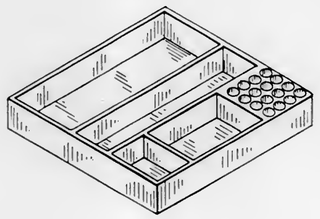


230,655
COMB
Anthony Battaglia, 455 NW. 202 Terrace, Miami, Fla. 33169
Filed June 1, 1972, Ser. No. 258,934
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—8

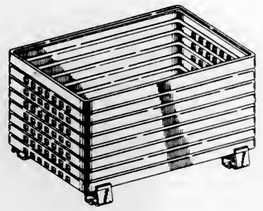
230,656
COMBINED COMB, MIRROR AND KEY HOLDER
Clyde H. Hafler, 115 N. 5th St., Allentown, Pa. 18100
Filed Mar. 2, 1973, Ser. No. 337,654
Term of patent 3½ years
Int. Cl. D28—*03*
U.S. Cl. D86—8



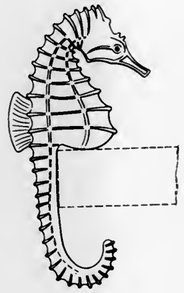
230,657
MAKEUP HOLDER
Dorothy Begun, 22559 Avon Lane, Southfield, Mich. 48075
Filed May 30, 1972, Ser. No. 258,209
Term of patent 7 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 A



230,658
MATERIAL HANDLING BOX
William R. Powell, Hubbard, Ohio, assignor to The Powell Pressed Steel Company
Filed Apr. 11, 1972, Ser. No. 243,108
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D87—1 R



230,659
PURSE HOLDER OR SIMILAR ARTICLE
Kenneth G. Bride, 408 Brett St., Inglewood, Calif. 90302
Filed Nov. 15, 1971, Ser. No. 199,085
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—2 A



230,660
PURSE
Jacqueline Hayes, 727 Stewart Ave., Daly City, Calif. 94015
Filed Jan. 31, 1972, Ser. No. 222,449
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F

230,661
HANDBAG
Jacqueline H. Andrews, Patrick St., Ashland, Va. 23005
Filed Feb. 15, 1972, Ser. No. 226,654
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 C

230,662
TRAVELING BAG OR SIMILAR ARTICLE
Ira R. Katz, Nashville, Tenn., assignor to Hartmann Luggage Company, Lebanon, Tenn.
Filed May 7, 1971, Ser. No. 141,467
Term of patent 7 years
Int. Cl. D3—*01*
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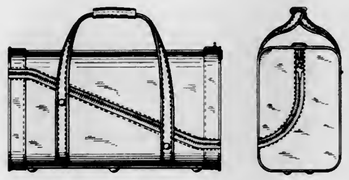

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF MARCH, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Acker, Douglas B.; and Berry, Trevis L., to Reliance Trailer Manufacturing, Inc. Apparatus for transporting building modules. 3,795,336, Cl. 214-390.000.

Ackerman, Albert C.; and Bowman, Walter J., to Mac Valves, Inc. Electrical disconnect means. 3,795,883, Cl. 339-19.00p.

Acraloc Corporation: *See—*
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Adams, Frank H.; and Anderson, Robert F., to Universal Oil Products Company. Metal, sulfur and nitrogen removal from hydrocarbons utilizing moving bed reactors. 3,795,607, Cl. 208-210.000.

Adams, Kenneth D.; Bradus, Robert; and Winar, Joseph J., to Singer Company, The. Cam selection module. 3,795,210, Cl. 112-158.00d.

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Aldrich, Floyd E.; and Fischman, Martin, to GTE Sylvania Incorporated. Horizontal linearity correction circuit. 3,795,835, Cl. 315-27.0td.

Allen, Paul M., to Armco Steel Corporation. Semi-austenitic Cr-Ni-Al-Cu stainless steel. 3,795,507, Cl. 75-124.000.

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Androsov, Pavel Iosifovich: *See—*
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Asakura, Hiroshi; Takano, Koshi; Arai, Yashuaki; and Kusaka, Masaharu, to Denki Kagaku Kogyo Kabushiki Kaisha and Toyo Kagaku Kabushiki; a/k/a Toyo Chemical Co., Ltd. Process for the production of foamed polystyrene materials. 3,795,729, Cl. 264-54.000.

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Aschauer, George R., to Twin Disc, Incorporated. Control apparatus for hydraulic jet propulsion water borne craft. 3,795,105, Cl. 60-221.000.

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Brenner, Mortimer Wilkes, to Schwarz Services International, Limited. Preparation of wort for making beer. 3,795,745, Cl. 426-29.000.

Brewer, George E. F.; Swider, Robert A.; and Rentz, Warren A., to Ford Motor Company. Electrodiffused protective coating system. 3,795,601, Cl. 204-181.000.

Brezinski, Richard R.; and Durkee, Lyle H., to General Motors Corporation. Method of manufacturing mounting pads for energy absorbing steering column installations. 3,795,038, Cl. 29-417.000.

Brick It Corporation: *See—*
Gilbert, Jack J.; and Kinneman, William P., Jr., 3,795,721.

Bricout, Daniel D.: *See—*
Burnier, Pierre H.; and Bricout, Daniel D., 3,795,116.

Bridger, Robert F.: *See—*
Stournas, Stamoulis; Bridger, Robert F.; and Heiba, El Ahmadi I., 3,795,612.

Bridgestone Tire Company Limited: *See—*
Yukuta, Toshio; Iwami, Kouichi; Onishi, Akira; and Seda, Yutaka, 3,795,598.

Brigida, Carlo J.; Wexler, Meyer; and Woodford, Philip S., to Foster Wheeler Corporation. Feedwater heater. 3,795,273, Cl. 165-112.000.

Brille, Maurice G., to Societe Anonyme de Vehicules Industriels et d'Equipements Mecaniques Saviem. Cold starting devices for diesel engines with compensated supercharging. 3,795,231, Cl. 123-119.0cb.

British Columbia Packers Limited: *See—*
McLean, Milton H., 3,795,325.

British Insulated Callender's Cables Limited: *See—*
Higgins, Peter, 3,795,757.
Raw, Peter Michael; and Robbins, Rodway Albert, 3,795,760.

Broaded, Charley H. Adjustable bed. 3,795,018, Cl. 5-68.000.

Broadt, David R., to GTE Sylvania Incorporated. Selective actuating mechanism for percussive photoflash lamp array. 3,795,477, Cl. 431-93.000.

Bronner, Francois: *See—*
Mionet, Robert; Bronner, Francois; and Fruteau, Pierre, 3,795,869.

Bronson, Orville P.; and Crabtree, Bruce L., Sr. Multipurpose bucket for heavy-duty construction equipment. 3,795,070, Cl. 37-117.500.

Broomer, Cyril J. Game apparatus with switching matrix between switches and load devices. 3,795,398, Cl. 273-138.00a.

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Buchheit, Otto Karl, to Moeller & Neumann GmbH. Rotary tilter for rolled products. 3,795,322, Cl. 214-1.0qg.

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Diery, Helmut; Seeger, Karl; Schneider, Gerhart; and Bucking, Hans-Walter, 3,795,704.

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Erickson, John W.; and Budrys, Vitolis, 3,795,457.

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Lange, Wilfried, 3,795,357.

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DCA Food Industries, Inc.: *See—*
Roth, Howard; Schiffmann, Robert F.; Kaufman, Harold B., Jr.; and Moyer, John H., 3,795,183.
De Caprio, Joseph Donald: *See—*
Dementi, Brian Armstead; De Caprio, Joseph Donald; and Lazarus, Stanley David, 3,795,661.
De Cremiers, Bertrand; and Chateau, Georges, to Societe Anonyme: Engins Matra. Process and installation for the connection of a cable or flexible pipe to an underwater guide column. 3,795,114, Cl. 61-69.000.
De Mets, Albert, to De Mets N.V. Konstrukteinerkhuizen Kloosterstraat. Press for continuously producing chip board, fiber board or the like. 3,795,470, Cl. 425-371.000.
De Mets N.V. Konstrukteinerkhuizen Kloosterstraat: *See—*
De Mets, Albert, 3,795,470.
De Torre, Robert P., to PPG Industries, Inc. Method of cutting glass and article made thereby. 3,795,572, Cl. 161-149.000.
Dean, Reginald I. R. Winding apparatus. 3,795,370, Cl. 242-621.00r.
Debs, Victor, to Levolor Lorentzen, Inc. Venetian blind. 3,795,266, Cl. 160-168.000.
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Decker, Willis W.: *See—*
Bianchi, Jack M.; and Decker, Willis W., 3,795,360.
Deepsea Ventures, Inc.: *See—*
Kane, William S.; and Cardwell, Paul H., 3,795,596.
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Koch, James Allan; and Henderson, Donald Le Roy, 3,795,415.
Deffeyes, Robert J.: *See—*
Schwartz, Arthur G.; and Deffeyes, Robert J., 3,795,092.
Degroat, Paul H.; Bell, Allan J.; and Cheng, King Y., to Xerox Corporation. Alternate analog encoding method and apparatus. 3,795,765, Cl. 178-6.000.
Deindoerfer, Fred H.; and Brake, Jon M., to American Hospital Supply Corporation. Method of maintaining or restoring the 2,3-diphosphoglycerate content of human red cells. 3,795,581, Cl. 195-1.800.
Delavarenne, Serge Y., to Union Carbide Corporation. Synthesis of cyclic ketals. 3,795,682, Cl. 260-340.900.
Dementi, Brian Armstead; De Caprio, Joseph Donald; and Lazarus, Stanley David, to Allied Chemical Corporation. Halogen catalyzed direct esterification process for poly(ethylene terephthalate). 3,795,661, Cl. 260-75.00r.
Demus, Andre, to Creusot-Loire. Method and apparatus for producing long flat metal strip from a coiled metal strip with uniform straight edges to a high decree of precision. 3,795,127, Cl. 72-274.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Aoyama, Keiji; Akahira, Rokuro; and Katoh, Yuichi, 3,795,688.
Asakura, Hiroshi; Takano, Koshi; Arai, Yashuaki; and Kusaka, Masaharu, 3,795,729.
Denton, Ronald T., to Ford Motor Company. Carburetor anti-dieseling and deceleration control. 3,795,237, Cl. 123-198.00d.
Depree, David O., to Aerojet-General Corporation. Stabilized ammonium perchlorate. 3,795,555, Cl. 149-76.000.
Deprez, Thomas A.; and Whalley, Frank M., to Gleason Works, S.A. Machine for running together bevel or hypoid gears to determine optimum running position of one gear relative to another. 3,795,143, Cl. 73-162.000.
Deramo, Anthony D.: *See—*
Wallace, Frank E.; and Deramo, Anthony D., 3,795,916.
Desso, Jerome Andrew; and Henschen, Homer Ernst, to AMP Incorporated. Adaptor for connecting flat conductor cable. 3,795,885, Cl. 339-17.00f.
DeTorre, Robert P., to PPG Industries, Inc. Method of cutting glass. 3,795,502, Cl. 65-174.000.
Dewhurst, David S.: *See—*
Mollen, Ignatius J.; Koerper, Phillip E.; Turner, Albert G.; and Dewhurst, David S., 3,795,094.
Di Nardo, Frank L.; and Salners, Edward A., to Motorola, Inc. Printed circuit board edge connector requiring zero insertion force. 3,795,888, Cl. 339-176.0mp.
Di/An Control, Inc.: *See—*
Kodis, Robert D., 3,795,298.
Diamond Electric Mfg. Co., Ltd.: *See—*
Ishida, Yoshio, 3,795,843.
Diery, Helmut: *See—*
Kuhne, Rudolf; Diery, Helmut; and Rittner, Siegbert, 3,795,626.
Diery, Helmut; Seeger, Karl; Schneider, Gerhart; and Bucking, Hans-Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Anti-microbially active surface-active compounds. 3,795,704, Cl. 260-534.00r.
Diesel Equipment, Limited: *See—*
Martin, Paul H.; and McKee, William C., 3,795,329.
Dietrich, Toni, to Will, Wilhelm, KG, Firma. Supporting mount for an instrument stand. 3,795,377, Cl. 248-125.000.
Digilux Corporation: *See—*
Bolger, John G., Jr.; and Walker, Carl A., 3,795,402.
Digital Systems, Inc.: *See—*
Kosmowski, Wojciech B., 3,795,455.
Dillingham, Edward, to Data Source Corporation. Polling interrupt for data information system. 3,795,895, Cl. 340-163.00r.
Dimino, Alfonso, to ADM Tronics. Water-based binder for magnetic tape. 3,795,539, Cl. 117-235.000.
Diolot, Lucien, to Societe Nouvelle Spidem. Method of detecting and compensating for defects on rolling mill rolls and means for applying this method. 3,795,124, Cl. 72-20.000.
Doane, William M.: *See—*
Wing, Robert E.; and Doane, William M., 3,795,671.
Domba, Elemer, to Nalco Chemical Company. Ketene dimers from long chain alkanoic acids with perfluoroalkyl terminal segments. 3,795,684, Cl. 260-343.900.
Dominion Bridge Company Limited: *See—*
Coulter, William John; and Graville, Brian Anthony, 3,795,781.
Donnelly, Charles A.; and Sanders, James F., to Minnesota Mining and Manufacturing Company. Fixing process. 3,795,033, Cl. 29-132.000.
Donofrio, Nicholas M.: *See—*
Benante, Joseph F.; Donofrio, Nicholas M.; and Linton, Richard H., 3,795,859.
Donohue, James A.; and Shore, Harry S., to Outboard Marine Corporation. Breakless ignition system with means for preventing reverse engine operation. 3,795,235, Cl. 123-148.00e.
Dorfman, Edwin; Emerson, William E.; and Carr, Russell L. K., to Hooker Chemical Corporation. Omega cyanoperfluoroalkanoyl fluorides. 3,795,693, Cl. 260-465.400.
Douglas, George H.; and Guinosso, Charles J., to American Home Products Corporation. Cholesterol-lowering agents. 3,795,691, Cl. 260-456.00p.
Douglas, Hunter, N.V., mesne: *See—*
Turner, Derek, 3,795,380.
Douty, Robert Lee: *See—*
Nauman, Warren David; Yerger, Clair William; and Douty, Robert Lee, 3,795,889.
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Armstrong, William A.; and Stefancin, James M., 3,795,163.
Crane, Robert A.; Lipps, Benjamin J.; and Sargent, John A., 3,795,318.
Eilers, Louis H.; and Parks, Christ F., 3,795,276.
Howsam, Robert William; and Larson, Paul Alan, 3,795,657.
Michael, Laddie L., 3,795,221.
Tefertiller, Ben A.; and Nevill, James I., 3,795,642.
Drayton, William Barry Dymock; and Knights, Paul Marshall. Electron microscopes. 3,795,808, Cl. 250-310.000.
Dresser Industries, Inc.: *See—*
Bohn, Floyd O., 3,795,275.
Luich, Ronald Joseph, 3,795,148.
Dressler, Bruno: *See—*
Lecailtel, Pierre; and Dressler, Bruno, 3,795,405.
Du Pont de Nemours, E. I., and Company: *See—*
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Dunwoody, Samuel A., Jr., 3,795,096.
Farley, Carl Wiern, 3,795,430.
Heyer, David E., 3,795,474.
Kirkland, Joseph J.; and Yates, Paul C., 3,795,313.
McGhee, John D., 3,795,825.
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Duling, Irl N.: *See—*
Thompson, Robert M.; and Duling, Irl N., 3,795,658.
Dumas, Guy, to Silec-Semi-Conducteurs. Method of fabricating semiconductor devices to facilitate early electrical testing. 3,795,045, Cl. 29-574.000.
Dunham-Bush, Inc.: *See—*
Moody, Harold W., Jr.; and Hamilton, Clark B., 3,795,117.
Dunn, Howard J.; Farr, Marvin Paul; and Schleusner, Otto, to Ralston Purina Company. Food product and method of making same. 3,795,751, Cl. 426-221.000.
Dunn, Kathy A.: *See—*
Glass, Marvin I.; and Dunn, Kathy A., 3,795,400.
Dunwoody, Samuel A., Jr., to Du Pont de Nemours, E. I., and Company. Product and process. 3,795,096, Cl. 57-144.000.
Dupasquier, Joseph Henry. Composite steam chamber for use on a traveling pulp mat. 3,795,578, Cl. 162-290.000.
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Dutkewych, Oleh Borys; and Conlan, William A., Jr. Pre-etch treatment of acrylonitrile-butadiene-styrene resins for electroless plating. 3,795,622, Cl. 252-79.100.
Earl, Roger Eric, to L.T.A. Electronics Limited. Method of making an electrolytic conductivity cell. 3,795,039, Cl. 29-592.000.
Easley, Wayne W.: *See—*
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Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, to Allied Chemical Corporation. Process for preparing fluoroperhaloalkyl isocyanates. 3,795,689, Cl. 260-453.00p.
Bhutani, Harish K.: *See—*
Kendall, Giles A.; and Bhutani, Harish K., 3,795,390.
Bianchi, Jack M.; and Decker, Willis W., to Safeway Stores Incorporated. Cover for basket-type container and combination thereof. 3,795,360, Cl. 229-43.000.
Bil-City i Pilea AB: *See—*
Eriksson, Lars Levi, 3,795,332.
Birkmayer, Walter; and Neumayer, Erwin, to Hoffmann-La Roche Inc., mesne. Treatment of Parkinson's disease. 3,795,739, Cl. 424-274.000.
Blaby, Roy E.: *See—*
Bergquist, Arthur John; Blaby, Roy E.; and Hopkins, John W., 3,795,115.
Black, Thomas J., to Westermann, Werner F. Centrifugal coin sorter. 3,795,252, Cl. 133-3.00a.
Blanchard, Eugene J.: *See—*
Harper, Robert J., Jr.; Gautreaux, Gloria A.; and Blanchard, Eugene J., 3,795,480.
Blaupunkt-Werke GmbH: *See—*
Altmann, Albrecht, 3,795,764.
Blosser, Nelson K. Salt removal spray device. 3,795,254, Cl. 134-123.000.
Bodine, Albert G. Acoustical suppression of detonation waves in rotary internal combustion engine. 3,795,226, Cl. 123-8.010.
Boehm, Robert Francis; and Van Bogelen, Donald Wayne, to International Business Machines Corporation. Data processing memory system with bidirectional data bus. 3,795,901, Cl. 340-172.500.
Boeing Company, The: *See—*
Ancker-Johnson, Betsy, 3,795,803.
Horn, Victor I.; and Kangas, Henry A., 3,795,559.
Bogart, Marcel J. P., to Fluor Corporation. Synthesis gas generation apparatus. 3,795,485, Cl. 23-262.000.
Boggs, Roger L.; and Reinsma, Harold L., to Caterpillar Tractor Company. Track link with replaceable rail. 3,795,431, Cl. 305-56.000.
Bohn, Floyd O., to Dresser Industries, Inc. Apparatus for applying an elastomeric sheath to a wireline used in oilfield service operations. 3,795,275, Cl. 166-85.000.
Bojas, Edward J.; and Ward, Harold R., to Eaton Corporation. Hydrostatic transmission drive system. 3,795,109, Cl. 60-490.000.
Bolger, John G., Jr.; and Walker, Carl A., to Digilux Corporation. Pin sensing system. 3,795,402, Cl. 273-54.00e.
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, to Hoffmann-La Roche Inc. Alpha-2-methylhydrazine-pyridivotoluidides and derivatives. 3,795,678, Cl. 260-295.0am.
Boller, Arthur; and Scherrer, Hanspeter, to Hoffmann-La Roche Inc. Nematogenic materials which exhibit the kerr effect at isotropic temperatures. 3,795,436, Cl. 350-150.000.
Boller, Thomas E., to Ford Motor Company. Method of treating a surface of a glass article and the glass article produced therefrom. 3,795,535, Cl. 117-118.000.
Bolton, Anthony Peter: *See—*
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Bond, Herbert M.; and Rucinski, Michael E., to Buckbee-Mears Company. Vertical etchers for minute parts. 3,795,561, Cl. 156-345.000.
Borden Chemical Company (U.K.), Ltd.: *See—*
Lees, William Arthur; Bennett, David John; Swire, John Richard; and Harding, Peter, 3,795,641.
Borden, Inc.: *See—*
Cummin, Alfred S.; Daun, Henryk; Gilbert, Seymour G.; and Henig, Yair, 3,795,749.
Hiss, Reinhard Calhoun, 3,795,086.
Bosma, Robert W.; and Pettee, George H., to Norton Company. Segmental cut-off grinding wheel. 3,795,077, Cl. 51-206.500.
Bouniot, Albert, to Melle-Bezons. Process for the continuous production of beta-methoxy aldehydes. 3,795,643, Cl. 260-602.000.
Bourdelais, Roger J.; Colangelo, Dominick; McFadyen, Robert J.; and Elliott, James F., to United States of America, Air Force. Instrument for automatically inspecting integrated circuit masks for pinholes and spots. 3,795,452, Cl. 356-237.000.
Bourgeois, Norbert, to Etudes et Bonneterie S.A. Cam device for controlling the needles or knitting accessories of circular knitting-machine. 3,795,119, Cl. 66-20.000.
Bowers, Charles E., Jr.: *See—*
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Bowman, Walter J.: *See—*
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Boycott, William A.: *See—*
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Boyer, Marcel-Louis, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Automatic code-correcting device. 3,795,791, Cl. 235-61.100.
Boyer, Marcel-Louis, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Device for punching and/or reading a tape. 3,795,793, Cl. 235-61.100.
Bradus, Robert: *See—*
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Brake, Jon M.: *See—*
Deindoerfer, Fred H.; and Brake, Jon M., 3,795,581.
Brand, Karl. Apparatus for processing sheet material. 3,795,166, Cl. 83-409.000.
Brandin, Tore; and Frejd, Bo, to Stal Refrigeration AB. Device for evenly mixing and distributing a gas and liquid mixture. 3,795,259, Cl. 137-561.00a.
Branger, Moritz: *See—*
Licht, Lazar; Branger, Moritz; Kayan, Helmut L.; and Lawson, Bob L., 3,795,427.
Brenner, Lawrence A.; and Lopuski, Andrew, to Beloit Corporation. Paper roll coding device. 3,795,082, Cl. 53-131.000.
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De Caprio, Joseph Donald: *See—*
Dementi, Brian Armstead; De Caprio, Joseph Donald; and Lazarus, Stanley David, 3,795,661.
De Cremiers, Bertrand; and Chateau, Georges, to Societe Anonyme: Engins Matra. Process and installation for the connection of a cable or flexible pipe to an underwater guide column. 3,795,114, Cl. 61-69.000.
De Mets, Albert, to De Mets N.V. Konstrukteinerkhuizen Kloosterstraat. Press for continuously producing chip board, fiber board or the like. 3,795,470, Cl. 425-371.000.
De Mets N.V. Konstrukteinerkhuizen Kloosterstraat: *See—*
De Mets, Albert, 3,795,470.
De Torre, Robert P., to PPG Industries, Inc. Method of cutting glass and article made thereby. 3,795,572, Cl. 161-149.000.
Dean, Reginald I. R. Winding apparatus. 3,795,370, Cl. 242-621.00r.
Debs, Victor, to Levolor Lorentzen, Inc. Venetian blind. 3,795,266, Cl. 160-168.000.
Debs, Victor, to Levolor Lorentzen, Inc. Venetian blind. 3,795,267, Cl. 160-168.000.
Decker, Willis W.: *See—*
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Deepsea Ventures, Inc.: *See—*
Kane, William S.; and Cardwell, Paul H., 3,795,596.
Deere & Company: *See—*
Koch, James Allan; and Henderson, Donald Le Roy, 3,795,415.
Deffeyes, Robert J.: *See—*
Schwartz, Arthur G.; and Deffeyes, Robert J., 3,795,092.
Degroat, Paul H.; Bell, Allan J.; and Cheng, King Y., to Xerox Corporation. Alternate analog encoding method and apparatus. 3,795,765, Cl. 178-6.000.
Deindoerfer, Fred H.; and Brake, Jon M., to American Hospital Supply Corporation. Method of maintaining or restoring the 2,3-diphosphoglycerate content of human red cells. 3,795,581, Cl. 195-1.800.
Delavarenne, Serge Y., to Union Carbide Corporation. Synthesis of cyclic ketals. 3,795,682, Cl. 260-340.900.
Dementi, Brian Armstead; De Caprio, Joseph Donald; and Lazarus, Stanley David, to Allied Chemical Corporation. Halogen catalyzed direct esterification process for poly(ethylene terephthalate). 3,795,661, Cl. 260-75.00r.
Demus, Andre, to Creusot-Loire. Method and apparatus for producing long flat metal strip from a coiled metal strip with uniform straight edges to a high decree of precision. 3,795,127, Cl. 72-274.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Aoyama, Keiji; Akahira, Rokuro; and Katoh, Yuichi, 3,795,688.
Asakura, Hiroshi; Takano, Koshi; Arai, Yashuaki; and Kusaka, Masaharu, 3,795,729.
Denton, Ronald T., to Ford Motor Company. Carburetor anti-dieseling and deceleration control. 3,795,237, Cl. 123-198.00d.
Depree, David O., to Aerojet-General Corporation. Stabilized ammonium perchlorate. 3,795,555, Cl. 149-76.000.
Deprez, Thomas A.; and Whalley, Frank M., to Gleason Works, S.A. Machine for running together bevel or hypoid gears to determine optimum running position of one gear relative to another. 3,795,143, Cl. 73-162.000.
Deramo, Anthony D.: *See—*
Wallace, Frank E.; and Deramo, Anthony D., 3,795,916.
Desso, Jerome Andrew; and Henschen, Homer Ernst, to AMP Incorporated. Adaptor for connecting flat conductor cable. 3,795,885, Cl. 339-17.00f.
DeTorre, Robert P., to PPG Industries, Inc. Method of cutting glass. 3,795,502, Cl. 65-174.000.
Dewhurst, David S.: *See—*
Mollen, Ignatius J.; Koerper, Phillip E.; Turner, Albert G.; and Dewhurst, David S., 3,795,094.
Di Nardo, Frank L.; and Salners, Edward A., to Motorola, Inc. Printed circuit board edge connector requiring zero insertion force. 3,795,888, Cl. 339-176.0mp.
Di/An Control, Inc.: *See—*
Kodis, Robert D., 3,795,298.
Diamond Electric Mfg. Co., Ltd.: *See—*
Ishida, Yoshio, 3,795,843.
Diery, Helmut: *See—*
Kuhne, Rudolf; Diery, Helmut; and Rittner, Siegbert, 3,795,626.
Diery, Helmut; Seeger, Karl; Schneider, Gerhart; and Bucking, Hans-Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Anti-microbially active surface-active compounds. 3,795,704, Cl. 260-534.00r.
Diesel Equipment, Limited: *See—*
Martin, Paul H.; and McKee, William C., 3,795,329.
Dietrich, Toni, to Will, Wilhelm, KG, Firma. Supporting mount for an instrument stand. 3,795,377, Cl. 248-125.000.
Digilux Corporation: *See—*
Bolger, John G., Jr.; and Walker, Carl A., 3,795,402.
Digital Systems, Inc.: *See—*
Kosmowski, Wojciech B., 3,795,455.
Dillingham, Edward, to Data Source Corporation. Polling interrupt for data information system. 3,795,895, Cl. 340-163.00r.
Dimino, Alfonso, to ADM Tronics. Water-based binder for magnetic tape. 3,795,539, Cl. 117-235.000.
Diolot, Lucien, to Societe Nouvelle Spidem. Method of detecting and compensating for defects on rolling mill rolls and means for applying this method. 3,795,124, Cl. 72-20.000.
Doane, William M.: *See—*
Wing, Robert E.; and Doane, William M., 3,795,671.
Domba, Elemer, to Nalco Chemical Company. Ketene dimers from long chain alkanoic acids with perfluoroalkyl terminal segments. 3,795,684, Cl. 260-343.900.
Dominion Bridge Company Limited: *See—*
Coulter, William John; and Graville, Brian Anthony, 3,795,781.
Donnelly, Charles A.; and Sanders, James F., to Minnesota Mining and Manufacturing Company. Fixing process. 3,795,033, Cl. 29-132.000.
Donofrio, Nicholas M.: *See—*
Benante, Joseph F.; Donofrio, Nicholas M.; and Linton, Richard H., 3,795,859.
Donohue, James A.; and Shore, Harry S., to Outboard Marine Corporation. Breakless ignition system with means for preventing reverse engine operation. 3,795,235, Cl. 123-148.00e.
Dorfman, Edwin; Emerson, William E.; and Carr, Russell L. K., to Hooker Chemical Corporation. Omega cyanoperfluoroalkanoyl fluorides. 3,795,693, Cl. 260-465.400.
Douglas, George H.; and Guinosso, Charles J., to American Home Products Corporation. Cholesterol-lowering agents. 3,795,691, Cl. 260-456.00p.
Douglas, Hunter, N.V., mesne: *See—*
Turner, Derek, 3,795,380.
Douty, Robert Lee: *See—*
Nauman, Warren David; Yerger, Clair William; and Douty, Robert Lee, 3,795,889.
Doverstrand Ltd.: *See—*
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Dow Chemical Company: *See—*
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Dow Chemical Company, The: *See—*
Armstrong, William A.; and Stefancin, James M., 3,795,163.
Crane, Robert A.; Lipps, Benjamin J.; and Sargent, John A., 3,795,318.
Eilers, Louis H.; and Parks, Christ F., 3,795,276.
Howsam, Robert William; and Larson, Paul Alan, 3,795,657.
Michael, Laddie L., 3,795,221.
Tefertiller, Ben A.; and Nevill, James I., 3,795,642.
Drayton, William Barry Dymock; and Knights, Paul Marshall. Electron microscopes. 3,795,808, Cl. 250-310.000.
Dresser Industries, Inc.: *See—*
Bohn, Floyd O., 3,795,275.
Luich, Ronald Joseph, 3,795,148.
Dressler, Bruno: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Brown, Theodore E., Jr.; and Willis, Frank M., 3,795,081.
Dunwoody, Samuel A., Jr., 3,795,096.
Farley, Carl Wiern, 3,795,430.
Heyer, David E., 3,795,474.
Kirkland, Joseph J.; and Yates, Paul C., 3,795,313.
McGhee, John D., 3,795,825.
Nebe, William John, 3,795,520.
Du-Al Company, The: *See—*
Allen, Robert E., Jr.; and Morel, Richard A., 3,795,245.
Duc, Alain: *See—*
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Duffy, Arthur R.: *See—*
Smith, Ernest L.; Duffy, Arthur R.; and Lyman, Eugene S., 3,795,573.
Duling, Irl N.: *See—*
Thompson, Robert M.; and Duling, Irl N., 3,795,658.
Dumas, Guy, to Silec-Semi-Conducteurs. Method of fabricating semiconductor devices to facilitate early electrical testing. 3,795,045, Cl. 29-574.000.
Dunham-Bush, Inc.: *See—*
Moody, Harold W., Jr.; and Hamilton, Clark B., 3,795,117.
Dunn, Howard J.; Farr, Marvin Paul; and Schleusner, Otto, to Ralston Purina Company. Food product and method of making same. 3,795,751, Cl. 426-221.000.
Dunn, Kathy A.: *See—*
Glass, Marvin I.; and Dunn, Kathy A., 3,795,400.
Dunwoody, Samuel A., Jr., to Du Pont de Nemours, E. I., and Company. Product and process. 3,795,096, Cl. 57-144.000.
Dupasquier, Joseph Henry. Composite steam chamber for use on a traveling pulp mat. 3,795,578, Cl. 162-290.000.
Durkee, Lyle H.: *See—*
Brezinski, Richard R.; and Durkee, Lyle H., 3,795,038.
Dutkewych, Oleh Borys; and Conlan, William A., Jr. Pre-etch treatment of acrylonitrile-butadiene-styrene resins for electroless plating. 3,795,622, Cl. 252-79.100.
Earl, Roger Eric, to L.T.A. Electronics Limited. Method of making an electrolytic conductivity cell. 3,795,039, Cl. 29-592.000.
Easley, Wayne W.: *See—*
Rhodarmer, Thomas C.; Easley, Wayne W.; and Pryor, Billy, 3,795,568.

Eastman, Edward A. Toilet water tank with light and heavy flush control. 3,795,016, Cl. 4-67.00a.
Eastman Kodak Company: *See—*
Brown, Gordon P.; and Schwardt, David N., 3,795,439.
Glidden, Dennis James; and Freiert, Wayne Alan, 3,795,444.
Hamlin, Ronald Jackson; and Albrecht, Richard Edmund, 3,795,445.
Hester, Robert; and Pierson, Howard P., 3,795,468.
Jackson, Winston J., Jr.; and Darnell, William R., 3,795,644.
Kasper, George F., 3,795,618.
McCabe, John M., 3,795,617.
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Stahr, Richard W.; and Franke, Hans G., 3,795,516.
Sutton, Richard C., 3,795,517.
Eaton Corporation: *See—*
Bojas, Edward J.; and Ward, Harold R., 3,795,109.
Grygera, James W., 3,795,850.
Pipes, George R.; Peppers, James D.; and Mormile, Wayne T., 3,795,200.
Ward, Harold R., 3,795,107.
Eberhard, Patrick; Hammacher, Konrad; and Mindi, Wolfgang, to Hoffmann-La Roche Inc. Electrochemical electrode with heating means. 3,795,239, Cl. 128-2.00e.
Ebersole, Theodore J.: *See—*
United States of America, National Aeronautics and Space Administration, 3,795,858.
EBSCO Industries, Inc.: *See—*
Gray, Jerry R., 3,795,379.
Eckert, Hans-Werner; and Werner, Claus, to Henkel & Cie G.m.b.H. Powdery softening rinsing agent compositions. 3,795,610, Cl. 252-8.800.
Eckhardt, Homer D., to United States of America, Air Force, mesne. System for rapidly positioning gimbaled objects. 3,795,150, Cl. 74-5.400.
Edwards, Robert A. Race calling system. 3,795,907, Cl. 340-323.000.
Ehret, Gordon F., to Swimquip, Inc. Filter element construction. 3,795,320, Cl. 210-486.000.
Eichelberger, Charles W., to General Electric Company. Method and apparatus for sensing radiation and providing electrical readout. 3,795,806, Cl. 250-211.00j.
Eichenbrenner, Fred E.; and Imig, Leland A., to United States of America, National Aeronautics and Space Administration. Anti-buckling fatigue test assembly. 3,795,134, Cl. 73-15.600.
Eidinger, Adolf, to Brown Boveri & Company Limited. Cross-connection arrangement between phase-isolated metal enclosures of insulating-gas-filled high-voltage conductors. 3,795,820, Cl. 307-147.000.
Eilers, Louis H.; and Parks, Christ F., to Dow Chemical Company, The. Composition and the use thereof for reducing the permeability of a formation. 3,795,276, Cl. 166-295.000.
Ekman, Frank O., to Environeering, Inc. Wet scrubber. 3,795,486, Cl. 23-283.000.
Elchyshyn, Stephen. Adjustable boring bar with lubricant passages. 3,795,454, Cl. 408-197.000.
Electronics Corporation of America: *See—*
Cade, Phillip J., 3,795,899.
Elliott, James F.: *See—*
Bourdelais, Roger J.; Colangelo, Dominick; McFadyen, Robert J.; and Elliott, James F., 3,795,452.
Emerson, William E.: *See—*
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Enders, George E.; and Cantarutti, Armindo, to NRM Corporation. Tire building machine servicer. 3,795,563, Cl. 156-406.000.
Endo, Takamasa; and Sugimura, Shojiro, to Mitsui Shipbuilding and Engineering Co. Ltd. Sealing apparatus for gas compressor. 3,795,460, Cl. 415-175.000.
Endo, Takeyuki; Yokozawa, Norio; Watanabe, Shigeru; and Okada, Kunihiro, to Hitachi, Ltd. Hybrid computing system of automatic connection type. 3,795,798, Cl. 235-150.500.
Engeler, William E.; and Tiemann, Jerome J., to General Electric Company. Method and apparatus for storing and transferring information. 3,795,847, Cl. 317-235.00r.
Engelhard Minerals & Chemicals Corporation: *See—*
Burns, Robert A., 3,795,650.
Engelmann, Manfred; Gordon, Wolfgang; and Rust, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the polymerization of alpha-olefins. 3,795,662, Cl. 260-87.0bb.
Environeering, Inc.: *See—*
Ekman, Frank O., 3,795,486.
Epley, Lee R., to Construction Plastics, Incorporated. Apparatus for attaching liner material to a base sheet. 3,795,566, Cl. 156-58.000.
Erbstein, Robert S., to Leesona Corporation. Electronic system distinguishing between good knots and defects in a moving strand. 3,795,906, Cl. 340-259.000.
Erickson, Donald G.; and Kaufman, Vernon R., to Jacobsen Manufacturing Company. Vented rotary lawn mower. 3,795,095, Cl. 56-320.200.
Erickson, John W.; and Budrys, Vitolis. Multistage pitot pump with means for feeding clean fluid to seals. 3,795,457, Cl. 415-89.000.
Erickson, John W.; Williams, Carter P.; and McArthur, Ralph F., to Kobe, Inc. Pitot pump with slotted inlet passages in rotor case. 3,795,459, Cl. 415-89.000.
Eriksson, Lars Levi, to Bil-City i Pilea AB. Device for setting aside of an implement carried by a vehicle and for replacing the implement on the vehicle. 3,795,332, Cl. 214-77.00r.
Ertingshausen, Gerhard: *See—*
Daly, John A.; and Ertingshausen, Gerhard, 3,795,484.
Eskeli, Michael. Compressor with cooling. 3,795,461, Cl. 415-1.000.
Esmond, William G. Degassing particulate matter and oil filter device. 3,795,088, Cl. 55-206.000.
Esso Research and Engineering Company: *See—*
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Essott, John W.: *See—*
Laing, David D.; and Essott, John W., 3,795,125.
Ethyl Corporation: *See—*
Bergeron, Charles R., 3,795,526.
Ettenreich, Ludwig; Reimann, Otto; and Greulich, Klaus, to Bau-Stahlgewebe GmbH. Heat treatment process for non-alloyed low-carbon structural steel. 3,795,550, Cl. 148-12.400.
Etudes et Bonneterie S.A.: *See—*
Bourgeois, Norbert, 3,795,119.
Fabish, Donald C.; and Hamilton, Robert M., to Robertshaw Controls Company. Demand valve assembly for use with breathing or resuscitation equipment. 3,795,257, Cl. 137-491.000.
Fabre, Paul Marie Esteve Henry, to Societe Nationale Industrielle Aerospatiale. Indicator of the maximum torque usable on a helicopter driven by a turbo-motor. 3,795,363, Cl. 235-78.000.
Faconti, Victor, Jr., to Singer Company, The, mesne. Training simulator with novel malfunction insertion. 3,795,059, Cl. 35-12.00d.
Faiveley S.A.: *See—*
Leger, Roland, 3,795,777.
Falik, Andrew M.: *See—*
Stevenson, Philip J.; and Falik, Andrew M., 3,795,376.
Falk, Leonard P.; and Stadler, Robert L., to UMC Industries Inc. Bowl or cup dispenser. 3,795,344, Cl. 221-116.000.
Fanaritis, John Peter, to Struthers Scientific and International Corporation. Fluidized bed process. 3,795,057, Cl. 34-10.000.
Farbweke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Cherdron, Harald; Burg, Karlheinz; and Gutweiter, Klemens, 3,795,715.
Diery, Helmut; Seeger, Karl; Schneider, Gerhart; and Bucking, Hans-Walter, 3,795,704.
Engelmann, Manfred; Gordon, Wolfgang; and Rust, Kurt, 3,795,662.
Konig, Wolfgang; Geiger, Rolf; and Wolf, Erhard, 3,795,666.
Kuhne, Rudolf; Diery, Helmut; and Rittner, Siegbert, 3,795,626.
Noetzel, Siegfried, 3,795,628.
Ruschig, Heinrich; Meixner, Willi; and Alpermann, Hans Georg, 3,795,681.
von der Eltz, Hans-Ulrich; Maier, Hans-Peter; and Suchy, Dietfried, 3,795,481.
Farley, Carl Wiern, to Du Pont de Nemours, E. I., and Company. Wear resistant frictionally contacting surfaces. 3,795,430, Cl. 308-241.000.
Farlow, Jan M., to Minnesota Mining and Manufacturing Company, mesne. Mode selection and carriage clutching assembly for facsimile. 3,795,766, Cl. 178-6.60r.
Farr, Marvin Paul: *See—*
Dunn, Howard J.; Farr, Marvin Paul; and Schleusner, Otto, 3,795,751.
Favard, Joseph. Device ensuring the automatic stoppage of a guided moving body at desired positions not defined by exterior reference or guide marks. 3,795,852, Cl. 318-602.000.
Feamster, William C. Tangential feed pipe cutter. 3,795,051, Cl. 30-101.000.
Feasey, Ronald George; and Newton, Alan Branford, to Imperial Chemical Industries Limited. Method of isolating aromatic polysulphones. 3,795,660, Cl. 260-49.000.
Feess, Erich; and Gronen, Willy, to Farbweke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Ficing prints of stabilized azoic and reactive dyes on cellulose and cellulose/polyester. 3,795,479, Cl. 88-21.00c.
Fein, Maier O.; and Hilt, Roy A., to United States of America, Navy. Multichannel noise simulator. 3,795,873, Cl. 331-78.000.
Feiner, Alexander; and Gerrish, Allan Martyn, to Bell Telephone Laboratories, Incorporated. Combined PBX and key telephone arrangement. 3,795,776, Cl. 179-99.000.
Feinstone, Wolffe Harry, to Plough, Inc. Means for removing cosmetics. 3,795,624, Cl. 252-91.000.
Feldman, Lewis. Sail rotor crane. 3,795,372, Cl. 244-2.000.
Fergason, James L.; and Harsch, Thomas B., to International Liquid Xtal Company. Thickness measuring method and apparatus. 3,795,133, Cl. 73-15.00r.
Ferrari, Giorgio; Canonica, Luigi; and Danieli, Bruno, to Dauten S.A. Steroid insecticide extracted from kaladana and process for producing same. 3,795,686, Cl. 260-397.200.
Ferraro, Joseph George: *See—*
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FG. Automalisabonasanlagenproyiklierungs: *See—*
Holik, Karl, 3,795,473.

Fiala, Ferdinand; and Zeller, Josef, to Concast AG. Method of and means for sealing a stopping and withdrawing head in a continuous casting mold for steel. 3,795,270, Cl. 164-274.000.
Fiat Societa per Azioni: *See—*
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Fibre-Metal Products Company, The: *See—*
Simpson, Jack N.; Ruck Heinz E.; and Bowers, Charles E., Jr., 3,795,014.
Fickert, Werner: *See—*
Rappen, Ludwig; Fickert, Werner; Orth, Winfried; Maurer, Manfred; and Miele, Heinrich, 3,795,708.
Fieni, Walter, to Societe Anonyme Francaise du Ferodo. Fixing of heat-exchangers, inter alia motor vehicle radiators. 3,795,274, Cl. 165-122.000.
Figuls, Juan, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Magnetic card having slot for strain relief. 3,795,794, Cl. 235-61.12m.
Firestone Tire & Rubber Company, The: *See—*
May, William Peter, 3,795,649.
Yates, Gerald A.; and Stephens, Arnold M., Jr., 3,795,030.
Fischman, Martin: *See—*
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Fisons Limited: *See—*
Burton, Dennis Ernest; Lambie, Alan James; and Newbold, Geoffrey Tattersall, 3,795,680.
Fleissner, Heinz, to Veps AG. Process for the continuous shinkage of random webs. 3,795,031, Cl. 26-18.500.
Fleming, Joseph W., to Koppers Company, Inc. Desulfurization of flue gases. 3,795,732, Cl 423-242.000.
Flue Cleaners, Inc.: *See—*
Lawson, Richard L., 3,795,181.
Fluor Corporation: *See—*
Bogart, Marcel J. P., 3,795,485.
FMC Corporation: *See—*
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Ford Motor Company: *See—*
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Brewer, George E. F.; Swider, Robert A.; and Rentz, Warren A., 3,795,601.
Davies, Richard G.; and Johnston, Thomas L., 3,795,510.
Denton, Ronald T., 3,795,237.
Golovoy, Amos; and Beck, Robert H., Jr., 3,795,633.
Hebert, Clarence C., 3,795,387.
McLean, Arthur P., 3,795,104
Reno, Frederick, 3,795,295.
Warnick, Alan; and Kukla, Cassimer M., 3,795,489.
Forlani, Franco, to Honeywell Information Systems. Method for obtaining beam lead connections for integrated circuits. 3,795,043, Cl. 29-574.000.
Forrester, Leonard R. Coin operated display device utilizing threaded time storage member. 3,795,296, Cl. 194-1.00l.
Foster Wheeler Corporation: *See—*
Brigida, Carlo J.; Wexler, Meyer; and Woodford, Philip S., 3,795,273.
Fox, Anthony Cecil; and Hyde, Kenneth Robert, to United Kingdom Atomic Energy Authority. Preparation of aqueous redispersible gels or stable dilutable sols containing tungsten and titanium and titanium-tungsten carbides therefrom. 3,795,522, Cl. 106-43.000
Fragas, Restituto R. Bed sheet or other bed covering having two head portions. 3,795,019, Cl 5-334.00c
Fram Corporation: *See—*
Conley, James D.; Belden, Donald E.; and Terhune, Ralph D., 3,795,810.
Frank, Ulrich Anton, to Hoffmann-La Roche Inc. Respiratory distress stimulator system. 3,795,240, Cl. 128-2.00r.
Franke, Hans G.: *See—*
Stahr, Richard W.; and Franke, Hans G., 3,795,516.
Franquet, Jacques, to Ste dite: Electronique Marcel Dassault. High frequency phase shift oscillator utilizing frequency dependent transistor phase shifts. 3,795,871, Cl. 331-45.000.
Frazier, Jeffrey R.: *See—*
Yelin, Robert E.; Frazier, Jeffrey R.; and Villiers, Ralph F., 3,795,482.
Freedy, Allan L.: *See—*
Cryder, John R.; and Freedy, Allan L., 3,795,177.
Frei, Hans, to Sulzer Brothers Limited. Apparatus to prevent overspeeding of a combination including a supercharged steam generator, a gas turbine and a compressor. 3,795,816, Cl. 290-40.00b.
Freiert, Wayne Alan: *See—*
Glidden, Dennis James; and Freiert, Wayne Alan, 3,795,444.
Frejd, Bo: *See—*
Brandin, Tore; and Frejd, Bo, 3,795,259.
French, James C.; Anderson, Lucia E.; Bunge, Richard H.; and Howells, John D., to Parke, Davis & Company. Polyamine compounds and methods for their production. 3,795,668, Cl. 260-210.0ab.
Frey, Albert J.; and Galantay, Eugene E., to Sandoz-Wander, Inc. Benzobenzazulenes. 3,795,709, Cl. 260-618.00f.
Freymond, Pierre, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Cascade throttle. 3,795,173, Cl. 89-193.000.
Friedland, Martin: *See—*
Spachner, Sheldon A.; Lose, John G.; and Friedland, Martin, 3,795,168.
Friedrich Uhde GmbH: *See—*
Wengeler, Wilhelm, 3,795,504.
Fries, Gunter Karl; and Oberhauser, Ernst-Gunther, to Moeller & Neumann G.m.b.H. Plate trimming shears. 3,795,167, Cl. 83-514.000.
Fruteau, Pierre: *See—*
Mionet, Robert; Bronner, Francois; and Fruteau, Pierre, 3,795,869.
Fryer, Rodney Ian; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 2-Substituted-p-nitro-anilines. 3,795,702, Cl. 260-500.50h.
Fuji Kogyo Kabushiki Kaisha: *See—*
Matsumoto, Massichiro; Tsuruta, Kiyoshi; Tokyo, Kodaira; and Miyata, Hideo, 3,795,560.
Fuji Photo Film Co., Ltd.: *See—*
Miyazako, Takushi; Taitma, Tatsuya; Kato, Hirotetu; Kokubo, Tadayoshi; Nishina, Tsutomu; and Tsuji, Nobuo, 3,795,519.
Fujimoto, Takehiko; Nishimura, Mikio; and Takigawa, Shoji, to Sanyo Chemical Industries, Ltd. Lubricating oil additives. 3,795,614, Cl. 252-51.50a.
Fujimoto, Yasuo; and Nakano, Kinichi, to Rhone-Poulenc S.A., mesne. Derivatives of spiramycin and a process for producing thereof. 3,795,669, Cl. 260-210.0ab.
Fujita, Kinji. Time correcting device for digital indication electronic watch. 3,795,098, Cl. 58-85.500.
Fujita, Kinji, to Kabushiki Kaisha Suwa Seikosha. Miniature tuning fork type cryatal vibrator. 3,795,831, Cl. 310-9.100.
Fujita, Yasuhiro: *See—*
Nogaito, Tadao; Fujita, Yasuhiro; and Watabiki, Kenichi, 3,795,787.
Fujita, Yoshitoshi: *See—*
Takahashi, Nobuaki; Nishikawa, Kazunori; Ishigaki, Yukinobu; and Fujita, Yoshitoshi, 3,795,876.
Fujitsu Limited: *See—*
Kobayashi, Kengo; and Manabe, Mitsuo, 3,795,854.
Fujiyama, Susumu; and Uchiyama, Seizi, to Mitsubishi Gas-Chemical Company, Inc. Process for separating aromatic hydrocarbons by extraction. 3,795,608, Cl. 208-324.000.
Fukuda, Tadaji: *See—*
Norashino, Koichi Kinoshita; and Fukuda, Tadaji, 3,795,515.
Fukunaga, Motoaki: *See—*
Shigemori, Hideto; Ueba, Akio; and Fukunaga, Motoaki, 3,795,343.
Fullton, James McFerrin, Jr., to Western Electric Company, Incorporated. Methods and apparatus for generating Walsh functions 3,795,864, Cl. 325-38.00r.
Furkert, Herbert, to Chemiebau Dr., A. Zieren GmbH & Co. KG. Process for the combustion of ammonium sulfate. 3,795,731, Cl. 423-351.000.
Furukawa, Mitsuhiko: *See—*
Ogawa, Kazuki; Ito, Hiroshi; and Furukawa, Mitsuhiko, 3,795,404.
Futagawa, Yoshikiyo; Komatsu, Chifumi; Mitsui, Yoshihiro; and Kamakura, Hiroshi, to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki Kaisha. Brushless direct current motor. 3,795,849, Cl. 318-254.000.
Gage, Theodora A.; and Crothers, Carl C., to Astro-Mechanics, Inc. Digital servosystem. 3,795,851, Cl. 318-602.000.
Gagnon, Edmund, to Vy-Nola Corporation. Mineral oil base cleaning composition. 3,795,623, Cl. 252-91.000.
Galantay, Eugene E.: *See—*
Frey, Albert J.; and Galantay, Eugene E., 3,795,709.
Ganiaris, Naophytos, to Struthers Scientific and International Corporation. Grid for fluidized bed apparatus. 3,795,058, Cl. 34-57.00d.
Gardiner, Derek J.: *See—*
Curtiss, Robert H.; Gardiner, Derek J.; and Lazarow, Seldan A., 3,795,186.
Gardner, Samuel: *See—*
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Garlow, Ronald K.: *See—*
Golding, Leonard S.; Garlow, Ronald K.; Ginsberg, Marvin D.; Maillet, Wilfred G.; Kaul, Pradman P.; and Heiges, Melville L., Jr., 3,795,763.
Garrett Corporation, The: *See—*
Lawrie, George S., 3,795,780.
Garrett, Jim C.: *See—*
Richardson, John L., 3,795,830.
Gauri, Kharaiti Lal, to Research Corporation. Preservation and strengthening of porous solids. 3,795,533, Cl. 117-54.000.
Gautreaux, Gloria A.: *See—*
Harper, Robert J., Jr.; Gautreaux, Gloria A.; and Blanchard, Eugene J., 3,795,480.
Gebhard, Rainer; and Axberg, Sture. Apparatus for cleaning the air from a spray painting chamber. 3,795,093, Cl. 55-238.000.
Gebr. Buhler Nachfolger GmbH: *See—*
Schaub, Gerhard, 3,795,848.
Gebr. Knauf Westdeutsche Gipswerke: *See—*
Scheel, Kurt, 3,795,728.
Gebruder Boehringer Gesellschaft mit beschrankter Haftung: *See—*
Berbalk, Hermann, 3,795,161.
Geiger, Rolf: *See—*
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Geilhufe, Mike: *See—*
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General Corrugated Machinery: *See—*

Schneider, Rudolf, 3,795,164.
General Electric Company: *See—*
Eichelberger, Charles W., 3,795,806.
Engeler, William E.; and Tiemann, Jerome J., 3,795,847.
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., 3,795,472.
Hall, Robert N., 3,795,547.
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MacKenzie, Burton Thornley, Jr.; and Wallace, Charles Frank, Jr., 3,795,646.
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Nielsen, John M., 3,795,634.
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General Motors Corporation: *See—*
Brezinski, Richard R.; and Durkee, Lyle H., 3,795,038.
Poe, David T., 3,795,543.
Smith, Kenneth A.; and Stempnik, William, 3,795,562.
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Nemec, John E., 3,795,392.
Georgia-Pacific Corporation: *See—*
Ludwig, Charles H., 3,795,665.
Gerard, Andre P. Aircraft. 3,795,373, Cl. 244-48.000.
Gerrish, Allan Martyn: *See—*
Feiner, Alexander; and Gerrish, Allan Martyn, 3,795,776.
Gerstein, David E. Dispenser for individually dispensing the endmost sheet of a continuous web of connected sheets. 3,795,355, Cl. 225-106.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Schwandt, Wolfgang; Mennekes, Werner; Weinhold, Heinz; and Weirich, Walter, 3,795,108.
Giani, Adolfo, to Reggiani S.p.A. Fluid pressure biased squeegee blade and counter pressure table therefore. 3,795,188, Cl. 101-119.000.
Gibbons, John Michael; and Knowles, William Ralph. Feature association in image analysis. 3,795,792, Cl. 235-92.0pc.
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Gilbert, Seymour G.: *See—*
Cummin, Alfred S.; Daun, Henryk; Gilbert, Seymour G.; and Henig, Yair, 3,795,749.
Gillette, William H.; McGandless, William J. C.; and Negersmith, Kent M., to Technicon Instruments Corporation. Method and apparatus for supplying samples for automated analysis. 3,795,149, Cl. 73-423.00a.
Ginsberg, Marvin D.: *See—*
Golding, Leonard S.; Garlow, Ronald K.; Ginsberg, Marvin D.; Maillet, Wilfred G.; Kaul, Pradman P.; and Heiges, Melville L., Jr., 3,795,763.
Giovanni, Sesto S.: *See—*
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Glass, Marvin, & Associates: *See—*
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Glass, Marvin I.; and Dunn, Kathy A., to Glass, Marvin, & Associates. Game device. 3,795,400, Cl. 273-1.00r.
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Plumat, Emile; and Lelong, Jose, 3,795,783.
Gleason Works, S.A.: *See—*
Deprez, Thomas A.; and Whalley, Frank M., 3,795,143.
Glidden, Dennis James; and Freiert, Wayne Alan, to Eastman Kodak Company. Exposure control apparatus. 3,795,444, Cl. 355-68.000.
Glory Kogyo Kabushiki Kaisha: *See—*
Hatanaka, Yoshihiro; Matono, Hirokuni; and Kawazoe, Hidenori, 3,795,253.
Shigemori, Hideto; Ueba, Akio; and Fukunaga, Motoaki, 3,795,343.
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Glynn, Terry W.: *See—*
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Golding, Leonard S.; Garlow, Ronald K.; Ginsberg, Marvin D.; Maillet, Wilfred G.; Kaul, Pradman P.; and Heiges, Melville L., Jr., to Communication Satellite Corporation. Digital television transmission system. 3,795,763, Cl. 178-5.600.
Goldstein, Bernard, to United States of America, Navy. Method for eliminating degradation of crossed-field-amplifier performance. 3,795,432, Cl. 316-2.000.
Golovko, Igor Fedorovich. Electrode for recording bioelectrical properties. 3,795,241, Cl. 128-2.06e.
Golovoy, Amos; and Beck, Robert H., Jr., to Ford Motor Company. Recovery of thermoplastic foam. 3,795,633, Cl. 260-2.300.
Gomi, Yoshifumi: *See—*
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Goodyear Tire & Rubber Company, The: *See—*
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Goodyear Tire and Rubber Company, The: *See—*
Sassaman, William O., 3,795,722.
Gordon, Robert E., to Monsanto Company. Tank with integral remotely controlled power actuated bottom valve. 3,795,256, Cl. 137-386.000.
Gordon, Wolfgang: *See—*
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Goretta, Louis A.: *See—*
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Gotaverkens Angtekriska AB(Gotaverken Heat Heart Engineering Co., Ltd.): *See—*
Hellstrom, Bengt Olov, 3,795,475.
Goto, Saburo. Method of forging sintered articles of high density. 3,795,129, Cl. 72-342.000.
Gould, Oliver M.: *See—*
Richardson, Charles D.; Corsentino, Robert J., Jr.; and Gould, Oliver M., 3,795,084.
Gouw, Lam H., to Shell Oil Company. Cellulosic sheet material and process for its preparation. 3,795,575, Cl. 162-146.000.
Grace, W. R., & Co.: *See—*
Schurman, Peter T.; and Confer, Raymond C., 3,795,265.
Graco, Inc., mesne: *See—*
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Graffman, Johan H.: *See—*
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Grainger, Derek Robert: *See—*
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Grant, Arthur G.: *See—*
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Graville, Brian Anthony: *See—*
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Gray, Jerry R., to EBSCO Industries, Inc. Adjustable shelf support. 3,795,379, Cl. 248-242.000.
Greenfield, Stanley A.: *See—*
Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., 3,795,679.
Greenwood, James, to Carborundum Company, The, mesne. Coated abrasive articles having a plasticized polyvinyl acetate supersize coat. 3,795,496, Cl. 51-295.000.
Greger, William J., to Nortec Electronics Corporation. Controlled squarewave voltage generating electronic circuit. 3,795,827, Cl. 307-279.000.
Greiner, Alan: *See—*
Moll, Alan H.; and Greiner, Alan, 3,795,784.
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Greulich, Robert G.; Casner, John W.; and Urciola, John A., to Singer Company, The. Remotely activated power switch for sewing machines. 3,795,211, Cl. 112-219.00a.
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Grieves, Gordon; and Holmes, Raymond, to Burgess Micro Switch Company Limited. Steering shaft, gear shift lever switch assembly. 3,795,779, Cl. 200-61.880.
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Grogler, Gerhard, to Bayer Aktiengesellschaft. Stabilized polyurethane compositions. 3,795,638, Cl. 260-45.90r.
Gronen, Willy: *See—*
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Gruber, Peregrinus; and Seidelman, Gerald. Injection mold for plastic roller bearing cages. 3,795,382, Cl. 249-60.000.
Grund, Karl: *See—*
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Grunling, Hermann-Walter: *See—*
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Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., to General Electric Company. Apparatus for the production of electrically heated window. 3,795,472, Cl. 425-517.000.
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GTE Sylvania Incorporated: *See—*
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Peterson, Carl L.; and Korumpas, James D., 3,795,147.
Poole, Margaret A., 3,795,877.
Guest, William H. Fork lift converter attachment. 3,795,331, Cl. 214-145.000.
Guinosso, Charles J.: *See—*
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Gulbransen, Capron R., Jr., to Graphic Calculator Company. Currency converter. 3,795,795, Cl. 235-70.00a.

Gulf & Western Industrial Products Company: *See—*
Niemkiewicz, Ignatius John, and Aseltine, William S., 3,795,419.
Spachner, Sheldon A.; Lose, John G.; and Friedland, Martin, 3,795,168.

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Gulf Research & Development Company: *See—*
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Gundersen, James L.; Julian, Richard L.; Kosco, Thomas J.; Lewis, Dan E.; and Sklar, Richard E., to Hughes Aircraft Company. Passenger entertainment/passenger service and self-test system. 3,795,771, Cl. 179-15.00a.

Gundlach, Robert W., to Xerox Corporation. Electrostatic latent image development. 3,795,530, Cl. 117-17.500.

Gurtner S.A.: *See—*
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Halaby, Sami A.; Kenny, Neal S.; and Murphy, James A., to Corning Glass Works. Method of making a magnetic recording and storage device. 3,795,542, Cl. 117-237.000.

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Hall, Wilbur S.; and Steinbrecher, Lester, to Amchem Products, Inc. Rinsing coated metallic surface. 3,795,546, Cl. 148-6.200.

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Hamilton, Clark B.: *See—*
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Hamilton, Robert M.: *See—*
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Hamlin, Ronald Jackson, and Albrecht, Richard Edmund, to Eastman Kodak Company. Slope control exposure control apparatus. 3,795,445, Cl. 355-68.000.

Hammacher, Konrad: *See—*
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Hammack, Calvin Miles. Method and apparatus for automatically determining position-motion state of a moving object. 3,795,911, Cl. 343-9.000.

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Hansen, Bobbie F., Jr. Material handling apparatus. 3,795,335, Cl. 214-304.000.

Hansen, Hans; Jorns, Peter; Rones, Josef; and Wuttke, Wolfgang, to Oxy Metal Finishing Corporation, mesne. Procedure for surface treatment of iron and steel. 3,795,548, Cl. 148-6.15r.

Harada, Kunio: *See—*
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Haraikawa, Tetsuo, to Tokico Ltd. Tandem master cylinder. 3,795,111, Cl. 60-581.000.

Harding, Peter: *See—*
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Hardman, Stanley J.: *See—*
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Harnischfeger Corporation: *See—*
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Harper, Robert J., Jr.; Gautreaux, Gloria A.; and Blanchard, Eugene J., to United States of America, Agriculture. Process for preparing durable-press or wash-wear fabrics which can be whitened with acidic optical brighteners. 3,795,480, Cl. 8-18.000.

Harris, David Isaac: *See—*
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Harris, Don N.; and Phillips, Marie B., to Squibb, E. R., & Sons, Inc. Inhibition of aggregation of blood platelets. 3,795,582, Cl. 195-1.800.

Harris, George M., to Harris-Hub Company, Inc. Adjustable bed rail member having locking arm. 3,795,022, Cl. 5-181.000.

Harris, Louis Selig, Pars, Harry George; and Razdan, Raj Kumar, to Sharps Associates. 5,5-Dimethyl-10-hydroxy-8-(3-methyl-2-octyl)-2-(2-propynyl)-1,2,3, 4-tetrahydro-5H-(1) benzopyrano (3,4-d)-pyridine as an analgesic agent. 3,795,736, Cl. 424-263.000.

Harris, Stephen E. Optical radiation frequency converter and method. 3,795,819, Cl. 307-88.300.

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Harsch, Thomas B.: *See—*
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Hart, Derek James, to Thorn Electrical Industries, Limited. Tack coupling for electrical distribution tracks. 3,795,886, Cl. 339-21.00r.

Hartenstein, Josef; and Nee, Monika, to Hendel & Cie GmbH. Electroplating. 3,795,594, Cl. 204-55.00r.

Hartwell Corporation, The: *See—*
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Hasegawa, Hiroshi, to Merit Abrasive Products, Inc. Method of making an abrasive wheel. 3,795,498, Cl. 51-297.000.

Hasha, Malvern M. Method of stage internal pressure testing connections between tubular members. 3,795,138, Cl. 73-46.000.

Hashimoto, Kametaro: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Serino, Yoichi; Mitani, Seisho; and Imanishi, Kunizo, 3,795,511.

Hatanaka, Yoshihiro; Matono, Hirokuni; and Kawazoe, Hidenori, to Glory Kogyo Kabushiki Kaisha. Adjustable coin guide in coin processing apparatus. 3,795,253, Cl. 133-3.00a.

Haviland, Girard S.: *See—*
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Hayasaka, Akio; and Taniguchi, Kenji, to Hitachi, Ltd. Semiconductor device and a method for fabricating the same. 3,795,553, Cl. 148-187.000.

Hayashibara Co.: *See—*
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Haywood, Henry. Nutcracker apparatus. 3,795,184, Cl. 99-577.000.

Hebert, Clarence C., to Ford Motor Company. Power fuel supply system. 3,795,387, Cl. 261-23.00a.

Hegedus, Balthasar: *See—*
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Hehl, Klaus Friedrich; and Schenk, Bernd, to ITW-ATECO GmbH. Housing for mounting an operating lever for an automotive vehicle door lock. 3,795,416, Cl. 292-336.300.

Heiba, El Ahmadi I.: *See—*
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Heiges, Melville L., Jr.: *See—*
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Heilman, William J.; and Lynch, Thomas J., to Gulf Research & Development Company. Shear stable, multiviscosity grade lubricating oils. 3,795,616, Cl. 252-59.000.

Heine-Geldern, Robert V.; and Amidon, Alan B., to Xerox Corporation. Xerographic development. 3,795,443, Cl. 355-10.000.

Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, 3,795,588.

Heinze, Gerhard; Reiss, Gerhard; Schwochow, Friedrich; and Ulisch, Gunter, to Bayer Aktiengesellschaft. Glass-fiber-reinforced zoelite granulates. 3,795,631 Cl. 252-455.00z.

Helfer, Hannelore, Jaques, Roland; and Noelpp, Bernhard, to Ciba-Geigy Corporation. Pharmaceutical preparations. 3,795,742, Cl. 424-311.000.

Hellin, Michel: *See—*
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Hellstrom, Bengt Olov, to Gotaverkens Angtekriska AB(Gotaverken Heat Heart Engineering Co., Ltd.). Burner for liquid waste fuel. 3,795,475, Cl. 431-1.000.

Hendel & Cie GmbH: *See—*
Hartenstein, Josef; and Nee, Monika, 3,795,594.

Henderson, Donald Le Roy: *See—*
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Hendriks, Pieter Jozef. Mosquito-frame. 3,795,268, Cl. 160-369.000.

Hengesbach, Robert W. Liquid ballasted temporary traffic marker. 3,795,220, Cl. 116-63.00p.

Henig, Yair: *See—*
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Henkel & Cie G.m.b.H.: *See—*
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Hennicke, Hans-Walter; and Grunling, Hermann-Walter, to Siemens Aktiengesellschaft. Process for the production of metal-ceramic bond. 3,795,041, Cl. 29-472.900.

Henning, Georg, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Stabilized orange pigments. 3,795,528, Cl. 106-288.00q.

Henry Heide, Incorporated: *See—*
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Herbert, William B. Controllable pitch propeller and drive means therefor. 3,795,463, Cl. 416-207.000.

Herd, Allen K.: *See—*
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Herzog, Raymond A., to Cincinnati Butcher's Supply Company, The. Track gate structure. 3,795,199, Cl. 104-100.000.

Hester, Robert; and Pierson, Howard P., to Eastman Kodak Company. Waste recovery of thermoplastic continuous filamentary material. 3,795,468, Cl. 425-208.000.

Heuner, Robert Charles: *See—*
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Hewlett-Packard Company: *See—*
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Hewlett-Packard GmbH: *See—*
Ohme, Wolfgang; Grund, Karl; and Winkler, Jorg, 3,795,868.

Heyer, David E., to Du Pont de Nemours, E. I., and Company. Molten thermoplastic web quenching apparatus. 3,795,474, Cl. 425-325.000.

Higgins, Peter, to British Insulated Callender's Cables Limited. Distribution cable with permanently connected branch cables and method of effecting said connections. 3,795,757, Cl. 174-72.00r.

Higuchi, Noriyasu, to Matsushita Electronics Corporation. Base for annular lamp. 3,795,887, Cl. 339-50.00c.

Hill, Alan E. Aerodynamic large volume gaseous electric discharge system. 3,795,838, Cl. 315-111.000.

Hill, Eugene, R.; and Mansnerus, Harlan H., to United States of America, Navy. Synchronization system for pulse orthogonal multiplexing systems. 3,795,772, Cl. 179-15.0bs.

Hill, Ronald D.; Wilmoth, Roger C.; and Scott, Robert B., to United States of America, Environmental Protection Agency. Reverse osmosis-neutralization process for treating mineral contaminated waters. 3,795,609, Cl. 210-23.000.

Hillenbrand, Hans, to Mauser-Werke Aktiengesellschaft. Projectile with a loose hard core. 3,795,196, Cl. 102-52.000.

Hilt, Roy A.: *See—*
Fein, Maier O.; and Hilt, Roy A., 3,795,873.

Hirao, Mamoru: *See—*
Mitsuhashi, Masakazu; Masuda, Kazuo; Shiosaka, Makoto; Hirao, Mamoru; Sugimoto, Kaname; Yokobayashi, Yasuyuki; Yuen, Shokichi; and Yoshida, Mikihiko, 3,795,584.

Hiss, Reinhard Calhoun, to Borden, Inc. Apparatus for wrapping meat. 3,795,086, Cl. 53-390.000.

Hitachi, Ltd.: *See—*
Endo, Takeyuki; Yokozawa, Norio; Watanabe, Shigeru; and Okada, Kunihiro, 3,795,798.
Hayasaka, Akio; and Taniguchi, Kenji, 3,795,553.
Hori, Sadayuki; Mawake, Akira; and Imanaka, Mitio, 3,795,290.
Ishida, Shinnosuke; Harada, Kunio; Kiyoshe, Tadashi; Takeuchi, Reizi; Itoh, Susumu; Sotodate, Akiyoshi; and Wachi, Tadashi, 3,795,334.
Ogawa, Takuzo; Miyata, Kenzi; Yagi, Hideyuki; and Sasaki, Takeshi, 3,795,846.
Umeda, Jun-Ichi; Maruyama, Eiichi; and Ikegami, Kazutoshi, 3,795,863.

Hiyama, Tomochika: *See—*
Yamamura, Toshio; Omote, Yuichi; Sato, Shiro; and Hiyama, Tomochika, 3,795,727.

Hobart, William: *See—*
Tolini, Charles; and Hobart, William, 3,795,371.

Hoffman, Daniel S.; Meagher, Thomas; and Michatek, Robert J., to Xerox Corporation. Transfer roller. 3,795,441, Cl. 355-3.00r.

Hoffman, Harold Robert, to Winfield Design Associates, Inc. Aluminum foil wall covering. 3,795,567, Cl. 161-53.000.

Hoffmann-La Roche Inc.: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,795,678.
Boller, Arthur; and Scherrer, Hanspeter, 3,795,436.
Brossi, Arnold; Pecherer, Benjamin; and Sunbury, Robert, 3,795,683.
Eberhard, Patrick; Hammacher, Konrad; and Mindi, Wolfgang, 3,795,239.
Frank, Ulrich Anton, 3,795,240.
Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,795,702.

Hoffmann-La Roche Inc., mesne: *See—*
Birkmayer, Walter; and Neumayer, Erwin, 3,795,739.

Hokama, Takeo, to Velsicol Chemical Corporation. Blended transpiperylene and maleic acid adduct polyester compositions. 3,795,716, Cl. 260-860.000.

Holik, Karl, to FG. Automalisabonasanlagenproyiklierungs. Apparatus for the automatic production of brake shoes and linings. 3,795,473, Cl. 425-506.000.

Holland, William P., to Machlett Laboratories, Incorporated, The. Target for X-ray tubes. 3,795,832, Cl. 313.060.000.

Holmes, Raymond: *See—*
Grieves, Gordon; and Holmes, Raymond, 3,795,779.

Holt, F. Sheppard: *See—*
Pierce, John N.; and Holt, F. Sheppard, 3,795,912.

Honen Seiyu Kabushiki Kaisha: *See—*
Matsumoto, Massichiro; Tsuruta, Kiyoshi; Tokyo, Kodaira; and Miyata, Hideo, 3,795,560.

Honeywell Inc.: *See—*
Monahan, Joseph E., 3,795,824.
Nelson, Lorne W., 3,795,476.
Tolini, Charles; and Hobart, William, 3,795,371.

Honeywell Information Systems: *See—*
Forlani, Franco, 3,795,043.

Honeywell Information Systems, Inc.: *See—*
Armstrong, Thomas R., 3,795,865.
Nimmo, John L.; and Morley, Peter I., 3,795,800.

Hooker Chemical Corporation: *See—*
Dorfman, Edwin; Emerson, William E.; and Carr, Russell L. K., 3,795,693.

Hoover, John R. E.; and Stedman, Robert John, to Smithkline Corporation. Caged acids. 3,795,695, Cl. 260-468.00g.

Hopkins, John W.: *See—*
Bergquist, Arthur John; Blaby, Roy E.; and Hopkins, John W., 3,795,115.

Hordon, Monroe J., to National Research Corporation. Erosion resistant wares composed predominantly of chromium bearing steel. 3,795,494, Cl. 29-196.600.

Hori, Sadayuki; Mawake, Akira; and Imanaka, Mitio, to Hitachi, Ltd. Drum, rim grip braking device. 3,795,290, Cl. 188-76.000.

Horix Manufacturing Company: *See—*
Wilhere, Charles V., 3,795,263.

Horn, Victor I.; and Kangas, Henry A., to Boeing Company, The. Aircraft fluted core radome and method for making the same. 3,795,559, Cl. 156-152.000.

Hosterman, Richard N.: *See—*
Price, Robert B.; Hosterman, Richard N.; and Cook, William G., 3,795,155.

Hotten, Bruce W., to Chevron Research Company. Lubricating composition. 3,795,613, Cl. 252-49.900.

Hougen, Gary A.; and Kloc, Henry F., to Continental Can Company, Inc. Tab mounting arrangement for easy opening can end. 3,795,340, Cl. 220-54.000.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 7-Substituted pleiadenes and 8-substituted dibenzoheptalenes. 3,795,676, Cl. 260-293.620.

Housh, Lloyd M.: *See—*
Paul, David E.; and Housh, Lloyd M., 3,795,724.

Houston, John Kenneth, to Rank Organization Limited, The. Lithography. 3,795,446, Cl. 355-78.000.

Howells, John D.: *See—*
French, James C.; Anderson, Lucia E.; Bunge, Richard H.; and Howells, John D., 3,795,668.

Howland, Ward W.; and Mallett, William R., to Union Oil Company of California. Gasoline anti-icing additives. 3,795,495, Cl. 44-58.000.

Howsam, Robert William; and Larson, Paul Alan, to Dow Chemical Company, The. Epoxy resin compositions containing aromatic biguanides as latent curing agents therefor. 3,795,657, Cl. 260-47.0en.

Huber, Guntram, to Daimler-Benz AG. Bearer, especially longitudinal bearer for motor vehicles. 3,795,410, Cl. 280-106.00r.

Huffman, George W.; and Rustad, Norman E., to Quaker Oats Company, The. Process for the preparation of polyurethane foams and microcellular elastomer with integral skins and polyol extender system for the preparation thereof. 3,795,636, Cl. 260-2.5az.

Hufford, Donald L., to Hufford Industries, Inc. Mounting device for portable loaders. 3,795,130, Cl. 72-419.000.

Hufford Industries, Inc.: *See—*
Hufford, Donald L., 3,795,130.

Hughes Aircraft Company: *See—*
Gundersen, James L.; Julian, Richard L.; Kosco, Thomas J.; Lewis, Dan E.; and Sklar, Richard E., 3,795,771.
King, Harry J.; and Schnelker, David E., 3,795,833.

Huling, Paul T.; and Janes, John J., Jr., to Caterpillar Tractor Company. Curved surface finish analyzer. 3,795,132, Cl. 73-105.000.

Humes Limited: *See—*
Pearson, Frederick Randall, 3,795,294.

Hunsucker, Jerry H.; and Mudd, Daniel G. Method of improving the leveling of an emulsion wax system. 3,795,645, Cl. 260-28.000.

Hunt, Maureen A.: *See—*
Bartholomew, Hans B.; and Hunt, Maureen A., 3,795,020.

Hurtubise, Fernand Guy: *See—*
Kalisch, John Hans; Tombler, George; Hurtubise, Fernand Guy; and Kopanidis, Jordan, 3,795,574.

Hyde, Kenneth Robert: *See—*
Fox, Anthony Cecil; and Hyde, Kenneth Robert, 3,795,522.

Ibaragi, Toshio: *See—*
Yamaguchi, Koretaka; Toyomoto, Kazuo; Sakamoto, Kuniaki; and Ibaragi, Toshio, 3,795,651.
Yamaguchi, Koretaka; Toyomoto, Kazuo; Sakamoto, Kuniaki; and Ibaragi, Toshio, 3,795,652.

Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Protective device for luminous diode. 3,795,821, Cl. 307-202-.

ICI America Inc.: *See—*
Langhans, Roy K.; and Sunshine, Gary A., 3,795,627.

Idris, John; and Parry, Ann Margaret, to Midland Silicones, Limited. Process for lubricating organic and inorganic fibers. 3,795,538, Cl. 117-139.50a.

Ikegami, Kazutoshi: *See—*
Umeda, Jun-Ichi; Maruyama, Eiichi; and Ikegami, Kazutoshi, 3,795,863.

Ikegami, Yoshisuke: *See—*
Yamaguchi, Tetsuo; Gonda, Hisashi; Nishimoto, Akihiko; and Ikegami, Yoshisuke, 3,795,508.

Imanaka, Mitio: *See—*
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Imanishi, Kunizo: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Serino, Yoichi; Mitani, Seisho; and Imanishi, Kunizo, 3,795,511.

Imig, Leland A.: *See—*
Eichenbrenner, Fred E.; and Imig, Leland A., 3,795,134.

Imperial Chemical Industries Limited: *See—*
Feasey, Ronald George; and Newton, Alan Branford, 3,795,660.
Wright, Donald; and Gardner, Samuel, 3,795,699.

Imperial Chemical Industries of Australia and New Zealand Limited: *See—*

Tregear, Geoffrey William; Catt, Kevin John; and Niall, Hugh David, 3,795,664.
Improved Machinery Inc.: *See—*
Luthi, Oscar; and Rich, John P., 3,795,319.
Pennington, Rohe Vester, 3,795,577.
Inc.: *See—*
Andersen, Ariel A., 3,795,135.
Industrial Science & Technology, Agency of: *See—*
Moriya, Yoshiro; Kawamoto, Takamichi; Tanaka, Hiroshi; and Ueno, Tsutomu, 3,795,523.
Suzuki, Hideo; Kobayashi, Harumi; and Kamibayashi, Akira, 3,795,585.
Industriele Onderneming Wavin N.V. Zwolle: *See—*
Van Zon, Cornelis, 3,795,317.
Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Torck, Bernard; Vidouta, Georges; Pariot, Pierre; and Hellin, Michel, 3,795,712.
Instrumentation Specialties Company: *See—*
Allington, William B., 3,795,600.
International Business Machines Corporation: *See—*
Abolafia, Oscar R.; Lau, John A.; Lee, Franklin F. M.; and Watson, Catherine R., 3,795,047.
Ash, Eric Albert, 3,795,434.
Benante, Joseph F.; Donofrio, Nicholas M.; and Linton, Richard H., 3,795,859.
Boehm, Robert Francis; and Van Bogelen, Donald Wayne, 3,795,901.
Cass, Eugene L.; Gustafson, Robert M.; and Young, Paul M., 3,795,845.
Cavaliere, Joseph R.; and Mooney, Donald B., 3,795,828.
Lee, Kenneth; Sawatzky, Erich; and Suits, James C., 3,795,541.
Lindsey, Royce Darwin, 3,795,903.
McDowell, Allen W.; and Lay, Frank M., 3,795,908.
Sarnacki, Frank H.; and Steenstrup, Robert V., 3,795,358.
Singh, Shanker; and Waxman, Ronald, 3,795,880.
Wheeler, Wendell J., 3,795,467.
International Computers Limited: *See—*
Luttmer, Willem, 3,795,037.
International Harvester Company: *See—*
Kesl, Elmer M.; and Zitko, Ronald F., 3,795,118.
International Liquid Xtal Company: *See—*
Fergason, James L.; and Harsch, Thomas B., 3,795,133.
International Rectifier Corporation: *See—*
Tarn, William H., 3,795,554.
International Telephone and Telegraph Corporation: *See—*
Schiatter, Gerald Lance, 3,795,136.
Irish, Charles G., Jr.; Silva, Joseph W.; and Cowles, Raymond I. Electrical initiator. 3,795,195, Cl. 102-38.000.
Isaacs, Roger, to Avant-Guard Devices, Inc. Wireless alarm system. 3,795,896, Cl. 340-171.00r.
Ishida, Shinnosuke; Harada, Kunio; Kiyoshe, Tadashi; Takeuchi, Reizi; Itoh, Susumu; Sotodate, Akiyoshi; and Wachi, Tadashi, to Hitachi Ltd. Method for transporting loads safely by utilizing a permanent magnet type lifting magnet. 3,795,334, Cl. 214-152.000
Ishida, Yoshio, to Diamond Electric Mfg. Co., Ltd. High voltage pulse generating apparatus. 3,795,843, Cl. 317-96.000.
Ishigaki, Yukinobu: *See—*
Takahashi, Nobuaki; Nishikawa, Kazunori; Ishigaki, Yukinobu; and Fujita, Yoshitoshi, 3,795,876.
ISM Corporation, mesne: *See—*
Capuano, Antonio, 3,795,466.
Ito, Hiroshi: *See—*
Ogawa, Kazuki; Ito, Hiroshi; and Furukawa, Mitsuhiko, 3,795,404.
Ito, Kazuo: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Shimoshinbara, Ihiro, 3,795,639.
Itoh, Hideo: *See—*
Okuda, Itsuki; Shinohara, Hiroshi; Ogawa, Haruki; and Itoh, Hideo, 3,795,743.
Itoh, Susumu: *See—*
Ishida, Shinnosuke; Harada, Kunio; Kiyoshe, Tadashi; Takeuchi, Reizi; Itoh, Susumu; Sotodate, Akiyoshi; and Wachi, Tadashi, 3,795,334.
ITW-ATECO GmbH: *See—*
Hehl, Klaus Friedrich; and Schenk, Bernd, 3,795,416.
Iung, Jacques, to Gurtner S.A. Apparatus for distributing gas under pressure. 3,795,258, Cl. 137-505.350.
Iwami, Kouichi: *See—*
Yukuta, Toshio; Iwami, Kouichi; Onishi, Akira; and Seda, Yutaka, 3,795,598.
Jabsen, Felix S., to Babcock & Wilcox Company, The. Method of inserting fuel rods into individual cells in a fuel element grid. 3,795,040, Cl. 29-433.000.
Jackson, David A.: *See—*
Shields, Martin A.; and Jackson, David A., 3,795,423.
Jackson, Winston J., Jr.; and Darnell, William R., to Eastman Kodak Company. Hot melt adhesive composition. 3,795,644, Cl. 260-22.00d.
Jacob, Adir, to LFE Corporation. Process and material for manufacturing semiconductor devices. 3,795,557, Cl. 156-8.000.
Jacobsen Manufacturing Company: *See—*
Erickson, Donald G.; and Kaufman, Vernon R., 3,795,095.
Jaeger, Ben E. Method and apparatus for trimming plastic bottles. 3,795,162, Cl. 83-23.000.
Jaffa, David; and Szarka, Sandor, to Precision Screen Machines Inc. Dryer construction. 3,795,060, Cl. 34-203.000.
Jaffa, David, to Precision Screen Machines Inc. Screen printing machine with oval rail for indexing pallets. 3,795,189, Cl. 101-123.000.
Jaffe, Joseph: *See—*
Morgan, Barry S.; and Jaffe, Joseph, 3,795,632.
Jaffe, Joseph, to Chevron Research Company. Hydrothermal method of manufacturing a novel catalytic material, catalysts containing said material, and processes using said catalysts. 3,795,606, Cl. 208-111.000.
James, Glenn D. Obtaining increased head in water systems. 3,795,587, Cl. 202-185.00a.
Janes, John J., Jr.: *See—*
Huling, Paul T.; and Janes, John J., Jr., 3,795,132.
Janiszewski, Kasimir. Guiding means for boring bars. 3,795,160, Cl. 82-1.400.
Jansson, Robert A.; and Reese, Thomas J., to PPG Industries, Inc. Method of shaping glass sheets to sharp bends. 3,795,501, Cl. 65-106.000.
Jansson, Robert A.; and Thomas, Dean L., to PPG Industries, Inc. Method of shaping glass sheets to sharp bends and shaped glass sheets produced thereby. 3,795,570, Cl. 161-125.000.
Jaques, Roland: *See—*
Helfer, Hannelore; Jaques, Roland; and Noelpp, Bernhard, 3,795,742.
Jaspers, Hans; and Torenbeek, Reinder, to Koninklijke Industrieele Maalschappy Noury & Van der Lande N.V. Chemically-stable non-separating organic peroxide compositions. 3,795,630, Cl. 252-426.000.
Jehly, Lynn C.; and Johanson, Carl E., to Bendix Corporation, The. Electromagnetic coupling for an altimeter. 3,795,151, Cl. 73-387.000.
Jehring, Arnfried: *See—*
Johne, Hans; Schumann, Gunter; Jehring, Arnfried; and Reichenberger, Kurt, 3,795,193.
Jenkins, Victor Frederick; Beeken, Michael John; and Pennington, Stephen, to Laporte Industries, Limited. Copolymers of epoxides and lactones. 3,795,701, Cl. 260-484.00a.
Johanson, Carl E.: *See—*
Jehly, Lynn C.; and Johanson, Carl E., 3,795,151.
Johansson, Per U., to Johansson, Unoma, & Co., Firma. Freight brace. 3,795,202, Cl. 105-369.00s.
Johansson, Unoma, & Co., Firma: *See—*
Johansson, Per U., 3,795,202.
John, Andrew E. Vehicle occupant restraint system. 3,795,412, Cl. 280-150.0ab.
Johne, Hans; Schumann, Gunter; Jehring, Arnfried; and Reichenberger, Kurt, to VEB Polygraph Leipzig Kombinat fur Polygraphische Machinen und Ausrustungen. Device for rapidly and precisely mounting flexible printing plates. 3,795,193, Cl. 101-415.100.
Johnson & Johnson: *See—*
Link, Martin, 3,795,309.
Johnson, Albert C. Combined clock and audio broadcast receiver with automatic chimes. 3,795,866, Cl. 325-396.000.
Johnson, Gary D.; and Matthews, Larry A., to Anaconda Company, The. Pneumatic conveying system for transferring slurry samples to an analyzer. 3,795,807, Cl. 250-273.000.
Johnson, Robert H.: *See—*
Richardson, John L., 3,795,830.
Johnson, S. C., & Son, Inc.: *See—*
Lo, Mei-Kuo; Thompson, Gary R.; and Sheppard, Erwin, 3,795,137.
Johnston, Roger L., to Harnischfeger Corporation. Telescoping crane boom. 3,795,321, Cl. 212-55.000.
Johnston, Thomas L.: *See—*
Davies, Richard G.; and Johnston, Thomas L., 3,795,510.
Jones, Charles, to Curtiss-Wright Corporation. Rotary combustion engine with improved firing system. 3,795,227, Cl. 123-8.090.
Jones, Leo V., Jr., to GTE Automatic Electric Laboratories, Incorporated. Pulse detection arrangement. 3,795,867, Cl. 328-133.000.
Jorgensen, Stanley A.; and Moss, Richard W., Jr., to Caterpillar Tractor Company. Counterweight suspension device. 3,795,330, Cl. 214-142.000.
Jorns, Peter: *See—*
Hansen, Hans; Jorns, Peter; Rones, Josef; and Wuttke, Wolfgang, 3,795,548.
Jugle, Don B.; and Thompson, Robert L., to Xerox Corporation. Development electrode system. 3,795,222, Cl. 118-637.000.
Jukes, Norman Alfred; and Grainger, Derek Robert, to Lucas, Joseph, (Electrical) Limited. Ignition distributor. 3,795,236, Cl. 123-148.00d.
Julian, Richard L.: *See—*
Gundersen, James L.; Julian, Richard L.; Kosco, Thomas J.; Lewis, Dan E.; and Sklar, Richard E., 3,795,771.
Julien, Georges. Framework assembling members. 3,795,453, Cl. 403-3.000.
Jurid Werke GmbH: *See—*
Mertl, Klaus, 3,795,493.
Jvirblis, Alex E.; and Urbach, John C., to Xerox Corporation. Deformation imaging method. 3,795,514, Cl. 96-1.100.

K & S Feed Bunks, Inc.: *See—*
Swatzel, Gareth D., 3,795,469.
Kabushiki Kaisha Koparu: *See—*
Matsuzawa, Nobuyoshi, 3,795,300.
Kabushiki Kaisha Suwa Seikosha: *See—*
Fujita, Kinji, 3,795,831.
Futagawa, Yoshikiyo; Komatsu, Chifumi; Mitsui, Yoshihiro; and Kamakura, Hiroshi, 3,795,849.
Nakamura, Toshihiko; Gomi, Yoshifumi; and Yokoyama, Toshiji, 3,795,299.
Shimodaira, Tadayaoshi; and Gomi, Yoshifumi, 3,795,185.
Kahn, Friedhelm; and Rittich, Hans O. Construction member for a heated floor and floor assembled therefrom. 3,795,272, Cl. 165-54.000.
Kaiser, Ado: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,795,678.
Kaiser Aluminum & Chemical Corporation: *See—*
Paul, David E.; and Housh, Lloyd M., 3,795,724.
Kaiser, Donald W.; and May, Kenneth J., to Ansul Company, The. p-Alkyl-N-bis(alkylxanthylalkylene)amine-2,6-dinitroaniline and p-alkyl-N-halogenoalkyleneamino, N-alkylxanthylalkyleneamino-2,6-dinitroaniline herbicides. 3,795,690, Cl. 260-455.00b.
Kakuta, Hajime: *See—*
Ogawa, Koichi; and Kakuta, Hajime, 3,795,744.
Kalisch, John Hans; Tombler, George; Hurtubise, Fernand Guy; and Kopanidis, Jordan, to Canadian International Paper Company. Impregnation of wood with a formaldehyde free alkaline solution of sodium hydroxide at a pH between 12.4 and 13. 3,795,574, Cl. 16286.000.
Kalvinskas, John Joseph. Carbon adsorption-reduction process for nitric oxides. 3,795,730, Cl. 423-239.000.
Kamai, Toshiso. Leak-proof zinc chloride dry cell. 3,795,545, Cl. 136-107.000.
Kamakura, Hiroshi: *See—*
Futagawa, Yoshikiyo; Komatsu, Chifumi; Mitsui, Yoshihiro; and Kamakura, Hiroshi, 3,795,849.
Kaman Aerospace Corporation: *See—*
Lemnios, Andrew Z., 3,795,375.
Kamei, Hisashi; and Ohno, Masayoshi, 50% to Tokyo Shibaura Electric Co., Ltd. and 50% to Nippon Atomic Industry Group Co., Ltd. Removal of hydrogen from liquid sodium. 3,795,087, Cl. 55-16.000.
Kamibayashi, Akira: *See—*
Suzuki, Hideo; Kobayashi, Harumi; and Kamibayashi, Akira, 3,795,585.
Kanai, Toshio: *See—*
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Ozaki, Kiyoju, 3,795,713.
Kanbayashi, Masaaki: *See—*
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Ozaki, Kiyoju, 3,795,713.
Kandler, Joachim; Dany, Franz-Josef; and Komorniczyk, Klaus, to Knapsack Aktiengesellschaft. Fire-proofing agents for polyurethanes. 3,795,637, Cl. 260-2.5aj.
Kane, William S.; and Cardwell, Paul H., to Deepsea Ventures, Inc. Method for selective by leaching metal values from ocean floor nodules. 3,795,596, Cl. 204-105.00m.
Kanesho Kabushiki Kaisha: *See—*
Aoyama, Keiji; Akahira, Rokuro; and Katoh, Yuichi, 3,795,688.
Kangas, Henry A.: *See—*
Horn, Victor I.; and Kangas, Henry A., 3,795,559.
Kanto Denka Kogyo Co., Ltd.: *See—*
Yamamura, Toshio; Omote, Yuichi; Sato, Shiro; and Hiyama, Tomochika, 3,795,727.
Karlschloss Anstalt: *See—*
Cillario, Lorenzo, 3,795,748.
Kartridge Pak Co., The: *See—*
Wells, Roy Earl, 3,795,083.
Kase, Hiroshi: *See—*
Nakayama, Kiyoshi; Kase, Hiroshi; and Yoshida, Hajime, 3,795,583.
Kasper, George F., to Eastman Kodak Company. Electrographic carrier vehicle and developer composition. 3,795,618, Cl. 252-62.100.
Kato, Hirokazu, to Nippon Gakki Seizo Kabushiki Kaisha. Acoustical filtration method and apparatus for obtaining instrumental tones. 3,795,770, Cl. 179-1.00j.
Kato, Hirotetu: *See—*
Miyazako, Takushi; Taitma, Tatsuya; Kato, Hirotetu; Kokubo, Tadayoshi; Nishina, Tsutomu; and Tsuji, Nobuo, 3,795,519.
Katoh, Yuichi: *See—*
Aoyama, Keiji; Akahira, Rokuro; and Katoh, Yuichi, 3,795,688.
Katsuda, Yoshio; and Kawanami, Toru, to Sumitomo Chemical Company, Ltd. and Dainippon Jochugiku Co., Ltd. Alkynylbenzyl cyclopropanecarboxylates. 3,795,696, Cl. 260-468.00h.
Katsuragawa Denki Kabushiki Kaisha: *See—*
Norashino, Koichi Kinoshita; and Fukuda, Tadaji, 3,795,515.
Kattner, Ronald D., to General Tire & Rubber Company, The. Apparatus for applying high viscosity mixture of reactive components. 3,795,364, Cl. 239-8.000.
Katz, Owen M.; and Campbell, Charles E., to United States of America, Atomic Energy Commission, mesne. Method of producing an ultra-clean, bright surface on titanium. 3,795,597, Cl. 204-141.500.
Kaufman, Harold B., Jr.: *See—*
Roth, Howard; Schiffmann, Robert F.; Kaufman, Harold B., Jr.; and Moyer, John H., 3,795,183.
Kaufman, Vernon R.: *See—*
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Kawamoto, Takamichi: *See—*
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Kawanami, Toru: *See—*
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Kazamek, Francis John; and Kazamek, Kenneth James. Saw-toothed scraper. 3,795,026, Cl. 15-236.00r.
Kazamek, Kenneth James: *See—*
Kazamek, Francis John; and Kazamek, Kenneth James, 3,795,026.
Kegerise, Wesley R.; Muzyka, Donald R.; and Barbis, Peter R., to Carpenter Technology Corporation. Precipitation hardened austenitic, ferrous base alloy article. 3,795,552, Cl. 148-37.000.
Keller, Clarence, Jr., to Bendix Corporation, The. Drum brake assembly. 3,795,292, Cl. 188-340.000.
Keller, Toni, to Spectrospin A.G. Method and apparatus for recording spin resonance spectra using a pulse modulated RF excitation signal. 3,795,856, Cl. 324-.50r.
Kendall Company, The: *See—*
Samour, Carlos M.; and Mitchell, Philip A., 3,795,648.
Kendall, Giles A.; and Bhutani, Harish K., to Menasco Manufacturing Company. Shock absorber device. 3,795,390, Cl. 267-33.000.
Kendrick, William T. Model rocket. 3,795,194, Cl. 102-34.100.
Kennedy, Frank, to United States Steel Corporation. Trunnton shaft fluid supply device. 3,795,389, Cl. 266-36.00p.
Kenny, Neal S.: *See—*
Halaby, Sami A.; Kenny, Neal S.; and Murphy, James A., 3,795,542.
Kerb, Ulrich, to Schering A.G. Process for the production of 6-fluoro-5-bromo-13-ethyl steroids. 3,795,687, Cl. 260-397.400.
Kesl, Elmer M.; and Zitko, Ronald F., to International Harvester Company. Knuckle shield. 3,795,118, Cl. 64-32.00f.
Kessinger, Orville E., Jr.: *See—*
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Schwarz, Eckhard C. A., 3,795,720.
Kimura, Takuhei; and Akita, Masaki. Electroprinting device. 3,795,442, Cl. 355-3.000.
King, Harry J.; and Schnelker, David E., to Hughes Aircraft Company. Ion beam deflection system. 3,795,833, Cl. 313-63.000.
Kinneman, William P., Jr.: *See—*
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Kinney, John M., to American Welding & Manufacturing Company. Method and apparatus for calibrating the position of a tool and for gauging dimension of a workpiece. 3,795,054, Cl. 33-174.0pl.
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Kirkland, Joseph J.; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Chromatographic packing with chemically bonded organic stationary phases. 3,795,313, Cl. 210-198.00c.
Kirkpatrick, George Fred, to Union Carbide Corporation. Degradable polyolefin film. 3,795,654, Cl. 260-45.9nc.
Kiwalle, Jozef, to Production Technology Inc. Parts handling fixture. 3,795,324, Cl. 214-1.0bd.
Kiyoshe, Tadashi: *See—*
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Klann, Paul A. Chest valve for pipe organs. 3,795,170, Cl. 84-339.000.
Klein, Keith W., to General Electric Company. Shock protecting circuit breaker for two circuits with common neutral. 3,795,841, Cl. 317-18.00d.
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Klein, Roy W.; Tremmel, Robert A.; and Clauss, Richard J., to Oxy Metal Finishing Corporation. Nickel electroplating composition and process. 3,795,592, Cl. 204-49.000.
Klem, Michael L. Building structure and method of erecting same. 3,795,079, Cl. 52-437.000.
Klemt, Arthur. Method and apparatus for comparison. 3,795,894, Cl. 340-146.3ma.
Kloc, Henry F.: *See—*
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Kloess, Peter; and Spillmann, Rudolf Stefan. Hatch cover having pairs of folding covers. 3,795,217, Cl. 114-202.000.
Knaak, Ruediger, to Koppers-Wistra-Ofenbau Gesellschaft mit beschrankter Haftung. Method of operation of a chamber furnace. 3,795,478, Cl. 432-25.000.
Knapsack Aktiengesellschaft: *See—*
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Kobelt, Jack R. Multiple-station fluid control circuit. 3,795,110, Cl. 60-413.000.
Koch, James Allan; and Henderson, Donald Le Roy, to Deere & Company. Multi-load tractor hitch system. 3,795,415, Cl. 280-461.00a.
Kodis, Robert D., to Di/An Control, Inc. Wire matrix print head particularly for high speed printers. 3,795,298, Cl. 197-1.00r.
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Konig, Justus; Rohrig, Josef; and Seidl, Gunther, to Siemens Aktiengesellschaft. Circuit arrangement for centrally controlled telephone exchange installations having common memory facilities. 3,795,773, Cl. 179-18.0es.
Konig, Wolfgang; Geiger, Rolf; and Wolf, Erhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Method of synthesizing peptides in the presence of a carbodiimide and of 3-hydroxy-4-oxo-3,4-dihydro-1,2,3-benzotriazine. 3,795,666, I. 260-112.500.
Koninklijke Industrieele Maalschappy Noury & Van der Lande N.V.: *See—*
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Koolaj-es Gaziparii Tervezo Vallalat: *See—*
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Koppers-Wistra-Ofenbau Gesellschaft mit beschrankter Haftung: *See—*
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Kosowsky, Lester H.; and Pierro, Richard S., to United Aircraft Corporation. Low angle, air to ground ranging radar. 3,795,913, Cl. 343-16.00m.
Kotaka, Yasumasa, to AMP Incorporated. Electrical connector formed from coil spring. 3,795,884, Cl. 339-17.01m.
Kovacs, Frank I., to Univ Amp, Inc. Circuit for monitoring voltages in a polyphase electrical supply. 3,795,842, Cl. 317-27.00r.
Kowalski, Xavier, to Monsanto Company. Bleaching compositions. 3,795,625, Cl. 252-186.000.
Kreider, Kenneth G.; and Prewo, Karl M., to United Aircraft Corporation. Method for producing composite materials. 3,795,042, Cl. 29-472.300.
Kristiansen, Svend Helge: *See—*
Westenholz, Sven Torben; and Kristiansen, Svend Helge, 3,795,438.
Kritz, Jacob A.; and Lerner, Seymour D., to Sperry Rand Corporation. Doppler speed log. 3,795,893, Cl. 340-3.00d.
Kropelnitski, Edward. Jump measuring device. 3,795,396, Cl. 272-59.00c.
Kuhne, Rudolf; Diery, Helmut; and Rittner, Siegbert, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Weather modification process. 3,795,626, Cl. 252-319.000.
Kukla, Cassimer M.: *See—*
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Kumiai Chemical Industry Co., Ltd.: *See—*
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Kunath, Wolfgang, to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Changed particle potical imaging system. 3,795,813, Cl. 250-396.000.
Kunststofftechnik G.m.b.H. & Co. KG: *See—*
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Kurahashi, Akira: *See—*
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Lado, William J., to Pettibone Corporation. Boom-crowd cylinders with selective sequencing by solenoid valve. 3,795,176, Cl. 91-167.000.
Laforest, Claude J. Lifting device. 3,795,289, Cl. 187-18.000.
Laguzzi, Umberto. Papaverolinic sulfonic acid monohydrate and salts. 3,795,675, Cl. 260-283.00s.
Laing, David D.; and Essott, John W., to Universal Oil Products Company. High-fin integral finned tube of heat-resisting alloys, and multipass process for making the same. 3,795,125, Cl. 72-69.000.
Lamb, Thomas. Child's hand trainer. 3,795,062, Cl. 35-29.00e.
Lamberti, John J. Dry smoking pipe. 3,795,251, Cl. 131-203.000.
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Langhans, Roy K.; and Sunshine, Gary A., to ICI America Inc. Stable liquid emulsifier compositions. 3,795,627, Cl. 252-356.000.
Lany, Jan: *See—*
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Laporte Industries, Limited: *See—*
Jenkins, Victor Frederick; Beeken, Michael John; and Pennington, Stephen, 3,795,701.
Larah, David Arthur, to Mather & Platt Limited. Foam-water sprinkler device. 3,795,368, Cl. 239-432.000.
Larsen, Ronald L., to Conwed Corporation. Plastic net deck surface and drainage unit. 3,795,180, Cl. 94-33.000.
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Latinen, May V.: *See—*
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Latsha, Albert L. Trimmer catch box. 3,795,050, Cl. 30-132.000.
Lau, John A.: *See—*
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Lawson, Bob L.: *See—*
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Lawson, Joseph M. Filter head. 3,795,312, Cl. 210-134.000.
Lawson, Richard L., to Flue Cleaners, Inc. Flue cleaning device. 3,795,181, Cl. 98-115.00k.
Lax, Ronald G.; and Herd, Allen K., to Syntex Corporation. Inhalation device. 3,795,244, Cl. 128-266.000.
Lay, Frank M.: *See—*

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Le Joint Francais: *See—*
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Lecailtel, Pierre; and Dressler, Bruno, to Regie Nationale des Usines Renault Billancourt and Automobiles Peugeot. Clamping of parts by adherence on axial thrust support. 3,795,405, Cl. 279-1.00l.
Leclaire, Claier D.; and Baker, John C., to Polysar International, S.A., mesne. Sulfur-vulcanizable elastomer mixtures and oxidation-resistant vulcanizates thereof. 3,795,655, Cl. 260-45.80n.
Leconte, Gerard Bernârd; and Wright, John Walter, to Alcan Research and Development, Limited. Method of and apparatus for casting on moving surfaces. 3,795,269, Cl. 164-73.000.
Lee, Chie-Ying, to Pennwalt Corporation. Centrifuge apparatus. 3,795,361, Cl. 233-7.000.
Lee, Franklin F. M.: *See—*
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Lee, Kenneth; Sawatzky, Erich; and Suits, James C., to International Business Machines Corporation. Ferromagnetic material. 3,795,541, Cl. 117-235.000.
Lees, William Arthur; Bennett, David John; Swire, John Richard; and Harding, Peter, to Borden Chemical Company (U.K.), Ltd. Storage-stable oxygenated polyfunctional acrylic ester compositions for anaerobic sealants. 3,795,641, Cl. 260-89.50r.
Leesona Corporation: *See—*
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Leger, Roland, to Faiveley S.A. High speed current collection. 3,795,777, Cl. 191-66.000.
Lehmann, Walter G., to Polaroid Corporation. Apparatus for dispensing a metered amount of fluid. 3,795,351, Cl. 222-209.000.
Lelong, Jose: *See—*
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Levin, Nathan. Stop motion apparatus for knitting machines. 3,795,120, Cl. 66-163.000.
Levine, Irving E., to Chevron Research Company. Method of simultaneously defatting, dehydrating, and eliminating bacteria from foodstuffs. 3,795,750, Cl. 426-332.000.
Levolor Lorentzen, Inc.: *See—*
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Linton, Richard H.: *See—*
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Locke, John William, to Communication Satellite Corporation. Holographic image scanner/recorder system. 3,795,768, Cl. 178-7.600.
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Luciano, Franco Paolo, to Rachelle Laboratories Italia S.p.A. Manufacture of α-6-deoxytetracyclines. 3,795,707, Cl. 260-559.0at.
Ludwig, Charles H., to Georgia-Pacific Corporation. Polyoxyalkylene lignin compositions and process for producing same. 3,795,665, Cl. 260-124.00r.
Luich, Ronald Joseph, to Dresser Industries, Inc. Pressure venting instrument casing assembly. 3,795,148, Cl. 73-431.000.
Luthi, Oscar; and Rich, John P., to Improved Machinery Inc. Shower apparatus. 3,795,319, Cl. 210-409.000.
Luttmer, Willem, to International Computers Limited. Electrical connector devices. 3,795,037, Cl. 29-638.000.
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MacKenzie, Burton Thornley, Jr.; and Wallace, Charles Frank, Jr., to General Electric Company. Cross-linking polyethylene compositions with silicone additive. 3,795,646, Cl. 260-29.1sb.
MacPherson, Donald E. Square-rigged sailboat. 3,795,216, Cl. 114-39.000.
Magor, Lincoln Stoddard, to Mimik Limited. Calibratable control. 3,795,154, Cl. 74-422.000.
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Mallory, Edwin E., to National-Standard Company. Tire building apparatus. 3,795,564, Cl. 156-417.000.
Malott, Thomas J.; and Stacey, Hugh J., to Parker-Hannifin Corporation. Load control and holding valve. 3,795,255, Cl. 137-102.000.
Malzoni, Tulio; and Lopes, Manoel Valentino. Residential water heaters. 3,795,789, Cl. 219-309.000.
M.A.N. Maschinefabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Tusche, Eckhard, 3,795,102.
Manabe, Mitsuo: *See—*
Kobayashi, Kengo; and Manabe, Mitsuo, 3,795,854.
Mansnerus, Harlan H.: *See—*
Hill, Eugene, R.; and Mansnerus, Harlan H., 3,795,772.
Mantel, John F. Natural bait holder. 3,795,074, Cl. 43-44.200.

Marchesi, Ralph R. Tamper-proof water meter. 3,795,144, Cl. 23-201.000.
Mark, Arthur M.; and Mehltretter, Charles L., to United States of America, Agriculture. Process for making starch triadetates. 3,795,670, Cl. 260-233.500.
Markarian, Mark, to Sprague Electric Company. Electronic component package. 3,795,844, Cl. 317-230.000.
Marouby, Guy, to Societe Anonyme D.B.A. Electronic braking system. 3,795,425, Cl. 303-21.0be.
Martin, Eugene Ray, to Stauffer Chemical Company. Organosilicon compositions containing ammonium platinum adducts. 3,795,656, Cl. 260-46.50e.
Martin, Paul H.; and McKee, William C., to Diesel Equipment, Limited. Foldable tailgates. 3,795,329, Cl. 214-75.00t.
Martin, Robert A., to Universal Oil Products Company. Mounting assembly for vibrating screen deck. 3,795,311, Cl. 209-395.000.
Maruyama, Eiichi: *See—*
Umeda, Jun-Ichi; Maruyama, Eiichi; and Ikegami, Kazutoshi, 3,795,863.
Marze, Xavier; and Quentin, Jean-Pierre, to Rhone-Poulenc S.A. Acrylonitrile copolymers. 3,795,635, Cl. 260-2.10e.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft (M.A.N.): *See—*
Aupor, Hans; Beuchlein, Gunter; and Viernheim, Hans-Joachim, 3,795,112.
Masiokas, Bruno: *See—*
Gritchen, Ralph A.; Daugirdas, Kristupas; Masiokas, Bruno; and Townsend, Richard H., 3,795,205.
Masuda, Kazuo: *See—*
Mitsuhashi, Masakazu; Masuda, Kazuo; Shiosaka, Makoto; Hirao, Mamoru; Sugimoto, Kaname; Yokobayashi, Yasuyuki; Yuen, Shokichi; and Yoshida, Mikihiko, 3,795,584.
Matchett, David: *See—*
Batson, Robert E.; Haviland, Girard S.; and Matchett, David, 3,795,224.
Mather & Platt Limited: *See—*
Larah, David Arthur, 3,795,368.
Matono, Hirokuni: *See—*
Hatanaka, Yoshihiro; Matono, Hirokuni; and Kawazoe, Hidenori, 3,795,253.
Matsumoto, Massichiro; Tsuruta, Kiyoshi; Tokyo, Kodaira; and Miyata, Hideo, to Honen Seiyu Kabushiki Kaisha and Fuji Kogyo Kabushiki Kaisha. Method for making plywood. 3,795,560, Cl. 156-300.000.
Matsushima, Yasunobu; Tanaka, Shigeo; and Terada, Haruyoshi, to Oxy Metal Finishing Corporation, mesne. Conversion coating solution for metallic surface. 3,795,549, Cl. 148-6.160.
Matsushita Electronics Corporation: *See—*
Higuchi, Noriyasu, 3,795,887.
Matsuzawa, Nobuyoshi, to Kabushiki Kaisha Koparu. Printing machine. 3,795,300, Cl. 197-49.000.
Matthews, Larry A.: *See—*
Johnson, Gary D.; and Matthews, Larry A., 3,795,807.
Maurer, Manfred: *See—*
Rappen, Ludwig; Fickert, Werner; Orth, Winfried; Maurer, Manfred; and Miele, Heinrich, 3,795,708.
Mauser-Werke Aktiengesellschaft: *See—*
Hillenbrand, Hans, 3,795,196.
Mawake, Akira: *See—*
Hori, Sadayuki; Mawake, Akira; and Imanaka, Mitio, 3,795,290.
Max-Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See—*
Kunath, Wolfgang, 3,795,813.
May, Kenneth J.: *See—*
Kaiser, Donald W.; and May, Kenneth J., 3,795,690.
May, William J.: *See—*
Nowka, Durval F.; and May, William J., 3,795,769.
May, William Peter, to Firestone Tire & Rubber Company, The. Plastisol process. 3,795,649, Cl. 260-31.80r.
McArthur, Ralph F.: *See—*
Erickson, John W.; Williams, Carter P.; and McArthur, Ralph F., 3,795,459.
McCabe, John M., to Eastman Kodak Company. Electrographic carrier vehicle and developer composition. 3,795,617, Cl. 252-62.100.
McDonnell Douglas Corporation: *See—*
Sheratte, Martin B., 3,795,619.
Sheratte, Martin B., 3,795,620.
Sheratte, Martin B., 3,795,621.
McDowell, Allen W.; and Lay, Frank M., to International Business Machines Corporation. Gas panel with multi-directional shifting arrangement. 3,795,908, Cl. 340-324.00m.
McFadyen, Robert J.: *See—*
Bourdelais, Roger J.; Colangelo, Dominick; McFadyen, Robert J.; and Elliott, James F., 3,795,452.
McGandless, William J. C.: *See—*
Gillette, William H.; McGandless, William J. C.; and Negersmith, Kent M., 3,795,149.
McGhee, John D., to Du Pont de Nemours, E. I., and Company. Automatic gain compensation circuit. 3,795,825, Cl. 307-264.000.
McGhie, Russell Park; and Ferraro, Joseph George. Multiple spray pattern device. 3,795,366, Cl. 239-397.000.
McHardy, Nicholas; Berger, John; and Simpson, Ruth M. Control of anaplasmosis in cattle using carbonilides. 3,795,737, Cl. 424-273.000.
McKay, Russell M., Sr., to Lockheed Missiles & Space Company, Inc. Cutter monitor. 3,795,449, Cl. 356-160.000.
McKee, William C.: *See—*
Martin, Paul H.; and McKee, William C., 3,795,329.
McKinney, Lloyd J.; and Ferrin, Wayne W., to General Electric Company. Electrolytic machining electrode. 3,795,604, Cl. 204-224.00m.
McLean, Arthur P., to Ford Motor Company. Gas turbine control system. 3,795,104, Cl. 60-39.270.
McLean, Milton H., to British Columbia Packers Limited. Hydraulic fish unloading apparatus. 3,795,325, Cl. 214-14.000.
McNair, Samuel L.: *See—*
Talge, Henry J.; and McNair, Samuel L., 3,795,015.
Meagher, Thomas: *See—*
Hoffman, Daniel S.; Meagher, Thomas; and Michatek, Robert J., 3,795,441.
Medical Innovations, Inc.: *See—*
Lerch, Donald C.; and Colman, John M., 3,795,242.
Meguro, Kanji; Tawada, Hiroyuki; and Kuwada, Yutaka, to Takeda Chemical Industries, Ltd. Process for producing benzodiazepine derivatives. 3,795,673, Cl. 260-239.0bd.
Mehalso, Robert Michael; and Harris, David Isaac, to RCA Corporation. Manufacture of video discs. 3,795,534, Cl. 117-101.000.
Mehltretter, Charles L.: *See—*
Mark, Arthur M.; and Mehltretter, Charles L., 3,795,670.
Mehta, Rustam J.; Geilhufe, Mike; and Palfi, Thomas L., to Advanced Memory Systems. Random access read/write semiconductor memory. 3,795,898, Cl. 340-173.00r.
Meier, Eric A.: *See—*
Skouetchi, Martin; and Meier, Eric A., 3,795,733.
Meitinger, Heinz, to Timex Corporation. Stepping motor for timepieces. 3,795,097, Cl. 58-23.00d.
Meixner, Willi: *See—*
Ruschig, Heinrich; Meixner, Willi; and Alpermann, Hans Georg, 3,795,681.
Melfi, Samuel T. Concrete form and clamp therefore. 3,795,393, Cl. 269-116.000.
Melle-Bezons: *See—*
Bouniot, Albert, 3,795,643.
Menasco Manufacturing Company: *See—*
Kendall, Giles A.; and Bhutani, Harish K., 3,795,390.
Mennekes, Werner: *See—*
Schwandt, Wolfgang; Mennekes, Werner; Weinhold, Heinz; and Weirich, Walter, 3,795,108.
Merck & Co., Inc.: *See—*
Kulsa, Peter; and Waksmunski, Frank S., 3,795,692.
Merit Abrasive Products, Inc.: *See—*
Hasegawa, Hiroshi, 3,795,498.
Merry, Carl Alan, to Schaefer Marine Products. Cam cleat. 3,795,218, Cl. 114-218.000.
Mertl, Klaus, to Jurid Werke GmbH. Bearing material for dry operation of the sintered bronze type. 3,795,493, Cl. 29-182.500.
Metzger, Lenard M., to Eastman Kodak Company. Color video film recording with segmented color filter. 3,795,761, Cl. 178-5.20d.
Meyer, Donald R.: *See—*
Carr, Albert A.; and Meyer, Donald R., 3,795,677.
Meyer, Herbert J., to Texaco Inc. Apparatus and means for inducing vibrations in an earth formation. 3,795,286, Cl. 181-.5rc.
Michael, Laddie L., to Dow Chemical Company, The. Applicator for controllably applying a liquid deposit to various workpieces. 3,795,221, Cl. 118-261.000.
Michatek, Robert J.: *See—*
Hoffman, Daniel S.; Meagher, Thomas; and Michatek, Robert J., 3,795,441.
Microsystems International Limited: *See—*
Cowpland, Michael C. J., 3,795,775.
Midland Silicones, Limited: *See—*
Idris, John; and Parry, Ann Margaret, 3,795,538.
Miele, Heinrich: *See—*
Rappen, Ludwig; Fickert, Werner; Orth, Winfried; Maurer, Manfred; and Miele, Heinrich, 3,795,708.
Miescher, Guide Max, to Commerical Solvents Corporation. Recovery of bacitracin. 3,795,663, Cl. 260-112.500.
Milani, Giuseppe, to Amunt S.p.A. Apparatus for shaping hollow extrudates of a plastic material. 3,795,471, Cl. 425-388.000.
Mildner, Raymond C., to Dow Chemical Company. Cable shielding tape. 3,795,540, Cl. 117-226.000.
Miller, Donald E.: *See—*
Taggart, Robert E.; and Miller, Donald E., 3,795,303.
Miller, Harry, to Sperry Rand Corporation. Variable throat venturi airspeed sensor. 3,795,145, Cl. 73-213.000.
Miller, John P.; Oatess, Arthur W.; and Thornton, Bryce G., to Addressograph-Multigraph Corporation. Latching mechanism for printing machines. 3,795,191, Cl. 101-269.000.
Miller, Joseph R. L. Ambulatory traction device for cervical problems. 3,795,243, Cl. 128-75.000.
Mimik Limited: *See—*
Magor, Lincoln Stoddard, 3,795,154.
Mimino, Tohru; Kinoshita, Kazuhisa; Shinoda, Takayuki; and Minegishi, Isao, to Nippon Kokan Kabushiki Kaisha. Austenitic steel of the Cr-Ni-Mn group. 3,795,509, Cl. 75-128.00a.
Minarik, Josef: *See—*
Piller, Bohumil; Suchanek, Jiri; Minarik, Josef; and Lacko, Vladimir, 3,795,569.
Mindi, Wolfgang: *See—*

Eberhard, Patrick; Hammacher, Konrad; and Mindi, Wolfgang, 3,795,239.
Minegishi, Isao: *See—*
Mimino, Tohru; Kinoshita, Kazuhisa; Shinoda, Takayuki; and Minegishi, Isao, 3,795,509.
Minieri, Pasquale Paul, to Tenneco Chemicals, Inc. Marine antifoulant compositions employing certain organotin compounds. 3,795,741, Cl. 424-288.000.
Minnesota Mining and Manufacturing Company: *See—*
Donnelly, Charles A.; and Sanders, James F., 3,795,033.
Newman, Donald J.; Williams, Donald J.; and Berg, John R., 3,795,532.
Renwick, Gordon M., 3,795,659.
Sowman, Harold G., 3,795,524.
Minnesota Mining and Manufacturing Company, mesne: *See—*
Farlow, Jan M., 3,795,766.
Mionet, Robert; Bronner, Francois; and Fruteau, Pierre, to Compagnie Industrielle des Telecommunication Cit-Alcatel. Frequency source including fault responsive control. 3,795,869, Cl. 330-2.000.
Miragliotta, Vito. Combination cutting, stripping and swaging tool. 3,795,023, Cl. 7-5.500.
Mischke, Joachim: *See—*
Clos, Franz; and Mischke, Joachim, 3,795,603.
Mitani, Seisho: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Serino, Yoichi; Mitani, Seisho; and Imanishi, Kunizo, 3,795,511.
Mitani, Takashi: *See—*
Usui, Keizaburo; Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Mitani, Takashi; Tsuji, Shinzo; and Mitsuhashi, Kenichi, 3,795,413.
Mitchell, Philip A.: *See—*
Samour, Carlos M.; and Mitchell, Philip A., 3,795,648.
Mitchell, William A.; and Seidel, William C., to General Foods Corporation. Alcohol-containing powder. 3,795,747, Cl. 426-192.000.
Mitsubishi Gas-Chemical Company, Inc.: *See—*
Fujiyama, Susumu; and Uchiyama, Seizi, 3,795,608.
Mitsubishi Mining & Cement Company Ltd.: *See—*
Tachibana, Kan-Ichi; Nishioka, Michihiro; and Ono, Mikiya, 3,795,048.
Mitsubishi Rayon Company, Limited: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Shimoshinbara, Ihiro, 3,795,639.
Mitsuhashi, Kenichi: *See—*
Usui, Keizaburo; Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Mitani, Takashi; Tsuji, Shinzo; and Mitsuhashi, Kenichi, 3,795,413.
Mitsuhashi, Masakazu; Masuda, Kazuo; Shiosaka, Makoto; Hirao, Mamoru; Sugimoto, Kaname; Yokobayashi, Yasuyuki; Yuen, Shokichi; and Yoshida, Mikihiko, to Hayashibara Co. Process for producing high purity maltose. 3,795,584, Cl. 195-31.00r.
Mitsui Shipbuilding and Engineering Co. Ltd.: *See—*
Endo, Takamasa; and Sugimura, Shojiro, 3,795,460.
Ozawa, Tokuji; Uyeda, Mikio; and Suzuki, Shigenori, 3,795,490.
Mitsui, Yoshihiro: *See—*
Futagawa, Yoshikiyo; Komatsu, Chifumi; Mitsui, Yoshihiro; and Kamakura, Hiroshi, 3,795,849.
Mitsuoki Iron Works Co., Ltd.: *See—*
Watanabe, Kazumasa, 3,795,576.
Miyata, Hideo: *See—*
Matsumoto, Massichiro; Tsuruta, Kiyoshi; Tokyo, Kodaira; and Miyata, Hideo, 3,795,560.
Miyata, Kenzi: *See—*
Ogawa, Takuzo; Miyata, Kenzi; Yagi, Hideyuki; and Sasaki, Takeshi, 3,795,846.
Miyazako, Takushi; Taitma, Tatsuya; Kato, Hirotetu; Kokubo, Tadayoshi; Nishina, Tsutomu; and Tsuji, Nobuo, to Fuji Photo Film Co., Ltd. Photographic materials containing mordants. 3,795,519, Cl. 96-84.00a.
Mobil Oil Corporation: *See—*
Stournas, Stamoulis; Bridger, Robert F.; and Heiba, El Ahmadi I., 3,795,612.
Mocarski, Zenon R., to S.R.C. Laboratories, Inc. Fluid device using coanda effect. 3,795,367, Cl. 239-265.170.
Mochida, Yasunori, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instruments with two master oscillators. 3,795,754, Cl. 84-1.010.
Moelbert, Heinrich, to Advanced Machine Design Company. Hydraulic shearing machine. 3,795,165, Cl. 83-378.000.
Moeller & Neumann GmbH: *See—*
Buchheit, Otto Karl, 3,795,322.
Fries, Gunter Karl; and Oberhauser, Ernst-Gunther, 3,795,167.
Molins Limited: *See—*
Powell, Gordon Francis Wellington, 3,795,802.
Moll, Alan H.; and Greiner, Alan, to Singer Company, The. Balancing system for a rotating mass. 3,795,784, Cl. 219-121.001.
Mollen, Ignatius J.; Koerper, Phillip E.; Turner, Albert G.; and Dewhurst, David S., to Ariens Company. Riding mower. 3,795,094, Cl. 56-11.100.
Monahan, Joseph E., to Honeywell Inc. Transistor switching circuit. 3,795,824, Cl. 307-255.000.
Monford, Leo G., Jr., to United States of America, National Aeronautics and Space Administration. Multifunction audio digitizer. 3,795,900, Cl. 340-347.0ad.
Moniot, Vincent E. Head positioning pillow. 3,795,021, Cl. 5-341.000.
Monsanto Company: *See—*
Carter, Don E.; and Latinen, George A., 3,795,386.
Gordon, Robert E., 3,795,256.
Kowalski, Xavier, 3,795,625.
Stevenson, Philip J.; and Falik, Andrew M., 3,795,376.
Moody, Harold W., Jr.; and Hamilton, Clark B., to Dunham-Bush, Inc. Injection cooling of screw compressors. 3,795,117, Cl. 62-197.000.
Mooney, Donald B.: *See—*
Cavaliere, Joseph R.; and Mooney, Donald B., 3,795,828.
Moore, Alfred George: *See—*
Sims-Williams, Christopher Temple, 3,795,064.
Morecroft, Andrew S.; deceased (by Morecroft, Janet E.; administratrix); Visser, Simon A. D.; and Limbert, Frank J., said Limbert and said Visser assors. to Baychem Corporation, mesne. Method of controlling the blow molding of hollow shaped plastic article. 3,795,719, Cl. 264-40.000..
Morecroft, Janet E.: *See—*
Morecroft, Andrew S.; Visser, Simon A. D.; and Limbert, Frank J., 3,795,719.
Morel, Richard A.: *See—*
Allen, Robert E., Jr.; and Morel, Richard A., 3,795,245.
Morgan, Barry S.; and Jaffe, Joseph, to Chevron Research Company. Hydroconversion catalyst preparation methods. 3,795,632, Cl. 252-455.00r.
Morgan, David Keith; and Heuner, Robert Charles, to RCA Corporation. Signal detection in noisy transmission path. 3,795,823, Cl. 307-247.000.
Mori, Masahiro; Noda, Atsuhiko; and Tokonaga, Shigeo, to Daido Seiko Kabushiki Kaisha. Electrode connecting device for furnace. 3,795,753, Cl. 13-18.000.
Morita, Robert Y. Jar lid remover. 3,795,158, Cl. 81-3.320.
Moriya, Yoshiro; Kawamoto, Takamichi; Tanaka, Hiroshi; and Ueno, Tsutomu, to Industrial Science & Technology, Agency of. Silver halide containing variable-transmittance borosilicate glass. 3,795,523, Cl. 106-54.000.
Morley, Peter I.: *See—*
Nimmo, John L.; and Morley, Peter I., 3,795,800.
Mormile, Wayne T.: *See—*
Pipes, George R.; Peppers, James D.; and Mormile, Wayne T., 3,795,200.
Moser, Paul R., to Beloit Corporation. Auger feed granulator. 3,795,369, Cl. 241-82.100.
Mosler Safe Company, The: *See—*
Ransom, Leslie R.; and Parmater, John O., 3,795,395.
Moss, Richard W., Jr.: *See—*
Jorgensen, Stanley A.; and Moss, Richard W., Jr., 3,795,330.
Motorenwerke Mannheim AG: *See—*
Aupor, Hans; Beuchlein, Gunter; and Viernheim, Hans-Joachim, 3,795,112.
Motorola, Inc.: *See—*
Di Nardo, Frank L.; and Salners, Edward A., 3,795,888.
Lincoln, Milan L., 3,795,492.
Motoume, Sakuichi, to Taisel Industrial Co., Ltd. Carrier roller. 3,795,306, Cl. 198-192.00r.
Mowery, Llewellyn L. Self-shaping dental matrix. 3,795,052, Cl. 32-63.000.
Moyer, Edward J.: *See—*
Scholl, Rolland D.; Moyer, Edward J.; Glynn, Terry W.; and Klein, Richard E., 3,795,285.
Moyer, John H.: *See—*
Roth, Howard; Schiffmann, Robert F.; Kaufman, Harold B., Jr.; and Moyer, John H., 3,795,183.
Moyses, Claude Daniel: *See—*
Lombard, Claude Edmond; and Moyses, Claude Daniel, 3,795,383.
Mracek, Milo F.: *See—*
Mracek, Milo F.; and Bauer, Ronald J. (said Bauer assor. to said), 3,795,284.
Mracek, Milo F.; and Bauer, Ronald J., said Bauer assor. to said Mracek, Milo F. Portable support and weigher for a bed patient. 3,795,284, Cl. 177-144.000.
Mudd, Daniel G.: *See—*
Hunsucker, Jerry H.; and Mudd, Daniel G., 3,795,645.
Muller, Marcel: *See—*
Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, 3,795,678.
Munk, Miner N., to Varian Associates. Dual beam optical absorption photometry detector assembly for high pressure applications. 3,795,450, Cl. 356-246.000.
Murphy, Charles F., to Lilly, Eli, and Company. Process for the preparation of delta 2-cephem-4-carboxylic acid esters. 3,795,672, Cl. 260-243.00c.
Murphy, James A.: *See—*
Halaby, Sami A.; Kenny, Neal S.; and Murphy, James A., 3,795,542.
Murphy, Norman Aidan. Extraction of gases from the molten bath of a float glass operation. 3,795,500, Cl. 65-99.00a.
Muzyka, Donald R.: *See—*
Kegerise, Wesley R.; Muzyka, Donald R.; and Barbis, Peter R., 3,795,552.
Nadelson, Jeffrey: *See—*
Houlihan, William J.; and Nadelson, Jeffrey, 3,795,676.
Nagasaki, Yoichi, to Nippon Gakki Seizo Kabushiki Kaisha. Heel-holding device for safety ski bindings. 3,795,407, Cl. 280-11.35t.
Nagy, Sandor: *See—*

Ban, Akos; Nagy, Sandor; and Balint, Valer, 3,795,277.
Naito, Masaharu; and Watanabe, Masae, to Yamaha Hatsudoki Kabushiki Kaisha. Hydraulic shock-absorbing device. 3,795,291, Cl. 188-274.000.
Nakamura, Toshihiko; Gomi, Yoshifumi; and Yokoyama, Toshiji, to Kabushiki Kaisha Suwa Seikosha. Method of positioning drum for precision printing. 3,795,299, Cl. 197-49.000.
Nakano, Kinichi: *See—*
Fujimoto, Yasuo; and Nakano, Kinichi, 3,795,669.
Nakayama, Kiyoshi; Kase, Hiroshi; and Yoshida, Hajime, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing L-serine. 3,795,583, Cl. 195-29.000.
Nalco Chemical Company: *See—*
Domba, Elemer, 3,795,684.
Newkirk, John D.; and Goretta, Louis A., 3,795,629.
Napolitano, Orlando; Pasternack, Gerald Philip; and Saltzberg, Burton R., to Bell Telephone Laboratories, Incorporated. Protection scheme for clock signal recovery arrangement. 3,795,872, Cl. 331-49.000.
National Cash Register Company, The: *See—*
Cartmell, James V.; and Churchill, Donald, 3,795,529.
National Research Corporation: *See—*
Hordon, Monroe J., 3,795,494.
National Starch and Chemical Corporation: *See—*
Skouetchi, Martin; and Meier, Eric A., 3,795,733.
National-Standard Company: *See—*
Mallory, Edwin E., 3,795,564.
Nauman, Warren David; Yerger, Clair William; and Douty, Robert Lee, to AMP Incorporated. Pin and socket type electrical contact terminals. 3,795,889, Cl. 339-217.0st.
Nebe, William John, to Du Pont de Nemours, E. I., and Company. Storage-life extender for crystalline photopolymerizable compositions. 3,795,520, Cl. 96-115.00p.
Nee, Monika: *See—*
Hartenstein, Josef; and Nee, Monika, 3,795,594.
Negersmith, Kent M.: *See—*
Gillette, William H.; McGandless, William J. C.; and Negersmith, Kent M., 3,795,149.
Neilon, Claude R.; and Willke, Herbert L., to Armco Steel Corporation. Apparatus for handling drill pipe. 3,795,326, Cl. 214-2.00s.
Nelson, Albert W., to Koehring Company. Self-propelled soil stabilizer machine. 3,795,279, Cl. 172-3.000.
Nelson, Lorne W., to Honeywell Inc. Combustion control apparatus. 3,795,476, Cl. 431-90.000.
Nelson, Roy A., to Spellbinder, Inc. Card Selection system. 3,795,063, Cl. 35-35.00d.
Nemec, John E., to General Tire & Rubber Company, The. Torsional energy absorber. 3,795,392, Cl. 267-140.000.
Nemessanyi, Laszlo, to Tridair Industries. Wheel and axle system for land vehicles. 3,795,408, Cl. 280-80.00r.
Nette, Otto: *See—*
Scheininger, Ludwig; and Nette, Otto, 3,795,804.
Neumayer, Erwin: *See—*
Birkmayer, Walter; and Neumayer, Erwin, 3,795,739.
Neuscheler, Wilhelm. Shifting lever for the transmission of motor vehicles. 3,795,156, Cl. 79-523.000.
Nevill, James I.: *See—*
Tefertiller, Ben A.; and Nevill, James I., 3,795,642.
Newbold, Geoffrey Tattersall: *See—*
Burton, Dennis Ernest; Lambie, Alan James; and Newbold, Geoffrey Tattersall, 3,795,680.
Newkirk, John D.; and Goretta, Louis A., to Nalco Chemical Company. Reduction of copper oxide with nickel. 3,795,629, Cl. 252-455.00r.
Newman, Donald J.; Williams, Donald J.; and Berg, John R., to Minnesota Mining and Manufacturing Company. Wide latitude copy sheet. 3,795,532, Cl. 117-36.200.
Newton, Alan Branford: *See—*
Feasey, Ronald George; and Newton, Alan Branford, 3,795,660.
NGK Insulators, Ltd.: *See—*
Ogawa, Yutaka; Ogasawara, Takayuki; and Seike, Shoji, 3,795,499.
Niall, Hugh David: *See—*
Tregear, Geoffrey William; Catt, Kevin John; and Niall, Hugh David, 3,795,664.
Nielsen, John M., to General Electric Company. Vinyl chloride foam containing silicone polymers. 3,795,634, Cl. 260-2.0jp.
Niemkiewicz, Ignatius John; and Aseltine, William S., to Gulf & Western Industrial Products Company. Bi-axial shock absorbing bumper. 3,795,419, Cl. 293-88.000.
Nihon Denshi Kabushiki Kaisha: *See—*
Takashima, Susumu, 3,795,809.
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Serino, Yoichi; Mitani, Seisho; and Imanishi, Kunizo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of combining iron-base sintered alloys and copper-base sintered alloys. 3,795,511, Cl. 75-208.000.
Niina, Akihiko; Oura, Kiyomori; and Tashiro, Kuniyoshi, to Nippon Zeon Co., Ltd. Process for preparing unsaturated carboxylic acids. 3,795,703, Cl. 260-530.00n.
Nilsson, Ake Valentin, to Aktiebolaget Bofors. Intensity limiting means for cathode ray oscilloscope. 3,795,836, Cl. 315-30.000.
Nimmo, John L.; and Morley, Peter L., to Honeywell Information Systems, Inc. Watchdog reload initializer. 3,795,800, Cl. 235-153.0ak.
Nippon Atomic Industry Group Co., Ltd.: *See—*
Kamei, Hisashi; and Ohno, Masayoshi, 3,795,087.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Kato, Hirokazu, 3,795,770.
Mochida, Yasunori, 3,795,754.
Nagasaki, Yoichi, 3,795,407.
Uchiyama, Yasuji, 3,795,755.
Nippon Gakki Seizo Kaisha: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
Mimino, Tohru; Kinoshita, Kazuhisa; Shinoda, Takayuki; and Minegishi, Isao, 3,795,509.
Tanaka, Jinkichi; Tanaka, Junichi; and Osuka, Tatsuki, 3,795,506.
Yamaguchi, Tetsuo; Gonda, Hisashi; Nishimoto, Akihiko; and Ikegami, Yoshisuke, 3,795,508.
Nippon Pillar Packing Company, Ltd.: *See—*
Ogawa, Kazuki; Ito, Hiroshi; and Furukawa, Mitsuhiko, 3,795,404.
Nippon Tungsten Company, Ltd.: *See—*
Ogawa, Kazuki; Ito, Hiroshi; and Furukawa, Mitsuhiko, 3,795,404.
Nippon Zeon Co., Ltd.: *See—*
Niina, Akihiko; Oura, Kiyomori; and Tashiro, Kuniyoshi, 3,795,703.
Nishihara, Tadashi, to Yokogawa Electric Works, Ltd. Force responsive device. 3,795,140, Cl. 73-141.00a.
Nishiiue, Kazuo: *See—*
Nozawa, Takamitsu; Tasaki, Takaharu; and Nishiiue, Kazuo, 3,795,337.
Nishikawa, Kazunori: *See—*
Takahashi, Nobuaki; Nishikawa, Kazunori; Ishigaki, Yukinobu; and Fujita, Yoshitoshi, 3,795,876.
Nishimoto, Akihiko: *See—*
Yamaguchi, Tetsuo; Gonda, Hisashi; Nishimoto, Akihiko; and Ikegami, Yoshisuke, 3,795,508.
Nishimura, Mikio: *See—*
Fujimoto, Takehiko; Nishimura, Mikio; and Takigawa, Shoji, 3,795,614.
Nishina, Tsutomu: *See—*
Miyazako, Takushi; Taitma, Tatsuya; Kato, Hirotetu; Kokubo, Tadayoshi; Nishina, Tsutomu; and Tsuji, Nobuo, 3,795,519.
Nishioka, Michihiro: *See—*
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Nissan Motor Company, Limited: *See—*
Usui, Keizaburo; Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Mitani, Takashi; Tsuji, Shinzo; and Mitsuhashi, Kenichi, 3,795,413.
Nistri, Ugo: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Passalenti, Beprino; and Nistri, Ugo, 3,795,717.
Niznik, Emil J., to Bunker Ramo Corporation. Electrical contact arrangement with self cleaning contact points. 3,795,101, Cl. 58-41.00b.
Noda, Atsuhiko: *See—*
Mori, Masahiro; Noda, Atsuhiko; and Tokonaga, Shigeo, 3,795,753.
Noda, Tsugio: *See—*
Usui, Keizaburo; Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Mitani, Takashi; Tsuji, Shinzo; and Mitsuhashi, Kenichi, 3,795,413.
Noelpp, Bernhard: *See—*
Helfer, Hannelore; Jaques, Roland; and Noelpp, Bernhard, 3,795,742.
Noetzel, Siegfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Daylight fluorescent pigments and process for preparing them. 3,795,628, Cl. 252-301.20r.
Nogaito, Tadao; Fujita, Yasuhiro; and Watabiki, Kenichi. Heat fixing system in an electrophotographic copying machine having a temperature control device. 3,795,787, Cl. 219-216.000.
Norashino, Koichi Kinoshita; and Fukuda, Tadaji, to Katsuragawa Denki Kabushiki Kaisha. Photosensitive elements for use in electrophotography. 3,795,515, Cl. 96-1.500.
Nordisk Ventilator Co. A/S: *See—*
Westenholz, Sven Torben; and Kristiansen, Svend Helge, 3,795,438.
Norman, Karl Arne. Buckle for plane belts, preferably textile belts. 3,795,029, Cl. 24-191.000.
Norman, Marvin Neil: *See—*
Waltner, Ronald Keith; and Norman, Marvin Neil, 3,795,767.
Nortec Computer Devices, Inc.: *See—*
Curtiss, Robert H.; Gardiner, Derek J.; and Lazarow, Seldan A., 3,795,186.
Nortec Electronics Corporation: *See—*
Greger, William J., 3,795,827.
North American Rockwell Corporation: *See—*
Vehrs, Charles L, Jr., 3,795,909.
Northwest Wire Works, Inc.: *See—*
Olsen, Robert J., 3,795,073.
Norton Company: *See—*
Bosma, Robert W.; and Pettee, George H., 3,795,077.
Coes, Loring, Jr., 3,795,078.
Rowe, Carl H., 3,795,602.
Nowka, Durval F.; and May, William J., to Tex-Row Music, Inc. Switching system for plurality of audio input. 3,795,769, Cl. 179-1.0sw.

Nozawa, Takamitsu; Tasaki, Takaharu; and Nishiiue, Kazuo, to Yoshino Kogyosho Co., Ltd. Safety cap. 3,795,337, Cl. 215-9.000.
NRM Corporation: *See—*
Enders, George E.; and Cantarutti, Armindo, 3,795,563.
Numao, Saichi; and Yoneyama, Yukio, to Yorozu Jidosha Kogyo Kabushiki Kaisha. Automatic deburring process. 3,795,175, Cl. 90-24.00a.
Numicon, Inc.: *See—*
Price, Robert B.; Hosterman, Richard N.; and Cook, William G., 3,795,155.
Oatess, Arthur W.: *See—*
Miller, John P.; Oatess, Arthur W.; and Thornton, Bryce G., 3,795,191.
Oberhauser, Ernst-Gunther: *See—*
Fries, Gunter Karl; and Oberhauser, Ernst-Gunther, 3,795,167.
Ogasawara, Takayuki: *See—*
Ogawa, Yutaka; Ogasawara, Takayuki; and Seike, Shoji, 3,795,499.
Ogawa, Haruki: *See—*
Okuda, Itsuki; Shinohara, Hiroshi; Ogawa, Haruki; and Itoh, Hideo, 3,795,743.
Ogawa, Kazuki; Ito, Hiroshi; and Furukawa, Mitsuhiko, to Nippon Tungsten Company, Ltd. and Nippon Pillar Packing Company, Ltd. Sealing of mechanical seal and manufacture thereof. 3,795,404, Cl. 277-235.00r.
Ogawa, Koichi; and Kakuta, Hajime, to Lotte Co., Ltd. Flavor variable chewing gum and method of preparing the same. 3,795,744, Cl. 426-3.000.
Ogawa, Takuzo; Miyata, Kenzi; Yagi, Hideyuki; and Sasaki, Takeshi, to Hitachi, Ltd. Integrated semiconductor device having functional regions isolated by P-N junction therebetween. 3,795,846, Cl. 317-235.00r.
Ogawa, Yutaka; Ogasawara, Takayuki; and Seike, Shoji, to NGK Insulators, Ltd. Method of producing semi-conducting glaze compositions. 3,795,499, Cl. 65-60.000.
Ogui, William M. Enclosed fishbowl. 3,795,225, Cl. 119-5.000.
Ohme, Wolfgang; Grund, Karl; and Winkler, Jorg, to Hewlett-Packard GmbH. Apparatus for the measurement of RMS values. 3,795,868, Cl. 328-144.000.
Ohno, Masayoshi: *See—*
Kamei, Hisashi; and Ohno, Masayoshi, 3,795,087.
Okabe, Hideo, to United States of America, Commerce. Sulfur dioxide pollution monitor. 3,795,812, Cl. 250-373.000.
Okada, Kunihiro: *See—*
Endo, Takeyuki; Yokozawa, Norio; Watanabe, Shigeru; and Okada, Kunihiro, 3,795,798.
Okuda, Itsuki; Shinohara, Hiroshi; Ogawa, Haruki; and Itoh, Hideo, to Kumiai Chemical Industry Co., Ltd. Method of controlling mites using chloromethanesulfoamide. 3,795,743, Cl. 424-321.000.
Oliver, David W., to General Electric Company. Method for producing crystal boules with extensive flat, parallel facets. 3,795,488, Cl. 23-301.0sp.
Oliver, Don L., to Cities Service Oil Company. Well flushing method. 3,795,282, Cl. 175-65.000.
Oliver, Roy N.; and Spain, Roy C. Machine for cutting multiple keys. 3,795,174, Cl. 90-13.050.
Olsen, Robert J., to Northwest Wire Works, Inc. Collapsible trap for crabs and the like. 3,795,073, Cl. 43-105.000.
Olson, Eugene E.: *See—*
Clendenen, Ronald L.; and Olson, Eugene E., 3,795,723.
O'Mara, Joseph B., to Anaconda Company, The. High voltage cable joint and heat sink sleeve for use therein. 3,795,758, Cl. 174-73.00r.
Omote, Yuichi: *See—*
Yamamura, Toshio; Omote, Yuichi; Sato, Shiro; and Hiyama, Tomochika, 3,795,727.
Omre Costruzioni Elettromeccaniche S.a.s.: *See—*
Perucca, Pietro, 3,795,788.
Ondetti, Miguel A., to Squibb, E. R., & Sons, Inc. Novel peptide intermediates in the preparation of secretin. 3,795,667, Cl. 260-112.500.
Onishi, Akira: *See—*
Yukuta, Toshio; Iwami, Kouichi; Onishi, Akira; and Seda, Yutaka, 3,795,598.
Ono, Mikiya: *See—*
Tachibana, Kan-Ichi; Nishioka, Michihiro; and Ono, Mikiya, 3,795,048.
Onsager, Olav Torgeir. Preparation of cyano compounds. 3,795,694, Cl. 260-465.80r.
Orth, Winfried: *See—*
Rappen, Ludwig; Fickert, Werner; Orth, Winfried; Maurer, Manfred; and Miele, Heinrich, 3,795,708.
Orthen, Erhard. Labelling devices. 3,795,356, Cl. 226-58.000.
Orzechowski, Walter Joseph, to Western Data Products, Inc., mesne. Controllable turnstile. 3,795,075, Cl. 49-46.000.
Ostrem, Obert M., to Continental Can Company, Inc. Easy opening container. 3,795,341, Cl. 220-54.000.
Osuka, Tatsuki: *See—*
Tanaka, Jinkichi; Tanaka, Junichi; and Osuka, Tatsuki, 3,795,506.
Ota, Hiroshi, to Toyoda Koki Kabushiki Kaisha. Rotary dressing apparatus. 3,795,238, Cl. 125-11.0cd.
O'Toole, James I.: *See—*
Worrell, George R.; and O'Toole, James I., 3,795,711.
Otter, Loren H.: *See—*
Clausi, Joseph V.; Landau, Michael; Otter, Loren H.; and Sawyer, Richard D., 3,795,544.
Oughton, Ronald, to Shuttle Mountain Holdings Co., Ltd. Apparatus for drilling and sampling rock formations. 3,795,283, Cl. 175-215.000.
Oura, Kiyomori: *See—*
Niina, Akihiko; Oura, Kiyomori; and Tashiro, Kuniyoshi, 3,795,703.
Oury, Robert F., to Rotec Industries, Inc. Scraper for concrete conveyor belt. 3,795,308, Cl. 198-230.000.
Ouska, Ralph C. Article roll-over device. 3,795,323, Cl. 214-1.00q.
Outboard Marine Corporation: *See—*
Donohue, James A.; and Shore, Harry S., 3,795,235.
Rose, Edgar, 3,795,287.
Owens-Illinois, Inc.: *See—*
Ferry, Jack I., 3,795,503.
Swartzbaugh, Peter T.; and Williams, Richard C., 3,795,338.
Oxenrider, Bryce C.: *See—*
Beyleveld, Wilhelmus M.; Oxenrider, Bryce C.; and Woolf, Cyril, 3,795,689.
Oxenrider, Bryce C.; Beyleveld, Wilhelmus M.; and Woolf, Cyril, to Allied Chemical Corporation. Fluoroperhalodiazaolefins and their method of preparation. 3,795,706, Cl. 260-566.00r.
Oxy Metal Finishing Corporation: *See—*
Brown, Henry; and Boycott, William A., 3,795,593.
Clauss, Richard J.; and Tremmel, Robert A., 3,795,591.
Klein, Roy W.; Tremmel, Robert A.; and Clauss, Richard J., 3,795,592.
Oxy Metal Finishing Corporation, mesne: *See—*
Hansen, Hans; Jorns, Peter; Rones, Josef; and Wuttke, Wolfgang, 3,795,548.
Matsushima, Yasunobu; Tanaka, Shigeo; and Terada, Haruyoshi, 3,795,549.
Oy Stromberg Ab: *See—*
Panu, Vaino Tuure Kalevi, 3,795,881.
Ozaki, Kiyoju: *See—*
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Ozaki, Kiyoju, 3,795,713.
Ozawa, Tokuji; Uyeda, Mikio; and Suzuki, Shigenori, to Mitsui Shipbuilding and Engineering Co. Ltd. Apparatus for thermal cracking and quenching. 3,795,490, Cl. 23-284.000.
Pabst Brewing Company: *See—*
Ziffer, Jack, 3,795,586.
Package Machinery Company: *See—*
Schoppee, Lawrence W., 3,795,302.
Paine, John H.; and Kessinger, Orville E., Jr., to Caterpillar Tractor Company. Two-piece interlocked support/thrust bearings. 3,795,428, Cl. 308-161.000.
Palfi, Thomas L.: *See—*
Mehta, Rustam J.; Geilhufe, Mike; and Palfi, Thomas L., 3,795,898.
Pall Corporation: *See—*
Pall, David B., 3,795,288.
Pall, David B., to Pall Corporation. Gas conduits with acoustic insulation comprising anisometric compressed and bonded multilayer knitted wire mesh composites. 3,795,288, Cl. 181-42.000.
Pan, Yu-Li; and Simpson, Joe R., to Bernhardt, Anthony F. and United States of America, Atomic Energy Commission. Apparatus for pumping a high pressure laser system. 3,795,874, Cl. 331-94.500.
Pande, Kailash C.; and Stattel, Richard J., to Powers Chemco, Inc. Furfuryl, allyl and methylol acrylamide esters of polymeric acids. 3,795,640, Cl. 260-78.500.
Panu, Vaino Tuure Kalevi, to Oy Stromberg Ab. High Voltage current transformer. 3,795,881, Cl. 336-69.000.
Pappas, James J.; Makowski, Henry S.; and Rossi, Albert. Hydrogenated copolymers of butadiene with another conjugated diene are useful as oil additives. 3,795,615, Cl. 252-59.000.
Pariot, Pierre: *See—*
Torck, Bernard; Vidouta, Georges; Pariot, Pierre; and Hellin, Michel, 3,795,712.
Parke, Davis & Company: *See—*
French, James C.; Anderson, Lucia E.; Bunge, Richard H.; and Howells, John D., 3,795,668.
Parker-Hannifin Corporation: *See—*
Malott, Thomas J.; and Stacey, Hugh J., 3,795,255.
Parks, Christ F.: *See—*
Eilers, Louis H.; and Parks, Christ F., 3,795,276.
Parmater, John O.: *See—*
Ransom, Leslie R.; and Parmater, John O., 3,795,395.
Parry, Ann Margaret: *See—*
Idris, John; and Parry, Ann Margaret, 3,795,538.
Pars, Harry George: *See—*
Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, 3,795,736.
Passalenti, Beprino: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Passalenti, Beprino; and Nistri, Ugo, 3,795,717.
Pasternack, Gerald Philip: *See—*
Napolitano, Orlando; Pasternack, Gerald Philip; and Saltzberg, Burton R., 3,795,872.
Patrie, Jos, to Cegedur GP. Process for coloring aluminum and alloys of aluminum having an anodized surface. 3,795,590, Cl. 204-35.00n.
Paul, David E.; and Housh, Lloyd M., to Kaiser Aluminum & Chemical Corporation. Method of making alumina refractory grain. 3,795,724, Cl. 264-65.000.

Pearson, Frederick Randall, to Humes Limited. Oil operated coupling. 3,795,294, Cl. 192-85.0at.
Pecherer, Benjamin: *See—*
Brossi, Arnold; Pecherer, Benjamin; and Sunbury, Robert, 3,795,683.
Peck, Daniel Anthony, to Combustion Engineering, Inc. Snubber seal leakage test circuit. 3,795,139, Cl. 73-40.50r.
Peltz, Hanns-Heinz, to Siemens Aktiengesellschaft. Method of contacting a semiconductor body having a plurality of electrodes utilizing sheet metal electric leads. 3,795,044, Cl. 29-591.000.
Pennington, Rohe Vester, to Improved Machinery Inc. Continuous digester with pressure relief outlet valve cycling. 3,795,577, Cl. 162-237.000.
Pennington, Stephen: *See—*
Jenkins, Victor Frederick; Beeken, Michael John; and Pennington, Stephen, 3,795,701.
Pennwalt Corporation: *See—*
Caldwell, John Warren; and Shapiro, Leonard, 3,795,362.
Lee, Chie-Ying, 3,795,361.
Peppers, James D.: *See—*
Pipes, George R.; Peppers, James D.; and Mormile, Wayne T., 3,795,200.
Perkins Engines Limited: *See—*
Stewart, William F.; Whittingham, John B.; and Perkins, Geoffrey R., 3,795,032.
Perkins, Geoffrey R.: *See—*
Stewart, William F.; Whittingham, John B.; and Perkins, Geoffrey R., 3,795,032.
Perry, Jack I., to Owens-Illinois, Inc. Apparatus for selecting the release point in a ninety-degree sweepout for a glass forming machine. 3,795,503, Cl. 65-260.000.
Perucca, Pietro, to Omre Costruzioni Elettromeccaniche S.a.s. Machine for brewing hot beverages, adapted to produce steam. 3,795,788, Cl. 219-272.000.
Peterson, Carl L.; and Korumpas, James D., to GTE Sylvania Incorporated. Atmosphere detector for helicopter blades. 3,795,147, Cl. 73-49.300.
Peterson, Earl A. Marine propulsion and steering apparatus. 3,795,219, Cl. 115-35.000.
Pettee, George H.: *See—*
Bosma, Robert W.; and Pettee, George H., 3,795,077.
Pettibone Corporation: *See—*
Lado, William J., 3,795,176.
Peyrot, Jean-Pierre. Open ball bearing. 3,795,429, Cl. 308-185.000.
Pfeiler, Leslie H.: *See—*
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., 3,795,472.
Phillips, Marie B.: *See—*
Harris, Don N.; and Phillips, Marie B., 3,795,582.
Picker, Patrick, to Universite de Sherbrooke. Axial piston rotary apparatus. 3,795,179, Cl. 91-500.000.
Pickert, Paul Eugene; and Bolton, Anthony Peter, to Union Carbide Corporation. Isoparaffin alkylation process and catalyst for use therein. 3,795,714, Cl. 260-683.430.
Pickles, Sidney. Rotating beacon antenna with polarization filter. 3,795,914, Cl. 343-756.000.
Pico-Matic, Inc.: *See—*
Chanowitz, Harry, 3,795,786.
Pierce, John N.; and Holt, F. Sheppard, to United States of America, Air Force. Spectrum analysis radar system. 3,795,912, Cl. 343-5.0sa.
Pierro, Richard S.: *See—*
Kosowsky, Lester H.; and Pierro, Richard S., 3,795,913.
Pierson, Howard P.: *See—*
Hester, Robert; and Pierson, Howard P., 3,795,468.
Piller, Bohumil; Suchanek, Jiri; Minarik, Josef; and Lacko, Vladimir, to Vyzkumny Ustav Pletarsky. Patterned fabrics having relief patterns and method of producing the same. 3,795,569, Cl. 161-72.000.
Pipes, George R.; Peppers, James D.; and Mormile, Wayne T., to Eaton Corporation. Free and power conveyor system. 3,795,200, Cl. 104-172.00s.
Planche, Jean, to Schlumberger Technology Corporation. Well logging probes. 3,795,141, Cl. 73-151.000.
Plasser, Franz; and Theurer, Josef. Track correction control. 3,795,056, Cl. 33-287.000.
Plasser, Franz; and Theurer, Josef. Mobile track tamper for continuously correcting a track position. 3,795,198, Cl. 104-12.000.
Platter, Sandford, to Steatite Research Corporation. Non-rotational constant film thickness, complete step coverage evaporation system. 3,795,536, Cl. 117-106.00r.
Plessey Handal und Investments A.G.: *See—*
Wilcock, John David, 3,795,829.
Plotnikoff, Nicholas Peter, to Abbott Laboratories. Use of L-prolyl L-leucyl glycine amide to treat Parkinson's disease. 3,795,738, Cl. 424-274.000.
Plough, Inc.: *See—*
Feinstone, Wolffe Harry, 3,795,624.
Plumat, Emile; and Lelong, Jose, to Glaverfel S.A. Method and apparatus for surface coating articles. 3,795,783, Cl. 219-121.0eb.
Poe, David T., to General Motors Corporation. Bi-polar lead-acid storage battery. 3,795,543, Cl. 136-10.000.
Poe, Lloyd Richard, to Hartwell Corporation, The. Energy absorbing door control device. 3,795,391, Cl. 267-136.000.
Poesy, Michel: *See—*
Aubert, Pierre-Camille; and Poesy, Michel, 3,795,065.
Pogonowski, Ivo C., to Texaco Inc. Mechanisms for swaging the ends of pipes. 3,795,035, Cl. 29-200.00b.
Polanka, George J.: *See—*
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Polaroid Corporation: *See—*
Lehmann, Walter G., 3,795,351.
Simon, Myron S., 3,795,518.
Thoenen, Earl R., 3,795,212.
Polysar International, S.A., mesne: *See—*
Leclaire, Claier D.; and Baker, John C., 3,795,655.
Pool, Julio Von Thaden. Water treatment mud decanting tank. 3,795,314, Cl. 210-208.000.
Poole, Margaret A., to GTE Sylvania Incorporated. High Q notch filter. 3,795,877, Cl. 333-70.00a.
Post, John Franklin. Dispensing device and method for introducing fluid into high pressure lines. 3,795,262, Cl. 141-1.000.
Poundstone, William N. Consolidation Coal Company Method and apparatus for conveying material. 3,795,304, Cl. 198-139.000.
Powell, Gordon Francis Wellington, to Molins Limited. Scanning system using radioactive radiation in cigarette rod making machine. 3,795,802, Cl. 250-384.00d.
Powers Chemco, Inc.: *See—*
Pande, Kailash C.; and Stattel, Richard J., 3,795,640.
PPG Industries, Inc.: *See—*
De Torre, Robert P., 3,795,572.
DeTorre, Robert P., 3,795,502.
Jansson, Robert A.; and Reese, Thomas J., 3,795,501.
Jansson, Robert A.; and Thomas, Dean L., 3,795,570.
Precision Screen Machines Inc.: *See—*
Jaffa, David; and Szarka, Sandor, 3,795,060.
Jaffa, David, 3,795,189.
Prentice, James S., to Esso Research and Engineering Company. Laminated non-woven sheet. 3,795,571, Cl. 161-148.000.
Prestegaard, Paul G. Overhead glue pot apparatus. 3,795,223, Cl. 118-262.000.
Preston, Max K., Jr., to United States of America, Atomic Energy Commission. Lift coupling. 3,795,420, Cl. 294-86.00a.
Preus, Paul. Control of waterborne oil slicks. 3,795,315, Cl. 210-242.000.
Preussag AG: *See—*
Beyersdorf, Hartwig; and Rims, Lothar, 3,795,904.
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, to Heinrich Koppers Gesellschaft mit beschrankter Haftung. Process for separating hydrocarbon mixtures comprising paraffins, monoolefins, diolefins and small amounts of more highly unsaturated hydrocabons by extractive distillation. 3,795,588, Cl. 203-25.000.
Prewo, Karl M.: *See—*
Kreider, Kenneth G.; and Prewo, Karl M., 3,795,042.
Price, Robert B.; Hosterman, Richard N.; and Cook, William G., to Numicon, Inc. Angular indexing apparatus for a machine tool. 3,795,155, Cl. 74-826.000.
Production Technology Inc.: *See—*
Kiwalle, Jozef, 3,795,324.
Produits Chimiques Pechiney Saint-Gobain: *See—*
Seigneurin, Laurent, 3,795,710.
Pryor, Billy: *See—*
Rhodarmer, Thomas C.; Easley, Wayne W.; and Pryor, Billy, 3,795,568.
Quaker Oats Company, The: *See—*
Huffman, George W.; and Rustad, Norman E., 3,795,636.
Queen, Harold B.: *See—*
Dabney, William C.; Goodenough, Samuel H.; and Queen, Harold B., 3,795,558.
Quenot, Denis; and Duc, Alain, to Compteurs Schlumberger. Token or coin inlet mechanisms for prior-payment machines. 3,795,297, Cl. 194-1.00e.
Quentin, Jean-Pierre: *See—*
Marze, Xavier; and Quentin, Jean-Pierre, 3,795,635.
Rabatin, Jacob G., to General Electric Company. X-ray image converters utilizing lanthanum and gadolinium oxyhalide luminous materials activated with thulium. 3,795,814, Cl. 250-460.000.
Rachelle Laboratories Italia S.p.A.: *See—*
Luciano, Franco Paolo, 3,795,707.
Ralston Purina Company: *See—*
Dunn, Howard J.; Farr, Marvin Paul; and Schleusner, Otto, 3,795,751.
Rank Organisation Limited, The: *See—*
Whitehouse, Joseph Colin, 3,795,853.
Rank Organization Limited, The: *See—*
Houston, John Kenneth, 3,795,446.
Ransom, Leslie R.; and Parmater, John O., to Mosler Safe Company, The. Dispenser for documents such as currency and the like. 3,795,395, Cl. 271-4.000.
Rappen, Ludwig; Fickert, Werner; Orth, Winfried; Maurer, Manfred; and Miele, Heinrich, to Rutgerswerke Aktiengesellschaft. Process for preparing 2,3,6-trimethylhydroquinone. 3,795,708, Cl. 260-621.00h.
Rausch, John J.: *See—*
Van Thyne, Ray J.; and Rausch, John J., 3,795,537.
Rausing, Anders Ruben, to Tetra Pak International AB. Parallellepipedic package. 3,795,359, Cl. 229-7.00r.
Raw, Peter Michael; and Robbins, Rodway Albert, to British Insulated Callender's Cables Limited. Electrical cables. 3,795,760, Cl. 174-128.000.

Ray, Richard G.: *See—*
Welch, Nathan E.; and Ray, Richard G., 3,795,447.
Razdan, Raj Kumar: *See—*
Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, 3,795,736.
RCA Corporation: *See—*
Channin, Donald Jones, 3,795,433.
Mehalso, Robert Michael; and Harris, David Isaac, 3,795,534.
Morgan, David Keith; and Heuner, Robert Charles, 3,795,823.
Waltner, Ronald Keith; and Norman, Marvin Neil, 3,795,767.
Willis, Donald Henry, 3,795,762.
Recordati SA Chemical and Pharmaceutical Company: *See—*
Sianesi, Enrico, 3,795,685.
Reddy, Robert R. Valve with axially movable valving tube and laterally movable valving wall. 3,795,384, Cl. 251-257.000.
Reed, Wilbur B., to United States of America, Navy, mesne. Apparatus for rapidly accelerating and cushionably decelerating a piston-like member. 3,795,172, Cl. 89-1.50r.
Rees, Alfred, to Lucas, Joseph, (Electrical) Limited. Ignition distribution with contact breaker assembly mounting plate. 3,795,778, Cl. 200-19.00r.
Rees, David John, to United States Borax & Chemical Corporation. Sulphoxidation of aliphatic hydrocarbons using ultraviolet light and a boron compound. 3,795,599, Cl. 204-162.0sa.
Reese, Thomas J.: *See—*
Jansson, Robert A.; and Reese, Thomas J., 3,795,501.
Reggiani S.p.A.: *See—*
Giani, Adolfo, 3,795,188.
Regie Nationale des Usines Renault: *See—*
Lombard, Claude Edmond; and Moyses, Claude Daniel, 3,795,383.
Ventre, Pierre; and Lacambre, Jacques, 3,795,414.
Regie Nationale des Usines Renault Billancourt: *See—*
Lecailtel, Pierre; and Dressler, Bruno, 3,795,405.
Reichenberger, Kurt: *See—*
Johne, Hans; Schumann, Gunter; Jehring, Arnfried; and Reichenberger, Kurt, 3,795,193.
Reimann, Otto: *See—*
Ettenreich, Ludwig; Reimann, Otto; and Greulich, Klaus, 3,795,550.
Reinsma, Harold L.: *See—*
Boggs, Roger L.; and Reinsma, Harold L., 3,795,431.
Reiss, Gerhard: *See—*
Heinze, Gerhard; Reiss, Gerhard; Schwochow, Friedrich; and Ulisch, Gunter, 3,795,631.
Reither, Karl, to Kunststofftechnik G.m.b.H. & Co. KG. Wet scrubber for air purifying systems. 3,795,089, Cl. 55-227.000.
Reliance Trailer Manufacturing, Inc.: *See—*
Acker, Douglas B.; and Berry, Trevis L., 3,795,336.
Renner, Hermann: *See—*
Barenyi, Bela; and Renner, Hermann, 3,795,418.
Rennie, David M., to Combustion Engineering, Inc. Means for separating fluids. 3,795,091, Cl. 55-440.000.
Reno, Frederick, to Ford Motor Company. Device for predetermining initial free play in clutch actuating mechanisms. 3,795,295, Cl. 192-110.00r.
Rentz, Warren A.: *See—*
Brewer, George E. F.; Swider, Robert A.; and Rentz, Warren A., 3,795,601.
Renwick, Gordon M., to Minnesota Mining and Manufacturing Company. Curing of epoxide compositions containing examines. 3,795,659, Cl. 260-47.0en.
Research Corporation: *See—*
Gauri, Kharaiti Lal, 3,795,533.
Reutsky, Jury Valerianovich: *See—*
Schetinin, Vasily Ivanovich; and Reutsky, Jury Valerianovich, 3,795,349.
Reynier, Jacques, to Saft-Societe des Accumulateurs Fixes et de Traction. Assembly arrangement for electrode plates of electrochemical generators. 3,795,892, Cl. 339-244.00r.
Rheem Manufacturing Company: *See—*
Andre, L. George; Barthalomew, Wayne R.; and Worline, Paul W., 3,795,085.
Rheinstohl Aktiengesellschaft: *See—*
Schafer, Heinrich, 3,795,456.
Rhodarmer, Thomas C.; Easley, Wayne W.; and Pryor, Billy, to Dayco Corporation. Compressible printing blanket and method of manufacture. 3,795,568, Cl. 161-87.000.
Rhone-Poulenc S.A.: *See—*
Marze, Xavier; and Quentin, Jean-Pierre, 3,795,635.
Rhone-Poulenc S.A., mesne: *See—*
Fujimoto, Yasuo; and Nakano, Kuichi, 3,795,669.
Rhyne, William A., to United States of America, Navy. Buoyant electrical cable. 3,795,759, Cl. 174-101.500.
Rich, John P.: *See—*
Luthi, Oscar; and Rich, John P., 3,795,319.
Richard, Jean-Paul. Viscosity controlled pestinolytic enzyme addition to fruit and vegetable juice. 3,795,521, Cl. 426-51.000.
Richardson, Charles D.; Corsentino, Robert J., Jr.; and Gould, Oliver M., to Richardson Service Division. Packaging apparatus. 3,795,084, Cl. 53-59.00w.
Richardson, John L., 1/3 to Garrett, Jim C., 1/3 to Johnson, Robert H. and 1/3 to Shelton, Jack. Led slidebase switchboard lamp. 3,795,830, Cl. 307-311.000.
Richardson Service Division: *See—*
Richardson, Charles D.; Corsentino, Robert J., Jr.; and Gould, Oliver M., 3,795,084.
Richardson-Merrell Inc.: *See—*
Carr, Albert A.; and Meyer, Donald R., 3,795,677.
Richmond, Henry: *See—*
Sono, John; and Richmond, Henry, 3,795,700.
Richter, Klaus: *See—*
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, 3,795,588.
Rieman, Willis E., to Gulf & Western Systems Company. Control circuit. 3,795,790, Cl. 219-490.000.
Rims, Lothar: *See—*
Beyersdorf, Hartwig; and Rims, Lothar, 3,795,904.
Ripley-Duggin, Basil Alexander, to Doverstrand Ltd. Agglomerating latices of diene polymers. 3,795,647, Cl. 260-29.7sq.
Rittich, Hans O.: *See—*
Kahn, Friedhelm; and Rittich, Hans O., 3,795,272.
Rittner, Siegbert: *See—*
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Robbins, Rodway Albert: *See—*
Raw, Peter Michael; and Robbins, Rodway Albert, 3,795,760.
Robert, Jean-Claude B.: *See—*
Buchot, Pierre Charles; Cohen-Alloro, Richard; and Robert, Jean-Claude B., 3,795,310.
Roberts, Tecwyn V.; and Snelling, David. Apparatus for dispensing articles from a stack thereof. 3,795,346, Cl. 221-223.000.
Robertshaw Controls Company: *See—*
Fabish, Donald C.; and Hamilton, Robert M., 3,795,257.
Robertson, Bruce W. Symbol stamp. 3,795,192, Cl. 101-368.000.
Robinson, Roger R.; and Hardman, Stanley J. Seat mounted food tray with vanity mirror. 3,795,422, Cl. 297-191.000.
Robinson, William J., Jr., to United States of America, National Aeronautics and Space Administration. Microwave power transmission system wherein level of transmitted power is controlled by reflections from receiver. 3,795,910, Cl. 343-7.500.
Roche, Richard M. Hydraulic actuator holding system. 3,795,178, Cl. 91-420.000.
Rochefort, Joseph Guy, to American Home Products Corporation. Cyclic regimen of hormone administration for contraception. 3,795,734, Cl. 424-238.000.
Rockwell International Corporation: *See—*
Cherry, Charles C.; and Haymes, William G., 3,795,106.
Sundby, Gustav B., 3,795,203.
Rockwell Manufacturing Company: *See—*
Wade, Zane A.; and Kolash, William F., 3,795,131.
Roebuck, Malcolm J. Die-set combination for making pin-back badges. 3,795,036, Cl. 29-243.520.
Rohm & Haas Company: *See—*
Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., 3,795,679.
Rohm, Gunter Horst. Self-tightening drill chuck. 3,795,406, Cl. 279-56.000.
Rohrig, Josef: *See—*
Konig, Justus; Rohrig, Josef; and Seidl, Gunther, 3,795,773.
Roller, Robert F.: *See—*
United States of America, National Aeronautics and Space Administration, 3,795,862.
Rome Industries: *See—*
Coughran, Samuel J., Jr., 3,795,264.
Rones, Josef: *See—*
Hansen, Hans; Jorns, Peter; Rones, Josef; and Wuttke, Wolfgang, 3,795,548.
Rose, Edgar, to Outboard Marine Corporation. Snowmobile muffler with heat shield. 3,795,287, Cl. 181-36.00r.
Rosenbauer, Hans-Gunter: *See—*
Aignesberger, Alois; and Rosenbauer, Hans-Gunter, 3,795,653.
Rossi, Albert: *See—*
Pappas, James J.; Makowski, Henry S.; and Rossi, Albert, 3,795,615.
Rotec Industries, Inc.: *See—*
Oury, Robert F., 3,795,308.
Roth, Howard; Schiffmann, Robert F.; Kaufman, Harold B., Jr.; and Moyer, John H., to DCA Food Industries, Inc. Apparatus for making cakes. 3,795,183, Cl. 99-353.000.
Rowe, Carl H., to Norton Company. Helical activator for electrodeposition. 3,795,602, Cl. 204-209.000.
Rucinski, Michael E.: *See—*
Bond, Herbert M.; and Rucinski, Michael E., 3,795,561.
Ruck Heinz E.: *See—*
Simpson, Jack N.; Ruck Heinz E.; and Bowers, Charles E., Jr., 3,795,014.
Ruffolo, James C.: *See—*
Westenrieder, Georg K.; and Ruffolo, James C., 3,795,385.
Ruschig, Heinrich; Meixner, Willi; and Alpermann, Hans Georg, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Aminothiophene-carboxylic acid esters. 3,795,681, Cl. 260-332.20c.
Russell, James T., to Battelle Development Corporation. Method apparatus for synchronizing photographic records of digital information. 3,795,902, Cl. 340-173.0lm.
Rust, Kurt: *See—*
Engelmann, Manfred; Gordon, Wolfgang; and Rust, Kurt, 3,795,662.
Rustad, Norman E.: *See—*
Huffman, George W.; and Rustad, Norman E., 3,795,636.

Rutgerswerke Aktiengesellschaft: *See—*
Rappen, Ludwig; Fickert, Werner; Orth, Winfried; Maurer, Manfred; and Miele, Heinrich, 3,795,708.
Sadamitsu, Katsumi, to Xerox Corporation. Electrophotographic photoreceptor cleaning apparatus. 3,795,025, Cl. 15-256.520.
Safeway Stores Incorporated: *See—*
Bianchi, Jack M.; and Decker, Willis W., 3,795,360.
Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Reynier, Jacques, 3,795,892.
Saito, Yasuhiro: *See—*
Usui, Keizaburo; Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Mitani, Takashi; Tsuji, Shinzo; and Mitsuhashi, Kenichi, 3,795,413.
Sakamoto, Kuniaki: *See—*
Yamaguchi, Koretaka; Toyomoto, Kazuo; Sakamoto, Kuniaki; and Ibaragi, Toshio, 3,795,651.
Yamaguchi, Koretaka; Toyomoto, Kazuo; Sakamoto, Kuniaki; and Ibaragi, Toshio, 3,795,652.
Salners, Edward A.: *See—*
Di Nardo, Frank L.; and Salners, Edward A., 3,795,888.
Saltzberg, Burton R.: *See—*
Napolitano, Orlando; Pasternack, Gerald Philip; and Saltzberg, Burton R., 3,795,872.
Samour, Carlos M.; and Mitchell, Philip A., to Kendall Company, The. Surfactant-free ampholytic polymeric latices. 3,795,648, Cl. 260-29.6hn.
Sanders, James F.: *See—*
Donnelly, Charles A.; and Sanders, James F., 3,795,033.
Sanders, Steven Neil, to Hewlett-Packard Company. Adaptive bandwidth phase lock loop employing high speed loop lock and fast phase transient reduction. 3,795,870, Cl. 331-1.00a.
Sandoz-Wander, Inc.: *See—*
Frey, Albert J.; and Galantay, Eugene E., 3,795,709.
Houlihan, William J.; and Nadelson, Jeffrey, 3,795,676.
Sandvik, Leonard E., to Universal Industries. Bucket conveyor system. 3,795,305, Cl. 198-145.000.
Santilli, Arthur A.; and Kim, Doug H., to American Home Products Corporation. Certain 2-substituted-4,6-diamino-5-pyrimidine (1) carboxaldehydes. 3,795,674, Cl. 260-256.40n.
Sanyo Chemical Industries, Ltd.: *See—*
Fujimoto, Takehiko; Nishimura, Mikio; and Takigawa, Shoji, 3,795,614.
Sargent, John A.: *See—*
Crane, Robert A.; Lipps, Benjamin J.; and Sargent, John A., 3,795,318.
Sarnacki, Frank H.; and Steenstrup, Robert V., to International Business Machines Corporation. Immersion solder leveling apparatus using ultrasonic cavitation. 3,795,358, Cl. 228-19.000.
Sarnoff, Stanley J.; and Calkins, George B., to Survival Technology, Inc. Training injector. 3,795,061, Cl. 35-17.000.
Sasaki, Takeshi: *See—*
Ogawa, Takuzo; Miyata, Kenzi; Yagi, Hideyuki; and Sasaki, Takeshi, 3,795,846.
Sassaman, William O., to Goodyear Tire and Rubber Company, The. Method of making a skin covered foam article and said article. 3,795,722, Cl. 264-45.000.
Sato, Shiro: *See—*
Yamamura, Toshio; Omote, Yuichi; Sato, Shiro; and Hiyama, Tomochika, 3,795,727.
Sawatzky, Erich: *See—*
Lee, Kenneth; Sawatzky, Erich; and Suits, James C., 3,795,541.
Sawyer, Richard D.: *See—*
Clausi, Joseph V.; Landau, Michael; Otter, Loren H.; and Sawyer, Richard D., 3,795,544.
Saxe, Herbert K. Infants crib and dressing table combination. 3,795,017, Cl. 5-2.000.
Schaefer, Ernst R.: *See—*
Zech, Armin H.; and Schaefer, Ernst R., 3,795,374.
Schaefer Marine Products: *See—*
Merry, Carl Alan, 3,795,218.
Schafer, Heinrich, to Rheinstohl Aktiengesellschaft. Worm extruder with built-on transmission. 3,795,456, Cl. 415-72.000.
Schaller, Karl: *See—*
Chenai, Jean-Claude; Schaller, Karl; Skok, Jean; and Venobre, Henri, 3,795,579.
Schaub, Gerhard, to Gebr. Buhler Nachfolger GmbH. Collectorless D. C. motor. 3,795,848, Cl. 318-138.000.
Scheel, Kurt, to Gebr. Knauf Westdeutsche Gipswerke. Process for manufacturing phosphoric acid and substantially alkalisilicofluoride-free gypsum. 3,795,728, Cl. 423-166.000.
Scheininger, Ludwig; and Nette, Otto, to Siemens Aktiengesellschaft. Device for charging and discharging heads of ray emitters. 3,795,804, Cl. 250-498.000.
Schenk, Bernd: *See—*
Hehl, Klaus Friedrich; and Schenk, Bernd, 3,795,416.
Schering A.G.: *See—*
Kerb, Ulrich, 3,795,687.
Scherrer, Hanspeter: *See—*
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Schetinin, Vasily Ivanovich; and Reutsky, Jury Valerianovich. Device for conveying liquid samples through pipeline by compressed air. 3,795,349, Cl. 222-193.000.
Schiatter, Gerald Lance, to International Telephone and Telegraph Corporation. Vibration densitometer apparatus. 3,795,136, Cl. 73-32.000.
Schiffmann, Robert F.: *See—*
Roth, Howard; Schiffmann, Robert F.; Kaufman, Harold B., Jr.; and Moyer, John H., 3,795,183.
Schilder, Emil: *See—*
Swerdlow, Robert; and Schilder, Emil, 3,795,440.
Schively, Dixon P., to United States of America, Atomic Energy Commission. Fuse for nuclear reactor. 3,795,580, Cl. 176-86.00m.
Schleusner, Otto: *See—*
Dunn, Howard J.; Farr, Marvin Paul; and Schleusner, Otto, 3,795,751.
Schlumberger Technology Corporation: *See—*
Planche, Jean, 3,795,141.
Schmidt, Alfred, Ing., Firma: *See—*
Brunner, Gustav, 3,795,068.
Schneider, Gerhart: *See—*
Diery, Helmut; Seeger, Karl; Schneider, Gerhart; and Bucking, Hans-Walter, 3,795,704.
Schneider, Rudolf, to General Corrugated Machinery. Device for straight-line slitting and cutting of corrugated paper. 3,795,164, Cl. 83-349.000.
Schnelker, David E.: *See—*
King, Harry J.; and Schnelker, David E., 3,795,833.
Scholl, Rolland D.; Moyer, Edward J.; Glynn, Terry W.; and Klein, Richard E., to Caterpillar Tractor Company. Steering system for articulated vehicles. 3,795,285, Cl. 180-79.20b.
Schoppee, Lawrence W., to Package Machinery Company. Article feeder for wrapping machine or the like. 3,795,302, Cl. 198-25.000.
Schoumaker, Henry R. P. J.: *See—*
Verhoeven, Pierre; Sunnen, Jean A. F.; and Schoumaker, Henry R. P. J., 3,795,752.
Schulze, Martin: *See—*
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, 3,795,588.
Schumann, Gunter: *See—*
Johne, Hans; Schumann, Gunter; Jehring, Arnfried; and Reichenberger, Kurt, 3,795,193.
Schurman, Peter T.; and Confer, Raymond C., to Grace, W. R., & Co. Plastic container and blow molding method. 3,795,265, Cl. 150-.500.
Schussler, Hans, to Licentia Patent-Verwaltungs-G.m.b.H. Flexural vibrator as resonator for mechanical filters. 3,795,878, Cl. 333-71.000.
Schwab, Kurt, to Swarovski, D., & Co. Reflex light reflection sheet and method for its manufacture. 3,795,435, Cl. 350-105.000.
Schwandt, Wolfgang; Mennekes, Werner; Weinhold, Heinz; and Weirich, Walter, to Gewerkschaft Eisenhutte Westfalia. Pressure fluid drive systems for mine installations. 3,795,108, Cl. 60-484.000.
Schwardt, David N.: *See—*
Brown, Gordon P.; and Schwardt, David N., 3,795,439.
Schwartz, Arthur G.; and Deffeyes, Robert J. Air filtering apparatus for allergy sufferers. 3,795,092, Cl. 55-473.000.
Schwarz, Eckhard C. A., to Kimberly-Clark Corporation. Method of producing a low density composite sheet material. 3,795,720, Cl. 264-41.000.
Schwarz Services International, Limited: *See—*
Brenner, Mortimer Wilkes, 3,795,745.
Schwochow, Friedrich: *See—*
Heinze, Gerhard; Reiss, Gerhard; Schwochow, Friedrich; and Ulisch, Gunter, 3,795,631.
Scott, Robert B.: *See—*
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Scovill Manufacturing Company: *See—*
Shay, Joseph John, 3,795,350.
Seda, Yutaka: *See—*
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Seeger, Karl: *See—*
Diery, Helmut; Seeger, Karl; Schneider, Gerhart; and Bucking, Hans-Walter, 3,795,704.
Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., to Rohm & Haas Company. 1,2,4-4H-Triazole derivatives. 3,795,679, Cl. 260-305.000.
Seidel, William C.: *See—*
Mitchell, William A.; and Seidel, William C., 3,795,747.
Seidelman, Gerald: *See—*
Gruber, Peregrinus; and Seidelman, Gerald, 3,795,382.
Seidl, Gunther: *See—*
Konig, Justus; Rohrig, Josef; and Seidl, Gunther, 3,795,773.
Seigneurin, Laurent, to Produits Chimiques Pechiney Saint-Gobain. Process for preparing fluoro-halogenated propane derivatives and use thereof. 3,795,710, Cl. 260-653.000.
Seike, Shoji: *See—*
Ogawa, Yutaka; Ogasawara, Takayuki; and Seike, Shoji, 3,795,499.
Seilly, Alec Harry, to C.A.V. Limited. Gear change mechanism. 3,795,153, Cl. 74-335.000.
Sel-Rex Corporation: *See—*
Weiss, Shirley I. (Albert, Joel M., executor of said Weiss, Shirley I., dec'd., assor. to), 3,795,497.
Semenenko, Jury Lukich; Tumanov, Nikolai Vasilievich; and Varava, Leonid Mikhailovich. Straightening installation for elongated circular articles. 3,795,126, Cl. 72-78.000.
Serino, Yoichi: *See—*

Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Serino, Yoichi; Mitani, Seisho; and Imanishi, Kunizo, 3,795,511.
Serturini, Giuseppe, to Somet Societa Meccanica Tessile S.p.A. Selvedges forming apparatus. 3,795,261, Cl. 139-54.000.
Shapiro, Leonard: *See—*
Caldwell, John Warren; and Shapiro, Leonard, 3,795,362.
Sharps Associates: *See—*
Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, 3,795,736.
Shay, Joseph John, to Scovill Manufacturing Company. Aerosol valve having selectable flow rate. 3,795,350, Cl. 222-402.170.
Shell Oil Company: *See—*
Clendenen, Ronald L.; and Olson, Eugene E., 3,795,723.
Gouw, Lam H., 3,795,575.
Whitten, Derrill G., 3,795,278.
Shelton, Jack: *See—*
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Sheppard, Erwin: *See—*
Lo, Mei-Kuo; Thompson, Gary R.; and Sheppard, Erwin, 3,795,137.
Sheratte, Martin B., to McDonnell Douglas Corporation. Fire-resistant functional fluid compositions. 3,795,619, Cl. 252-78.000.
Sheratte, Martin B., to McDonnell Douglas Corporation. Functional fluid compositions. 3,795,620, Cl. 252-78.000.
Sheratte, Martin B., to McDonnell Douglas Corporation. Fire-resistant functional fluids. 3,795,621, Cl. 252-78.000.
Sherman, Thomas D. Fishing reel. 3,795,072, Cl. 43-25.000.
Shields, Martin A.; and Jackson, David A., to Bendix Corporation, The. Adaptive braking modulator. 3,795,423, Cl. 303-6.00c.
Shigemori, Hideto; Ueba, Akio; and Fukunaga, Motoaki, to Glory Kogyo Kabushiki Kaisha. Trouble-detecting system in an automatic money dispenser. 3,795,343, Cl. 221-2.000.
Shigemori, Hideto; and Abe, Masahiro, to Glory Kogyo Kabushiki Kaisha. Stop-motion for sheet counters. 3,795,796, Cl. 235-92.0sb.
Shimizu, Hiroshi, to Toyo Kogyo Company Limited. Nozzle for rotary piston engine. 3,795,228, Cl. 123-8.010.
Shimodaira, Tadayaoshi; and Gomi, Yoshifumi, to Kabushiki Kaisha Suwa Seikosha and Shinshu Seiki Kabushiki. Compact flying printer. 3,795,185, Cl. 101-93.00c.
Shimoshinbara, Ihiro: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Shimoshinbara, Ihiro, 3,795,639.
Shinoda, Takayuki: *See—*
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Shinohara, Hiroshi: *See—*
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Shinshu Seiki Kabushiki: *See—*
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Shinshu Seiki Kabushiki Kaisha: *See—*
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Shiosaka, Makoto: *See—*
Mitsuhashi, Masakazu; Masuda, Kazuo; Shiosaka, Makoto; Hirao, Mamoru; Sugimoto, Kaname; Yokobayashi, Yasuyuki; Yuen, Shokichi; and Yoshida, Mikihiko, 3,795,584.
Shirn, George A., to Sprague Electric Company. Method of making a heat sinked resistor. 3,795,046, Cl. 29-618.000.
Shoberg, John T.: *See—*
Beaman, Don L.; and Shoberg, John T., 3,795,818.
Shore, Harry S.: *See—*
Donohue, James A.; and Shore, Harry S., 3,795,235.
Shotec, Inc.: *See—*
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Shuttle Mountain Holdings Co., Ltd.: *See—*
Oughton, Ronald, 3,795,283.
Sianesi, Enrico, to Recordati SA Chemical and Pharmaceutical Company. Process for preparing N-alkyl-dimethylamines. 3,795,685, Cl. 260-345.200.
Siemens Aktiengesellschaft: *See—*
Hennicke, Hans-Walter; and Grunling, Hermann-Walter, 3,795,041.
Konig, Justus; Rohrig, Josef; and Seidl, Gunther, 3,795,773.
Peltz, Hanns-Heinz, 3,795,044.
Scheininger, Ludwig; and Nette, Otto, 3,795,804.
Signa-Signer, Inc.: *See—*
Belcher, Donald K., 3,795,169.
Silec-Semi-Conducteurs: *See—*
Dumas, Guy, 3,795,045.
Silva, Joseph W.: *See—*
Irish, Charles G., Jr.; Silva, Joseph W.; and Cowles, Raymond I., 3,795,195.
Simm Motor Units Ltd.: *See—*
Snook, Colen John Charles, 3,795,232.
Simon, Myron S., to Polaroid Corporation. Alpha-cyanophenylacetic acid developing agents. 3,795,518, Cl. 96-66.00r.
Simpson, Jack N.; Ruck Heinz E.; and Bowers, Charles E., Jr., to Fibre-Metal Products Company, The. Ear protector. 3,795,014, Cl. 2-209.000.
Simpson, Joe R.: *See—*
Pan, Yu-Li; and Simpson, Joe R., 3,795,874.
Simpson, Ruth M.: *See—*
McHardy, Nicholas; Berger, John; and Simpson, Ruth M., 3,795,737.
Sims-Williams, Christopher Temple, to Moore, Alfred George. Therapeutic toy. 3,795,064, Cl. 35-35.00c.
Singer Company, The: *See—*
Adams, Kenneth D.; Bradus, Robert; and Winar, Joseph J., 3,795,210.
Greulich, Robert G.; Casner, John W.; and Urciola, John A., 3,795,211.
Moll, Alan H.; and Greiner, Alan, 3,795,784.
Singer Company, The, mesne: *See—*
Faconti, Victor, Jr., 3,795,059.
Singer, Ernst. Power purged liquid sampler. 3,795,347, Cl. 222-21.000.
Singh, Shanker; and Waxman, Ronald, to International Business Machines Corporation. Partial product array multiplier. 3,795,880, Cl. 235-164.000.
Sippel, Nathan J.; and Young, Richard K., to United States of America, Navy. Gelled gasoline incendiary compositions containing triethyl aluminum and a metal. 3,795,556, Cl. 149-109.000.
Sisson, Albert E., to Bendix Corporation, The. Actuation means responsive to a sensed braking condition for activating a servomotor. 3,795,426, Cl. 303-21.00f.
Sjovall, Jan: *See—*
Bergstrom, Sune; and Sjovall, Jan, 3,795,697.
Sklar, Richard E.: *See—*
Gundersen, James L.; Julian, Richard L.; Kosco, Thomas J.; Lewis, Dan E.; and Sklar, Richard E., 3,795,771.
Skok, Jean: *See—*
Chenai, Jean-Claude; Schaller, Karl; Skok, Jean; and Venobre, Henri, 3,795,579.
Skokan, Zdenek E., to Hewlett-Packard Company. Multiemitter coupled logic gate. 3,795,822, Cl. 307-215.000.
Skouetchi, Martin; and Meier, Eric A., to National Starch and Chemical Corporation. Suntan formulations containing ethylenically unsaturated derivatives of 4-aminobenzoic acid. 3,795,733, Cl. 424-47.000.
Smith, Edward E., to Teledyne, Inc. Successive automatic deposition of generally horizontal contiguous weld beads upon non-planar surfaces. 3,795,785, Cl. 219-125.00r.
Smith, Ernest L.; Duffy, Arthur R.; and Lyman, Eugene S. Liner. 3,795,573, Cl. 161-165.000.
Smith, Kenneth A.; and Stempnik, William, to General Motors Corporation. Dielectric embossing apparatus. 3,795,562, Cl. 156-380.000.
Smith, Orville Keith. Blindstitch foot attachment for sewing machines. 3,795,209, Cl. 112-140.000.
Smith, Robert C.; and Steffensen, Roger J., to Amoco Production Company. Temperature well logging. 3,795,142, Cl. 73-154.000.
Smithkline Corporation: *See—*
Hoover, John R. E.; and Stedman, Robert John, 3,795,695.
Smolderen, Albert Emiel; and Cappuyns, Joseph Marie, to Agfa-Gevaert N.V. Method for packaging. 3,795,080, Cl. 53-14.000.
Snelling, David: *See—*
Roberts, Tecwyn V.; and Snelling, David, 3,795,346.
Snook, Colen John Charles, to Simm Motor Units Ltd. Fuel pumping apparatus. 3,795,232, Cl. 123-139.0az.
Societa Italiana Resine S.p.A.: *See—*
Vargiu, Silvio; Giovanni, Sesto S.; Passalenti, Beprino; and Nistri, Ugo, 3,795,717.
Societe Anonyme D.B.A.: *See—*
Marouby, Guy, 3,795,425.
Societe Anonyme de Vehicules Industriels et d'Equipements Mecaniques Saviem: *See—*
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Societe Anonyme Francaise du Ferodo: *See—*
Fieni, Walter, 3,795,274.
Societe Anonyme Heurtey: *See—*
Tamalet, Michel, 3,795,487.
Societe Anonyme: Engins Matra: *See—*
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Societe d'Exploitation des Brevets Neiman: *See—*
Lipschutz, Paul, 3,795,122.
Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
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Societe Generale de Constructions Electriques Et Mechaniques (Alsthom): *See—*
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Societe Nationale Industrielle Aerospatiale: *See—*
Aubert, Pierre-Camille; and Poesy, Michel, 3,795,065.
Fabre, Paul Marie Esteve Henry, 3,795,363.
Societe Nouvelle Spidem: *See—*
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Sono, John; and Richmond, Henry, to American Cyanamid Company. Esters of 4-alkyl-2,6-dimethyl-3-hydroxybenzyl alcohol. 3,795,700, Cl. 260-475.00p.
Soto, Enrique. Machine for sizing and processing drapery material. 3,795,565, Cl. 156-465.000.
Sotodate, Akiyoshi: *See—*
Ishida, Shinnosuke; Harada, Kunio; Kiyoshe, Tadashi; Takeuchi, Reizi; Itoh, Susumu; Sotodate, Akiyoshi; and Wachi, Tadashi, 3,795,334.

Soulal, Maurice John; and Utting, Kenneth, to Beecham Group Limited. Acetoxy methyl and pivaloyloxymethyl 5-acetamido-2,4,6-triiodo-N-methyliaphthalamates. 3,795,698, Cl. 260-471.00r.
Sowman, Harold G., to Minnesota Mining and Manufacturing Company. Aluminum borate and aluminum borosilicate articles. 3,795,524, Cl. 106-65.000.
Spachner, Sheldon A.; Lose, John G.; and Friedland, Martin, to Gulf & Western Industrial Products Company. Low-impact four-bar press. 3,795,168, Cl. 83-617.000.
Spain, Roy C.: *See—*
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Spectrospin A.G.: *See—*
Keller, Toni, 3,795,856.
Spellbinder, Inc.: *See—*
Nelson, Roy A., 3,795,063.
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Grey, Donald M.; Cook, Albert C.; and Butler, Lee D., 3,795,327.
Kritz, Jacob A.; and Lerner, Seymour D., 3,795,893.
Miller, Harry, 3,795,145.
Spicer, William E., to Varian Associates. X-ray image intensifier tube and method of making same. 3,795,531, Cl. 117-33.50c.
Spillmann, Rudolf Stefan: *See—*
Kloess, Peter; and Spillmann, Rudolf Stefan, 3,795,217.
Sprague Electric Company: *See—*
Markarian, Mark, 3,795,844.
Shirn, George A., 3,795,046.
Squibb, E. R., & Sons, Inc.: *See—*
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Stacey, Hugh J.: *See—*
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Stadler, Robert L.: *See—*
Falk, Leonard P.; and Stadler, Robert L., 3,795,344.
Stahr, Richard W.; and Franke, Hans G., to Eastman Kodak Company. Barrier layer for liquid crystal-containing elements. 3,795,516, Cl. 96-1.500.
Stal Refrigeration AB: *See—*
Brandin, Tore; and Frejd, Bo, 3,795,259.
Stattel, Richard J.: *See—*
Pande, Kailash C.; and Stattel, Richard J., 3,795,640.
Stauffer Chemical Company: *See—*
Baker, Don R.; and Teach, Eugene G., 3,795,740.
Chan, James H., 3,795,705.
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Stedman, Robert John: *See—*
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Steenstrup, Robert V.: *See—*
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Steffensen, Roger J.: *See—*
Smith, Robert C.; and Steffensen, Roger J., 3,795,142.
Steigerwald, Carl, J., to TRW Inc. Method of making a printed circuit edge connector. 3,795,049, Cl. 29-629.000.
Steinbrecher, Lester: *See—*
Hall, Wilbur S.; and Steinbrecher, Lester, 3,795,546.
Steiner, Charles Dale; and William, Earl, to AMP Incorporated. Insulation stripper for twisting wire pair. 3,795,159, Cl. 81-9.510.
Stempnik, William: *See—*
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Stephens, Arnold M., Jr.: *See—*
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Sternbach, Leo Henryk: *See—*
Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,795,702.
Stevenson, Philip J.; and Falik, Andrew M., to Monsanto Company. Non-woven parachute fabric. 3,795,376, Cl. 244-145.000.
Stewart, William F.; Whittingham, John B.; and Perkins, Geoffrey R., to Perkins Engines Limited. Method for making a center gear crankshaft. 3,795,032, Cl. 29-6.000.
Stiffel, Henry R. Rotary lock protection member. 3,795,123, Cl. 70-417.000.
Stippich, Garold L. Luggage attachment for tandem-wheeled vehicle. 3,795,354, Cl. 224-32.00a.
Stolle Corporation, The: *See—*
Taggart, Robert E.; and Miller, Donald E., 3,795,303.
Stolz, Albert, to Daimler-Benz Aktiengesellschaft. Motor vehicle with fuel heating system independent of engine. 3,795,234, Cl. 123-142.50r.
Stone, James N.; Wing, James H.; and Thomas, Frank B., III, to Continental Can Company, Inc. Dry powder paper size having improved resistance to caking. 3,795,527, Cl. 106-206.000.
Stournas, Stamoulis; Bridger, Robert F.; and Heiba, El Ahmadi I., to Mobil Oil Corporation. Cyclic lubricants containing organophosphorus compounds. 3,795,612, Cl. 252-46.600.
Strangfeld, Reiner, to August Herrog Maschinenfabrik. Guiding unit for braiding spools in braiding machines. 3,795,171, Cl. 87-50.000.
Strekopytov, Tatyana Andreevne: *See—*
Strekorytov, Alexei Alexeevich; Strekopytov, Tatyana Andreevne; Androssva, Tamara Povlovna; and Androsov, Pavel Iosifovich, 3,795,034.
Strekorytov, Alexei Alexeevich; Strekopytov, Tatyana Andreevne; Androssva, Tamara Povlovna; and Androsov, Pavel Iosifovich; deceased (by Androsova, Maria Nickforovna; administrator; U.S.S.R.). Surgical instrument for suturing tissues and organs with metal taples. 3,795,034, Cl. 29-212.00d.
Strickland, Alvah T., to United States of America, Navy. Diver operated propulsion system for an underwater vehicle. 3,795,213, Cl. 114-16.00a.
Strub, Rene, to Brown Boveri-Sulzer Turbomachinery Limited. Multistage compressor. 3,795,458, Cl. 415-149.000.
Struthers Scientific and International Corporation: *See—*
Fanaritis, John Peter, 3,795,057.
Ganiaris, Naophytos, 3,795,058.
Stump, Lester F., Jr.: *See—*
Zifferer, Luthar Robert; and Stump, Lester F., Jr., 3,795,726.
Sturgeon, John F., to Bard, C. R., Inc. Venocclusion device. 3,795,246, Cl. 128-325.000.
Suchanek, Jiri: *See—*
Piller, Bohumil; Suchanek, Jiri; Minarik, Josef; and Lacko, Vladimir, 3,795,569.
Suchy, Dietfried: *See—*
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Suddeutsche Kalkstickstoff-Werke Aktiengesellschaft: *See—*
Aignesberger, Alois; and Rosenbauer, Hans-Gunter, 3,795,653.
Sugahara, Eisuke. One-piece channel shaped piston ring. 3,795,403, Cl. 277-201.000.
Sugimoto, Kaname: *See—*
Mitsuhashi, Masakazu; Masuda, Kazuo; Shiosaka, Makoto; Hirao, Mamoru; Sugimoto, Kaname; Yokobayashi, Yasuyuki; Yuen, Shokichi; and Yoshida, Mikihiko, 3,795,584.
Sugimura, Shojiro: *See—*
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Sugitani, Ejyo, to Dawa Can Company, Limited. Apparatus for turning and transferring sheet metal. 3,795,301, Cl. 198-20.00r.
Sugiyama, Takahiro, to Asohi Kogaku Kogyo Kabushiki Kaisha. Photographic objective of relatively narrow viewing angle. 3,795,437, Cl. 350-218.000.
Suits, James C.: *See—*
Lee, Kenneth; Sawatzky, Erich; and Suits, James C., 3,795,541.
Sulzer Brothers Limited: *See—*
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Sumitomo Chemical Company, Ltd.: *See—*
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Sun Research and Development Co.: *See—*
Thompson, Robert M.; and Duling, Irl N., 3,795,658.
Sunbury, Robert: *See—*
Brossi, Arnold; Pecherer, Benjamin; and Sunbury, Robert, 3,795,683.
Sundby, Gustav B., to Rockwell International Corporation. Roll dampening railway trucks. 3,795,203, Cl. 105-182.00k.
Sunderland, John C., to Capintec, Inc. Electronic ratio instrument for remote temperature measurement. 3,795,918, Cl. 356-45.000.
Sunnen, Jean A. F.: *See—*
Verhoeven, Pierre; Sunnen, Jean A. F.; and Schoumaker, Henry R. P. J., 3,795,752.
Sunshine, Gary A.: *See—*
Langhans, Roy K.; and Sunshine, Gary A., 3,795,627.
Survival Technology, Inc.: *See—*
Sarnoff, Stanley J.; and Calkins, George B., 3,795,061.
Sutton, Richard C., to Eastman Kodak Company. Barrier layer for liquid crystal-containing elements. 3,795,517, Cl. 96-1.500.
Suzuki, Hideo; Kobayashi, Harumi; and Kamibayashi, Akira, to Industrial Science & Technology, Agency of. Method for manufacture of alpha-galactosidase. 3,795,585, Cl. 195-65.000.
Suzuki, Kiyohiko, to Kokusai Denshin Denwa Kabushiki Kaisha. Reflex isolators and branched waveguide networks utilizing the same. 3,795,875, Cl. 333-9.000.
Suzuki, Shigenori: *See—*
Ozawa, Tokuji; Uyeda, Mikio; and Suzuki, Shigenori, 3,795,490.
Suzuki, Syoichi, to Nippon Gakki Seizo Kaisha. Electronic tremolo effect producing device. 3,795,756, Cl. 84-1.220.
Swanberg, Melvin E.; and Wilson, James M., to Xerox Corporation. Apparatus for testing a credit card. 3,795,805, Cl. 250-209.000.
Swarovski, D., & Co.: *See—*
Schwab, Kurt, 3,795,435.
Swartzbaugh, Peter T.; and Williams, Richard C., to Owens-Illinois, Inc. Ratchet drive child-resistant closure. 3,795,338, Cl. 215-9.000.
Swatzel, Gareth D., to K & S Feed Bunks, Inc. Slip form. 3,795,469, Cl. 425-219.000.
Sweeney, Thomas E. Apparatus for providing a sailboat with an auxiliary stern mast and sail. 3,795,214, Cl. 114-39.000.
Swerdlow, Robert; and Schilder, Emil, to Cinacor Ltd. Multi-track sound system for narrow-width motion picture film. 3,795,440, Cl. 352-27.000.
Swider, Robert A.: *See—*
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Swimquip, Inc.: *See—*

Ehret, Gordon F., 3,795,320.
Swire, John Richard: *See—*
Lees, William Arthur; Bennett, David John; Swire, John Richard; and Harding, Peter, 3,795,641.
Swirnow, Alan R., to Curtiss-Wright Corporation. Case hardening steel. 3,795,551, Cl. 148-15.000.
Sylvan, Tage Peter, to Teradyne, Inc. Network tester employing latched test switching units. 3,795,860, Cl. 324-73.00r.
Syntex Corporation: *See—*
Lax, Ronald G.; and Herd, Allen K., 3,795,244.
Szarka, Sandor: *See—*
Jaffa, David; and Szarka, Sandor, 3,795,060.
Tachibana, Kan-Ichi; Nishioka, Michihiro; and Ono, Mikiya, to Mitsubishi Mining & Cement Company Ltd. Method for manufacturing non-linear resistors. 3,795,048, Cl. 29-621.000.
Tack, Carl E. Railway car roll dampening friction device. 3,795,201, Cl. 105-199.00a.
Taggart, Robert E.; and Miller, Donald E., to Stolle Corporation, The. Machine for arranging cans in position. 3,795,303, Cl. 198-34.000.
Taisei Industrial Co., Ltd.: *See—*
Motoume, Sakuichi, 3,795,306.
Taitma, Tatsuya: *See—*
Miyazako, Takushi; Taitma, Tatsuya; Kato, Hirotetu; Kokubo, Tadayoshi; Nishina, Tsutomu; and Tsuji, Nobuo, 3,795,519.
Takada, Takezo. Mechanism for automatically applying safety restraint belts. 3,795,411, Cl. 280-150.0sb.
Takahashi, Nobuaki; Nishikawa, Kazunori; Ishigaki, Yukinobu; and Fujita, Yoshitoshi, to Victor Company of Japan, Limited. Compression and/or expansion system and circuit. 3,795,876, Cl. 333-14.000.
Takano, Koshi: *See—*
Asakura, Hiroshi; Takano, Koshi; Arai, Yashuaki; and Kusaka, Masaharu, 3,795,729.
Takashima, Shunichi: *See—*
Chimura, Kazuya; Ito, Kazuo; Takashima, Shunichi; and Shimoshinbara, Ihiro, 3,795,639.
Takashima, Susumu, to Nihon Denshi Kabushiki Kaisha. Scanning electron microscope with conversion means to produce a diffraction pattern. 3,795,809, Cl. 250-311.000.
Takeda Chemical Industries, Ltd.: *See—*
Meguro, Kanji; Tawada, Hiroyuki; and Kuwada, Yutaka, 3,795,673.
Takeuchi, Reizi: *See—*
Ishida, Shinnosuke; Harada, Kunio; Kiyoshe, Tadashi; Takeuchi, Reizi; Itoh, Susumu; Sotodate, Akiyoshi; and Wachi, Tadashi, 3,795,334.
Takigawa, Shoji: *See—*
Fujimoto, Takehiko; Nishimura, Mikio; and Takigawa, Shoji, 3,795,614.
Talbot, Earl J. Telephone communication system with auxiliary unit for call tracing. 3,795,774, Cl. 179-181.0fh.
Talge, Henry J.; and McNair, Samuel L., to Dazey Products Company. Portable bidet. 3,795,015, Cl. 4-7.000.
Tamalet, Michel, to Societe Anonyme Heurtey. Apparatus for improving heat transfers between fluidized particles and granular materials. 3,795,487, Cl. 23-284.000.
Tanaka, Hiroshi: *See—*
Moriya, Yoshiro; Kawamoto, Takamichi; Tanaka, Hiroshi; and Ueno, Tsutomu, 3,795,523.
Tanaka, Jinkichi; Tanaka, Junichi; and Osuka, Tatsuki, to Nippon Kokan Kabushiki Kaisha. Steel containing aluminum, copper and nickel. 3,795,506, Cl. 75-124.000.
Tanaka, Junichi: *See—*
Tanaka, Jinkichi; Tanaka, Junichi; and Osuka, Tatsuki, 3,795,506.
Tanaka, Shigeo: *See—*
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Taniguchi, Kenji: *See—*
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Tarn, William H., to International Rectifier Corporation. Process for simultaneous diffusion of Group III-Group V intermetallic compounds into semiconductor wafers. 3,795,554, Cl. 148-189.000.
Tarnopolsky, Igor Rafailovich; and Akimtsev, Gennady Vasilievich. Graphic answer input device for a teaching machine. 3,795,066, Cl. 35-48.00r.
Tasaki, Takaharu: *See—*
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Tashiro, Kuniyoshi: *See—*
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Tawada, Hiroyuki: *See—*
Meguro, Kanji; Tawada, Hiroyuki; and Kuwada, Yutaka, 3,795,673.
Teach, Eugene G.: *See—*
Baker, Don R.; and Teach, Eugene G., 3,795,740.
Tebben, John A. Trailer ramp apparatus. 3,795,333, Cl. 214-85.000.
Technicon Instruments Corporation: *See—*
Gillette, William H.; McGandless, William J. C.; and Negersmith, Kent M., 3,795,149.
Tefertiller, Ben A.; and Nevill, James I., to Dow Chemical Company, The. Tris(hydroxyalkyl)-3,3,3-nitrilotripropionates. 3,795,642, Cl. 260-482.00p.
Teikoku Tsushin Kogyo Co., Ltd.: *See—*
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Tektronix, Inc.: *See—*
Andrews, Roland Eugene; and White, Robert Edward, 3,795,834.
Teledyne, Inc.: *See—*
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Teletype Corporation: *See—*
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Teradyne, Inc.: *See—*
Sylvan, Tage Peter, 3,795,860.
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Tetra Pak International AB: *See—*
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Texaco Inc.: *See—*
Meyer, Herbert J., 3,795,286.
Pogonowski, Ivo C., 3,795,035.
Thaler, Sherwood S., to America Optical Corporation. Passive pacer refractory circuit. 3,795,247, Cl. 128-419.00p.
Theurer, Josef: *See—*
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Plasser, Franz; and Theurer, Josef, 3,795,198.
Thoenen, Earl R., to Polaroid Corporation. Method for fabricating a fluid spreader. 3,795,212, Cl. 113-116.00r.
Thomas, Dean L.: *See—*
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Thomas, Frank B., III: *See—*
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Thompson, Gary R.: *See—*
Lo, Mei-Kuo; Thompson, Gary R.; and Sheppard, Erwin, 3,795,137.
Thompson, Robert L.: *See—*
Jugle, Don B.; and Thompson, Robert L., 3,795,222.
Thompson, Robert M.; and Duling, Irl N., to Sun Research and Development Co. Epoxy resins from dimethyladamantane bisphenols. 3,795,658, Cl. 260-47.0ep.
Thomson-CSF: *See—*
Broussaud, Georges, 3,795,801.
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Thorn Electrical Industries, Limited: *See—*
Hart, Derek James, 3,795,886.
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Timex Corporation: *See—*
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Tokico Ltd.: *See—*
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Tokonaga, Shigeo: *See—*
Mori, Masahiro; Noda, Atsuhiko; and Tokonaga, Shigeo, 3,795,753.
Tokubo, Tsugio, to Teikoku Tsushin Kogyo Co., Ltd. Coordinated control device for variable resistors. 3,795,882, Cl. 338-128.000.
Tokyo, Kodaira: *See—*
Matsumoto, Massichiro; Tsuruta, Kiyoshi; Tokyo, Kodaira; and Miyata, Hideo, 3,795,560.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Kamei, Hisashi; and Ohno, Masayoshi, 3,795,087.
Tolini, Charles; and Hobart, William, to Honeywell Inc. Automatic threading tape drive. 3,795,371, Cl. 242-182.000.
Tolle, Gunter. Mechanism for laterally vibrating the needle of a zigzag sewing machine. 3,795,207, Cl. 112-158.00r.
Tolle, Gunter. Needle vibrating control mechanism for buttonhole sewing machines. 3,795,208, Cl. 112-158.00b.
Tombler, George: *See—*
Kalisch, John Hans; Tombler, George; Hurtubise, Fernand Guy; and Kopanidis, Jordan, 3,795,574.
Torck, Bernard; Vidouta, Georges; Pariot, Pierre; and Hellin, Michel, to Institut Francais du Petrole des Carburants et Lubrifiants. Alkylation of hydrocarbons with olefins in the presence of an acid catalyst. 3,795,712, Cl. 260-671.00c.
Torenbeek, Reinder: *See—*
Jaspers, Hans; and Torenbeek, Reinder, 3,795,630.
Toth, Albert S. Liquid cooling apparatus. 3,795,388, Cl. 261-112.000.
Toth, John E.; and Grant, Arthur G. Small parts feeder system. 3,795,307, Cl. 198-218.000.
Townsend, Richard H.: *See—*
Gritchen, Ralph A.; Daugirdas, Kristupas; Masiokas, Bruno; and Townsend, Richard H., 3,795,205.
Toyo Kagaku Kabushiki; a/k/a Toyo Chemical Co., Ltd.: *See—*
Asakura, Hiroshi; Takano, Koshi; Arai, Yashuaki; and Kusaka, Masaharu, 3,795,729.
Toyo Kogyo Company Limited: *See—*
Shimizu, Hiroshi, 3,795,228.
Yoshimura, Shigetake, 3,795,230.
Toyoda Koki Kabushiki Kaisha: *See—*
Ota, Hiroshi, 3,795,238.

Toyomoto, Kazuo: *See—*
Yamaguchi, Koretaka; Toyomoto, Kazuo; Sakamoto, Kuniaki; and Ibaragi, Toshio, 3,795,651.
Yamaguchi, Koretaka; Toyomoto, Kazuo; Sakamoto, Kuniaki; and Ibaragi, Toshio, 3,795,652.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Serino, Yoichi; Mitani, Seisho; and Imanishi, Kunizo, 3,795,511.
Tregear, Geoffrey William; Catt, Kevin John; and Niall, Hugh David, to Imperial Chemical Industries of Australia and New Zealand Limited. Process for preparing peptides or proteins. 3,795,664, Cl. 260-112.500.
Tremmel, Robert A.: *See—*
Clauss, Richard J.; and Tremmel, Robert A., 3,795,591.
Klein, Roy W.; Tremmel, Robert A.; and Clauss, Richard J., 3,795,592.
Tridair Industries: *See—*
Nemessanyi, Laszlo, 3,795,408.
Trumpler, William E., Jr., to Westinghouse Electric Corporation. Vibration dampening for long twisted turbine blades. 3,795,462, Cl. 416-196.000.
TRW Inc.: *See—*
Steigerwald, Carl, J., 3,795,049.
Van Buren, Harold S., Jr., 3,795,890.
Tsuji, Nobuo: *See—*
Miyazako, Takushi; Taitma, Tatsuya; Kato, Hirotetu; Kokubo, Tadayoshi; Nishina, Tsutomu; and Tsuji, Nobuo, 3,795,519.
Tsuji, Shinzo: *See—*
Usui, Keizaburo; Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Mitani, Takashi; Tsuji, Shinzo; and Mitsuhashi, Kenichi, 3,795,413.
Tsuruishi, Yuki. Electronic timepiece having a chronograph mechanism. 3,795,099, Cl. 58-23.00r.
Tsuruta, Kiyoshi: *See—*
Matsumoto, Massichiro; Tsuruta, Kiyoshi; Tokyo, Kodaira; and Miyata, Hideo, 3,795,560.
Tumanov, Nikolai Vasilievich: *See—*
Semenenko, Jury Lukich; Tumanov, Nikolai Vasilievich; and Varava, Leonid Mikhailovich, 3,795,126.
Turner, Albert G.: *See—*
Mollen, Ignatius J.; Koerper, Phillip E.; Turner, Albert G.; and Dewhurst, David S., 3,795,094.
Turner, Derek, to Douglas, Hunter, N.V., mesne. Curtain tracks. 3,795,380, Cl. 248-263.000.
Tusche, Eckhard, to M.A.N. Maschinefabrik Augsburg-Nurnberg Aktiengesellschaft. Double acting, reciprocating hot gas, external combustion cylinder-piston engine. 3,795,102, Cl. 60-525.000.
Twin Disc, Incorporated: *See—*
Aschauer, George R., 3,795,105.
Uchiyama, Seizi: *See—*
Fujiyama, Susumu; and Uchiyama, Seizi, 3,795,608.
Uchiyama, Yasuji, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic accompaniment device of an electronic musical instrument. 3,795,755, Cl. 84-1.030.
Ueba, Akio: *See—*
Shigemori, Hideto; Ueba, Akio; and Fukunaga, Motoaki, 3,795,343.
Ueno, Tsutomu: *See—*
Moriya, Yoshiro; Kawamoto, Takamichi; Tanaka, Hiroshi; and Ueno, Tsutomu, 3,795,523.
Uhde, Friedrich, GmbH: *See—*
Clos, Franz; and Mischke, Joachim, 3,795,603.
Ulisch, Gunter: *See—*
Heinze, Gerhard; Reiss, Gerhard; Schwochow, Friedrich; and Ulisch, Gunter, 3,795,631.
Ulz, Georg, AG: *See—*
Utz, Georg, 3,795,206.
UMC Industries Inc.: *See—*
Falk, Leonard P.; and Stadler, Robert L., 3,795,344.
Umeda, Jun-Ichi; Maruyama, Eiichi; and Ikegami, Kazutoshi, to Hitachi, Ltd. Voltage indicator employing a resistive network and light emitting diodes. 3,795,863, Cl. 324-122.000.
Union Carbide Corporation: *See—*
Daly, John A.; and Ertingshausen, Gerhard, 3,795,484.
Delavarenne, Serge Y., 3,795,682.
Kirkpatrick, George Fred, 3,795,654.
Pickert, Paul Eugene; and Bolton, Anthony Peter, 3,795,714.
Union Oil Company of California: *See—*
Howland, Ward W.; and Mallett, William R., 3,795,495.
Union Tank Car Company: *See—*
Westenrieder, Georg K.; and Ruffolo, James C., 3,795,385.
United Aircraft Corporation: *See—*
Kosowsky, Lester H.; and Pierro, Richard S., 3,795,913.
Kreider, Kenneth G.; and Prewo, Karl M., 3,795,042.
United Kingdom Atomic Energy Authority: *See—*
Fox, Anthony Cecil; and Hyde, Kenneth Robert, 3,795,522.
United States Borax & Chemical Corporation: *See—*
Rees, David John, 3,795,599.
United States of America
Agriculture: *See—*
Harper, Robert J., Jr.; Gautreaux, Gloria A.; and Blanchard, Eugene J., 3,795,480.
Mark, Arthur M.; and Mehltretter, Charles L., 3,795,670.
Wing, Robert E.; and Doane, William M., 3,795,671.
Air Force: *See—*
Bartholomew, Hans B.; and Hunt, Maureen A., 3,795,020.
Bourdelais, Roger J.; Colangelo, Dominick; McFadyen, Robert J.; and Elliott, James F., 3,795,452.
Pierce, John N.; and Holt, F. Sheppard, 3,795,912.
Weir, Donald E., 3,795,811.
Air Force, mesne: *See—*
Eckhardt, Homer D., 3,795,150.
Atomic Energy Commission: *See—*
Mailen, James C., 3,795,451.
Pan, Yu-Li; and Simpson, Joe R., 3,795,874.
Preston, Max K., Jr., 3,795,420.
Schively, Dixon P., 3,795,580.
Atomic Energy Commission, mesne: *See—*
Katz, Owen M.; and Campbell, Charles E., 3,795,597.
Commerce: *See—*
Okabe, Hideo, 3,795,812.
Environmental Protection Agency: *See—*
Hill, Ronald D.; Wilmoth, Roger C.; and Scott, Robert B., 3,795,609.
National Aeronautics and Space Administration: *See—*
Cambra, Joseph M., 3,795,840.
Eichenbrenner, Fred E.; and Imig, Leland A., 3,795,134.
Monford, Leo G., Jr., 3,795,900.
Robinson, William J., Jr., 3,795,910.
National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Aisenberg, Sol. Doppler shift system. 3,795,448, Cl. 356-28.000.
Roller, Robert F. Demodulator for carrier transducers. 3,795,862, Cl. 324-118.000.
Wagner, Albert P.; Ebersole, Theodore J.; and Andrews, Robert E. Inverter ratio failure detector. 3,795,858, Cl. 324-57.00r.
Navy: *See—*
Fein, Maier O.; and Hilt, Roy A., 3,795,873.
Goldstein, Bernard, 3,795,432.
Hill, Eugene, R.; and Mansnerus, Harlan H., 3,795,772.
Rhyne, William A., 3,795,759.
Sippel, Nathan J.; and Young, Richard K., 3,795,556.
Strickland, Alvah T., 3,795,213.
Whitehouse, Harper John; and van de Vaart, Herman, 3,795,879.
Navy, mesne: *See—*
Clausi, Joseph V.; Landau, Michael; Otter, Loren H.; and Sawyer, Richard D., 3,795,544.
Reed, Wilbur B., 3,795,172.
United States Steel Corporation: *See—*
Kennedy, Frank, 3,795,389.
Univ Amp, Inc.: *See—*
Kovacs, Frank I., 3,795,842.
Universal Industries: *See—*
Sandvik, Leonard E., 3,795,305.
Universal Oil Products Company: *See—*
Adams, Frank H.; and Anderson, Robert F., 3,795,607.
Laing, David D.; and Essott, John W., 3,795,125.
Martin, Robert A., 3,795,311.
Universite de Sherbrooke: *See—*
Picker, Patrick, 3,795,179.
Urbach, John C.: *See—*
Jvirblis, Alex E.; and Urbach, John C., 3,795,514.
Urciola, John A.: *See—*
Greulich, Robert G.; Casner, John W.; and Urciola, John A., 3,795,211.
Ushitani, Kenzi: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Serino, Yoichi; Mitani, Seisho; and Imanishi, Kunizo, 3,795,511.
Usui, Keizaburo; Yamaguchi, Michio; Saito, Yasuhiro; Noda, Tsugio; Mitani, Takashi; Tsuji, Shinzo; and Mitsuhashi, Kenichi, to Nissan Motor Company, Limited. Safety device for motor vehicle. 3,795,413, Cl. 280-150.0ab.
Utting, Kenneth: *See—*
Soulal, Maurice John; and Utting, Kenneth, 3,795,698.
Utz, Georg, to Ulz, Georg, AG. Plastic palette. 3,795,206, Cl. 108-51.000.
Uyeda, Mikio: *See—*
Ozawa, Tokuji; Uyeda, Mikio; and Suzuki, Shigenori, 3,795,490.
V.A.C. Industries, Inc., mesne: *See—*
Gritchen, Ralph A.; Daugirdas, Kristupas; Masiokas, Bruno; and Townsend, Richard H., 3,795,205.
Van Bogelen, Donald Wayne: *See—*
Boehm, Robert Francis; and Van Bogelen, Donald Wayne, 3,795,901.
Van Buren, Harold S., Jr., to TRW Inc. Terminal connector. 3,795,890, Cl. 339-217.00s.
Van Damme, Pierre Emile. Coffee filter. 3,795,182, Cl. 99-306.000.
van de Vaart, Herman: *See—*
Whitehouse, Harper John; and van de Vaart, Herman, 3,795,879.
Van Thyne, Ray J.; and Rausch, John J. Hard diffusion formed reaction coatings. 3,795,537, Cl. 117-114.00r.
Van Zon, Cornelis, to Industriele Onderneming Wavin N.V. Zwolle. System for reversed osmosis. 3,795,317, Cl. 210-321.000.
Vapor Corporation, mesne: *See—*
Wilson, Francis B., 3,795,146.
Varava, Leonid Mikhailovich: *See—*
Semenenko, Jury Lukich; Tumanov, Nikolai Vasilievich; and Varava, Leonid Mikhailovich, 3,795,126.

Vargiu, Silvio; Giovanni, Sesto S.; Passalenti, Beprino; and Nistri, Ugo, to Societa Italiana Resine S.p.A. Process for producing improved polyester resins by blending magnesium oxide therewith. 3,795,717, Cl. 260-865.000.
Varian Associates: *See—*
Munk, Miner N., 3,795,450.
Spicer, William E., 3,795,531.
VEB Polygraph Leipzig Kombinat fur Polygraphische Machinen und Ausrustungen: *See—*
Johne, Hans; Schumann, Gunter; Jehring, Arnfried; and Reichenberger, Kurt, 3,795,193.
Vehrs, Charles L, Jr., to North American Rockwell Corporation. Terrain-following radar system. 3,795,909, Cl. 343-7.0ta.
Velsicol Chemical Corporation: *See—*
Hokama, Takeo, 3,795,716.
Vendo Company, The: *See—*
Baxendale, John William, 3,795,345.
Venobre, Henri: *See—*
Chenai, Jean-Claude; Schaller, Karl; Skok, Jean; and Venobre, Henri, 3,795,579.
Ventre, Pierre; and Lacambre, Jacques, to Regie Nationale des Usines Renault and Automobiles Peugeot. Inflatable safety devices for protecting the drivers of motor vehicles. 3,795,414, Cl. 280-150.0ab.
Ventron Corporation: *See—*
Winiarczyk, Edward R., 3,795,491.
Veps AG: *See—*
Fleissner, Heinz, 3,795,031.
Verhoeven, Pierre; Sunnen, Jean A. F.; and Schoumaker, Henry R. P. J., to La Soudure Electrique Autogene. Electric furnace. 3,795,752, Cl. 13-1.000.
Vertue, Charles R. Device for delivering particulate material. 3,795,348, Cl. 222-193.000.
Victor Company of Japan, Limited: *See—*
Takahashi, Nobuaki; Nishikawa, Kazunori; Ishigaki, Yukinobu; and Fujita, Yoshitoshi, 3,795,876.
Vidouta, Georges: *See—*
Torck, Bernard; Vidouta, Georges; Pariot, Pierre; and Hellin, Michel, 3,795,712.
Viernheim, Hans-Joachim: *See—*
Aupor, Hans; Beuchlein, Gunter; and Viernheim, Hans-Joachim, 3,795,112.
Villiers, Ralph F.: *See—*
Yelin, Robert E.; Frazier, Jeffrey R.; and Villiers, Ralph F., 3,795,482.
Visser, Simon A. D.: *See—*
Morecroft, Andrew S.; Visser, Simon A. D.; and Limbert, Frank J., 3,795,719.
Vitkovicke Zelezarny Klementa Gottwalda, narodni podnik: *See—*
Bursik, Ladislav; Bursik, Jan; and Lany, Jan, 3,795,782.
Vohl, Justin; and Vohl, Paul-Eugene. Grapple assembly. 3,795,421, Cl. 294-88.000.
Vohl, Paul-Eugene: *See—*
Vohl, Justin; and Vohl, Paul-Eugene, 3,795,421.
Voltz, Bradford H.; and Hayden, Kenneth E., to Hayden, Kenneth E. Basketball rebound dome. 3,795,401, Cl. 273-1.50a.
von der Eltz, Hans-Ulrich; Maier, Hans-Peter; and Suchy, Dietfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the single-bath dyeing of cellulose and polyamide fiber blends according to the pad dyeing technique. ,795,481, Cl. 8-21.00b.
Von Meyer, William C.: *See—*
Seidel, Michael C.; Von Meyer, William C.; and Greenfield, Stanley A., 3,795,679.
Vy-Nola Corporation: *See—*
Gagnon, Edmund, 3,795,623.
Vyzkumny Ustav Pletarsky: *See—*
Piller, Bohumil; Suchanek, Jiri; Minarik, Josef; and Lacko, Vladimir, 3,795,569.
Wachi, Tadashi: *See—*
Ishida, Shinnosuke; Harada, Kunio; Kiyoshe, Tadashi; Takeuchi, Reizi; Itoh, Susumu; Sotodate, Akiyoshi; and Wachi, Tadashi, 3,795,334.
Wade, R. M., & Co.: *See—*
Cornelius, Gail, 3,795,365.
Wade, Zane A.; and Kolash, William F., to Rockwell Manufacturing Company. Spin testing apparatus for turbine-type flow meters. 3,795,131, Cl. 73-3.000.
Wagner, Albert P.: *See—*
United States of America, National Aeronautics and Space Administration, 3,795,858.
Wagner, Heinz R. Planning board. 3,795,071, Cl. 40-63.00r.
Waguespack, Wilson J. Inhibition of end-to-end sloshing, longitudinal of the direction of movement, within confined bodies of liquid in transit. 3,795,204, Cl. 105-358.000.
Waksmunski, Frank S.: *See—*
Kulsa, Peter; and Waksmunski, Frank S., 3,795,692.
Walberg, Arvid C., to Graco, Inc., mesne. Method for preventing arcing in an electrostatic coating system. 3,795,839, Cl. 317-3.000.
Walker, Carl A.: *See—*
Bolger, John G., Jr.; and Walker, Carl A., 3,795,402.
Walker, Emil C., to Zenith Radio Corporation. Apparatus for manufacturing a code-bearing ticket. 3,795,394, Cl. 270-79.000.
Wallace, Charles Frank, Jr.: *See—*
MacKenzie, Burton Thornley, Jr.; and Wallace, Charles Frank, Jr., 3,795,646.
Wallace, Frank E.; and Deramo, Anthony D., to Westinghouse Electric Corporation. Process operation error monitor and error message system. 3,795,916, Cl. 444-1.000.
Wallace, Harry L., to Burroughs Corporation. Endorsing apparatus. 3,795,190, Cl. 101-233.000.
Waltner, Ronald Keith; and Norman, Marvin Neil, to RCA Corporation. High voltage protection circuit. 3,795,767, Cl. 178-7.50r.
Walton, Richard W., to Squibb, E. R., & Sons, Inc. Sweetening composition. 3,795,746, Cl. 426-96.000.
Ward, Harold R.: *See—*
Bojas, Edward J.; and Ward, Harold R., 3,795,109.
Ward, Harold R., to Eaton Corporation. Hydrostatic transmission and control system. 3,795,107, Cl. 60-395.000.
Warnick, Alan; and Kukla, Cassimer M., to Ford Motor Company. Chemiluminescence reaction chamber. 3,795,489, Cl. 23-254.00r.
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Ozaki, Kiyoju, to Kureha Kagaku Kogyo Kabushiki Kaisha. Thermal cracking of liquid hydrocarbons. 3,795,713, Cl. 260-679.00r.
Watabiki, Kenichi: *See—*
Nogaito, Tadao; Fujita, Yasuhiro; and Watabiki, Kenichi, 3,795,787.
Watanabe, Kazumasa, to Mitsuoki Iron Works Co., Ltd. Cylindrical screen method for paper manufacturing. 3,795,576, Cl. 162-214.000.
Watanabe, Masae: *See—*
Naito, Masaharu; and Watanabe, Masae, 3,795,291.
Watanabe, Shigeru: *See—*
Endo, Takeyuki; Yokozawa, Norio; Watanabe, Shigeru; and Okada, Kunihiro, 3,795,798.
Watson, Catherine R.: *See—*
Abolafia, Oscar R.; Lau, John A.; Lee, Franklin F. M.; and Watson, Catherine R., 3,795,047.
Waxman, Ronald: *See—*
Singh, Shanker; and Waxman, Ronald, 3,795,880.
Weber, Robert L., to Caterpillar Tractor Company. Engine valve lifter guide. 3,795,229, Cl. 123-90.500.
Webster Electric Company, Inc.: *See—*
Bulin, Edward G., 3,795,725.
Weihrauch, Georg, to Coronet-Werke Heinrich Schlorf GmbH. Brush having adjustable hardness. 3,795,024, Cl. 15-169.000.
Weinhold, Heinz: *See—*
Schwandt, Wolfgang; Mennekes, Werner; Weinhold, Heinz; and Weirich, Walter, 3,795,108.
Weinstein, Harold. Educational apparatus. 3,795,067, Cl. 35-9.00d.
Weinstock, Miriam E. B.; and Woodruff, William N. Patient retention device. 3,795,815, Cl. 250-444.000.
Weir, Donald E., to United States of America, Air Force. Method and means for equalizing the response of signal channels in a multiple channel improved system. 3,795,811, Cl. 250-339.000.
Weirich, Walter: *See—*
Schwandt, Wolfgang; Mennekes, Werner; Weinhold, Heinz; and Weirich, Walter, 3,795,108.
Weiss, Irving, 50% to Kestermara Bros. Mfg., Co. Clasp construction for bracelet. 3,795,028, Cl. 24-78.000.
Weiss, Irving, 50% to Kestenman Bros. Mfg. Co. and 50% to Lisnow & Weiss Co., Inc. Watch band construction and connector for use therewith. 3,795,353, Cl. 224-4.00e.
Weiss, Shirley I.; decrased (by Albert, Joel M.; executor), Albert, Joel M., executor of said Weiss, Shirley I., dec'd., assor. to Sel-Rex Corporation. Metal bonded grinding wheels. 3,795,497, Cl. 51-297.000.
Welch, Nathan E.; and Ray, Richard G. Laser anemometer frequency to D.C. converter. 3,795,447, Cl. 356-28.000.
Wells, Roy Earl, to Kartridge Pak Co., The. Wraparound closure clip applying mechanism. 3,795,083, Cl. 53-138.00a.
Wengeler, Wilhelm, to Friedrich Uhde GmbH. Process for prilling fertilizer melts. 3,795,504, Cl. 71-64.0db.
Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Freymond, Pierre, 3,795,173.
Werner, Claus: *See—*
Eckert, Hans-Werner; and Werner, Claus, 3,795,610.
Westenholz, Sven Torben; and Kristiansen, Svend Helge, to Nordisk Ventilator Co. A/S. Apparatus for permeating an auditorium with odours in conjunction with projection of a motion picture film. 3,795,438, Cl. 352-85.000.
Westenrieder, Georg K.; and Ruffolo, James C., to Union Tank Car Company. Ball valve. 3,795,385, Cl. 251-170.000.
Westermann, Werner F.: *See—*
Black, Thomas J., 3,795,252.
Western Data Products, Inc., mesne: *See—*
Orzechowski, Walter Joseph, 3,795,075.
Western Electric Company, Incorporated: *See—*
Fullton, James McFerrin, Jr., 3,795,864.
Westinghouse Canada Limited: *See—*
Wright, Donald F., 3,795,905.
Westinghouse Electric Corporation: *See—*
Trumpler, William E., Jr., 3,795,462.
Wallace, Frank E.; and Deramo, Anthony D., 3,795,916.
Wexler, Meyer: *See—*
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Whalley, Frank M.: *See—*
Deprez, Thomas A.; and Whalley, Frank M., 3,795,143.
Wheeler, Wendell J., to International Business Machines Corporation. Apparatus for loading conductive powders into an electrical connector socket. 3,795,467, Cl. 425-78.000.

White, Robert Edward: *See—*
Andrews, Roland Eugene; and White, Robert Edward, 3,795,834.
Whitehouse, Harper John; and van de Vaart, Herman, to United States of America, Navy. Composition dispersive filter. 3,795,879, Cl. 333-72.000.
Whitehouse, Joseph Colin, to Rank Organisation Limited, The. Servomechanisms that decelerates properly on approach to limit of travel. 3,795,853, Cl. 318-618.000.
Whitten, Derrill G., to Shell Oil Company. Down-dip steam injection for oil recovery. 3,795,278, Cl. 166-303.000.
Whittingham, John B.: *See—*
Stewart, William F.; Whittingham, John B.; and Perkins, Geoffrey R., 3,795,032.
Wilcock, John David, to Plessey Handal und Investments A.G. Electrical information delay line. 3,795,829, Cl. 307-304.000.
Wilhere, Charles V., to Horix Manufacturing Company. Pneumatic system controlling operation of a filling valve in a container filling machine. 3,795,263, Cl. 141-198.000.
Will, Wilhelm, KG, Firma: *See—*
Dietrich, Toni, 3,795,377.
William, Earl: *See—*
Steiner, Charles Dale; and William, Earl, 3,795,159.
Williams, Carter P.: *See—*
Erickson, John W.; Williams, Carter P.; and McArthur, Ralph F., 3,795,459.
Williams, Donald J.: *See—*
Newman, Donald J.; Williams, Donald J.; and Berg, John R., 3,795,532.
Williams, Richard C.: *See—*
Swartzbaugh, Peter T.; and Williams, Richard C., 3,795,338.
Willis, Donald Henry, to RCA Corporation. Plural operation mode television receivers. 3,795,762, Cl. 178-5.40r.
Willis, Frank M.: *See—*
Brown, Theodore E., Jr.; and Willis, Frank M., 3,795,081.
Willke, Herbert L.: *See—*
Neilon, Claude R.; and Willke, Herbert L., 3,795,326.
Wilmoth, Roger C.: *See—*
Hill, Ronald D.; Wilmoth, Roger C.; and Scott, Robert B., 3,795,609.
Wilson, Francis B., to Vapor Corporation, mesne. Reference signal differentiating capacitive fluid level gauge. 3,795,146, Cl. 73-304.00c.
Wilson, Harold P. 4Vulcan Materials Company. Electrolytic production of tin and lead salts using anion permselective membranes. 3,795,595, Cl. 204-86.000.
Wilson, James M.: *See—*
Swanberg, Melvin E.; and Wilson, James M., 3,795,805.
Wilson, John C.; deceased (by Wilson, Margaret I.; executrix). Spring tread. 3,795,397, Cl. 272-66.000.
Wilson, Margaret I.: *See—*
Wilson, John C., 3,795,397.
Winar, Joseph J.: *See—*
Adams, Kenneth D.; Bradus, Robert; and Winar, Joseph J., 3,795,210.
Winfield Design Associates, Inc.: *See—*
Hoffman, Harold Robert, 3,795,567.
Wing, James H.: *See—*
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Wing, Robert E.; and Doane, William M., to United States of America, Agriculture. Epoxypropyl starch. 3,795,671, Cl. 260-233.30r.
Winiarczyk, Edward R., to Ventron Corporation. Method for preparing aqueous solutions of sodium borohydride of high concentration. 3,795,491, Cl. 23-299.000.
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Yamaguchi, Koretaka; Toyomoto, Kazuo; Sakamoto, Kuniaki; and Ibaragi, Toshio. Novel rubbery copolymer compositions. 3,795,652, Cl. 260-33.6aq.
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Yates, Gerald A.; and Stephens, Arnold M., Jr., to Firestone Tire & Rubber Company, The. Buckle. 3,795,030, Cl. 24-230.0al.
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LIST OF DEFENSIVE PUBLICATIONS

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Broadwell, Walter B., R. M. Burkley, and R. H. Daw, to International Business Machines Corp. Dynamically modifiable adaptive machine tool control system and method. T920,008, 3-5-74, Cl. 340—172.5.
Burkley, Richard M.: *See—*
Broadwell, Walter B., Burkley, and Daw. T920,008.
Carleton, Richard D., and A. Bhattacharyya, to Westinghouse Electric Corp. Variable flow control for a nuclear reactor control rod. T920,002, 3-5-74, Cl. 176—36.
Cator, Edward J. Bobbin assembly. T920,007, 3-5-74, Cl. 317—15.
Conner, Watson M., to International Business Machines Corp. Sorting method. T920,010, 3-5-74, Cl. 444—1.
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Cooper, Martin H., to Westinghouse Electric Corp. Method and apparatus for removing iodine from a nuclear reactor coolant. T920,001, 3-5-74, Cl. 176—37.
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Dierks, James E. Film movement preventing means. T920,011, 3-5-74, Cl. 95—31.
Du Pont de Nemours, E. I., and Co.: *See—*
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Groves, William L., Jr., T. G. Edwards, and J. A. Wingrave, to Continental Oil Co. Alcoholic compounds as molybdenum collector-frothers. T920,003, 3-5-74, Cl. 209—166.
Holloway, Arthur J., and G. G. Turner, to Imperial Chemical Industries Ltd. Magnetic recording materials. T920,016, 3-5-74, Cl. 117—235.
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McCully, Everette R., and Schaffer. T920,004.
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McCully, Everette R., and W. J. Schaffer, to International Business Machines Corp. Magnetic tape unit having an automatic reel latch and means for sensing improper loading of a tape reel. T920,004, 3-5-74, Cl. 242—68.3.
Mole, Cecil J., to Westinghouse Electric Corp. Segmented magnet homopolar dynamoelectric machines having fluid cooled liquid metal current collecting zones. T920,005, 3-5-74, Cl. 310—178.
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Schoening, Lowell L., to E. I. du Pont de Nemours and Co. Package making method. T920,006, 3-5-74, Cl. 53—39.
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Hensel, Werner R. E., to Daimler-Benz Aktiengesellschaft. Friction clutch construction. Re. 27,937, 3-5-74, Cl. 192—87.110.
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Mayhew, Thomas R., to RCA Corp. LSI array and standard cells. Re. 27,935, 3-5-74, Cl. 340—173.
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Kordes, Reimer, to Jackson & Perkins Co. Rose plant. 3,509, 3-5-74, Cl. 24.
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Dean, Roger L., to Minnesota Mining and Mfg. Co. Set of bath treads. 230,547, 3-5-74, Cl. D6—209.
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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TRADEMARK REGISTRATION TREATY

Post Conference Information

The text of the Trademark Registration Treaty (TRT), signed on June 12, 1973 for the United States, was reproduced in the OFFICIAL GAZETTE *of July 24, 1973. This treaty will not enter into force until six months after five States have deposited their instruments of ratification or accession. The question of United States ratification and of the legislation which would be necessary for its implementation in the United States are now under study in the Patent Office. Interested persons and organizations are requested to submit their views on these questions to the Patent Office prior to September 1, 1974. The Patent Office has also received numerous requests for information about the Trademark Registration Treaty.*

The World Intellectual Property Organization (WIPO), which served as the Secretariat of the Vienna Diplomatic Conference at which the Trademark Registration Treaty was adopted, has recently circulated three post-conference documents on the history of the treaty, a brief summary of its provisions and advantages, and explanatory notes on each of the articles.

The substance of these papers is published in this issue in order to assist interested persons in their study of the question of ratification by the United States.

In addition to the United States, the following States had as of December 31, 1973, signed the Treaty: Austria, Denmark, Federal Republic of Germany, Finland, Hungary, Italy, Monaco, Norway, Portugal, Romania, San Marino, Sweden, and the United Kingdom.

C. MARSHALL DANN,
Commissioner of Patents.

Feb. 11, 1974.

1. HISTORY OF THE TRADEMARK REGISTRATION TREATY

Memorandum by the International Bureau

INTRODUCTION

1. The present memorandum is a chronological account of the main decisions and consultations leading to the adoption and signature of the Trademark Registration Treaty (TRT) and the TRT Regulations.

2. The account is broken down into four Chapters, the first dealing with the events between 1966 and 1970, the second with those of 1971, the third with those of 1972, and the fourth with the events of 1973.

THE YEARS 1966 TO 1970

Origin of the Project

3. The Madrid Agreement Concerning the International Registration of Marks was concluded in 1891 and is open to accession by any State party to the Paris Convention (of 1883) for the Protection of Industrial Property. Although, at the time of writing the present document, the Paris Union has 80 members, the Madrid Union has only 23, most of them from continental Europe: Algeria, Austria, Belgium, Czechoslovakia, Egypt, France, German Democratic Republic, Germany (Federal Republic of), Hungary, Italy, Liechtenstein, Luxembourg, Monaco, Morocco, Netherlands, Portugal, Republic of Viet-Nam, Romania, San Marino, Spain, Switzerland, Tunisia, Yugoslavia. The situation was almost the same in 1968—the year with which the present account starts—and has remained the same for several decades: membership of the Madrid Union has, in fact, become virtually stationary.

4. The reason for such an apparent lack of attractiveness for other States could only be due to certain features of the Madrid Agreement, features which, although acceptable or even desirable for the member States of the Madrid Union, are difficult if not impossible to reconcile with the trademark laws, or traditional thinking on what trademark laws should be, in most other States.

5. When those concerned with changing such a situation started to look for a remedy, it appeared to them that the remedy probably lay in an appropriate revision of the Madrid Agreement. The first official sign of such thinking was a request which the Committee of Directors of National Industrial Property Offices—an intergovernmental organ of the Madrid Union—addressed to the Director of BIRPI (United International Bureaux for the Protection of Intellectual Property, predecessor of the International Bureau of WIPO (World Intellectual Property Organization)). The request was formulated in the December 1966 session of the said Committee. It asked the Director of BIRPI to study the advisability of revising the Madrid Agreement (see document MJ/CJ/I/3, paragraph 19). The request was transmitted by the Director of BIRPI to the Interunion Coordination Committee—a committee consisting of the members of the Executive Committees of the Paris Union and of the International (Berne) Union for the Protection of Literary and Artistic Works—which was, at that time, responsible for formulating the program of BIRPI.

6. In its session held in September 1968, the Interunion Coordination Committee approved a proposal that studies should be started in 1969 with a view to the possible revision of the Madrid Agreement and that a working group should be convened for that purpose (see documents CCIU/VI/6, paragraph 20, and CCIU/VI/17, paragraph 27).

Working Group of 1970 (April 1970)

7. The said Working Group—under the title of Committee of Experts—was convened by the Director of BIRPI to meet in April 1970. BIRPI prepared working documents for it in 1969 and published them in October of that year. One of them was entitled "Questions for possible consideration by the Committee of Experts" (document MM/I/2), the other contained the draft of a revision of the Stockholm (1967) Act of the Madrid Agreement (document MM/I/3).

8. The States invited to the Committee of Experts were the States members of the Madrid Union and eight States that were not members of that Union.

9. The Committee of Experts met, as scheduled, in April 1970. The following countries were represented: *members of the Madrid Union:* Austria, Belgium, Czechoslovakia, France, Germany (Federal Republic of), Hungary, Italy, Netherlands, Portugal, Romania, San Marino, Spain, Switzerland, United Arab Republic (now Egypt), Yugoslavia; *not members of the Madrid Union:* Denmark, Finland, Norway, Soviet Union, Sweden, United Kingdom, United States of America.

10. One intergovernmental organization, the Commission of the European Communities (CCE), and three international non-governmental organizations—the International Association for the Protection of Industrial Property (AIPPI), the International Chamber of Commerce (ICC), and the International Federation of Patent Agents (FICPI)—were represented by observers. The list of participants appears at the end of this report.

11. The discussions of the Committee of Experts raised a fundamental question, namely, whether the right approach was to try to revise the Madrid Agreement. Would it not be more promising to make a fresh start, that is, conclude a new treaty which could exist side by side with the Madrid Agreement? The Delegation of the United States of America, in its closing statement, "recommended the convening of a wider assembly, which could bring together all the member countries of the Paris Union" and spoke about "a universal Agreement of Marks" rather than the revision of the Madrid Agreement (see document MM/I/8, paragraph 78).

12. The report of the 1970 Committee of Experts is contained in document MM/I/8.

General Assembly, Conference of Representatives and Executive Committee of the Paris Union (September 1970)

13. These bodies, created by or reorganized pursuant to the entry into force of the Stockholm (1967) Act of the Paris Convention, held their first sessions in September 1970. On the proposal of the United States of America, their agendas included a separate item—"Universal Agreement on Marks"—on the question of the continuation of the work (see, for example, document P/A/I/1. Rev.).

14. During the meetings, the Delegation of the United States of America declared that, in its opinion, the time had come to establish a truly universal agreement on the international registration of marks, that the discussions in the Committee of Experts which had met for that purpose in April 1970, within the framework of the Madrid Union, had shown that this aim would be very difficult to achieve through revision of the Madrid Agreement Concerning the International Registration of Marks since several States party to that Agreement were opposed to making certain adjustments in which States not party to the Madrid Agreement were very much interested, and that it was therefore necessary to place the establishment of a universal agreement on the international registration of marks within the broader context of the Paris Union.

15. During the course of the discussion of the said bodies, it was unanimously agreed that it would be in the general interest to have an agreement on the international registration of marks whose scope would be broader than that of the existing Madrid Agreement. Several delegations of member States of the Madrid Union declared, however, that such an aim could be achieved by a revision of the Madrid Agreement, that the conflicting opinions revealed in the Committee of Experts in April 1970 could probably be reconciled by means of compromise solutions, and that, for the moment at least, the work should continue in the form of a revision of the Madrid Agreement, but perhaps with all the interested States of the Paris Union being invited to take part in the meetings of the committees of experts which would be entrusted with the revision work.

16. Eventually, the said bodies decided:

(i) that the aim was to achieve an agreement on the international registration of marks which should be acceptable to a much wider circle of countries than the then existing (and still existing) Madrid Agreement; that such an agreement should be achieved through an appropriate revision of the Madrid Agreement; and that only if the preparatory work clearly showed that the said goal could not be obtained through revision of the Madrid Agreement should the possibilities of concluding a treaty independently of the Madrid Agreement be envisaged;

(ii) that the diplomatic conference should be preceded by sessions of committees of experts to which all States of the Paris Union would be invited and in which these States would have an equal standing;

(iii) that these questions, like those of the Patent Cooperation Treaty, should be prepared by the International Bureau with the collaboration of a small group of government consultants, and in consultation with interested circles.

THE YEAR 1971

Meetings of Three Groups of Consultants (February 1971)

17. In the month of February 1971, representatives of the International Bureau of WIPO met with three groups of consultants: the first consisted of representatives of non-governmental organizations, mainly of industrial interests, and met on February 15 and 16; the second consisted of representatives of non-governmental organizations, mainly of lawyers and trademark agents, and met on February 19; the third consisted of representatives of governments and met on February 17 and 18. All meetings were held in Geneva, at the headquarters of WIPO, on the invitation of the Director General of WIPO.

18. The following organizations were represented in the first group: American Bar Association (ABA), Association of Corporate Patent Counsel, Bundesverband der Deutschen Industrie (BDI), Confederation of British Industry (CBI), Council of European Industrial Federations (CEIF), International Chamber of Commerce (ICC), Trade Marks, Patents and Designs Federation (TMPDF) (United Kingdom), Union des fabricants (UNIFAB) (France), Union of Industries of the European Community (UNICE), United States Trademark Association (USTA).

19. The following organizations were represented in the second group: American Patent Law Association (APLA), Chartered Institute of Patent Agents (CIPA) (United Kingdom), Deutsche Vereinigung für gewerblichen Rechtssuchutz und Urheberrecht (DVGR) (Federal Republic of Germany), Institute of Trade Mark Agents (ITMA) (United Kingdom), International Association for the Protection of Industrial Property (AIPPI), International Federation of Patent Agents (FICPI), Union of European Patent Agents (UNEPA).

20. The following States were represented in the third group: Austria, France, Germany (Federal Republic of), Hungary, Japan, Netherlands, Soviet Union, Sweden, Switzerland, United Kingdom, United States of America.

21. The list of participants of these three groups appears at the end of this report.

22. The discussions of each of the Groups of Consultants were based on a memorandum entitled "International Registration of Marks" (document IRM/GC/1), prepared and published by the International Bureau in December 1970. The memorandum weighed up the arguments for and against a revision of the Madrid Agreement as opposed to the conclusion of a new multilateral treaty which would leave the Madrid Agreement untouched. It also reviewed the question what features of the Stockholm Act of the Madrid Agreement should be preserved and what features should be changed.

23. No reports on these meetings were issued. However, the solution promising more general acceptance appeared to lie in a new treaty rather than a revision of the Madrid Agreement. It also became apparent that one of the most important points on which opinions differed was whether the new treaty should contain provisions, as does the Madrid Agreement, giving extraterritorial effect to decisions refusing or cancelling the registration of a mark by one of the Contracting States (the so-called "central attack" question).

The First TRT Draft (April 1971)

24. On the basis of the consultations that took place in February 1971, the International Bureau prepared and published in April 1971 a series of preparatory documents for a committee of experts which, later, became known as the First Committee of Experts on the Trademark Registration Treaty.

25. The title "Trademark Registration Treaty," or "TRT," is used for the first time for the proposed new treaty in the said preparatory documents, which consisted of an introductory memorandum (TRT/I/2), the full text of a proposed Treaty ("First Draft") and a commentary on the text (TRT/I/3), and the full text of draft Regulations under the proposed Treaty (TRT/I/4).

The First Committee of Experts on the TRT (October 1971)

26. This Committee of Experts was convened by the Director General of WIPO and met at Geneva in October 1971.

27. The following 36 States were represented in the Committee of Experts: Algeria, Australia, Austria, Belgium, Brazil, Cameroon, Canada, Cuba, Czechoslovakia, Denmark, Egypt, Finland, France, Germany (Federal Republic of), Hungary, Iran, Italy, Ivory Coast, Japan, Mexico, Monaco, Netherlands, Norway, People's Republic of the Congo, Poland, Portugal, Romania, South Africa, Soviet Union, Spain, Sweden, Switzerland, Syria, United Kingdom, United States of America, Yugoslavia.

28. The following five intergovernmental organizations were represented in the Committee of Experts: United Nations, United Nations Conference on Trade and Development (UNCTAD), African and Malagasy Industrial Property Office (OAMPI), Benelux Trademark Office, Commission of the European Communities (CCE).

29. The following 19 non-governmental organizations were represented in the Committee of Experts: American Bar Association (ABA), American Patent Law Association (APLA), Association of Corporate Patent Counsel, Bundesverband der Deutschen Industrie (BDI), Chartered Institute of Patent Agents (CIPA), Council of European Industrial Federations (CEIF), Deutsche Vereinigung für gewerblichen Rechtsschutz und Urheberrecht (DVGR), European Federation of Agents of Industry in Industrial Property (FEMIPI), Institute of Trade Mark Agents (ITMA), International Association for the Protection of Industrial Property (AIPPI), International Chamber of Commerce (ICC), International Federation of Agricultural Producers, International Federation of Patent Agents (FICPI), New York Patent Law Association (NYPLA), United States Trademark Association (USTA), Trade Marks, Patents and Designs Federation (TMPDF) (United Kingdom), Union des fabricants (UNIFAB) (France), Union of European Patent Agents (UNEPA), Union of Industries of the European Community (UNICE).

30. The list of participants appears at the end of this document.

31. The discussions confirmed the opinion that a new treaty ought to be concluded rather than revise the Madrid Agreement. The Committee of Experts considered the drafts of the International Bureau article by article and rule by rule and suggested a number of changes in them. But, as far as the problem of "central attack" is concerned, views continued to differ on the fundamental question whether the new treaty should or should not provide for the possibility of such "central attack." The report of the Committee of Experts is contained in document TRT/I/11.

The Second TRT Draft (January 1972)

32. On the basis of the recommendations of the First Committee of Experts and other informal consultations with interested governments and private circles, the International Bureau drew up revised drafts for the Trademark Registration Treaty ("Second Draft") and its Regulations (documents TRT/II/1 and 2), an introductory memorandum (TRT/II/3), a document on the implementation of the recommendations of the First Committee of Experts (TRT/II/4), a memorandum analyzing the main differences between the first (1971) and second (1972) drafts of the TRT, and a memorandum on various systems for fees and their financial consequences for applicants, trademark owners and national Industrial Property Offices (TRT/II/5). These documents were published in January 1972.

The First Working Group on the "Central Attack" Question (April 1972)

33. This Working Group was convened by the Director General of WIPO and met in Geneva on April 17 and 18, 1972. Representatives of eight States participated in it: Belgium, Canada, France, Germany (Federal Republic of), Netherlands, Switzerland, United Kingdom, United States of America. The list of participants appears at the end of this document.

34. Six different solutions for the problem of "central attack" were put forward by those participants advocating the idea that the TRT should provide for the possibility of such "central attack", while the other participants resisted the inclusion of any provisions of the said kind in the TRT.

35. The documents of the Working Group—of which there are nine—constitute the TRT/WG/I series (TRT/WG/I/1 to 9). The report on the results of the meeting is contained in document TRT/WG/I/9.

The Second Committee of Experts on the TRT (May 1972)

36. This Committee of Experts was convened by the Director General of WIPO and met at Geneva from May 2 to 8, 1972.

37. The following 34 States were represented in the Committee of Experts: Algeria, Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Cameroon, Canada, Czechoslovakia, Denmark, Finland, France, Germany (Federal Republic of), Greece, Hungary, Italy, Japan, Monaco, Netherlands, Norway, Philippines, Poland, Portugal, Romania, San Marino, Senegal, Soviet Union, Spain, Sweden, Switzerland, United Kingdom, United States of America, Yugoslavia.

38. The following five intergovernmental organizations were represented in the Committee of Experts: United Nations Conference on Trade and Development (UNCTAD), Benelux Trademark Office, Commission of the European Communities (CCE), Latin American Free Trade Association (LAFTA), Organization of American States (OAS).

39. The following 22 non-governmental organizations were represented in the Committee of Experts: American Bar Association (ABA), American Patent Law Association (APLA), Asian Patent Attorneys Association (APAA), Bundesverband der Deutschen Industrie (BDI), Chartered Institute of Patent Agents (CIPA), Council of European Industrial Federations (CEIF), Deutsche Vereinigung für gewerblichen Rechtsschutz und Urheberrecht (DVGR), European Federation of Agents of Industry in Industrial Property (FEMIPI), Institute of Trade Mark Agents (ITMA) (United Kingdom), Inter-American Association of Industrial Property (ASIPI), International Association for the Protection of Industrial Property (AIPPI), International Chamber of Commerce (ICC), International Federation of Agricultural Producers, International Federation of Patent Agents (FICPI), National Association of Manufacturers (NAM) (United States of America), New York Patent Law Association (NYPLA), Patent and Trademark Institute of Canada (PTIC), Trade Marks, Patents and Designs Federation (TMPDF) (United Kingdom), Union of European Patent Agents (UNEPA), Union des fabricants (UNIFAB) (France), Union of Industries of the European Com-

munity (UNICE), United States Trademark Association (USTA).

40. The list of participants appears at the end of this document.

41. With the exception of the question of "central attack," the Committee of Experts reached substantial agreement on all important points of the draft Treaty. However, as far as the draft Regulations are concerned, a further meeting was considered to be useful; and, as far as "central attack" is concerned, it was decided to convene another working group.

42. The report of the Committee of Experts is contained in document TRT/II/15.

Publication of Working Documents for the Diplomatic Conference (July 1972)

43. On the basis of the discussions of the Second Committee of Experts, the International Bureau of WIPO prepared and published in July 1972 the basic working documents prepared for the diplomatic conference scheduled to take place in Vienna, Austria, in May and June 1973. These documents were the following: revised drafts of the proposed Treaty ("Third Draft") and Regulations (TRT/DC/1 and 2), the text of the draft Treaty being accompanied, once again, by comments; an introductory memorandum (TRT/DC/3); a memorandum on the implementation of the recommendations of the Second Committee of Experts (TRT/DC/4); and a memorandum analyzing the main differences between the January 1972 and the July 1972 drafts of the TRT.

The Second Working Group on the "Central Attack" Question (September 1972)

44. This Working Group was convened by the Director General of WIPO and met in Geneva on September 18 and 19, 1972. Representatives of eight States participated in it: Belgium, Canada, France, Germany (Federal Republic of), Netherlands, Switzerland, United Kingdom, United States of America. The list of participants appears at the end of this document.

45. Discussions were based on a proposal prepared by the experts of Belgium (TRT/WG/II/1). The Working Group, however, was unable to endorse this proposal or any of the other proposals made during its deliberations.

46. The documents of the Working Group—of which there are five—constitute the TRT/WG/II/ series (TRT/WG/II/1 to 5). The report on the results of the meeting is contained in document TRT/WG/II/5.

Executive Committee of the Paris Union (September 1972)

47. The Executive Committee of the Paris Union, in its session held at Geneva from September 25 to 30, 1972, decided that the diplomatic conference of Vienna, whose agenda included the adoption of the TRT, should take place from May 17 to June 12, 1973, as suggested by the Government of the host country, Austria.

The Third Committee of Experts on the TRT (December 1972)

48. This Committee of Experts was convened by the Director General of WIPO and met at Geneva from December 5 to 12, 1972.

49. The following 31 States were represented in the Committee of Experts: Algeria, Argentina, Austria, Belgium, Bulgaria, Canada, Czechoslovakia, Denmark, Egypt, Finland, France, German Democratic Republic, Germany (Federal Republic of), Hungary, Ireland, Ivory Coast, Japan, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Senegal, South Africa, Soviet Union, Spain, Sweden, Switzerland, United Kingdom, United States of America.

50. The following two intergovernmental organizations were represented in the Committee of Experts: United Nations Conference on Trade and Development (UNCTAD), Benelux Trademark Office.

51. The following 15 non-governmental organizations were represented in the Committee of Experts: American Bar Association (ABA), American Patent Law Association (APLA), Asian Patent Attorneys Association (APAA), Bundesverband der Deutschen Industrie (BDI), Council of European Industrial Federation (CEIF), European Federation of Agents of Industry in Industrial Property (FEMIPI), Institute of Trade Mark Agents (ITMA) (United Kingdom), International Association for the Protection of Industrial Property (AIPPI), International Chamber of Commerce (ICC), International Federation of Patent Agents (FICPI), Trade Marks, Patents and Designs Federation (TMPDF) (United Kingdom), Union of European Patent Agents (UNEPA), Union des fabricants (UNIFAB) (France), Union of Industries of the European Community (UNICE), United States Trademark Association (USTA).

52. The list of participants appears at the end of this document.

53. The Committee of Experts examined the draft Regulations as published in document TRT/DC/2. It proposed a number of changes in the draft. The report of the Committee of Experts is contained in document TRT/III/6.

THE YEAR 1973

Publication of Further Working Documents for the Diplomatic Conference (January 1973)

54. On the basis of the recommendations of the Third Committee of Experts, the International Bureau revised the draft of the Regulations and suggested a few consequential changes in the July 1972 draft of the Treaty. The documents containing these revisions and suggestions were published in January 1973 (documents TRT/DC/2.Rev., TRT/DC/1.Add.).

Vienna Diplomatic Conference, 1973 (May and June 1973)

55. The "Vienna Diplomatic Conference on Industrial Property, 1973" took place, at the invitation of the Government of the Republic of Austria, in Vienna from May 17 to June 12, 1973. The meetings were held in the conference premises of the Hofburg.

56. The Vienna Conference provided the framework within which three Diplomatic Conferences took place. One of them was convened for the purposes of completing negotiations on, and adopting the text of, the TRT and the Regulations under the TRT. In that Conference, any of the 80 member States of the Paris Union had the right to vote. Other States participated in an observer capacity.

57. The following 52 States members of the Paris Union participated in the Diplomatic Conference on the TRT: Algeria, Australia, Austria, Belgium, Brazil, Bulgaria, Cameroon, Canada, Congo, Cuba, Czechoslovakia, Denmark, Dominican Republic, Egypt, Finland, France, Gabon, German Democratic Republic, Germany (Federal Republic of), Holy See, Hungary, Iran, Ireland, Israel, Italy, Ivory Coast, Japan, Lebanon, Luxembourg, Mexico, Monaco, Netherlands, Nigeria, Norway, Poland, Portugal, Romania, San Marino, Senegal, South Africa, Soviet Union, Spain, Sweden, Switzerland, Syrian Arab Republic, Tunisia, Turkey, United Kingdom, United Republic of Tanzania, United States of America, Uruguay, Yugoslavia.

58. The following 4 States, not members of the Paris Union, participated in the said Diplomatic Conference, Ecuador, Republic of Korea, Venezuela, Zaire.

59. The following 8 intergovernmental organizations were represented by observers: United Nations Industrial Development Organization (UNIDO), African and Malagasy Industrial Property Office (OAMPI), Benelux Trademark Office, International Institute for the Unification of Private Law (UNIDROIT), Council of Europe (CE), Commission of the European Communities (CCE), Council of Ministers of the European Communities (CMCE), Council for Mutual Economic Assistance (CMEA).

60. The following 21 non-governmental organizations were represented by observers: American Bar Association (ABA), International Association for the Protection of Industrial Property (AIPPI), Asian Patent Attorneys Association (APAA), American Patent Law Association (APLA), Bundesverband der Deutschen Industrie (BDI), Council of European Industrial Federations (CEIF), Chartered Institute of Patent Agents (CIPA), Deutsche Vereinigung für gewerblichen Rechtsschutz und Urheberrecht (DVGR), European Federation of Agents of Industry in Industrial Property (FEMIPI), International Federation of Patent Agents (FICPI), International Chamber of Commerce (ICC), Institute of Trade Mark Agents (ITMA), International League Against Unfair Competition (LICCD), New York Patent Law Association (NYPLA), Pacific Industrial Property Association (PIPA), Patent and Trade Mark Institute of Canada (PTIC), Trade Marks, Patents and Designs Federation (TMPFD) (United Kingdom), Union of European Patent Agents (UNEPA), Union of Industries of the European Community (UNICE), Union des fabricants (UNIFAB) (France), United States Trademark Association (USTA).

61. The list of participants appears at the end of this document.

62. As in the three preparatory Committees of Experts so also in the Diplomatic Conference all participants, whether representing governments or organizations, had the right and opportunity to participate in the debates. They made ample use of this opportunity.

63. During the Diplomatic Conference, amendments were proposed in writing by the following States: Australia, Austria, Belgium, Brazil, Denmark, France, Gabon, Germany (Federal Republic of), Hungary, Ireland, Italy, Ivory Coast, Japan, Luxembourg, Netherlands, Nigeria, Poland, Romania, Senegal, Switzerland, Tanzania, United Kingdom, United States of America. (See documents TRT/DC/7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 25, 26, 27, 29, 30, 32, 33, 34.)

64. The Trademark Registration Treaty and the annexed Regulations were unanimously adopted by the Diplomatic Conference on June 12, 1973.

65. The Conference also unanimously adopted a Resolution recommending certain interim measures pending the entry into force of the Treaty.

66. The texts of the Treaty, the Regulations and the Resolution were published in the August 1973 issue of *Industrial Property*. The texts of the Treaty and the Regulations are also available in the form of a printed booklet published by the International Bureau of WIPO in October 1973 (WIPO publication No. 265(E)).

67. The Records of the Diplomatic Conference, which will also contain summary minutes of the deliberations, are under preparation by the International Bureau of WIPO and are expected to be published as a printed volume towards the end of 1974.

Signature of the Treaty (June to December 1973)

68. The Treaty was opened for signature on June 12, 1973, and remained open for signature until December 31, 1973. During the said period, the following 14 States signed it: Austria, Denmark, Finland, Germany (Federal Republic of), Hungary, Italy, Monaco, Norway, Portugal, Romania, San Marino, Sweden, United Kingdom, United States of America.

69. States which have signed the Treaty may ratify it. Those which have not signed it may accede to it. Instruments of ratification or accession must be deposited with the Director General of WIPO in Geneva.

NOTE: The lists of participants referred to in paragraphs 10, 21, 30, 33, 40, 44, 52 and 61 are not reproduced. Copies of these lists are available on request to the Commissioner of Patents.

2. SUMMARY AND ADVANTAGES OF THE TRADEMARK REGISTRATION TREATY

Memorandum prepared by the International Bureau

BRIEF SUMMARY OF THE TREATY

1. *National Registration Effect of International Registrations.* The most important feature of the Treaty, the provision which constitutes its *raison d'être*, is that marks—and by this term both trademarks and service marks are meant—may be registered internationally, that is, with the International Bureau of the World Intellectual Property Organization (WIPO), and that international registration would have the same effect in each of the Contracting States (that is, States party to the Treaty) in which the owner of the mark desires protection as would be obtained if the mark had been registered in each and every one of such States.

2. A corollary of this "national registration effect," which is as important as the effect itself, is that international registrations may be renewed every ten years, and such renewals may maintain the national registration effect in each and every one of such States throughout the periods for which the international renewal was effected.

3. *International Application.* To achieve protection by international registration of a mark, the owner must file an international application. Only residents and nationals of Contracting States have the right to file international applications, except that, during an initial period of 5, 10 or 15 years, the nationals and residents of certain developing countries may have the right to file international applications even if such countries have not yet acceded to the Treaty. The international application must identify the applicant, the mark, the goods and/or services in connection with which protection of the mark is desired, and the States ("designated States") in which such protection is desired.

4. The goods and/or services must be listed and grouped according to the classes of the International ("Nice") Classification. That Classification has 34 classes for goods, and 8 classes for services. It is used by the national Offices of some 60 countries at the present time.

5. Any Contracting State, including the applicant's own, may be designated. Any number of Contracting States may be designated.

6. A representative may be appointed in the international application for contacts with the International Bureau.

7. The international application may be filed in either English or French. Preparation of the international application consists essentially in filling up a printed form, distributed free of charge by the International Bureau. Listing the goods and/or services is facilitated by an alphabetical list of practically all conceivable goods and services which accompanies the International Classification of Nice. The said alphabetical list, which contains the names of some 20,000 products (goods) and services, is available in English, French, German and Spanish—and will soon be available also in Dutch, Italian and Portuguese—

in official editions published by the International Bureau. The alphabetical list indicates, by its number, the class to which each product or service belongs and is brought up to date from time to time to cover goods or services which are new.

8. The international application is subject to the payment of a fee. Part of the fee is kept by the International Bureau to cover its expenses connected with the publication of the international registration and other processing of the international application. The other part of the fee belongs to the national Offices of the designated Contracting States to cover their expenses connected with the processing of the international registration notified to them by the Inernational Bureau. The amount of the fees payable depends on the number of designated States and the number of classes of goods and/or services listed.

9. The International Bureau checks each international application to see whether it complies with the most elementary requirements of any application: Is the applicant sufficiently identified? Is he entitled, on the basis of his nationality or the residence indicated by him, to file international applications? Is the reproduction of the mark included? Are goods and/or services listed? Is there at least one designated State? Have the fees been paid? Is the application in one of the prescribed languages (English, French)? Is it signed?

10. It is unlikely that the International Bureau will err in answering such elementary questions. However, if it does, the applicant's rights are still not affected provided he turns to the national Office of one or more of the designated States for relief. He has two kinds of relief at his disposal and he is free to choose between them. One consists in asking the national Office to request the International Bureau to proceed with the international registration as far as that State (i.e., the State of which it is the national Office) is concerned; if the national Office finds that the International Bureau has erred, it requests the Bureau so to proceed and the Bureau must comply. The other relief consists in filing an application with the national Office for the registration of the mark in the national register of marks of that State (i.e., the State of which it is the national Office); if the national Office finds that the International Bureau has erred, it must treat the said national application as if it had been filed on the date on which the erroneously declined international application was filed.

11. *Later Designations.* Any Contracting State not designated in the international application itself may be designated later. This faculty is important because the applicant or owner may have had no interest in a given State when he filed but may develop an interest in that State later, and also because a State may not have been a Contracting State when the international application was filed.

12. *Registration, Publication, and Notification.* Unless the international application is declined because of some formal defect, the mark is registered in the International Register of Marks and all the relevant data—including the reproduction of the mark and the list of goods and/or services—are promptly published and individually notified to the national Office responsible for the national registration of marks in each of the designated States.

13. The international registration is normally effected within a few days after receipt of the international application. The international registration date is the date on which the International Bureau received the international application. This rule is subject to an exception when the application contains some serious defect: in such a case the international registration date is the date on which the defect is corrected ("later-dating"). Any mistake may be corrected within three months. Some less serious defects, if corrected within one month from the date of an invitation to correct, may even be corrected without any "later-dating."

14. The international publication is effected in a weekly gazette of the International Bureau.

15. The individual notifications cannot be different from the contents of the publication because they consist of reprints of the relevant parts of the gazette.

16. The above remarks also apply as far as later designations are concerned.

17. *Refusal of National Registration Effect.* Each designated State, may, as far as it is concerned, refuse the national registration effect on the same grounds as those on which it may refuse an application filed with its national Office for registration in the national register of marks. However, grounds incompatible with the Treaty or with the Paris Convention are excluded. For example, no designated State may require that the application be translated into its national language or that fees other than its share in the international fees be paid to it.

18. Any such refusal must, however, be pronounced, or its possible pronouncement announced ("notice of possible refusal")—for example, where the registration has been opposed by a third party and the refusal depends on whether the opposition will be successful—before the expiration of 15 months (or, in the case of a certification mark, 18 months) counted from the date of the international publication of the international registration, or of the later designation, as the case may be.

19. Furthermore, the refusal or notice of possible refusal would have to contain the grounds for the refusal or possible refusal. Although the final decision could be rendered after the expiration of the 15 months period, it would be effective only if it contained and was based on at least one of the grounds indicated in the notice of possible refusal. According to a possible variant, this condition would not apply where the decision was that of a court.

20. *Use of the Mark.* No designated State may refuse the registration effect, cancel it or otherwise impair the rights of the owner on the ground that he had not used his mark before the expiration of three years counted from the date of the international registration (or the later designation, as the case may be). No such moratorium on use is, however, required if the mark's international registration was preceded by a national registration or another international registration three years older than the international registration, and the term of this moratorium may be corresponding reduced where the mark's international registration was preceded by a national registration or another international registration which is less than three years older than the international registration. The moratorium of three years must, except in States whose national law does not so permit, be extended, but never by more than two years, where at the expiration of the third year it is uncertain—because of a pending refusal proceeding—whether the national registration effect will obtain.

21. It is to be noted that the national law of any Contracting State may provide that any action for infringement by the owner of the international registration that is based upon such registration may not be brought until the said owner has started using the mark in the said State and any remedy therefrom may relate only to the period of such use.

22. *Declaration of Actual Use.* Routine declarations of actual use may be filed with the International Bureau on an internationally agreed form or in the form prescribed by the national law of the State which requires such declarations.

23. *Declaration of Intent to Use.* Declarations of intent to use connected with any designation and filed with the International Bureau have the same effect as declarations of intent to use connected with national applications and filed with national Offices.

24. *Preservation of Acquired Rights.* Whenever the owner of a national registration switches over to international registration, his rights acquired under the national registration are not affected and are deemed to be included in the international registration. The same applies to switching over from international registration under the Madrid Agreement to international registration under the Treaty.

25. *Right of Priority.* International applications may invoke the priority of earlier national applications, and vice versa. In the former case, the single declaration of priority, made in the international application, applies to all designated States.

26. *Assignments.* Although their substantive validity is subject to the national law of each State, assignments and other changes in ownership with respect to some or all of the designated States, or concerning some or all of the goods and/or services listed, may be recorded in the International Register of Marks.

27. *Regional Marks.* The Treaty, taking into account existing and possible future regional agreements for the registration of regional marks, provides for a system which allows the combination of the advantages offered by an international registration under the TRT with those resulting from a regional mark system.

28. *"Union."* The Contracting States constitute a Union with an Assembly and a Secretariat, the latter being provided by the International Bureau of WIPO. The Assembly may amend the Regulations.

29. *Financial Obligations of Contracting States.* Except for the possibility of having to contribute towards a working capital fund, the Contracting States have no financial obligations and do not have to pay any contributions.

30. *Becoming Party to the Treaty.* Only States members of the Paris Union may become party to the Treaty. Any state may make its acceptance of the Treaty conditional on the acceptance of that Treaty by one, one of two, or two other States specified by it.

31. *Regulations.* The Regulations are attached to the Treaty. They were adopted at the same time as the Treaty itself.

MAIN ADVANTAGES OF THE TREATY

32. *Complexity of the Present System.* Without the Treaty, the owner of a mark who wishes to secure protection of a mark in several States must—unless he can avail himself of the benefits of the Madrid Agreement and the said States are party to that Agreement—separately register the mark in each of those States. The number of such States may be very large. More than 50 is not unusual. The burden placed on the owner is consequently a heavy one: preparation of a separate application for each State; translation into the various languages of those States; filing separately in each of them; being familiar with their widely varying requirements, in particular with their fee structures; keeping an eye on as many different due dates for renewal as there are States in which he wishes protection; transfer of money in as many different currencies as there as such States; uncertainty as to whether he is aware of the latest requirements and the latest fee schedules; uncertainty as to whether the money he transfers to persons or authorities in so many States will arrive in time and will actually be appled to the mark he wishes it to be applied to.

33. *Administrative Simplicity Under the Treaty.* Under the Treaty, such difficulties almost entirely disappear. There is only one application; no translation, or only one, is needed; that translation relates mainly to the list of goods and/or services and is easy to make on the basis of the official English and French lists of the International Classification; the amount of the fees payable is easy to compute on the basis of a single schedule of fees; filing is in one place (with the International Bureau); renewal is in one place (the same Bureau); only one date repeated once every ten years has to be remembered for renewal purposes; all fees are paid in one currency (the Swiss), by a simple transfer, to an agency experienced in currency transfers; it suffices to know the Treaty and its Regulations—rather than a great number of different national laws—in order to be sure that the application is correct and the renewal is correct.

34. *Shortening of Period of Uncertainty.* The fact that the Treaty obliges each designated Office to notify refusals or notices of possible refusals within a period of 15 months (in the case of certification marks, 18 months) reduces the period of uncertainty prevailing without the Treaty as to the ultimate fate of applications in some of the States. Under the Treaty, the applicant knows, once the said period is over, whether he has acquired the national registration effect or, if there has still been no final decision, the obstacles it will be necessary to overcome in order to secure that effect.

35. *Declarations of Intent To Use and Routine Declarations of Actual Use.* Such declarations are required in a number of States. Under the Treaty, they may be filed with the International Bureau.

36. *Requirement of Using the Mark.* Laws vary greatly from one another on the question whether the owner of the mark loses his rights because of non-use, particularly during the period around the initial registration. The Treaty does not create uniformity in this respect but it guarantees to the owner that non-use before, at the time of, or during the first three years after the international registration may not result in refusal or cancellation of his mark.

37. *Maintenance of Acquired Rights.* The Treaty is extremely useful not only in connection with the registration of new marks but also with regard to the maintenance of existing marks that have already been registered in national registers a long time ago. Through international registration under the Treaty the rights existing under national registrations may be preserved and continued through international registration and international renewal, a procedure far simpler than that of separate renewals of national registrations.

38. *Comparison With the System of the Madrid Agreement.* Most of the advantages mentioned in connection with applications and renewals exist also under the Madrid Agreement. But that Agreement also has disadvantages. The most important of them is the fact that any international application must be preceded by registration of the mark in the national register of marks of the country of origin of the mark. This may be impossible for reasons peculiar to the national law of that country or because of anticipations existing only in that country. Furthermore, the procedure leading to registration in the country of origin may last for a long time, and may even take years, causing the loss of any priority right and, in countries whose laws follow the principle that "the earlier registrant has the stronger right," even the loss of all rights. All these disadvantages do not exist under the Treaty. According to the Treaty, international applications are filed direct with the International Bureau and the existence of a registration in the country of origin is not required.

39. None of the advantages mentioned in connection with the three-year moratorium on the requirement to use the mark, the declarations of intent to use, and the routine declarations of actual use, exists under the Madrid Agreement.

3. NOTES ON THE TRADEMARK REGISTRATION TREATY

Prepared by the International Bureau

These Notes are intended to serve two main purposes. One is to facilitate the reading of the text of the Treaty by providing, where a provision refers to other provisions of the Treaty, brief information on those other provisions, so that the reader should generally be able to avoid, as far as possible, turning to the page on which the provisions referred to appear. The other is to enable the reader to find rapidly in the Regulations those Rules which pertain to any given provision of the Treaty. To that end, the pertinent Rules are referred to by their numbers and in most cases also by their titles.

Notes on Article 1

Sole paragraph: The Treaty [1] is a "special agreement" under Article 19 of the Paris Convention since it is concluded among States party to that Convention (see Article 39(1) of the Treaty). Article 19 of the Paris Convention reads as follows: "It is understood that the countries of the [Paris] Union reserve the right to make separately between themselves special agreements for the protection of industrial property, in so far as these agreements do not contravene the provisions of this [Paris] Convention."

Each of the seven agreements so far concluded under Article 19 of the Paris Convention which provides also for the establishment of administrative organs (at least an Assembly of the Contracting States) provides for the constitution of a special "Union" under the "general" Paris Union (constituted by the Contracting States of the Paris Convention). Thus, the constitution of a Union is in conformity with tradition.[2]

[1] The word "Treaty" in these Notes refers to the Trademark Registration Treaty, habitually (but not in these Notes) called "the TRT."

[2] The other Unions are:
- Madrid Union Concerning the International Registration of Marks
- The Hague Union Concerning the International Deposit of Industrial Designs
- Nice Union Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks
- Lisbon Union for the Protection of Appellations of Origin and Their International Registration
- Locarno Union Establishing an International Classification for Industrial Designs
- International Patent Cooperation Union
- Strasbourg Union Concerning the International Patent Classification.

Notes on Article 2

These abbreviated expressions seem to be self-explanatory. However, the following might be noted.

ad (iii) and (iv): The person who files an international application is called an *applicant* only as long as the international registration, on the basis of his application, is not effected. Once the international registration is effected, he is called the *owner of the international registration.*

See, however, Article 4(5) and Rule 1.3 (Associations); they provide, in essence, that certain associations, in so far as they are applicants or owners of international registrations, are assimilated to legal entities.

ad (iv): Where any change in the ownership of an international registration is partial—that is, where it relates to fewer than all the designated States but to all or some only of the goods and/or services, or where it relates to all the designated States but to some only of the goods and/or services (see Article 14(1)(a))—the international registration will have at least two owners: the earlier owner, that is, the owner who is owner in respect of the designated State(s) and the goods and/or services for which no change in ownership is recorded in favor of the new owner(s), and the new owner(s), that is, the owner(s) who is (are) recorded as such in respect of the designated State(s), and the goods and/or services for which the change in ownership is recorded. The provision means that whenever there is a reference in the Treaty or the Regulations [3] to "the owner of the international registration" and, because of a partial change of ownership, an international registration has two or more owners, the expression must be construed as referring to the earlier owner as far as the international registration concerns States and goods (and/or services) in respect of which he is still the owner, and it must be construed as referring to the new owner(s) as far as the international registration concerns States and goods (and/or services) in respect of which the new owner(s) has (have) become owner(s). Consequently, any demand for renewal, any request for limitation of the goods and/or services, any request for recording further changes in ownership (subject to the latter part of Article 14(1)(c)), any appointment of a (new) representative, any withdrawal relating to the designated States and to the goods (and/or services) in respect of which the earlier owner remains owner or the new owner becomes owner must be signed by and becomes effective in respect of the earlier owner only or the new owner only, as the case may be. However, any later designation of a State not yet designated in the international registration may be the subject of a request for recording by any of the owners. Furthermore, any notification or any refusal under Article 12 is effective in respect of all the owners who are owners in respect of the State from which the said notification or refusal issues. The same is true in respect of any decision of cancellation where the cancellation proceedings started before the change in ownership.

ad (v): Article 7*bis* of the Stockholm (1967) Act of the Paris Convention reads as follows:

> "(1) The countries of the Union undertake to accept for filing and to protect collective marks belonging to associations the existence of which is not contrary to the law of the country of origin, even if such associations do not possess an industrial or commercial establishment.
>
> "(2) Each country shall be the judge of the particular conditions under which a collective mark shall be protected and may refuse protection if the mark is contrary to the public interest.
>
> "(3) Nevertheless, the protection of these marks shall not be refused to any association the existence of which is not contrary to the law of the country of origin, on the ground that such association is not established in the country where protection is sought or is not constituted according to the law of the latter country."

See also Articles 5(1)(a)(vii), 6(2)(a)(vi), 12(2)(i), 18(3)(c) and 19(6), these being the provisions which refer to collective and/or certification marks.

ad (vi): It is to be noted that, whereas in the expression "national mark" the word "national" does not include "regional," the word "national" does include "regional" in the expressions "national Office," "national register of marks," and "national law" (see items (xiii), (xiv) and (xvi)).

[3] The word "Regulations" in these Notes refers to the Regulations under the Trademark Registration Treaty.

ad (ix): As to the Gazette, see Rule 40 (The Gazette).

It goes without saying that, as is usual in legislative texts, the singular stands also for the plural and masculine pronouns stand also for feminine and neuter pronouns, wherever appropriate.

Notes on Article 3

Paragraph (1): See Rule 3 (International Register of Marks).

"Mark" is defined in Article 2(v).
"International Bureau" is defined in Article 2(xxi).
"Regulations" is defined in Article 2(xxiv).

Paragraph (2): See Article 4 (Right to File International Applications and to Own International Registrations) and Article 5 (The International Application).

"International registration" is defined in Article 2(i).
"International application" is defined in Article 2(ii).

Notes on Article 4

Paragraph (1): See Article 5 (The International Application).

The entitlement to file international applications may be restricted under paragraph (6).

According to Rule 4 (Applicant), the applicant must be the same for all the designated States. Consequently, the international registration will be in the name of the same person for all designated States. A change in ownership in respect of one or more of the designated States may be recorded only after the international registration has been effected (see Article 14(1)).

According to Rule 5.2 (Indications Concerning the Applicant), the international application must indicate the nationality and the residence of the applicant. The International Bureau will not examine whether these allegations are true. It is not, and could not reasonably be expected to be, equipped to do so. Whether a person is the national of a State or not, or the resident of a State or not, is a question which the national laws answer differently, and sometimes not very clearly, particularly in the case of dual nationality. Which law should the International Bureau follow? Thus, the question whether the applicant's allegation is true can be raised only before the national Office or other authorities of each designated State. If the allegation is held to be false, the effect of the Treaty on the protection of the mark can be refused or cancelled by such Office or authority (see Articles 12(1)(ii) and 13(1)(ii)).

Article 40(2) constitutes an exception to the rule laid down in this paragraph.

Paragraphs (2) and (3): These provisions are based on the concepts used in the Paris Convention, which grants national treatment to "nationals of any country of the Union" (Paris Convention, Article 2(1)) and assimilates to such nationals those "who are domiciled or who have real and effective industrial or commercial establishments in the territory of one of the countries of the Union" (Paris Convention, Article 3).

"National law" is defined in Article 2(xvi).

Paragraph (4): This provision means that it is not necessary that the applicant or owner should have both the nationality of and residence in a Contracting State: compliance with one of these criteria is sufficient.

Paragraph (5): Such associations are, for example, the *offene Handelsgesellschaft* and the *Kommanditgesellschaft* under the law of Germany (Federal Republic of) and the *société en commandite simple* under the law of Switzerland. See, however, Article 19(9).

Paragraph (6): The International Bureau does not examine whether the requirement described in this paragraph has been actually complied with where it applies. Any sanction for non-compliance is left to the national law of the State providing for such requirement.

Notes on Article 5

Paragraph (1)(a), introductory phrase: See Rule 5 (Mandatory Contents of the International Application).

Paragraph (1)(a)(i): See Rule 5.1 (Indication that the International Application Is Filed Under the Treaty).

Paragraph (1)(a)(ii): See Rule 5.2 (Indications Concerning the Applicant).

"Applicant" is defined in Article 2(iii).

Paragraph (1)(a)(iii): See Rule 5.3 (Reproduction of the Mark; Color; Transliteration).

Paragraph (1)(a)(iv): See Rule 5.4 (List of Goods and/or Services). Non-compliance with any of the criteria specified in this item cannot be a ground for declining the international application or the request for the recording of later designation, except where the proper classification causes an increase in the fees and the applicant does not pay the difference (see Article 7(4)).

"International Classification" is defined in Article 2(xxiii).

Paragraph (1(a)(v): See Rule 5.5 (Identification of of States). The designation of one Contracting State is permitted. Where the international application is for a regional mark and, under the regional treaty, the applicant cannot limit his application to some only of the States party to that treaty, designation of one of those States is treated as designation of all the States party to the said regional treaty (see Article 25(1)(b)).

"Designated State" is defined in Article 2(xii).

Paragraph (1)(a)(vi): See Rule 5.6 (Choice Between National and Regional Marks). "National mark" and "regional mark" are defined in Article 2(vi) and (vii), respectively. Where the applicant has no choice and can obtain only the effects of a regional mark, see Article 25.

Paragraph (1)(a)(vii): See Rule 5.7 (Collective Marks and Certification Marks).

Paragraph (1)(b): See Rule 6 (Optional Contents of the International Application).

As to the claiming of priority, see Rule 6.2 (Claiming of Priority). As to the conditions for and the effect of such claiming, see Article 27. "Earlier filings" could also be applications under the Treaty (see Article 28) or under regional treaties (OAMPI), Benelux); if they are, at least one of the countries "for" which they were filed will have to be indicated.

The additional optional indications provided for in *other provisions of the Treaty* concern:

- the choice of a certain national register or a certain part of the national register (see Article 11(3), and Rule 6.6: Option Under Article 11(3)),
- the declaration stating intent to use the mark in respect of any of the designated States (see Article 19(4), and Rule 6.3: Declaration of Intent to Use the Mark),
- the declaration stating actual use of the mark in respect of any of the designated States (see Article 19(3), and Rule 6.4: Declaration of Actual Use),
- the preservation of rights acquired through national registrations, or through international registrations under the Madrid Agreement (see Articles 21(2) and 22(2), Rule 6.5: Declarations Under Articles 21(2) and 22(2),

and Rule 27: Declarations Concerning Earlier National or Madrid Registrations).

The additional optional indications provided for *in the Regulations* concern:

the appointment of a representative (see Rule 2: Representation Before the International Bureau, and Rule 6.1: Naming of a Representative),
the indication that the mark is a three-dimensional mark or a sound mark (see Rule 5.3(d) and Rule 5.3(e)),
the indication of the trade or business of the applicant (see Rule 6.7: Trade or Business of the Applicant),
the submission of a translation of the mark (see Rule 6.8: Translation of the Mark).

Paragraph (1)(c): As to *language*, see Rule 7.1 (Langauge of the International Application).

As to *form*, see Rule 8.1 (Printed Forms).

As to *signature*, see Rule 8.2 (Copies; Signature) and Rule 29 (Signature). The international application may be signed by the applicant's duly appointed representative (see Article 26(2), second sentence).

As to *fees*, see Rule 9 (Fees Payable With the Filing of the International Application), as well as Article 18 (Fees) and Rule 31 (Payment of Fees).

Paragraph (2): Filing may be made by deposit with the International Bureau or with any agency of that Bureau established according to Article 32(2)(a)(ix) (if and when such agency is established in a place other than Geneva, Switzerland), or through mailing to the said Bureau or such agency (see Rule 28: Transmittal of Documents to the International Bureau). Paragraph (3) constitutes an exception to this paragraph.

Paragraph (3): This paragraph, together with Articles 6(3), 7(1), 7(2)(viii), 7(6), 8(1), 8(2)(a), 28(2), 29(3) and 38(2)(b), as well as Rules 5.8, 10.3(a), 10.7, 14.3, 15.1 and 31.2(i), constitutes a system which, subject to one exception, permits applicants and owners of international registrations residing in a Contracting State whose national law so provides to file their international applications and requests for the recording of later designations not direct with the International Bureau in Geneva (Switzerland) but through the intermediary of their own national Offices and ensures that the international registration date and the recording date of the later designation will be the date on which the said application or request reached the national Office, provided it reaches the International Bureau (after being forwarded by the national Office) within 45 days (see Articles 7(1) and 8(1)). The exception is that this "indirect filing system" is not available where there is an agency of the International Bureau functioning on the territory of the said State (see paragraph (3)(c)).

Paragraph (3)(a): Paragraph (2) provides that international applications must be filed direct with the International Bureau.

"National Office" is defined in Article 2(xiii).

Paragraph (3)(b): See Rule 5.8 (Application Filed Through the Intermediary of a National Office). As to the time limit of 45 days which is allowed to elapse between the filing of the international application in the national Office and its arrival in the International Bureau, see Articles 7(1) and 29(3) and (4).

Paragraph (3)(c): Article 32(2)(a)(ix) provides that the Assembly may decide upon the establishment of any agency of the International Bureau outside Geneva for the purposes of receiving documents and payments under the Treaty and the Regulations with the same effect as if they had been received by the International Bureau in Geneva. A typical agency under such a provision would consist of a single employee who would receive the papers and, before forwarding them to Geneva, would make a copy of them (in case they got lost or delayed in the mail) and would report once or twice a week to the International Bureau on the numbers of papers sent so that the latter could check whether they had actually been received. Such an agency could, of course, receive international applications and any other documents and any payments under the Treaty irrespective of the nationality or residence of the applicant or the owner of the international registration and therefore could, in practice, serve the residents not only of the State in which it is established but also, for example, of a whole region.

The exception constituted by this provision to the rule contained in Articles 5(3)(a) and 6(3)(a) is motivated by the fact that the residents of a State in which the International Bureau has an agency do not need the indirect filing system since the advantages that the latter would provide are ensured—without any of the risks inherent in the need for respecting the 45-day time limit—by the existence of an agency in that State.

NOTES ON ARTICLE 6

Paragraph (1): Any later designation may relate not only to a State which was never designated but also to one whose designation ceased to have effect (because it was withdrawn, refused, cancelled or not renewed). Where it ceased to have effect because of refusal or cancellation, such designation would generally make sense only if the reason for refusal or cancellation no longer existed.

"Owner of the international registration" is defined in Article 2(iv).

Requests for recording later designations may be filed before or after international registration.

Paragraph (2)(a), introductory sentences: See Rule 10 (Mandatory Contents of the Request for Recording of Later Designations).

In connection with the word *request*, the following terminological pattern of the Treaty may be noted: a petition for international registration is called an *application*, a petition for the recording of a later designation is called a *request*, a petition for renewal is called a *demand;* furthermore, only applications lead to *registration*, all other petitions lead to *recording*.

Requests may relate to one or several Contracting States. As to the word *direct*, see the Notes on Article 5(2). As to the meaning of "recording," see Article 2(xi). Paragraph (3) constitutes an exception to this paragraph.

Paragraph (2)(a)(i): See Rule 10.1 (Indication that the Request is for Recording of Later Designations).

Paragraph (2)(a)(ii): See Rule 10.2 (Indications Concerning the Applicant or the Owner of the International Registration). The indication of the residence and nationality of the applicant or owner is necessary since between the time of the filing of the international application and the time of the filing of the request for recording later designations his residence or nationality may undergo changes which no longer allow him to own international registrations. His address may also have changed.

Paragraph (2)(a)(iii): See Rule 10.3 (Identification of the International Application or International Registration).

Paragraph (2)(a)(iv): See Rule 10.4 (Identification of the Later Designated State) and the Notes on Article 5(1)(a)(v).

Paragraph (2)(a)(v): See Rule 10.5 (Indication of the Choice Between National and Regional Marks) and the Notes on Article 5(1)(a)(vi).

Paragraph (2)(a)(vi): See Rule 10.6 (Collective Marks and Certification Marks).

Paragraph (2)(b): See Rule 11 (Optional Contents of the Request for the Recording of Later Designations).

As to the claiming of priority, see Rule 11.1 (Claiming of Priority) and the Notes on Article 5(1)(b).

As to the possibility of presenting a more limited list of goods and/or services in respect of any later designated State than the list appearing in the international registration, etc., see Rule 11.5 (List of Goods and/or Services).

The additional optional indications provided for in *other provisions of the Treaty concern:*

the choice of a certain national register or a certain part of the national register (see Article 11(3), and Rule 11.6: Option Under Article 11(3)),
the declaration of intent to use the mark in respect of the designated State (see Article 19(4), and Rule 11.2: Declaration of Intent to Use),
the declaration of actual use of the mark in respect of any later designated State (see Article 19(3), and Rule 11.3: Declaration of Actual Use),
the preservation of rights acquired through national registrations, or through international registrations under the Madrid Agreement (see Articles 21(2) and 22(2), Rule 11.4: Declarations Under Articles 21(2) and 22(2), and Rule 27: Declarations Concerning Earlier National or Madrid Registrations).

Paragraph (2)(c): As to *language*, see Rule 7.2 (Language of the Request for Recording of Later Designations).

As to *form*, see Rule 12.1 (Printed Forms).

As to *signature*, see Rule 12.2 (Copies; Signature) and Rule 29 (Signature). The request may be signed by the duly appointed representative (see Article 26(2), second sentence).

As to *fees*, see Rule 13 (Fees Payable With the Request for Recording of Later Designations), as well as Article 18 (Fees) and Rule 31 (Payment of Fees).

Paragraph (3): See the Notes on Article 5(3).

NOTES ON ARTICLE 7

Generally: This Article deals mainly with the international registration.

Where the International Bureau finds no defects in the international application, it promptly effects the international registration (paragraph (1)). Where it finds defects, it invites the applicant to correct them (paragraphs (2)(a) and (3)(a)).

All defects may be corrected but, whereas certain defects (listed in paragraph (2)(a)) necessarily entail a later international registration date, others (listed in paragraph (3)(a))—when corrected within a relatively short time limit—do not entail a "later-dating." If, however, any of the latter defects is corrected after the expiration of the relatively short time limit but before the expiration of a prescribed longer time limit, the international registration will still be "later-dated."

Where any of the defects enumerated in the Treaty is not corrected within the applicable time limit, the International Bureau will decline the application or, in a particular case (see Article 7(3)(b)), the recording of a State as a designated State.

It is to be noted that, where the International Bureau declines the international application or, more precisely, declines to give the status of an international application to what purports to be an international application and such declining is the result of an error by the International Bureau, the applicant may alert it to its error and the International Bureau may come back on its decision. But even if it perseveres in its error, all the consequences of that error can be avoided by making use of the possibilities offered to the applicant by Article 9 (Avoiding the Effects of Declining). Where the error of the International Bureau does not result in declining the international application but causes some other prejudice—for example, unjustified later-dating—and the International Bureau perseveres in its error, that prejudice, too, can be avoided by making use of the possibilities offered by Article 30 (Correction of Errors of the International Bureau).

Paragraph (1): As to the registration, see Rule 3 (International Register of Marks).

As to the certificate of international registration, see Rule 17 (Certificates).

Paragraph (2)(a): These are defects so basic that as long as they are not corrected the papers that are called an "international application" do not really amount to one. That is why the international registration date cannot be the date on which the papers were received but can only be the date on which the defects were corrected ("later-dating").

Paragraph (2)(a)(i): See Article 5(1)(a)(i) and Rule 5.1 (Indication that the International Application Is Filed Under the Treaty).

Paragraph (2)(a)(ii): See Article 5(1)(c) and Rule 7.1 (Language of the International Application).

Paragraph (2)(a)(iii): It is to be noted that the ground for "later-dating" and for declining as defined in this provision permits non-compliance with certain provisions of Article 5(1)(a)(ii) and Rule 5.2 (Indications Concerning the Applicant). In particular, although Article 5(1)(a)(ii) and Rule 5.2(b) require that both the nationality and the residence of the applicant be indicated, the international application may not be "later-dated" or declined if one of them is missing and the existence of the other permits the conclusion that the applicant has the right to file international applications.

Paragraph (2)(a)(iv): It is to be noted that the ground for "later-dating" and for declining as defined in this provision permits non-compliance with certain provisions of Article 5(1)(a)(ii) and Rule 5.2 (Indications Concerning the Applicant). In particular, although Article 5(1)(a)(ii), in conjunction with Rule 5.2(a), requires that the applicant be indicated by his family name and given name(s) where he is a natural person and by his full official designation where such applicant is a legal entity, any indication that permits him to be identified will prevent "later-dating" and declining of the international application. Moreover, although Article 5(1)(a)(ii) requires that the applicant's address be indicated and Rule 5.2(c) defines the meaning of address, any indication that permits him to be reached by mail will prevent "later-dating" or declining of the international application.

Paragraph (2)(a)(v): See Article 5(1)(a)(iii) and Rule 5.3 (Reproduction of the Mark, etc.).

Paragraph (2)(a)(vi): See Article 5(1)(a)(iv) and Rule 5.4 (List of Goods and/or Services). As to certain defects in the list, see the Notes on paragraph (4).

Paragraph (2)(a)(vii): See Article 5(1)(a)(v) and Rule 5.5 (Indentification of the Designated State or States).

Paragraph (2)(a)(viii): See Article 5(1)(c) and Rule 9 (Fees Payable With the Filing of the International Application). As to international applications filed through the intermediary of a national Office, see the Notes on Article 5(3).

Paragraph (2)(a)(ix): See Rule 14.1 (Minimum Amount Under Article 7).

It is to be noted that certain imperfections in the international application—in addition to those referred to under paragraphs (2)(a)(iii) and (iv)—are not sanctioned by "later-dating" or by declining the application. For example, where the requirement that the reproduction of certain marks must be accompanied by a transliteration (Rule 5.3(f)) is not respected or where the requirement that goods and/or services must be grouped according to the classes of the International Classification (Rule 5.4(b)) is not respected, the International Bureau will itself proceed with the transliteration or grouping (see the cited Rules).

Another example is that, although the applicant is supposed to use a printed form (see Rule 8.1: Printed Forms), there is no legal consequence if he does not do so.

Paragraph (2)(a), last sentence: The International Bureau will not easily assume that it is unlikely that the invitation will not reach the applicant at the address indicated by the applicant himself.

Paragraph (2)(b): This is one of the cases of declining. Paragraph (3)(b) deals with another case of declining.

As to the procedure, see the Notes on paragraph (5).

Paragraph (2)(c): This is one of the cases of "later-dating." Paragraph (3)(d) is another case of "later-dating."

Paragraph (3)(a): These are defects which, if corrected within a certain period of time, will not cause "later-dating."

Paragraph (3)(a)(i): The date referred to in paragraph (2)(a)(viii) is the date on which the International Bureau receives the international application or, where the application is filed through the intermediary of a national Office, the date is 45 days after that on which the said Office received the application.

As to the minimum amount, see Rule 14.1 (Minimum Amount Under Article 7).

Paragraph (3)(a)(ii): The choice referred to in Article 5(1)(a)(vi) is a choice between the effects of a regional mark and those of a national mark.

See Rule 5.6 (Choice Between National and Regional Marks).

Paragraph (3)(a)(iii): See Article 5(1)(c), Article 26(2), second sentence, Rule 8.2 (Copies; Signature) and Rule 29 (Signature).

Paragraph (3)(b): This is one of the cases of declining. Paragraph (2)(b) deals with another case of declining. As to procedure, see the Notes on paragraph (5). It is to be noted that, where the only defect is the defect referred to in subparagraph (a)(ii) and it concerns some only of the designated States, the international registration will be effected but only in respect of the other designated States.

Paragraph (3)(c): This is a case where the international registration date will be the same as if the international application had contained no defect, and will therefore, in the case of direct filing, be the date on which the international application was received by the International Bureau and, in the case of filing through the intermediary of a national Office, will be the date on which the application was received by that Office, if in the latter case the International Bureau received the application within 45 days from that date (see paragraph (1)).

Paragraph (3)(d): This is one of the cases of "later-dating." Paragraph (2)(c) is another case of "later-dating."

Paragraph (4): According to Article 5(1)(a)(iv), the international application must contain a list of goods and/or services and in that list:

(i) the terms must be grouped under the applicable classes of the International Classification,
(ii) each term must be comprehensible,
(iii) each term must permit classification in one class only of the International Classification,
(iv) each term must, as far as possible, be one which appears in the alphabetical list of goods and/or services of the International Classification.

If the international application contains no list at all, it will be declined unless a list is furnished within three months (see Article 7(2)(a)(vi), (b) and (c)).

If the terms are not grouped according to the International Classification or if any term is not shown under the class to which it belongs, the International Bureau will, after giving the applicant an opportunity to question the Bureau's opinion, proceed with the grouping or the proper classification, as the case may be (see Rule 5.4(b)). Such an operation may or may not cause the paid amount of fees to be insufficient. If the amount of the fees is insufficient and if the difference is paid up within a certain time limit, the international registration will be effected without "later-dating" (see paragraphs (3)(b) and (4)(c)); if it is paid up within some other time limit, it will be effected with "later-dating (see paragraphs (2)(c), (3)(d) and (4)(b)); if it is not paid up within the latter time limit, the international application will be declined (see paragraphs (2)(b), (3)(b) and (4)(b)), provided, however, that the applicant may, instead of paying the difference, choose to limit the list in conformity with the formal concept of limitation and, where such limitation reduces the difference in the fees, that limitation will have the same effect as if the difference had been paid (see paragraph (4)(b)).

If any term is incomprehensible, and if the International Bureau maintains that it is incomprehensible even after an explication between the International Bureau and the applicant, the International Bureau will delete the incomprehensible term ex officio (see Rule 5.4(c)).

If any term does not permit classification in one class only of the International Classification, it will be classified in each of the applicable classes (Rule 5.4(b), last sentence); such classification may result in the procedure and consequences described in the paragraph before the preceding paragraph.

If any of the terms is not a term appearing in the alphabetical list of goods and/or services of the International Classification, this fact will have no legal consequences except where the term is incomprehensible, in which case it will be treated as described in the paragraph before the preceding paragraph.

Paragraph (4)(a): See the Notes on paragraph (4), above.

Paragraph (4)(b): See the Notes on paragraph (4), above. As to the formal concept of limitation, see Rule 24.2.

Paragraph (5)(a): See Rule 14 (Defects in the International Application) as well as Rules 5.4 (List of Goods and/or Services), 5.8 (Application Filed Through the Intermediary of a National Office), 7.3 (Language of Registrations, Recordings, Annotations and Communications), 8.3 (No Additional Matter) and 17 (Certificates).

Paragraph (5)(b): This provision means that, even where the invitation to correct a defect which causes the declining or the "later-dating" of the international application is not sent or is sent later than it should, or is not received or is received later than it should, or is not correct, the declining or "later-dating" will issue. The invitation to correct is, in fact, regarded as assistance to the applicant but not as assistance the lack of which could excuse defects for which the applicant alone is responsible. However, there is no reason to believe that the assistance will not be forthcoming or that it will not be forthcoming in time or that it will be incorrect.

Paragraph (5)(c): See Rule 14.2 (Notification, and Reimbursement of Certain Fees, Under Article 7(5)).

Paragraph (6): This provision deals with certain possible defects connected with indirect filing; the consequence of such defects will invariably be "later-dating" and never declining.

Paragraph (6)(i): See Article 5(3)(a), which permits filing through the intermediary of a national Office only to residents of the State whose national Office is the forwarding Office.

Paragraph (6)(ii): See Article 5(3)(b), which requires the indication of the date in question.

Paragraph (6)(iii): See the proviso in Article 7(1) ("provided that the said application is received by the International Bureau before the expiration of 45 days from that date [i.e., the date on which it was received by the said Office]").

Paragraph (6), last twenty-three words: This provision means that, if the indirect filing suffers from any of the three defects described in items (i) to (iii), the only consequence will be "later-dating." In other words, these defects can never result in declining.

NOTES ON ARTICLE 8

Generally: This Article mainly deals with the recording of later designations, with the possible defects in the request for the recording of later designations ("request") which may entail the declining of the request, and with the possible defects in the request as a consequence of which the recording of the later designation may not be effected under the date on which the request was received but under that on which the defect was remedied ("later-dating"). Insufficiency of fees is one of the possible "defects" in a request.

In its results, the Article parallels Article 7, which deals with the same questions as far as the international application is concerned. Consequently, the comments made under Article 7 apply also to this Article, subject to the following observations.

Paragraph (1): This paragraph deals with the normal situation, namely, where there is no defect in the request.

As to recording, see Rule 3 (International Register of Marks).

As to filing through the intermediary of a national Office, see the Notes on Article 5(3).

As to the certificate of the recording of the later designation, see Rule 17 (Certificates).

Paragraph (2)(a): As to Article 7(2) to (6), see the Notes on those provisions. See also Rule 15.1 (Application of Rule 14).

Paragraph (2)(b): Among the grounds which always cause "later-dating" and may cause declining in the case of international applications, there are two which are inapplicable in the case of requests.

One is contained in Article 7(2)(v) and is the case where the international application does not include the reproduction of a mark; since a request necessarily relates to an international application or international registration in which the mark is already identified, this provision is replaced by one which requires that the request identify the said application or registration.

The other is contained in Article 7(2)(vi) and is the case where the international application does not contain a list of goods and/or services. The request does not have to contain such a list and, if it does not, the list contained in the international registration as first published or, if not yet published, that contained in the international application after any limitation under Article 7(4) shall apply also to the States designated in the request. The request may, however, contain a list but, if it is different from the "original" or limited list, as the case may be, it must conform with the formal concept of limitation. That concept is defined in Rule 24.2 (Formal Concept of Limitation). If non-compliance with this requirement is corrected within one month from the date of the invitation to correct, "later-dating" will be avoided. If corrected later but before the expiration of three months from the date of the filing of the request, it will cause "later-dating." Failure to correct will cause declining. All of this results from Article 8(2)(c) in conjunction with Article 7(b), (c) and (d).

Paragraph (2)(c): See the third paragraph of the Notes on paragraph (2)(b).

NOTES ON ARTICLE 9

Paragraph (1): This paragraph provides for a choice between two possibilities of avoiding the effects of any error by the International Bureau resulting in the declining of the international application or of the request for the recording of a later designation. The choice lies with the applicant (or the owner of the international registration), and the decision on the question whether the International Bureau has erred or not rests with the national Office of any designated State. The applicant or owner may either ask the designated Office to request the International Bureau to proceed, in respect of the State of that Office, with the international registration or the recording of the later designation (item (i)), or, alternatively, he may ask for his mark to be registered in the national register of marks of the said State (item (ii)), and, if the designated Office finds that the International Bureau has made an error, the applicant's or owner's request will be fulfilled and, in the case of item (i), the effective date of the registration or recording in the International Register of Marks will be the same as if the error had not occurred, whereas, in the case of item (ii), the "national application" will be considered by the national authorities to have been filed on the date which would have been the international registration date or the recording date of the later designation if no error had been made by the International Bureau (see paragraph (2)). Thus the Treaty provides for complete guarantees against any error made by the International Bureau in declining an international application or a request for the recording of a later designation. Guarantees against errors by the International Bureau in respects other than the said erroneous declining are provided for in Article 30.

See Rule 16.2 (Information Available to National Offices) and Rule 16.3 (Information Furnished by the National Office).

Paragraph (2): See the Notes on paragraph (1), above.

Paragraph (3): See Rule 16.1 (Recording and Publication Under Article 9(3)). The recording is notified by the International Bureau to the owner of the international registration (see Article 31).

NOTES ON ARTICLE 10

Paragraph (1): The publication is effected in the Gazette of the International Bureau, since Article 2(ix) provides that "references to any publication by the International Bureau shall be construed as references to publications effected in the official Gazette of that Bureau."

As to the contents of the publication, see Rule 18.1 (Contents of Publication of International Registrations) and Rule 18.2 (Contents of Publication of Recordings of Later Designations). The publication will be effected in English and French (see Rule 40.3: Languages of the Gazette), normally (where no defects are found) within between ten and twenty days from the date on which the application or request was received by the International Bureau (direct or through the intermediary of a national Office) if it is assumed that preparations for the registration and publication will last approximately ten days and if it is considered that the Gazette will be weekly (see Rule 40.2: Frequency of Issue of the Gazette).

The Regulations contain no provision on the question whether the registration of a mark relating to goods and/or services belonging to several classes of the Nice Classification should be published as one item or as many items as there are classes. The matter will be regulated in the Administrative Instructions. The present intention of the International Bureau is to proceed as follows. The Gazette will have a separate section for each class of the Nice Classification. Each registration which relates to one class only will be published in the section corresponding to that class. Where any registration relates to several classes, it will be published in the section corresponding to that class which has the lowest number among the said classes,

whereas in each other relevant section mention will merely be made of the international registration number or international later designation number, together with a reproduction of the mark, and the page number of the Gazette on which the registration appears. The same principle would apply also to the publication of the recording of later designations.

As to access to information through other means than the Gazette, see Rule 41 (Copies and Other Information Available to the Public).

Paragraph (2): See Rule 19 (Notification of International Registrations and Recordings of Later Designations), according to which the notification will essentially consist of a reprint of the relevant passages in the Gazette. However, where the international application or the request for the recording of the later designation contains a declaration of intent to use the mark, the notification to the interested designated Office will also include a copy in full of that application or request (see Rule 19.1(iii)).

Where a declaration of actual use was attached to the international application (see Rule 6.4) or to the request for the recording of the later designation (see Rule 11.3), a copy of that declaration will be included in the notification to the interested national Offices (see Rule 19.1(iv)).

Where the international application was accompanied by a reproduction in color of the mark, the notification to the interested national Offices will also include copies of that reproduction in color (see Rule 19.1(v)).

The recording of any later designation is notified by the International Bureau to the owner of the international registration (see Article 31).

NOTES ON ARTICLE 11

Paragraphs (1) and (2): These two paragraphs state the two effects of the international registration: the first is the same as that of national filing, the second is the same as that of national registration. In these Notes, the first will sometimes be referred to as the *"national application effect* (of the international application)," and the second as the *"national registration effect* (of the international registration)."

These indications appear also at the beginning of the paragraphs, in brackets, as a sort of title.

"National register of marks" is defined in Article 2(xiv).

Paragraph (1): The national application effect comes into existence as of the international registration date, which is generally the date on which the international application was received by the International Bureau or, in the case of indirect filing, by the national Office (see Article 7(1)) or, in the case of a later designation, as of the recording date of the later designation, which generally is the date on which the request for recording the later designation is received by the International Bureau or, in the case of indirect filing, by the national Office (see Article 8(1)).

In essence, this paragraph provides that an international registration has the same effect as a national application. It should be noted that it contains no provision attempting to harmonize the effects attached to national applications under the various national laws. Consequently, each State's national law will continue to be completely free in this respect. Whatever effect is provided for national applications will be applicable under this paragraph to international registrations.

Paragraph (2): This provision, together with the provision on renewals, is the most important one of the Treaty. The Treaty has been concluded for the very reason that a single (international) registration should be able to take the place of the separate (national) registrations in each of those States in which the owner of the mark is interested in obtaining protection. This is the provision which accomplishes the desired aim.

The provision means that the effect of the international registration in each designated State (whether designated in the interantional application or later) is the same as that of the registration of the same mark, for the same goods and/or services, in the national register of marks of that State ("national registration effect").

It should be noted that neither this provision nor any other provision of the Treaty attempts to harmonize the effects attached to national regisration under the various national laws. Consequently, each State's national law will be free to provide the effects it desires to provide for national registration, and whatever effect is so provided will be applicable under this paragraph to international registrations. One of the examples of the freedom left to national laws is that no given time limit has necessarily to be computed from the date of registration; thus, for example, any requirement of the national law concerning incontestability or the use of the mark may run from any point in time (subject, of course, as far as use is concerned, to respecting Article 19(3)), but any time limit or right which, according to the national law, runs from the national registration date (as distinguished from national filing) will run from the international registration date unless the Treaty provides for exceptions or a different system. (For the sake of simplicity, the Notes on this paragraph speak only of the international registration date; however, the expression should always be understood as including also the recording date of the later designation when the designation has not been made in the international application but in a later request.)

Furthermore, it should be noted that protection cannot be acquired, through international registration, in a designated State for marks which are unregistrable in the national register of that State; for example, service marks, three-dimensional marks or sound marks in States in which service marks, three-dimensional marks or sound marks are not registrable. If such a State is designated, its authorities should use the right of refusal given to it by Article 12; but, even if such a State fails to refuse, the designation will have the same effect as that of a national registration made in error (i.e., in most cases, none).

Finally, it should be noted that the fact that the effect, once acquired, is the same as that of a national registration implies that it can be taken away for the same reasons as those for which a national registration can be cancelled, for example, because it should never have been made (because accepting it for registration was contrary to the law), or because it has not been renewed, or because the mark is not being used when it should be. However, the Treaty provides for guarantees or alternative possibilities: cancellation must strictly follow the national treatment principle of the Paris Convention (see Article 13), renewal is to be effected internationally (see Article 17), and use generally cannot be required during an initial period, usually three years, after the international registration or the later designation (see Article 19(3)(a)).

As to "international registration date," see Article 7(1), (2)(c), (3)(c), (3)(d) and (4)(b). Article 8(1) and, *mutatis mutandis*, Article 7(2)(c), (3)(c), (3)(d) and (4)(b) indicate what the "recording date of the later designation" is.

Paragraph (3): This paragraph is intended, in particular, to cover the situation existing in the United States of America, the United Kingdom, and a number of States following the UK system, namely, where there are two registers of marks or one register having two parts ("Principal" and "Supplemental" in the United States of America or "Part A" and "Part B" in the United Kingdom). The provision leaves it to the discretion of the applicant or the owner of the international registration to decide whether, in the said examples, the national registration effect will relate to the Principal Register or to the Supplemental Register, or to Part A or to Part B of the Register. If the application or the request for recording of a later designation does not contain an indication that the Supplemental Register or Part B of the Register is chosen, the effect will relate to the Principal Register or Part A of the Register, since they afford a higher degree of protection than the Supplemental Register and Part B of the Register. See Rule 6.6 (Option Under Article 11(3)) and Rule 11.6 (Option Under Article 11(3)).

NOTES ON ARTICLE 12

Paragraph (1)(i): This provision enunciates the principle according to which the "national application effect" and the "national registration effect" may not, on the basis of an international registration, materialize for the same reasons as those for which the national registration of a mark applied for direct in the national Office cannot be granted.

The principle is qualified in three respects. *First,* the refusal must follow certain procedural requirements (see paragraph (2)). *Secondly,* the refusal cannot be in violation of Article 19, which provides for the non-applicability of certain national requirements generally or for a limited period of time. *Thirdly,* the national registration effect cannot be put, so to speak, in double jeopardy by exposing the mark to a new possibility of refusal when it has already been exposed to such possibility because the mark which is the subject of the international registration is neither more nor less than a mark which is already in the national register or which is already in the other international register, namely, that maintained under the Madrid Agreement (see Article 21 (Preservation of Rights Acquired Through National Registration) and Article 22 (Preservation of Rights Acquired Through International Filing Under the Madrid Agreement)). The question that may arise is why a State in which the mark is already protected (by virtue of a national registration or by virtue of the Madrid Agreement) should be designated at all under the Treaty. The answer is that under the Treaty the surveillance of renewals is much simpler if not also much cheaper (see Article 17(2) and the Notes accompanying Article 21(1)).

The grounds on which the refusal is based must not be incompatible with the provisions of the Treaty and the Regulations or of the Paris Convention. That they must not be incompatible with the Treaty and the Regulations is a matter of course. That they cannot be incompatible with the Paris Convention follows from the fact that only States members of the Paris Union may become party to the Treaty (see Article 39(1)). The reference to "the most recent provisions" means that, for example, if a State is bound by the administrative provisions of the Stockholm Act but not by its substantive provisions, and if it is also bound by the Lisbon Act, it will have to apply, in connection with the paragraph in question, the provisions of the Lisbon Act since the provisions that are applicable under that paragraph are substantive (rather than administrative) in nature. These matters are dealt with in the first proviso of the provision under consideration.

The second proviso provides that the refusal must also respect Article *6quinquies* of the Stockholm Act of the Paris Convention. In this case, the mere reference to the Paris Convention would not suffice since the said Article refers to the notion of country of origin, and marks which are the subject of international registration do not have a country of origin when the international registration is not preceded by a registration in the national register of a country. Sections B and C of Article *6quinquies* provide the reasons for which marks may be "denied registration" or may be "invalidated" (Section B) or may be "refused" (Section C). In the Treaty's terminology, these acts are called refusals or cancellations (Articles 12 and 13). It is to be noted that any Contracting State could, in connection with international applications filed under the Treaty, apply Article *6quinquies* in the same way as it applies that Article in connection with national applications.

Paragraph (1)(ii): See Article 4 (Right To File International Applications and To Own International Registrations). This ground of refusal is expressly mentioned because national laws naturally do not deal with the question who is entitled to file international applications.

Paragraph (2), generally: This paragraph specifies the procedural requirements which any refusal, to be effective under the Treaty, must satisfy. Roughly stated, it means that the refusal can generally be based only on such grounds as are notified—via the International Bureau—within a certain time limit to the owner of the international registration. The notification is made *via* the International Bureau because it might be awkward, or even imposible from a legal view point, for a national Office to send official communications to persons in foreign States. Naturally, this difficulty could be eliminated if the owner of the international registration were obliged to have a representative or at least an address for service in each of the designated States. However, this would always be costly for him and often completely unnecessary, especially where there is no dispute between him and the national Office. But, of course, if there is a refusal or notice of possible refusal, and the owner wants to defend his case, he will have to conform, from then on, to the national procedure, because he can only react direct, that is, not through the International Bureau. Consequently, he will have to use the remedies available under the national law in accordance with that law. This will necessitate a knowledge of the national law, the use of the official language of the national Office, and the practical if not the legal necessity of using the services of a local representative (attorney, agent, or other). See Article 19(7).

Where the address of the owner of the international registration is in the State which notifies the refusal or notice of possible refusal, the national Office could, if it so desired, send a copy of the notification to the owner. Such a copy may give the owner a few more days to react if he so desires.

Paragraph (2)(a)(i): See Rule 20.1 (Notifying the International Bureau; Grounds). For the definition of the date of publication, see Article 2(x).

For the case where the notification is made but the time limit is missed, see Rule 20.5 (Belated Notifications).

Paragraph (2)(a)(ii): See Rule 20.1 (Notifying the International Bureau; Grounds).

Paragraph (2)(a)(iii): See Rule 20.1 (Notifying the International Bureau; Grounds). For the definition of "final," see Article 2(viii).

Where the final decision is notified within the 15 or 18 months time limit, item (ii) rather than item (iii) is applicable as to the grounds of refusal.

Paragraph (2)(b): The rule expressed in subparagraphs (a)(ii) and (iii) is that the grounds specified in the final decision of refusal must include at least one of the grounds specified in the non-final refusal or in the notice of possible refusal; otherwise the notice could become a meaningless formality which would not give the applicant the required warning. However, it does not seem practical to apply that rule to final decisions in proceedings before courts or other independent review authorities since courts and such authorities may not wish to have their freedom of decision limited by any earlier administrative finding. This subparagraph gives them that freedom. Naturally, in almost all cases, the same result could be obtained, without this subparagraph, by pronouncing

the negative decision in the form of a cancellation rather than in the form of a refusal.

Paragraph (2)(c): Article 19(3) permits the national law—with certain restrictions—to require that the owner of an international registration use the mark. Non-compliance with such requirement may be a ground for refusal even where the provisions of subparagraph (a) are not respected.

Paragraph (3): "Reasonable time limits" should be understood as meaning that the owner of the international registration will, if he is diligent, have sufficient time for preparing and presenting his reaction to the notification.

Paragraph (4)(a): The recording is made in the International Register of Marks (see Article 2(xi)). The International Bureau notifies the owner of the international registration of the recording (see Article 31). A corresponding notice is published in the Gazette (see Article 2(ix)).

Paragraph (4)(b): See Rule 20.3 (Notification and Recording of Final Decisions of Refusal; Cancellation of the Designation, and Publication of the Cancellation).

Paragraph (4)(c): See Rule 20.4 (Notification and Publication Where Final Decision Results in Acceptance of the Effect Provided for in Article 11(2)).

Paragraph (4)(d): See the two Rules referred to in the preceding two paragraphs. See also Article 31 (Notification of Owner of International Registration).

NOTES ON ARTICLE 13

Paragraph (1)(i): Since the international registration is a constructive national registration (see Notes on Article 11(2)), it is logical that, once acquired, it should be capable of being taken away ("cancelled") for the same reasons as a "real" national registration. That is the principle enunciated in this provision. See also the Notes on Article 12(1)(i).

Paragraph (1)(ii): See Article 4 (Right To File International Applications and To Own International Registrations) and the Notes on Article 12(1)(ii).

Paragraph (2): This provision can be regarded as specifying for a special purpose—namely, for decisions of cancellation—the national treatment rule of the Paris Convention. It goes without saying that this provision does not apply in those cases in which, according to the national law, the omission of certain acts by such owner entails, *ipso facto,* cancellation of registrations.

Paragraph (3): This provision deals with the question how to inform all those concerned and the public at large of the fact that the designation of a State has failed because of a final decision of cancellation pronounced by the authorities of that State. See Rule 21.1 (Notification and Recording of Final Decisions of Cancellation; Cancellation of the Designation, and Publication of the Cancellation). The owner of the international registration is notified of the recording by the International Bureau (Article 31). As to the definition of "final," see Article 2(viii).

NOTES ON ARTICLE 14

Paragraph (1)(a): The change in the ownership may have various causes. It may be caused by reason of a contract (typically, assignment) or by operation of law (for example, inheritance). The Treaty does not regulate, and the International Bureau will not examine, the question whether a change has really occurred, in particular whether the contract transferring the property is valid and the transferee capable of owning property. However, the competent authorities of any designated State may deny, in respect of that State, the effect of the recording of the change in ownership in the International Register of Marks as provided for in paragraph (4).

Paragraph (1)(b): See Rule 22.1 (Request for Recording of Change in Ownership).

Paragraph (1)(c): The attestation is provided for in Rule 22.1(e).

Paragraph (1)(d): As to the fee, see Rule 22.1(g). See also Rule 31 (Payment of Fees).

As to publication, see Rule 22.2 (Publication Where the Change in Ownership is Total) and Rule 22.3 (Publication Where the Change in Ownership is Partial).

As to the notifications, see Rule 22.4 (Notification of Recording of Changes).

Paragraph (2): See Rule 22.5 (Notification of Declining of the Recording).

Paragraph (3): Paragraph (4) deals with the denial of the effect of the recording of the change in ownership.

Paragraph (4)(a): Paragraph (3) deals with the effect of the recording.

Paragraph (4)(b): Paragraph (3) deals with the effect of the recording. The publication referred to in paragraph (1)(d) is the publication of the recording.

Paragraph (4)(c): Paragraph (3) deals with the effect of the recording. As to the procedure, see Rule 22.6 (Denial).

Paragraph (5): It appears to be only logical that where the new owner is neither residing in nor a national of a Contracting State he should not be allowed to benefit from the Treaty. However, where the new owner acquired ownership by means other than by contract—for example, by inheritance—that is, by means over which he generally has no control, and where, under the national law of the designated State, he may own registrations, it would seem equitable to allow him to switch over to the national register. That is what the present provision is intended for.

NOTES ON ARTICLE 15

Paragraph (1): The Treaty does not regulate, and the International Bureau will not examine, the question whether a change in the name of the owner has really occurred nor the question whether the change in the name does not also amount to a change in the ownership of the international registration.

However, the national law of any Contracting State may require the production, within a certain time limit, of evidence that the former name and the new name indicate the same natural person or the same legal entity. If such evidence is not produced in good time, the Contracting State may deny the effect of the change in the name recorded in the International Register of Marks, but of course only in respect of that State (see paragraph (6)).

The recording of the change in the name of the owner of the international registration is notified to him by the International Bureau (see Article 31).

Paragraph (2)(a): The fee varies according to whether the request relates to one or more international registrations. See the Table of Fees, items 4.1 and 4.2.

Paragraph (2)(b): See Rule 23.1 (Request for Recording of Change in the Name).

Paragraph (2)(c): See Rule 29 (Signature).

Paragraph (2)(d): See Table of Fees, item 4.

Paragraph (3): See Rule 23.2 (Publication) and Rule 23.3 (Notification of Recording).

Paragraph (4): See Rule 23.4 (Notification of Declining of the Recording).

Paragraph (5): Paragraph (6) deals with the denial of effect of the recording of the change in the name.

Paragraph (6)(a): See the Notes on paragraph (1). Paragraph (5) deals with the effect of the recording of the change in the name.

The publication referred to in paragraph (3) is the publication of the recording of the change in the name.

Paragraph (6)(b): Paragraph (5) deals with the effect of the recording of the change in the name. As to procedure, see Rule 23.5 (Denial).

The recording of the denial is notified by the International Bureau to the owner of the international registration (see Article 31).

NOTES ON ARTICLE 16

Paragraph (1): As to the request, see Rule 4.1 (Request for Recording of Limitation of the List).

It is important that only such changes be recordable as are *true* limitations. If additions or such other changes were permitted as could be regarded as extending the list of goods and/or services, the designated Offices would have to be given a new opportunity to refuse the "national registration effect" since what was acceptable in respect of a certain list might well be unacceptable under a list of a broader scope. Re-opening the refusal procedure would be too complicated. If the owner wants to cover additional goods and/or services, he will have to apply for a new registration of the mark for those additional goods and/or services.

Deciding whether a limitation is a true limitation is not always easy if the limitation takes the form of substituting one term for another. That is why Rule 24.2 (Formal Concept of Limitation) does not allow substitutions (and obviously—even less so—additions) but only deletions and such qualifications of existing terms as are easy to recognize and can lead to nothing but a true limitation. A "term" may, of course, consist of several words (e.g., tropical fruits).

The competent authorities of any designated State have the right to disagree with the declining or with the recording of the requested limitation by the International Bureau if such authorities find that, in fact, the requested limitation is or is not, as the case may be, a limitation (see paragraph (5)).

The recording of the limitation is notified to the owner of the international registration by the International Bureau (Article 31).

Limitation of the list of goods and/or services is also possible in combination with the request for recording later designation (see Article 6(2)(b), second sentence, and Rule 11.4). In this case, there is no need for a separate request and no fees for the limitation are due.

Paragraph (2): As to the fee, see Rule 24.1(c). See also Rule 31 (Payment of Fees).

As to procedure, see Rule 24.3 (Recording, Publication, and Notification, of Limitation of the List).

Paragraph (3): See Rule 24.4 (Declining the Recording of Limitation of the List).

Paragraph (4): Paragraph (5) deals with cases in which a designated State disagrees with the decision of the International Bureau.

Paragraph (5)(a): The question whether a request for limitation is acceptable or not is decided by the International Bureau by applying the "formal concept of limitation" as defined in Rule 24.2, whereas the same question is decided by the national authorities of the designated States by examining whether the limitation is "in fact" a limitation (see the present paragraph).

As to procedure, see Rule 24.5 (Invitation To Record Limitation of the List; Recording, Publication and Notification).

Paragraph (5)(b): See the first paragraph of the Notes on paragraph (5)(a).

As to procedure, see Rule 24.5 (Invitation To Record Limitation of the List; Recording, Publication and Notification).

Paragraph (5)(c): See Rule 24.5 (Invitation To Record Limitation of the List; Recording, Publication and Notification).

The recording is notified by the International Bureau to the applicant (see Article 31).

NOTES ON ARTICLE 17

Paragraph (1): As to "international registration date," see Article 7(1), (2)(c), (3)(c), (3)(d) and (4)(b).

It goes without saying that any later designation becomes part of the international registration and thus renewal in respect of later designated States will be due at the same time as in respect of States designated in the international application itself. Consequently, for example, where the later designation took place four years after the international registration date, it will be effective only for the six remaining years of the initial term.

Paragraph (2)(a): This provision implies that the demand for renewal may relate to all or to one or some only of the designated States. Such limitation of the renewal to one or some of the designated States can be effected by excluding in the demand for renewal those designated States in respect of which renewal is not desired (see Rule 25.2(a)).

It is to be noted that, according to Rule 25.2(b), any renewal may relate to one or some only of the classes of the list of goods and/or services appearing in the international registration. Such limitation can be effected by excluding in the demand for renewal those classes in respect of which renewal is not desired. Such limitation to certain classes may be different for different designated States.

Paragraph (2)(b): This provision means that the "national application effect" and the "national registration effect" will continue. Compliance with the requirements of the national law of any designated State concerning renewals is neither required nor, indeed, possible.

Paragraph (2)(c): As to the computation of terms, see Rule 30.2 (Periods Expressed in Years, Months, or Days).

Paragraph (3)(a): The International Bureau must remind the owner of the international registration that the time for renewal is approaching (see Rule 25.1: Reminder by the International Bureau).

As to the form and contents of the demand, see Rule 25.2 (Demand for Renewal).

As to the fees, see Rule 25.3 (International Renewal Fee and State Renewal Fees). The "renewal surcharge" is referred to in Rule 25.3(a)(i) and Rule 25(3)(b). See also Rule 31 (Payment of Fees).

Where the demand is imperfect, the International Bureau must, whenever practicable, invite the owner of the international registration to correct the demand or to pay the (missing part of the) fees. See Rule 25.4 (Imperfect Demands).

Where the demand is presented or the fees are paid too early or too late or where the demand is imperfect or the fees are not paid or not completely paid, the demand is declined and certain fees are reimbursed. See Rule 25.6 (Declining the Demand) and Rule 25.7 (Reimbursement of Certain Fees).

Paragraph (3)(b): As to the recording of the renewal and its notification to each designated Office, see Rule 25.5 (Recording, Publication, and Notification). The recording of the renewal is notified by the International Bureau to the owner of the international registration (see Article 31).

As to publication of the renewal, see Rule 25.5 (Recording, Publication, and Notification). The publication is made in the Gazette. It gives a complete picture of the international registration after renewal. This kind of publication of renewed international registrations has the advantage that an up-to-date picture of all registrations that are still valid can be found in the Gazettes issued over the past ten years.

It is to be noted that the fact of non-renewal in respect of any designated State is to be recorded in the International Register of Marks (see Rule 25.8: Recording of Lack of Demand). From time to time the International Bureau must publish a list of international registrations which have not been renewed for any of the designated States (see Rule 25.9: Publication of Lists of International Registrations Not Renewed).

"Designated Office" is defined in Article 2(xv).

NOTES ON ARTICLE 18

Paragraph (1): As to the fees to which the International Bureau is entitled in connection with the filing of the international application, see Rule 9.1 (International Application Fee . . .), in particular paragraphs (a)(i) and (b) of that Rule; in connection with the request for the recording of later designations, see Rule 13.1 (International Later Designation Fee . . .), in particular paragraphs (a)(i) and (b) of that Rule; in connection with the demand for renewal, see Rule 25.3 (International Renewal Fee . . .), in particular paragraphs (a)(i) and (b) of that Rule: in connection with other operations and services, see the Table of Fees.

Paragraph (2): In connection with each designation concerning it, each State is entitled either to an individual State designation fee or to a standard State designation fee. See Rule 9.1 (. . . State Designation Fees), in particular paragraphs (a)(ii) and (c) of that Rule; Rule 13.1 (. . . State Designation Fees), in particular paragraphs (a)(ii) and (b) of that Rule; and, in connection with the standard fees, also the Table of Fees.

In connection with each renewal concerning it, each State is entitled to either an individual State renewal fee or to a standard State renewal fee. See Rule 25.3 (. . . State Renewal Fees), in particular paragraphs (a)(ii), (b) and (c) of that Rule; and, in connection with the standard State renewal fees, also the Table of Fees.

As to the beneficiary of the fees in the case of regional treaties, see Article 25(2)(i).

Each Contracting State may choose to benefit from the individual fees or from the standard fees. As to the choice, see Rule 33 (Choice Between Individual and Standard State Fees). The main difference between the two kinds of State fees is that, whereas the amount of the individual State fees is determined by each State for itself (see paragraph (3)(a)), the amount of the standard State fees is fixed in the Table of Fees annexed to the Regulations. However, the individual State designation fee cannot exceed the total amount of the national fees prescribed by the same State in connection with a national application (see paragraph (3)(e)), whereas the individual State renewal fee cannot exceed the national renewal fee for a comparable renewal period (see paragraph (3)(f)). Any Contracting State which has chosen the individual fees may change the amounts of those fees within the stated limits (see Rule 34: Change in the Amounts of Individual State Fees); the standard State fees can only be changed through amendment of the Regulations by the Assembly with a qualified majority (see Article 35(2)-(b)). When the Assembly decides on changes of the standard State fees, only the Contracting States which have chosen the standard fee system have the right to vote (see Article 35(2)(c)).

The choice that each Contracting State will make between the two fee systems may partly depend on the question which of the two will provide the higher fees: States having relatively high national fees will usually earn more under the individual fee system, whereas States having relatively low national fees will usually earn more under the standard fee system, particularly if they carry out examination at the national level to any extent. Another consideration that may play a part in the Contracting State's choice is the fact that under the individual fee system the amount depends entirely on the wish of the interested State, whereas under the standard fee system the amounts can only be changed by a vote, possibly not entirely to the liking of States that have not voted for it.

As to the choice between the two kinds of fees in the case of regional registrations, see Article 25(2)(ii).

Paragraph (3)(a): See the second last paragraph of the Notes on paragraph (2).

See Rule 33.1 (Initial Choice), in particular the second sentence of that Rule, and Rule 33.2 (Change in Choice), first sentence. See also Rule 34 (Change in the Amounts of Individual State Fees).

Paragraph (3)(b): See Rule 33.1 (Initial Choice), Rule 33.2 (Change in Choice) and Rule 34.1 (Communication; Effective Date).

Paragraph (3)(c): Individual fees may, in certain cases, vary also according to the number of the designated States where the international registration has the effect of a regional registration under a regional treaty (see Article 25(2)(iii)).

Paragraph (3)(d): See Rule 35.1 (Individual State Fees).

Paragraph (3)(e): As to the limit applicable in the case of regional registrations, see Article 25(2)(iii).

Paragraph (3)(f): As to the limit applicable in the case of regional registrations, see Article 25(2)(iii).

Paragraph (4)(a): See the Table of Fees.

Paragraph (4)(b): See Rule 35.2 (Standard State Fees).

Paragraph (5): See Rule 33 (Choice Between Individual and Standard State Fees), Rule 34 (Change in the Amounts of Individual State Fees), Rule 35 (State Fees), Rule 36 (Fees Belonging to the International Bureau) and, in the case of regional marks, Rule 42.2 (Fees).

The *amounts* of all major fees are shown in the Table of Fees annexed to the Regulations; the amounts of minor fees will be given in the Administrative Instructions; the amounts of the individual State fees are published once a year in the Gazette.

Partial reimbursement is provided for in Rules 14.2 (Notification, and Reimbursement of Certain Fees, Under Article 7(5)), 15.1 (Application of Rule 14), and 25.7 (Reimbursement of Certain Fees): where the International Bureau declines the international application or the request for recording of a later designation, or the demand for renewal, the fees belonging to the designated States are reimbursed since, because of the fact that the international application, the request or the demand has been declined, such States are *not* designated States. The fees belonging to the International Bureau are not reimbursed since that Bureau has performed the task of checking and conducting correspondence with the applicant or owner, a task that is frequently more costly than in a routine case because the cases involved are those where the application, request or demand have defects.

NOTES ON ARTICLE 19

Paragraph (1): As far as "the obtaining . . . of the effects . . . of international applications [and] international registrations" is concerned, the effect of this paragraph in particular is that no designated State may collect any fee that would be payable, in a national procedure, before and including national registration, that is—depending on the national laws—filing fees, search and examination fees, registration fees, grant fees, publication fees, class fees, fees payable in an opposition proceeding by the applicant, and any other fees, but, of course, *not* fees payable by the opposer in any opposition proceeding and *not* fees payable by the petitioner in any cancellation proceeding (since such fees are not fees payable by the owner of the international registration).

As far as the "renewing of the effects . . . of . . . international registrations" is concerned, the effect of this paragraph in particular is that no designated State may collect any fee that would be payable, in a national procedure, for renewing a national registration, that is—depending on the national laws—renewal fees and publication fees (for the publication of the renewal).

As far as the "recordings concerning such [i.e., international] applications and registrations" are concerned, the effect of this paragraph in particular is that no designated State may collect any fee that would be payable, in a national procedure, for the recording of changes in ownership, changes in the name of the owner, changes in address, and limitations of the list of good and/or services.

This paragraph does not exempt from payment of fees to national authorities where such an authority is not the national Office but rather, for example, a court of the designated State (since the paragraph speaks about *national Offices* not being entitled to fees), where the national Office acts as an "independent review authority" (for example, an appeals board against whose decisions there is no recourse to the (Head) of the national Office), or where the national Office examines evidence concerning changes in ownership (see Article 14(4)(b), last sentence).

Paragraph (2): Some national laws provide that for each different class a separate registration is required, or that each registration may relate to only a given number of goods and/or services (for example, ten). Such provisions may not be held against an international registration. Since the amount of the fees payable under the Treaty may depend, among other things, on the number of classes to which the goods and/or services belong, the fee aspects of the said national laws could be taken care of partly if not always wholly.

Paragraph (3)(a): The national laws of some States provide that a mark must be used before an application concerning it may be filed, or before the registration concerning it may be granted. Some national laws provide that the registration must be cancelled if the mark is not used within a specified period of time. Some national laws provide for the cancellation of marks which have been abandoned and establish a presumption of abandonment when the mark is not used for a specified period and its non-use is not excusable.

Under the Treaty these provisions also apply to marks which are the subject of international registration to the same extent as they apply to marks registered nationally in that State, but with an important qualification: *non-use* at any time prior to the expiration of *three years* may not be a ground for refusing the effects, for cancelling them or for otherwise impairing them. An example of the last-mentioned effect is that an international registration which, in a designated State, has the effect provided for in Article 11(2) may be relied upon, even if the mark is not used during the said three-year period, in order to prevent and/or to cancel, as the case may be, the registration of another mark which was filed later with the national Office of that State. Another example of the said effect is that an international registration which, in a designated State, has the effect provided for in Article 11(1)—but not yet the effect provided for in Article 11(2)—may be relied upon, even if the mark is not used during the said three-year period, at least in order to delay, until the expiration of that period, any decision on the registration of another mark which was filed later with the national Office of that State. The three-year period is counted from the international registration date or the recording date of the later designation, as the case may be, that is, from the date which, for the purposes of the interested State, is the "filing date." In certain circumstances—as described in subparagraph (b)—the period may have to be extended but never beyond five years from the said date (see paragraph (3)(b)) and in certain other circumstances—as described in subparagraph (c)—the moratorium on non-use may be non-existent or may extend to a period that is less than the said three years.

As stated in the second sentence of subparagraph (a), even though the effects provided for in Article 11 existing in a State cannot be refused, cancelled or otherwise impaired on the ground of non-use during a period which is generally of three years' duration, the national law of any Contracting State could provide that any action for infringement may not be started until the owner has commenced use of the mark in that State and any remedy resulting from such action could relate only to the period after the said owner has started use. To take an example: if the owner starts to use the mark as from the second year after the international registration and in the course of the third year after such event he sues for damages a person who started to use a similar mark just after the international registration date of his mark and is still using it, then the national law may provide that the plaintiff will recover damages only as from the second year.

It goes without saying that provisions of any national law excusing non-use even beyond the three-year period—for example, because the owner of the mark for a pharmaceutical product cannot use it before the authorization of the health authorities is granted—remain applicable by virtue of the national treatment provisions of the Paris Convention. Such justified non-use, where it is of relavance, has to be proved according to the national law of each designated State direct before the competent national authorities of such State, without the intermediary of the International Bureau.

Of course, nothing in the Treaty prevents the national law of any Contracting State from requiring at any time, from the owner of an international registration, evidence of use in any proceeding where such evidence is relevant or necessary under such national law to overcome a ground *other than non-use* for refusing under Article 12, or cancelling under Article 13, the effects of the international registration as defined in Article 11. For example, if registration is refused or cancelled on the ground that the mark is descriptive (or, in the British law, not distinctive) and that ground, in the given case, can be overcome only where the applicant or owner shows that the mark has acquired a secondary meaning (or, as in the British law, that it has been adapted to distinguish or is capable of distinguishing) by reason of use of the mark, evidence of use could be required, but only to overcome the said ground, which is a ground other than non-use.

It is to be noted that the following statement was adopted by the Diplomatic Conference of Vienna:

> "1. When the Diplomatic Conference adopted Article 19(3), it was unanimously understood that the said provision required, among other things, that any Contracting State whose national law requires that marks be actually used and whose national law provides for opposition procedures will have to allow, during the moratorium on actual use provided for in the said Article, the institution, processing and defending of opposition proceedings based on or concerning an international registration even where the mark which is the subject of that registration and for which that State is a designated State is not used during the said moratorium.
>
> "2. The Diplomatic Conference recognized in this connection that it was highly desirable for the owner of an international registration to know, before commencing actual use of his mark in any designated

State, whether the registration effect provided for in Article 11(2) has come into existence. It was, consequently, recognized to be equally desirable that the best efforts of each Contracting State be exerted to ensure that the procedures of its national Office be expedited so that a final decision pursuant to Article 11(2)(ii) be rendered before the expiration of the moratorium on actual use of the mark provided for in Article 19(3)."

Paragraph (3)(b): This provision means that, in the cases described in the said provision, the minimum of the non-use moratorium—that is, three years under subparagraph (a)—is extended by a maximum of two years and thus becomes five years. Whether it will, in fact, be so extended in any Contracting State depends on the national law of that State.

Paragraph (3)(c): This provision relates mainly to the situation where a mark has been the subject of a national application or registration in a given State and is later the subject of an international registration-cum-designation of the same State. The moratorium on non-use applies only if the national registration took place *within* the three years preceding the international registration or later designation and only for the period between such registration or designation and the end of a three-year period *counted from the national filing date.*

Paragraph (3)(d): Some national laws require not only that a mark be used but also that the owner of the mark file with the national Office at a certain point in time or from time to time (as fixed in that law) a declaration ("routine declaration") that the mark is (still) used. The Treaty leaves any such requirement intact, subject to two exceptions. One is that such a requirement cannot, obviously, be applied during the three-year moratorium provided for in paragraph (a) (see subparagraph (e)). The other is that any routine declaration may be filed with the International Bureau rather than the national Office (see the subparagraph under consideration.) The question when such routine declarations are due depends on the national law but the national Office must provide and the International Bureau must publish the necessary information (see Rule 26.1: Information on Requirements Concerning Routine Declarations of Actual Use). As to the form of the declaration, the applicant or owner may choose between two forms. One is the form prescribed by the national law of the State which the declaration concerns ("national forms"). The other is an "international form" in the language of the international application. (See Rules 26.2: National Forms, and 26.3: International Form.) Both kinds of form are made available to the owner of the international registration, free of charge. In any case, the declaration must be transmitted by the International Bureau to the designated Office. A further advantage provided for is that, where evidence is required and does not accompany the declaration (while it may accompany the declaration, there is no obligation to do so) or is insufficient, the national Office must give at least three months for filing or completing such evidence.

It is to be noted that the said facilities apply only to "routine declarations" and not to any declaration which is needed on an ad hoc basis. For example, when non-use is alleged in a cancellation proceeding dealing with a specific mark, it may well be necessary, in order to overcome such allegation, to make a statement of use. Another example is the declaration of use provided for in the U.S. law as one of the conditions for obtaining incontestability of the owner's right to use the mark; no owner is required to seek such incontestability but, if he wishes to do so, he will, among other things, have to file a declaration alleging continued use for a period of five years subsequent to registration.

Paragraph (3)(e): This provision means that routine declarations may not be required during the three-year (or, in some cases, less than three-year or up to five-year) moratorium.

Paragraph (4)(a): Some national laws provide that at the time a person files an application for the registration of a mark he must have a *bona fide* intent to use the mark in the country and that a declaration to that effect must be filed with the national Office. This provision of the Treaty means that the requirement for a declaration to be filed with the national Office is inapplicable or, rather, it is replaced by a declaration to the same effect filed with the International Bureau. Rules 6.3 (Declaration of Intent To Use the Mark) and 11.2 (Declaration of Intent To Use) provide for the details where the declaration is made in connection with the international application or a later designation, as the case may be, and contain a suggested wording for the declaration which must be recognized by all Contracting States. The wording does not include the expression *"bona fide"* since, at least in civil law countries, it goes without saying that a solemn declaration producing legal effects is not a declaration if it is not made in good faith. The substantive requirement of the national law that the intent to use must exist is left unaffected by the Treay. Consequently, where the applicant or owner does not, *in fact,* intend to use the mark, the registration effect may be taken away by any designated State requiring intent to use. It may be taken away notwithstanding the existence of the—false—declaration, and may be taken away at any time, even before the three-year period referred to in paragraph (3)(a) expires.

Paragraph (4)(b): See item (iii) of Rule 19.1 (Form of Notification).

Paragraph (5): This provision means that, in any routine declaration of actual use (paragraph (3)(d)) and in any declaration of intent to use (paragraph (4)(a)), the alleged use may be either direct (that is, by the owner of the international registration or by the applicant, respectively) or indirect (that is, by a person whose use inures to the benefit of such owner or applicant).

Paragraph (6): See the Notes on Article 2(v).

Paragraph (7): This provision means that representation by a local agent or a local address for service ("local" meaning on the territory of the State to which the provision refers) may be required only where the applicant or owner "institutes . . . a proceeding before the national authorities of the said States," for example, attacks the mark of another person in an opposition proceeding or in a cancellation proceeding, or where he "defends" such a proceeding, for example, tries to save the registration of his mark in a cancellation proceeding instituted against him. A local agent or a local address for service is, in particular, not needed for communication from the International Bureau to the applicant or owner, even where such communication essentially consists of the transmittal of a notice—for example a notice of possible refusal or refusal under Article 12—emanating from the national Office of a designated State.

Paragraph (8)(a): This provision allows any Contracting State to provide for a special procedure for serving notifications concerning proceedings for cancellation pursuant to Article 13 (and for no other matter) on the owner of the international registration. The proceeding must be one which is before a national authority. That authority may be a court or any other authority. Naturally, if the owner has an address for service or a representative in the State, it would make little sense to use the special procedure authorized by this provision. It is to be noted that no Contracting State is obliged to provide for the said special procedure in its national law; Contracting States which consider that their general rules for serving notifications abroad are sufficient will probably make no use of this provision. Finally, it should be noted that the provision relates only to notifications which commence the proceeding because, once the owner is involved in the proceeding, he may, under paragraph (7), be required to have an address for service or a representative in the State in question.

Paragraph (8)(b): The receipt form is sent to the International Bureau, whose files will thus contain evidence as to the fact and date of the receipt of the notification by the owner of the international registration.

Paragraph (8)(c): As to certification of the copy of the receipt form, see paragraph (10).

Paragraph (8)(d): Publication will be in the Gazette (see Article 2(ix)).

Paragraph (8)(e): This provision is intended to give an opportunity to the diligent owner to defend his rights.

Paragraph (9): Article 4(5) allows, under certain conditions, associations of natural persons or legal entities to file international applications and to own international registrations even where such associations are not legal entities.

Paragraph (10): The "Director General" is the Director General of the World Itellectual Property Organization (see Article 2(xxii)).

NOTES ON ARTICLE 20

Paragraph (1): The Treaty does not require any Contracting State to enter in its own (national) register of marks (or any other related register) marks which, by virtue of the Treaty, have a national registration effect in that State. (Such effect exists by virtue of the Treaty, in particular, under Article 11(2), whether such marks are entered in the national register or not.) But the Treaty does not prohibit the entering of such marks in the national register. If any country chooses to make such entries, that is, to "repeat" the international registration in its national register, it may be that certain changes affecting the mark only in that State will be entered in the national register without the owner's asking for their recording by the International Bureau. For example, ownership of the mark or the list of goods and/or services may change in that State. If such changes are entered in the national register without the owner's asking for them to be recorded in the International Register of Marks, the latter will not reflect them. Such a situation is undesirable since the International Register of Marks would then become incomplete and third parties could not entirely rely on it. The aim of this paragraph is to avoid such a situation: any change "directly" entered in the national register must be communicated to the International Bureau by the national Office, provided such change concerns matters which may be recorded in the International Bureau. These matters are: change of ownership, change in the name of the owner of the international registration, change in address, change of representative, change in the list of goods and/or services. Any change in the mark itself is, of course, unrecordable. Any entry in the national register concerning a matter—for example, a license—which may not be recorded in the International Register of Marks not only is not required to be communicated to the International Bureau, but, if communicated, is not the subject of any annotation in the International Register of Marks.

See Rule 37 (Recordings Effected by National Offices), in particular Rule 37.1 (Notification).

Paragraph (2): See Rule 37.2 (Annotation and Publication).

In certain cases, it is only with great difficulty that the change could be recorded in all its details in the International Register of Marks, primarily because of language problems (for example, where the change is in the list of goods and/or services). In such cases, probably the fact that a change has been entered in the national register and an indication of the nature of the change will be all that is practicable for the purposes of international annotation and publication.

Paragraph (3)(a): If the national Office fails to proceed as it should under paragraph (1), it can be assumed that any party that may suffer prejudice because of the consequences provided for in paragraph (3)(a) will remind the national Office of its obligation.

A typical case of actual awareness on the part of a third party is the case where such party has had correspondence with a third person about the subject matter recorded only in the national register of marks.

Paragraph (3)(b): This provision deals with a possible exception to the general rule contained in subparagraph (a). The exception is a limited one as it concerns only the residents of the State in question.

NOTES ON ARTICLE 21

Paragraph (1): This paragraph deals mainly with the situation in which the owner of a mark switches over from protection by virtue of national registration to protection by virtue of international registration-cum-designation under the Treaty. It is essential that he suffer no prejudice because of such switchover, and that is what this provision and paragraph (3) accomplish. The reason for which the owner of a mark may desire such a switchover is that under the Treaty the surveillance of his mark becomes much simpler, and generally also much cheaper, if for no other reason than that renewals valid in a number of States can be made at regular (ten-year) intervals, in one place (the International Bureau), according to a centrally (in the Gazette) publicized fee schedule, by payment in one currency (Swiss) by a single transfer, subject to the simplest single formality (filling in one form), and without the need of any intermediary.

The paragraph provides that the effect of the switchover will be such that the rights under the national registration will be deemed to be included and will continue to be deemed to be included in the international registration. The continued inclusion of the rights under the national registration is unconditional as long as that registration exists, and for a further year after it has ceased to exist; thereafter, it is conditional, the condition being that the declaration referred to in paragraph (2) has been filed (see paragraph (4)). This declaration is necessary because, without it, persons consulting the International Register of Marks would not be informed about the continued inclusion of rights acquired under the national registration and those consulting the national register could assume that, since the national registration had expired, all the rights which had been acquired under it would also have expired.

Paragraph (2): As to the declarations, see Rule 6.5 (Declarations Under Articles 21(2) and 22(2)), dealing with declarations included in international applications, and Rule 11.4 (Declarations Under Articles 21(2) and 22(2)), dealing with declarations included in requests for the recording of later designations. See also Rule 27 (Declarations Concerning Earlier National or Madrid Registrations), dealing in its first paragraph with separately filed declarations.

As to the certified copy of the national registration, see Rule 27.2 (Certification of National Registrations).

As to recording the declarations, see Rule 3.1 (Contents of the International Register).

As to publishing the declaration, see paragraph (a)(ix) of Rule 18.1 (Contents of Publication of International Registrations) and paragraph (a)(vii) of Rule 18.2 (Contents of Publication of Recordings of Later Designations), as well as Rule 27.4 (Publication; Notification [of Declarations]).

As to notifying the declaration, see Rule 19.1 (Form of Notification [of International Registrations and Recordings of Later Designations]), by virtue of which everything that is published is also separately notified to each interested designated State. See also Rule 27.4 (Publication; Notification [of Declarations]).

The last sentence of this paragraph provides that the declaration must be referred to in the *national* register in connection with the national mark on the basis of which the switchover took place. This is important because it means that anybody consulting the national register is alerted to the fact that mere failure to renew the national registration does not necessarily mean that the protection has ceased.

Paragraph (3)(a): The words "to the extent that they [the conditions referred to in paragraph (1)] are complied with" are intended to emphasize that the provision applies only to the extent to which the goods and/or services listed in the national registration are the same as those which are listed in the international registration. See also the Notes on Article 12(1).

Paragraph (3)(b): This subparagraph deals with the situation contemplated in Article 11(3) (see the Notes thereon) and means that, for example, if a person owns a mark registered in the Supplemental Register of the U.S. Patent Office and later switches over to an international registration-cum-designation of the United States of America, such designation is exempt from the possibility of refusal only if the declaration is connected with the indication of the Supplemental Register (see Rule 6.6: Option Under Article 11(3)).

Paragraph (4): The declaration must be accompanied by a certified copy of the national registration (paragraph (2), third sentence) in order to allow easy verification of the identity of the mark, and of the goods and/or services, covered by that registration and the international registration. See also the Notes on paragraph (1).

NOTES ON ARTICLE 22

Paragraphs (1) to (4): This Article has virtually the same content as Article 21, except that it deals with the preservation of rights acquired not through national registration but through international registration under the Madrid Agreement. Consequently, the Notes in connection with Article 21 apply also to this Article, *mutatis mutandis.*

NOTES ON ARTICLE 23

Sole paragraph: The Treaty does not replace the Madrid Agreement, not even among States which are party to both instruments. Where any applicant or owner of a mark is a national or a resident of a State party to both instruments, he has the freedom to choose between them and may use, for the purposes of protection in other States that are also party to both instruments, either of the two instruments. The freedom to choose the Madrid Agreement is spelled out in this Article. The freedom to choose the present Treaty—which is the more recent one—goes without saying.

NOTES ON ARTICLE 24

Paragraph (1): This provision permits the owner of the international registration to switchover from protection by virtue of the Treaty to protection by virtue of national registration in any designated State and guarantees that such switchover does not entail any diminishing of the rights which the owner had in respect of that State under the international registration.

Paragraph (2): Article 20(1) and 20(2) provide, in essence, that, where the mark is registered in both registers, recordings in the national register of marks must be indicated in the International Register of Marks. As to the reasons for this requirement, see the Notes on Article 20.

NOTES ON ARTICLE 25

Paragraph (1)(a): "Regional mark" is defined in Article 2(vii).

As to the declaration to be made by any Contracting State making use of this provision, see Rule 42.1 (Declaration Under Article 25(1)(a)).

Paragraph (1)(b): "Regional mark" is defined in Article 2(vii).

Paragraph (2): See Rule 42.2 (Fees). See also the Notes on Article 18.

NOTES ON ARTICLE 26

Paragraph (1): See Rules 2.1 (Number of Duly Appointed Representatives), 2.2 (Form of Appointment), 2.3 (Revocation or Renunciation of Appointment), 2.4 (General Powers of Attorney) and 2.5 (Substitute Representative).

This provision means that any person may represent an applicant or owner of an international registration *before the International Bureau.* The representative may be not only a trademark agent or attorney but also one of the employees of the applicant or owner, or any other person, including a legal entity, and no requirements as to professional qualifications may be prescribed. Of course, if and when any act has to be accomplished *before a national Office or other national authority,* the national law applicable to that Office governs and, consequently, in proceedings before national authorities it will frequently be necessary that the representative be a qualified trademark attorney or agent residing in the country in which that national Office or other authority is located.

Paragraph (2): According to the first sentence, where, for example, the Treaty provides that the International Bureau has to (i) invite the *applicant* to correct certain defects (including the payment of missing fees) (Article 7(2) and (3) and Rule 25.4), (ii) notify the *applicant* if it declines the international application or declines to record a State as a designated State (Rule 14.2) or if it receives from a designated State a notice of refusal or possible refusal (Article 12(2)(a)), or (iii) notify the *owner* of the international registration if it declines a request for changing the list of goods and/or services (Article 16(3)), and the said Bureau sends the invitation or notification to the duly appointed *representative* (rather than to the applicant or the owner of the international registration), the International Bureau will have complied with the requirements of the Treaty.

According to the second sentence, the duly appointed representative, instead of the applicant or the owner of the international registration, may, for example, sign the international application, any request for recording later designations or a change in ownership or a change in the list of goods and/or services, any demand for renewal, any declaration of intent to use, or any declaration of actual use, and any communication of withdrawal or renunciation referred to in Rule 32.

Paragraph (3)(a): See Rule 2.1(a), which provides that the applicant or owner of the international registration may appoint only one representative. This provision is applicable also when there are several applicants or owners.

Paragraph (3)(b): See the Notes on paragraph (3)(a).

Paragraph (3)(c): The situation provided for in this subparagraph will arise in the case of a partial change in the ownership of the international registration (see Article 14).

NOTES ON ARTICLE 27

Sole paragraph: The international application or any request for later designation may contain a declaration claiming the priority of one or more earlier applications filed in or for any country party to the Paris Convention (see Articles 5(1)(b) and 6(2)(b)). Rule 6.2 (Claiming of Priority) regulates the details for making the declaration of priority effective in respect of all of the States designated in the international application. Rule 11.1 (Claiming of Priority) provides for the same in respect of any later designated State.

NOTES ON ARTICLE 28

Paragraph (1): This Article makes the international application the possible basis of a priority claim. Since, under the Treaty, international applications may be filed without or before the existence of any national filing (except in the case contemplated in Article 4(6)), international applications will frequently be "first" applications, and it will be useful to invoke their priority in States which cannot be designated (because they are not party to the Treaty) or which, for one reason or another, are not designated although they could be designated.

The Stockholm Act of the Paris Convention provides that "any filing that is equivalent to a regular national filing . . . under . . . multilateral treaties concluded between countries of the Union shall be recognized as giving rise to the right of priority" (Article 4A(2)).

The paragraph under consideration provides that a regular international filing comes within the scope of the quoted provision of the Paris Convention.

Paragraph (2): This paragraph specifies the conditions which an international application must satisfy to constitute a "regular" filing and defines the date of filing.

NOTES ON ARTICLE 29

Paragraph (1): A typical reason for which national laws excuse delays in meeting time limits is *force majeure.* Thus, for example, if, according to the national law of a Contracting State, a postal strike is considered *force majeure* and, because of that strike, the missing signature on a request for the recording of the later designation of that State is furnished after the expiration of the time limit applicable under Article 8(2), the national Office of that State will, on the request of the owner of the international registration, have to request the International Bureau to proceed with the recording of the designation (see Article 9(1)(i) and (2)(i)).

Paragraph (2): If, for example, the delay is not due to *force majeure* but—to modify the example given above—is caused by the late arrival in the mail of the signature, for no apparent reason, the designated State may, if it so wishes, proceed as outlined in the above example.

Paragraph (3): The time limit provided for in Articles 7(1), 7(6)(iii), and 8(1) is the 45 days time limit within which the International Bureau should receive international applications or requests for later designations which are filed through the intermediary of a national Office, whereas the time limit provided for in Article 12(2)(a)(i) is the 15 months or 18 months time limit for notifying refusals or notices of possible refusals to the International Bureau.

Excusing delays in meeting those time limits would mean that the Contracting State would be excusing its own delay. This would seem to be going too far, particularly since it would create uncertainty both for the owner of the mark and for third parties over an indefinite period of time. That is the reason why the provision under consideration does not permit the excusing of delays in meeting any of the said time limits.

Paragraph (4): This provision is needed even for cases where the delay is caused by *force majeure* since the International Bureau has no rules for defining the concept of *force majeure* and has no machinery for taking evidence and passing judgment on the question whether a given circumstance amounts to *force majeure.*

NOTES ON ARTICLE 30

Paragraph (1): Whereas Article 9 provides for measures enabling the effects to be avoided of any error by the International Bureau which has resulted in the declining of the international application or the request for the recording of later designations, this Article provides for measures enabling the effects to be avoided of any error by the International Bureau which does not result in the said declining but which may otherwise adversely affect the interests of the applicant or the owner of the international registration. Such error may, for example, be the refusal by the International Bureau to record the renewal, or the change in ownership, or the change in the name of the owner, or the limitation of the list of goods and/or services, because it has—erroneously—found that the fees paid were insufficient.

It goes without saying that, as in the case of erroneous declining (see the last paragraph of the Notes on Article 7 (under *"Generally"*), so also in the case of any other error, the applicant or the owner of the international registration may call the attention of the International Bureau to the fact that, in his opinion, it is about to make an error or has made an error, and the International Bureau may decide not to make the decision or come back on it.

As to the time limit for filing the petition, see Rule 43.1 (Time Limit Under Article 30). See also Rule 16.2 (Information Available to National Offices) and Rule 16.3 (Information Furnished by the National Office), which are applicable *mutatis mutandis* in respect of Article 30 (see Rule 43.2: Application of Rule 16).

Paragraph (2): This provision means that all consequences of the error will be eliminated as far as the designated State in question is concerned.

Paragraph (3): See Rule 16.1 (Recording and Publication Under Article 9(3)), which is applicable *mutatis mutandis* in respect of Article 30 (see Rule 43.2: Application of Rule 16).

Paragraph (4): If the correction does not relate to any matter which has been the subject of publication, the error and its correction are shown only by the file of the international registration.

NOTES ON ARTICLE 31

Recording is mentioned in the following Articles: 9(3) (petitions for redress against declining of international registration or recording of later designation), 10(2) (later designation), 12(4) (notice of possible refusal, refusal), 13(3) (cancellation), 14(1)(a) and (4)(c) (change in ownership), 15(1) and (6)(b) (change in the name of the owner), 16(1) and (5)(c) (limitation of the list of goods and/or services and Article 17(3)(b) (renewal).

See also Rule 14.2 (Notification . . . Under Article 7(5)), Rule 20.2 (Notifying the Owner [of the recording

effected under Article 12(4)(a)]), Rule 22.5 (Notification of Declining of the Recording [of change in ownership]), Rule 22.6 (Denial [of effect of recording of change in ownership]), Rule 25.5 (Recording, Publication, and Notification [of renewal]), paragraph (d).

As to the language in which notifications must be effected, see Rule 7.3 (Language of Registrations, Recordings, Annotations and Communications), paragraph (b).

NOTES ON ARTICLE 32

Paragraph (1)(a): "Assembly" is defined in Article 2(xix).

Paragraph (1)(b): See Rule 44.1 (Expenses Borne by Governments), according to which the expenses of each delegation are borne by the Government which the delegation represents.

Paragraph (2)(a): This paragraph enumerates some of the main tasks of the Assembly. The Assembly is the principal organ of the Union, in which all Contracting States are represented (paragraph (1)(a)) and have equal rights (paragraph (4)). The Treaty provides for only one other organ and that is the secretariat, called the "International Bureau," headed by the Director General (see Article 33). The International Bureau is the secretariat of the World Intellectual Property Organization (WIPO), with headquarters in Geneva, Switzerland (see Article 2(xx)). WIPO administers several intellectual property Unions, including the Paris Union and the Madrid Union.

"Union" is defined in Article 2(xviii).

"Director General" is defined in Article 2(xxii).

Paragraph (2)(b): The Coordination Committee of WIPO is composed of the members of the Executive Committee of the Paris Union and the members of the Executive Committee of the International (Berne) Union for the Protection of Literary and Artistic Works.

"Organization" is defined in Article 2(xx).

Paragraph (3): In other words, no person can represent two or more member States.

Paragraph (4): This provision ensures equality among the member States.

Paragraph (5)(a): This provision is qualified in subparagraph (b), which provides that decisions can be made also in the absence of a quorum: decisions of a procedural nature made in the absence of a quorum are unconditionally valid, whereas all other decisions made in the absence of a quorum and of the required majority obtain effect after what amounts to a continuation—by correspondence—of the voting.

Paragraph (5)(b): See the Notes in connection with the preceding subparagraph. See also Rule 45.1 (Voting by Correspondence).

Paragraph (6)(a): Article 34(5)(f) deals with the majority required for decisions concerning the working capital fund.

Article 35(2)(b) and (c) deals with the majorities required for amending the Regulations, a matter within the power of the Assembly. The majorities are two-thirds for some provisions and three-fourths for others.

Article 38(2)(b) deals with the majorities required for amending certain provisions of the Treaty (all provisions—except two—fixing time limits and some administrative provisions), a matter within the power of the Assembly. The required majority is three-fourths for the said provisions, and unanimity for changing the length of the 45 days time limit within which indirectly filed international applications and requests for the recording of later designations must reach the International Bureau. Unanimity is also required for changing the length of the one-month time limit within which defects in the international application and requests for the recording of later designations must be corrected in order to avoid "later-dating" of the international registration or of the recording of the later designation (see Article 7(3)(c)).

Paragraph (6)(b): Abstentions, whether explicit or tacit, of delegations represented in the Assembly are, of course, counted in the quorum.

Paragraph (7)(a): Traditionally, the place and the period are Geneva and the end of September/beginning of October.

In some other treaties which are administered by WIPO and which constitute a Union, the Union has not only an Assembly but also an Executive Committee (generally consisting of one quarter of the States members of the Assembly) and that Committee meets once a year and the Assembly once every three years. The present Treaty does not constitute a body (e.g., an Executive Committee) consisting of some only of the members of the Union but provides that the Assembly meet every year. The main reasons for not establishing an Executive Committee and for the institution of annual (rather than triennial) sessions of the Assembly are that the Regulations, including the fees under those Regulations, would probably have to be under constant review, that relatively large sums of money would go to the member States through the Union each year, and that those are all matters of equal interest to all member States.

Paragraph (7)(b): The request is to be addressed to the Director General, who must then convene the extraordinary session.

Paragraph (8): There are in existence what are called the General Rules of Procedure of WIPO, which the organs of the various Unions usually take as a basis for their own rules of procedure. The latter may, of course, differ from the former in any and every respect which the Assembly sees fit.

NOTES ON ARTICLE 33

Paragraph (1)(i): Among the tasks specially assigned, the most important are the receiving of the international applications, the keeping of the International Register of Marks, the publication of the Gazette, and the notification of national Offices and owners of international registrations.

"International Bureau" is defined in Article 2(xxi).

Paragraph (1)(ii): As to revision conferences, see Article 37.

"Director General" is defined in Article 2(xxii).

Paragraph (2): A similar provision is included in the "Charters" of all the Unions administered by WIPO.

Paragraph (3): The rules of procedure will contain provisions as to agendas and the length of the period which must be left between the sending of the preparatory documents and the meeting. In one case (Article 38(1)(b)), this period is fixed by the Treaty itself.

Paragraph (4)(a): "Participate" should be understood as meaning that he has the right to be present and the right to speak.

Paragraph (4)(b): The usual tasks of the Secretary are to assist the Chairman and prepare a draft report on the meeting.

Paragraph (5)(a): As to revision conferences, see Article 37. "Preparations" mainly consist in making proposals, receiving and distributing any proposals made by member States, convening preparatory meetings and preparing proposals for such meetings.

Paragraph (5)(b): This is a customary provision for all Unions administered by WIPO.

Paragraph (5)(c): "Take part" should be understood as meaning that they have the right to be present and the right to speak.

Paragraph (5)(d): See the Notes on paragraph (4)(b).

Paragraph (6): Such services include, for example, furnishing their statistics. Naturally, the services in question would be of the same kind for each national Office.

NOTES ON ARTICLE 34

Paragraph (1)(a): This provision and most of the others in this Article are identical or almost identical with the "Finances" provisions in the "Charters" of the other Unions administered by WIPO.

Paragraph (1)(b): The main sources of income are fees and the sale of publications. The main expenses are for staff salaries and printing. The "sum made available to the budget of the Conference of the Organization" would mainly serve purposes of technical assistance to member States. Similar provisions exist in the "Charters" of the Paris and Berne Unions. Of course, it is for the Assembly to decide whether to make any contribution for the said purpose and, if so, how much.

Paragraph (1)(c): Typical common expenses are those connected with the buildings used by the International Bureau and the staff salaries of such "common services" as the Director General's Office, External Relations, Finances, and Personnel.

Paragraph (2): Such coordination is mainly necessary in connection with the "common expenses."

Paragraph (3): Fees and receipts from the sale of publications represent the greatest part of the income.

Paragraph (4)(a): In other words, the Union should be self-supporting. Consequently, there is no provision for any regular contribution by member States. Thus, any State which becomes party to the Treaty assumes no financial obligations, except, perhaps, that of contributing to a working capital fund. The constitution of such a fund may not, in certain circumstances, take place at all (see paragraph (5)(d)), but, if it does, its amount will be decided by the Assembly (see paragraph (5)(c)). Any contribution will be rather in the nature of a loan since it must be reimbursed if no longer needed (see paragraph (5)(a), last sentence).

Paragraph (4)(b): The financial regulations will be adopted by the Assembly.

Paragraph (5)(a)(b)(c)(d)(e) and (f): See the Notes in connection with paragraph (4)(a).

Paragraph (6): The State in question is Switzerland. The provision is similar to parallel provisions in the "Charters" of the other Unions administered by WIPO.

Paragraph (7): The financial regulations will be established by the Assembly.

NOTES ON ARTICLE 35

Paragraph (1): The text of the Regulations is part of the document opened for signature at the end of the Diplomatic Conference which adopted the Treaty and the Regulations.

Paragraph (2)(a): This is probably the most important right of the Assembly.

Paragraph (2)(b): Amendment of subparagraph (c) requires three-fourths of the votes cast.

Amendment of subparagraph (d) requires two-thirds of the votes cast and requires that no Contracting State whose national law allows or requires the filing of declarations of intent to use the mark or declarations of actual use of the mark vote against the proposed amendment.

Paragraph (2)(c): Article 18(2) deals with the fees to which the Contracting States are entitled. It is the only provision which has an effect on the size of the income that each Contracting State derives from the Treaty. The fees whose amount is fixed in the Regulations and to which only some of the Contracting States are entitled are the standard State fees (see Article 18(4) and Rules 13.1 and 25.3, as well as the Table of Fees). The provision means, in particular, that, when any proposal to change the amounts of the standard State fees is voted upon, only those Contracting States have the right to vote which have opted for the standard State fee system, whereas those which apply the individual State fee system do not have the right to vote.

Paragraph (2)(d): See the Notes on paragraph (2)(b). The Rules referred to in this subparagraph are Rules 6.3, 6.4, 11.2, 11.3, 19.1, 25.2 and 26.

Paragraph (3): The hierarchy of the two instruments (Treaty, Regulations) follows that of the two organs (Diplomatic Conference, Assembly) which adopt them.

NOTES ON ARTICLE 36

Paragraph (1): Such a Search Service for marks registered under the Madrid Agreement has been in existence for decades. "Anticipations" means identical and similar marks. "Other marks" means marks registered under the Madrid Agreement and marks registered in the national register of marks of any given State. Inclusion in the Service of other marks, however, requires a decision by the Assembly.

Paragraph (2): Search reports have, of course, no legal effect whatsoever.

Paragraph (3): The fees must make the Service self-supporting since no sources of revenue other than the fees are provided for.

NOTES ON ARTICLE 37

Paragraph (1): "Conferences of the Contracting States" means diplomatic conferences, that is, conferences among Governments represented by delegations having full powers to vote and sign.

Paragraph (2): "Revision conference" means the same as "conference of the Contracting States," the term used in paragraph (1).

Paragraph (3): See the Notes on Article 38(1)(a).

NOTES ON ARTICLE 38

Paragraph (1)(a): The time limits whose length is fixed in Chapter I of the Treaty and which may be amended by the Assembly are the following:

(i) the time limit (one month) within which certain defects concerning the international application or the request for the recording of later designations may be corrected without "later-dating" (Articles 7(3)(c) and 8(2)(a)),

(ii) the time limit (three months) within which certain defects concerning the international application or the request for the recording of later designations may, subject to "later-dating," be corrected (Article 7(2)(c), (3)(d), and Article 8(2)(a)),

(iii) the time limit (three months) within which the list of goods and/or services may, in cases other than those covered by Article 16, be limited (Articles 7(4)(b) and 8(2)(a)),

(iv) the time limit (two months) within which a petition or application for the avoiding of the effects of declining may be filed (Article 9(1)),

(v) the time limit (three months) within which evidence regarding a change in ownership may be required to be submitted (Article 14(4)(b)),

(vi) the time limits referred to in Article 14(5) dealing with the switchover to the national register of marks when the owner cannot own international registrations,

(vii) the time limit (three months) within which evidence regarding a change in the name of the owner may be required to be submitted (Article 15(6)(a)),

(viii) the time limits (six months before and six months after the starting date of the renewal) within which the demand for renewal must be filed (Article 17(3)(a)),

(ix) the time limit (one month) for publication of certain notifications presumed not to have been actually received by the owner of the international registration (Article 19(8)(d)),

(x) the time limit (two months) for submitting, when required, a list of members of "associations" (Article 19(9)),

(xi) the time limit (one year) provided for the filing, in certain cases, of declarations under Articles 21(2) and 22(2) (switchover to international registration under the Treaty from national registration or Madrid registration) (Articles 21(4) and 22(4)),

(xii) the time limit (45 days) within which indirectly filed international applications and requests for the recording of later designations must reach the International Bureau (Articles 7(1), 7(6)(iii) and 8(1)).

The time limits whose length is fixed in Chapter I of the Treaty and which may not be amended by the Assembly but only by a revision of the Treaty under Article 37, that is, by a diplomatic conference, are the following:

(i) the time limit (15 or 18 months) within which refusals or notices of possible refusal must be notified by national Offices to the International Bureau (Article 12(2)(a)),

(ii) the time limit (three years and, in certain cases, up to five years or, in other cases, less than three years) of the moratorium for certain purposes on actual use (Article 19(3)(a), (b) and (c)),

(iii) the time limit (three months) for adducing certain evidence of actual use in certain cases (Article 19(3)(d)).

Article 32(5) and (7) are the provisions on the quorum in the Assembly and the provisions on the times when ordinary and extraordinary sessions of the Assembly meet.

Article 33 deals with the International Bureau.

Article 34 deals with the finances of the Union.

Article 36 deals with the Search Service. "Initiated" means "made."

The reason for providing for a procedure easier than revision—that is, the procedure of amendment by an Assembly decision—is that changing circumstances or experience may well show that some of the time limits that may be amended by the Assembly are too long or too short or that the said administrative provisions could be usefully improved upon. It should be possible for such amendments—which would be dictated by practical needs and would not affect anything basic—to enter into effect without delay. This, too, is feasible only under the amendment procedure since entry into force of revisions usually requires several years.

Paragraph (1)(b): This provision is intended to give sufficient time for reflection to the Governments of the Contracting States.

Paragraph (2)(a): As to the required majority, see the following subparagraph.

Paragraph (2)(b): The time limit fixed in Articles 7(1), (6)(iii) and 8(1) is the time limit (45 days) within which indirectly filed international applications and requests for the recording of later designations must reach the International Bureau. The time limit fixed in Article 7(3)(c) (one month) is the time limit within which certain defects may be corrected without "later-dating."

Paragraph (3)(a): As to States which become Contracting States later, see subparagraph (c).

Paragraph (3)(b): In other words, no Contracting State is bound by an amendment increasing its financial obligations unless it agrees to be so bound. The only financial obligation provided in the Treaty is the obligation to contribute to a working capital fund (see Article 34(5)).

Paragraph (3)(c): As to becoming a Contracting State, see Article 39.

NOTES ON ARTICLE 39

Paragraph (1): The legal effect of ratification and accession is the same. The difference is merely a terminological one, "ratification" referring to acceptance by a signatory State, and "accession" referring to acceptance by a State which has not signed the Treaty.

Paragraph (2): Such instruments are usually signed by the Head of State.

Paragraph (3)(a): This provision enables any State to say, in effect, that it will become party only if State X, or State X or State Y, or States X and Y, also become party.

Paragraph (3)(b): This provision enables any State having said, in effect, that it will become party only if State X also becomes party to change its mind, which it might well wish to do if, in the meantime, the membership of State X has ceased to be indispensable in the eyes of the State having made the declaration.

Paragraph (4)(a): Article 24 of the Stockholm Act of the Paris Convention is worded as follows:

"(1) Any country may declare in its instrument of ratification or accession, or may inform the Director General by written notification any time thereafter, that this Convention shall be applicable to all or part of those territories, designated in the declaration or notification, for the external relations of which it is responsible.

"(2) Any country which has made such a declaration or given such a notification may, at any time, notify the Director General that this Convention shall cease to be applicable to all or part of such territories.

"(3)(a) Any declaration made under paragraph (1) shall take effect on the same date as the ratification or accession in the instrument of which it was included, and any notification given under such paragraph shall take effect three months after its notification by the Director General."

"(b) Any notification given under paragraph (2) shall take effect twelve months after its receipt by the Director General."

Paragraph (4)(b): This subparagraph is almost identical with Article 62(4) of the Patent Cooperation Treaty, and the preceding subparagraph with Article 62(3) of that Treaty.

NOTES ON ARTICLE 40

Paragraph (1): The right provided for in paragraph (2) is the right of residents and nationals of a State that is a developing country and not party to the Treaty (but party to the Paris Convention) to file international applications and to own international registrations.

Paragraph (2): Article 4(1) provides that only nationals and residents of Contracting States have the right to file international applications and to own international registrations.

Paragraph (3): Thus, the time limit is five years from the date on which the Treaty was opened for signature.

Paragraph (4): The entry into force of the Treaty according to Article 41(1) is the *initial* entry into force of the Treaty.

Paragraph (5): Paragraphs (6) and (7) deals with the possible prolongation of the effect in question, whereas paragraph (8) deals with its possible termination before its normal expiration.

Paragraph (6): This provision allows, under certain conditions, the prolongation of the effect in question for twice five years for the benefit of certain developing countries not party to the Treaty.

Paragraph (7): This provision allows, under certain conditions, a further prolongation of the effect in question for twice five years for the benefit of certain countries which qualify as the least developed among the developing countries and which are not party to the Treaty.

Paragraph (8): The right provided for in paragraph (2) is the right of residents and nationals of a State that is a developing country and not party to the Treaty (but party to the Paris Convention) to file international applications and to own international registrations.

NOTES ON ARTICLE 41

Paragraph (1): Although this provision speaks of five States, it does not necessarily mean that when five States have deposited their instruments the Treaty will come into force. The number actually required depends on the influence of the declarations made under Article 39(3)(a): it may be anything between five and any other, possibly much higher number.

Paragraph (2): The time limit of three months is the usual one.

NOTES ON ARTICLE 42

Sole paragraph: Article 46(2) allows, in effect, any Contracting State to exempt itself from the compulsory jurisdiction of the International Court of Justice as provided for in Article 46(1).

NOTES ON ARTICLE 43

Paragraph (1): This provision is subject to one exception stated in paragraph (3).

Paragraph (2): This provision is subject to certain qualifications stated in paragraph (4).

Paragraph (3): This provision is intended to give a certain degree of stability to the membership of the Union.

Paragraph (4)(a): This provision is intended to allow a certain period of time for owners of international registrations to look for means of protection other than under the Treaty in the denouncing State.

Paragraph (4)(b): This provision is intended to allow a certain period of time for owners of international registrations who are residents or nationals of the denouncing State to look for means of protection other than under the Treaty in the Contracting States designated in the international registrations concerned.

NOTES ON ARTICLE 44

Paragraph (1): This provision follows the trend of treaties recently concluded under the aegis of the Paris Convention.

Paragraph (2): The Note in respect of the preceding paragraph applies also to this paragraph.

Paragraph (3): The Treaty was opened for signature at Vienna on June 12, 1973.

NOTES ON ARTICLE 45

Paragraph (1): This provision follows the contemporary trend of treaties recently concluded under the aegis of the World Intellectual Property Organization.

Paragraph (2): The note in respect of the preceding paragraph applies also to this paragraph.

Paragraph (3): Article 102 of the Charter of the United Nations provides for the mandatory registration of treaties with the Secretariat of the United Nations.

Paragraph (4): The Note in respect of paragraph (1) applies also to this paragraph.

NOTES ON ARTICLE 46

Paragraph (1): This provision establishes, in fact, the compulsory jurisdiction of the International Court of Justice for the settlement of disputes among Contracting States. The provision, however, may be set aside by any Contracting State by means of a reservation as provided for in paragraph (2).

Paragraph (2): See the Notes on paragraph (1).

Paragraph (3): This provision permits, in effect, the withdrawal of any reservation made under paragraph (2).

NOTES ON ARTICLE 47

Sole paragraph: These notifications are indispensable to keep the interested States officially informed of the status of the Treaty.

[Printed in Official Gazette, Mar. 12, 1974]

PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of January 1974

Examiner affirmed	130
Examiner affirmed in part	16
Examiner reversed	52
Total	198

Registration to Practice

The following list contains the names of persons applying for registration to practice before the U.S. Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before April 5, 1974.

Hanley, James M., 111 Cleveland Road, Apt. 148, Pleasant Hill, Calif. 94523

Simons, William A., 1827 SW. Beaverton-Hillsdale Highway, Portland, Oreg. 97201

Sroka, Edward A., 6001 Southport Drive, Bethesda, Md. 20014

Williams, Cleveland R., III, 11938 Hamden Drive, Cincinnati, Ohio 45240

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,717,603, J. J. Colm, PACIFIER, **filed** Apr. 19, 1973, D.C., S.D.N.Y., Doc. 73-1739, *Eagle Druggists Supply Co. Inc.* v. *Danara Products Inc.*

2,811,069, A. H. Faulkner, ELECTRICAL MUSICAL INSTRUMENT, **filed** Mar. 19, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c685, *Alfred H. Faulkner* v. *Seeburg Corp. of Delaware and Gulbransen Company.*

2,900,638, O. O'Kelley, APPARATUS FOR DRIVING JOINT NAILS; **3,947,990**, same, APPARATUS FOR FORMING AND DRIVING JOINT NAILS; **3,597,142**, L. Jasper, AUTOMATIC NAILING MACHINE, **filed** Oct. 6, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-2391-HP, *Lane Jasper* v. *Ri-Mat Enterprises Inc. et al.* Final dismissal as to all defendants, Feb. 13, 1973.

2,945,533, P. S. Fletcher, IMPROVED LEG-REST AND ACTUATING MECHANISM; **3,092,416**, same, LEG-REST CONTROL LINKAGE FOR MULTIPLE POSITION CHAIR; **3,121,590**, F. F. Schliephacke, RECLINING CHAIR; **3,363,942**, P. S. Fletcher, RECLINING CHAIR SEQUENCING ARRANGEMENT; **Re. 24,849**, J. Luckhardt, ARTICLE OF REPOSE FOR SUPPORTING THE BODY OF A PERSON, **filed** Apr. 16, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c973, *Peter S. Fletcher* v. *The Seng Co. et al.*

2,947,990. (See 2,900,638.)

2,852,085, G. A. M. Petersen, REVERSIBLE TOOTH FOR EARTH DIGGING EQUIPMENT; **2,968,880**, same, REVERSIBLE TOOTH HAVING RESILIENT RETAINING MEANS; **3,057,091**, same; **3,426,860**, G. A. Petersen, PILOT BIT WITH REPLACEABLE TEETH, **filed** Feb. 9, 1973, D.C., N.D. Tex. (Fort Worth), Doc. CA-4-2200, *Gearhart-Owen Industries, Inc.* v. *William C. Gooch, Grand Tooth Co. and Gooch Res. & Dev.*

2,968,880. (See 2,952,085.)

3,057,091. (See 2,952,085.)

3,092,416. (See 3,945,533.)

3,121,590. (See 2,945,533.)

3,122,395, E. Offner, WIDTH-ADJUSTING ATTACHMENT FOR WHEEL CHAIRS, **filed** Feb. 15, 1971, D.C.N.J. (Newark), Doc. C-204-71, *Narro-Matic, Inc.* v. *Everest & Jennings, Inc.* Patent declared invalid; complaint dismissed, June 20, 1973.

3,166,757, S. Downs Jr., OFFSET DRIVING TOOL, **filed** Apr. 24, 1973, D.C. Conn. (Hartford), Doc. H-32, *Crain Cutter Company, Inc.* v. *Carpet Work Shop, Inc.*

3,178,781, Masi and Di Prinzio, FOUNDRY MACHINES; **3,417,811**, A. Masi, MATCHPLATE SUPPORT ASSEMBLY; **3,695,338**, A. S. Masi, MOLDING MACHINE, **filed** Mar. 14, 1973, D.C., W.D. Pa. (Erie), Doc. C.A. 27-73, *Anthony S. Masi* v. *Harrison Machine Company.*

3,216,459, Schroeder and Clark, FLEXIBLE INSULATED DUCT; **3,240,643**, same, METHOD AND APPARATUS FOR MAKING A FLEXIBLE INSULATED DUCT, **filed** June 20, 1967, D.C., C.D. Calif. (Los Angeles), Doc. 67-869-PH, *Clifford A. Schroeder et al.* v. *Owens-Corning Fiberglas Corp. et al.* Summary judgment of patent invalidity: order dismissing the second cause of action for unfair competition, Patent 3,216,459 invalid, Patent 3,240,643 dismissed for improper venue, June 27, 1973.

3,240,643. (See 3,216,459.)

3,265,177, K. Knickerbocker, COIN OPERATED VENDING MACHINES, **filed** Nov. 10, 1971, D.C., M.D. Fla. (Tampa), Doc. 71-508-C, *Kaspar Wire Works, Inc.* v. *Leco Engineering and Machine, Inc. and Gulf Machine and Grinding, Inc.* Defendants enjoined on consent judgment, Mar. 30, 1973.

3,322,515, Dittrich and Shepard, FLAME SPRAYING EXOTHERMICALLY REACTING INTERMETALLIC COMPOUND FORMING COMPOSITES, **filed** Apr. 16, 1973, D.C., S.D.N.Y., Doc. 73-1668, *Metco. Inc.* v. *Metallizing Company of America Inc.*

3,337,218, F. A. Hurley, AMUSEMENT APPARATUS; **3,357,703**, same, COMBINED CLOCK AND CHANCE DEVICE; **3,377,517**, same, RELAY COMPUTER CIRCUITS; **3,583,538**, same, ELECTRIC PING-PONG GAME AND THE LIKE; **3,601,707**, same, ELECTRIC DART GAME AND THE LIKE; **3,637,212**, same, BIRD SHOOT GAME AND THE LIKE; **D. 202,629**, same, GAME PANEL; **D. 202,630**, same, GAME DISPLAY PANEL; **D. 202,794**, same, DISPLAY PANEL FOR A COIN OPERATED AMUSEMENT DEVICE; **D. 202,795**, same, ELECTROLUMINESCENT PANEL FOR A COIN OPERATED AMUSEMENT DEVICE; **D. 204,894**, same, CLOCK, **filed** Apr. 9, 1973, D.C. Pa. (Philadelphia), Doc. C.A. 73-820, *Funtronics of Texas, Inc.* v. *Tri-City, Inc.*

3,357,703. (See 3,337,218.)

3,363,942. (See 2,945,533.)

3,377,517. (See 3,337,218.)

3,417,811. (See 3,178,781.)

3,426,614, Brilando, Jameson and Blaho, TWIN CONTROL LEVER ASSEMBLY; **3,477,303**, F. P. Brilando, DOUBLE PLATEAU SPROCKET ASSEMBLY; **D. 208,128**, Brilando, Jameson and Blaho, TWIN CONTROL LEVER ASSEMBLY FOR BICYCLES, **filed** Apr. 25, 1973, D.C., S.D. Calif. (San Diego), Doc. 73-157-T, *Schwinn Bicycle Company* v. *Beneficial Products, Inc.*

3,426,860. (See 2,952,085.)

3,475,070, T. C. Hoshall, DISPLAY CASE, **filed** Apr. 6, 1972, D.C. Ark. (Little Rock), Doc. LR 72-C-87, *Freedman Artcraft Engineering Corp.* v. *Rainbo Photo Color Inc.*

3,477,303. (See 3,426,614.)

3,487,221, L. M. Frank, LIGHT ACTIVATED TRIGGER FOR PHOTOGRAPHIC FLASH SYSTEM, **filed** June 22, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1439-CC, *Wein Products, Inc. and Stanley Weinberg* v. *The Lase Company.*

3,504,907, Barber and Scrymgeour, FILING SYSTEM INDEX INDICATORS AND METHOD OF PRODUCING SAME, **filed** May 14, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1232, *Donald Barber and Thomas Scrymgeour and Datafile Limited* v. *Tab Prod. Co. and Tab Service Co.* Cause dismissed pursuant to Rule 41(a)(1), May 23, 1973.

3,567,515, Maricle and Mohns, ELECTRO-CHEMICAL CELL CONTAINING SULFUR DIOXIDE AS THE CATHODE DEPOLARIZER; **3,644,145,** Fraioli and Mohns, INCORPORATION OF VALVE METALS INTO CURRENT-PRODUCING CELL CONSTRUCTIONS, **filed** Apr. 18, 1973, D.C., S.D.N.Y., Doc. 73-1713, *American Cyanamid Company* v. *Power Conversion, Inc.*

3,583,538. (See 3,337,218.)

3,594,260, P. Dieffenbach, ARTIFICIAL SHRUBBERY AND METHOD OF MANUFACTURING THE SAME, **filed** June 15, 1973, D.C., S.D.N.Y., Doc. 73-2693, *Masterpiece of Pennsylvania, Inc.* v. *Consolidated Novelty Co. Inc.*

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3,604,707. (See 3,337,218.)

3,610,879, Katzman and Briggin, INSULATED HEATING CHAMBER FOR VAPORIZERS; **3,705,415,** same, VAPORIZER BOWL CONSTRUCTION; **3,714,391,** same, VAPORIZER WITH THERMALLY INSULATED HEATING CHAMBER, **filed** June 21, 1973, D.C., S.D.N.Y., Doc. 73-2766, *Koz Manufacturing Co. Inc.* v. *Northern Electric Company.*

3,636,611, I. W. Rosenbaum, APPARATUS FOR SPLICING WIRES, **filed** June 20, 1973, D.C., S.D.N.Y., Doc. 73-2743, *General Staple Co. Inc., etc.* v. *George Magnifico.*

3,637,212. (See 3,337,218.)

3,644,145. (See 3,567,515.)

3,647,096, J. H. Holland, MATERIAL DELIVERY SYSTEM; **3,724,692,** same, **filed** June 20, 1973, D.C. Minn. (Minneapolis), Doc. 4-73-C-324, *Orcon Industries, Inc.* v. *J. H. Holland Company and Gravel Co. and McAlester Fuel Company.*

3,665,579, Jaeger and King, PIPE TOOL, **filed** June 19, 1973, D.C., M.D. La. (Baton Rouge), Doc. 73-200, *Robert F. Jaeger and Ernest F. King, Jr.* v. *W.F. Products Corporation.*

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3,705,415. (See 3,610,870.)

3,714,391. (See 3,610,879.)

3,717,339, Holkesvick and Hudnall and Adams, METHOD OF UNASSISTED FRICTION-RESISTANCE EXERCISING, **filed** June 22, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1445-RJK, *Diversified Products Corporation* v. *Exer-Genie, Inc. and Edgar E. Holkesvick.*

3,724,692. (See 3,647,096.)

3,731,649, Anderson and Castro, RIBBON-INKING MACHINE; **3,733,211,** same, **filed** June 21, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1609, *Westates Space-Era Products, Inc.* v. *Charles J. Dee and C and G Research Inc.*

3,733,211. (See 3,731,649.)

3,738,836, R. L. Dalton, PROCESS OF MAKING IDENTIFICATION CARDS, **filed** June 28, 1973, D.C., M.D. Fla. (Jacksonville), Doc. 73-511-C-J-T, *Percy Rosenbloom, Jr.* v. *Central Florida Merchandise Mart, Inc.*

Re. 24,849. (See 2,945,533.)

D. 202,629. (See 3,337,218.)

D. 202,630. (See 3,337,218.)

D. 202,794. (See 3,337,218.)

D. 202,795. (See 3,337,218.)

D. 204,894. (See 3,337,218.)

D. 208,128. (See 3,426,614.)

Certificates of Correction for the Week of Mar. 12, 1974

D. 227,246	3,734,939	3,752,442	3,764,274
D. 227,828	3,735,827	3,752,539	3,764,707
D. 228,071	3,737,696	3,753,229	3,764,809
3,454,280	3,738,311	3,753,933	3,765,501
3,606,667	3,738,425	3,754,367	3,765,693
3,615,777	3,738,645	3,754,835	3,765,769
3,620,832	3,739,109	3,755,382	3,765,826
3,624,868	3,739,206	3,755,386	3,765,879
3,629,717	3,739,996	3,755,406	3,765,894
3,632,510	3,740,208	3,755,592	3,766,034
3,652,382	3,740,330	3,755,595	3,766,259
3,654,349	3,740,331	3,755,697	3,766,277
3,658,104	3,740,391	3,755,807	3,766,402
3,662,296	3,743,145	3,756,730	3,766,776
3,666,775	3,743,780	3,756,881	3,767,054
3,670,662	3,743,781	3,757,317	3,767,070
3,679,605	3,743,787	3,757,612	3,767,184
3,687,186	3,744,086	3,758,526	3,767,248
3,689,656	3,744,991	3,758,861	3,767,604
3,695,522	3,745,206	3,759,360	3,767,632
3,698,506	3,745,336	3,759,684	3,768,052
3,708,277	3,746,527	3,759,823	3,768,299
3,714,422	3,746,623	3,759,876	3,768,760
3,717,591	3,747,797	3,760,592	3,768,933
3,718,895	3,748,158	3,761,106	3,769,267
3,719,609	3,748,524	3,761,151	3,769,483
3,723,420	3,749,418	3,761,389	3,770,089
3,724,710	3,749,796	3,761,455	3,770,636
3,726,613	3,751,487	3,761,475	3,771,042
3,729,319	3,751,852	3,762,445	
3,730,158	3,751,862	3,762,564	
3,731,514	3,751,916	3,764,186	

Disclaimer and Dedication

3,535,159.—*Benjamin P. Shiro,* Pittsford, N.Y. METHOD AND APPARATUS FOR APPLYING ULTRASONIC ENERGY TO A WORKPIECE. Patent dated Oct. 20, 1970. Disclaimer and dedication filed Nov. 30, 1973, by the assignee, *Branson Instruments, Incorporated.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Dedications

3,094,403.—*Joseph E. Jendrisak,* Northville, Mich. GLASS SHEET BENDING MOLD. Patent dated June 18, 1963. Dedication filed Nov. 28, 1973, by the assignee, *Libbey-Owens-Ford Company.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,436,073.—*Newton Christman,* Mount Prospect, Ill. STACKER. Patent dated Apr. 1, 1969. Dedication filed Jan. 14, 1974, by the assignee, *Industrial Design & Engineering, Inc.*

Hereby dedicates to the Public the entire term of said patent.

3,755,811.—*Jack Breckman,* Haddonfield, N.J. DISCRIMINATING SIGNALING SYSTEM. Patent dated Aug. 28, 1973. Dedication filed July 9, 1973, by the assignee, *RCA Corporation.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,390,823.—*Robert W. Ott, Jr.,* Rockford, Ill. WEB GUIDE APPARATUS. Patent dated July 2, 1968. Disclaimer filed Dec. 3, 1973, by the assignee, *Rockford Servo Corporation.*

Hereby enters this disclaimer to claim 18 of said patent.

3,451,700.—*Frederic R. Smith,* Whitmore Lake, Mich. DUST SEAL FOR BALL JOINTS. Patent dated June 24, 1969. Disclaimer filed Dec. 11, 1972, by the assignee, *Gulf & Western Industrial Products Company.*

Hereby enters this disclaimer to claim 7 of said patent.

3,529,692.—*Walter A. Meier,* Bridgeton, Mo. SOUND BARRIER. Patent dated Sept. 22, 1970. Disclaimer filed Oct. 23, 1973, by the assignee, *St. Joe Minerals Corporation.*

Hereby enters this disclaimer to claims 1-5, 7 and 8 of said patent.

3,704,155.—*Bror E. Anderson,* Arlington Heights, and *Margery L. Schick,* Mount Prospect, Ill. THERMOGRAPHIC STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET. Patent dated Nov. 28, 1972. Disclaimer filed Jan. 24, 1974, by the assignee, *Weber Marking Systems, Inc.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 28, 1989.

3,748,497.—*David H. Woods,* Monroeville, Pa. TRANSFER GATE. Patent dated July 24, 1973. Disclaimer filed Nov. 28, 1973, by the assignee, *Westinghouse Electric Corporation.*

Hereby enters this disclaimer to claims 1-5 of said patent.

3,771,216.—*Verner A. Johnson,* Livonia, Mich. METHOD AND TOOLING FOR EXTRUDING A CLOSED END RIVET. Patent dated Nov. 13, 1973. Disclaimer filed Nov. 23, 1973, by the assignee, *Johnson Die & Engineering Co.*

Hereby disclaims the portion of the term of said patent subsequent to May 8, 1990.

3,771,480.—*Verner A. Johnson,* Livonia, Mich. METHOD AND APPARATUS FOR EXTRUDING A RIVET FORM IN A LAYER OF METALLIC MATERIAL. Patent dated Nov. 13, 1973. Disclaimer filed Nov. 23, 1973, by the assignee, *Johnson Die & Engineering Co.*

Hereby disclaims the portion of the term of said patent subsequent to May 8, 1990.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF FEBRUARY 16, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-30-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-17-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-11-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-01-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-06-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-11-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-28-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits, Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-13-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-20-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	3-08-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-04-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-02-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-21-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	4-30-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-08-73

[a] **Expiration of patents:** The patents within the range of numbers indicated below expire during March 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,783,468 to 2,786,999, inclusive
Plant Patents..... Numbers 1,575 to 1,585, inclusive

REISSUES

MARCH 12, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,938

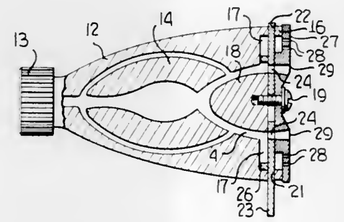
OSCILLATOR AND SHOWER HEAD FOR USE THEREWITH

Peter Bauer, Germantown, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Original No. 3,563,462, dated Feb. 16, 1971, Ser. No. 777,694, Nov. 21, 1968. Application for reissue June 30, 1972, Ser. No. 268,212

Int. Cl. B05b *1/08*

U.S. Cl. 239—102 **29 Claims**



A gas-liquid fluidic oscillator is provided employing liquid as the operating fluid and gas as the control fluid, a pair of feedback channels to opposed central passages are provided, the liquid stream sealing one feedback channel while gas admitted to the other feedback channel[s] produces stream switching.

A shower head is also provided which may operate conventionally as a spray source or by rotation of a lever or a ring on the shower head or other suitable means may be converted to a source of fluid pulses generated by the oscillator located in the head to provide a fluidic massaging device.

27,939

LAUROLACTAM COPOLYAMIDE SHAPED ARTICLE HAVING HIGHLY ADHESIVE SURFACE

Fritz Raabe, Bonn, Germany, assignor to Dr. Plate GmbH Chemische Fabrik, Bonn, Germany

No Drawing. Original No. 3,515,702, dated June 2, 1970, Ser. No. 614,018, Feb. 6, 1967. Application for reissue Jan. 5, 1972, Ser. No. 215,679

Claims priority, application Germany, Feb. 11, 1966, P 38,767

Int. Cl. C08g *20/10*

U.S. Cl. 260—78 L **4 Claims**

There is provided a plastic article of manufacture having highly adhesive surfaces at elevated temperatures formed by condensing together 80% to 20% by weight laurolactam and 20% to 80% by weight of at least one other polymerizable amide.

27,940

POLYMER CATALYSTS

Arthur W. Langer, Jr., Watchung, and Erik Tornqvist, Roselle, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original No. 3,032,511, dated May 1, 1962, Ser. No. 858,861, Dec. 11, 1959, which is a continuation-in-part of abandoned application Ser. No. 629,488, Dec. 20, 1956. Application for reissue Apr. 30, 1964, Ser. No. 377,154

Int. Cl. B01j *11/84;* **C08f** *3/04, 3/10*

U.S. Cl. 260—93.7 **17 Claims**

An improved catalyst component is prepared by reacting a heavy transition metal halide, such as titanium tetrachloride, with an aluminum alkyl, such as aluminum triethyl, under specific temperature, time, and mole ratio conditions. The improved catalyst component is then activated with an aluminum alkyl to form a catalyst useful for polymerizing olefins.

PLANT PATENTS

GRANTED MARCH 12, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,511

AFRICAN VIOLET

Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany

Filed Aug. 24, 1972, Ser. No. 283,369

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, and uniformity throughout the life cycle.

3,512

AFRICAN VIOLET

Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany

Filed Aug. 24, 1972, Ser. No. 283,471

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, and uniformity throughout the life cycle.

3,513
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Filed Aug. 24, 1972, Ser. No. 283,472
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, and uniformity throughout the life cycle.

3,514
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Filed Aug. 24, 1972, Ser. No. 283,495
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, and uniformity throughout the life cycle.

3,515
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Filed Aug. 24, 1972, Ser. No. 283,586
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, and uniformity throughout the life cycle.

3,516
AFRICAN VIOLET
Hermann Holtkamp, Werther Strasse 5–7, Postfach 19, 4243 Isselburg, Germany
Filed Aug. 24, 1972, Ser. No. 283,587
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, and uniformity throughout the life cycle.

3,517
ILEX PLANT
Kathleen K. Meserve, St. James, N.Y., assignor to The Conard-Pyle Company, West Grove, Pa.
Filed Oct. 5, 1972, Ser. No. 295,218
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—65 **1 Claim**

Ilex produced by crossing an unnamed and unpatented seedling of the species botanically known as *Ilex aquifolium* with another unnamed and unpatented seedling of the species known botanically as *Ilex rugosa*.

3,518
ROSE PLANT
Arnold W. Ellis, Upland, and Herbert C. Swim, Ontario, Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.
Filed Oct. 13, 1972, Ser. No. 299,912
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—24 **1 Claim**

A new variety of rose plant of the floribunda class, having a tendency to flower heavily and to bear many of its blooms singly, on relatively straight stems which are valuable for cutting because of their length and caliper. Blooms have a strong spicy fragrance, are brilliant yellow in color as they open, and fade only slightly after opening. Stems have very few thorns and prickles, and peduncles are almost free of stipitate glands. The plant has better than average resistance to mildew. Its blooms are large for the class, and they range from 2½ to 3¼ inches in diameter with from 30 to 50 petals plus 2 to 6 petaloids. The petals are undulated in form throughout the life of the bloom.

3,519
ROSE PLANT
Georges Delbard, Paris, France, assignor to Armstrong Nurseries, Inc., Ontario, Calif.
Filed Oct. 25, 1972, Ser. No. 300,647
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—22 **1 Claim**

An outdoor bush rose of the floribunda class, with small to medium size semi-glossy leaves, having their lateral margins lifted from the mid-rib. The plant has a tendency to bear a large number of blooms on some of its stems, sometimes even as many as twenty. The general color effect of the newly opened flower is a rather brilliant orange, tending towards a yellowish orange pink as it matures. Pistils range in number from 85 to 140. Fragrance slight, tea to spicy.

3,520
POMEGRANATE TREE
Leonard K. Wileman, 13136 Avenue 400, Cutler, Calif. 93615
Filed Nov. 10, 1972, Ser. No. 305,495
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—33 **1 Claim**

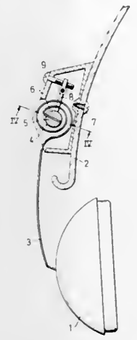
A rapid-growing pomegranate tree which is of medium size, vigorous, spreading, round-topped, foliated with small lanceolate leaves, blooms late with large, orange-red, fertile flowers, and is a regular and productive bearer of large, thin-skinned, round-oblate fruit symmetrical and uniform in shape, and having a deep red exterior color.

PATENTS

GRANTED MARCH 12, 1974

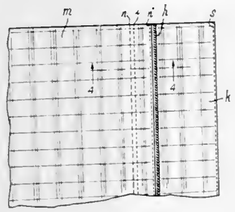
GENERAL AND MECHANICAL

3,795,919
METHOD OF JOINING A HEARING PROTECTOR AND A PROTECTIVE HELMET AND DEVICE FOR APPLYING SAME
Yrjo Aho, Tinasepantie 11, Helsinki 62, Finland
Filed June 21, 1972, Ser. No. 264,854
Claims priority, application Finland, June 21, 1971, 1750/71
Int. Cl. A42b *3/00*
U.S. Cl. 2—6 **5 Claims**



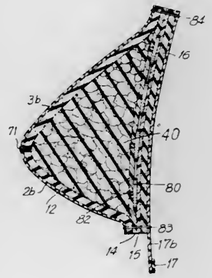
Method of joining a hearing protector and a protective helmet wherein the yoke part between the earcup and the helmet has been made of a leaf spring, which has been attached to the helmet or to an intermediate part on same either integrally or turnably in a longitudinal vertical plane for the purpose of turning the earcups up into a position at rest, and which comprises an arrangement for spring force adjustment, characterized in that the upper end of the leaf spring has been shaped to be a spiral resembilng a watch spring and that adjustment of the spring tension has been arranged to take place by turning the centre shaft of the spiral or the device serving this function.

3,795,920
PREFABRICATED TROUSER-FLY
Christian Bernard, Mouvaux, France, assignor to Dollfus-Mieg & Cie, Paris, France
Filed Mar. 16, 1972, Ser. No. 235,136
Int. Cl. A41d *1/06*
U.S. Cl. 2—234 **2 Claims**



A prefabricated trouser-fly comprises a facing strip of material of suitable configuration and of the same or similar appearing material as the trousers, inserted during the manufacturing process under a slide fastener tape secured on a supporting strip, whereafter said facing strip of material is secured to the trousers by stitching, druing the sewing of the prefabricated fly assembly to the trousers, for example, by using a twin-needle sewing machine equipped with a suitable guide member.

3,795,921
BREAST PROSTHESIS AND BRASSIERE FOR SAME
Samuel Zucker, 581-Hungry Harbor Rd., North Woodmere, L. I., N.Y.
Filed June 21, 1971, Ser. No. 155,135
Int. Cl. A61f *1/00;* **A41c** *3/10*
U.S. Cl. 3—36 **10 Claims**

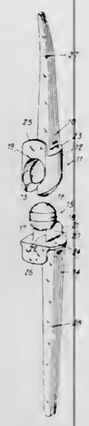


A brassiere is provided with two cups, one or both of which is filled with an integral, artificial breast. Each of such artificial breasts contains a substantially conical outer surface of foamed polyester material, filled with chips of foamed rubber substance to approximate the size and elasticity of the natural breast, and a back panel of flat material covering the base of the conical form. A number of flat leaden weights are attached to the inner surface of the back panel to bring the weight of the artificial breast to that of the portion of the wearer's body it replaces; the artificial breast is permanently attached to the inside of the appropriate cup of the brassiere.

3,795,922
COMPLETE KNEE PROTHESIS
Jules Jean-Marie Ernest Herbert, clinque du Dr. Herbert La Roche du Roi, and Marcel Henri Gros, 46 bis rue de Beneve, both of Aix les Bains, France
Filed Nov. 17, 1972, Ser. No. 307,557
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **7 Claims**

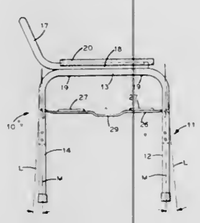
This prothetic device for replacing the articulation of a human knee comprises two elements adapted to be inserted the one into the femur and the other into the tibia, the femoral element having a female articulation portion adapted to be engaged by the male articulation portion of the tibial element so as to retain the latter, the male portion being releasably engageable into the female portion only when the two elements

are disposed substantially at right angles to each other ; the design is such that a certain locking action is obtained in the



fully stretched leg position and that during the flexion movement a certain degree of lateral movement is allowed.

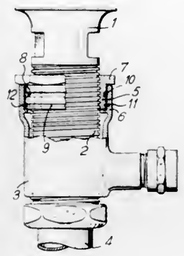
3,795,923
COMMODE CHAIR
Morton I. Thomas, 125 South St., Passaic, N.J.
Filed Nov. 1, 1972, Ser. No. 302,928
Int. Cl. A47k *11/02*; **A61g** *7/02*
U.S. Cl. 4—134 **4 Claims**



A commode of the armchair type having a removable receptacle and an improved wire frame mounted on the seat portion of the commode for mounting the receptacle; the wire frame being interengaged with the seat portion of the commode so as to be substantially integral therewith, and thereby avoiding separation of the wire frame from the commode when the receptacle is lifted relatively to the supporting wire frame.

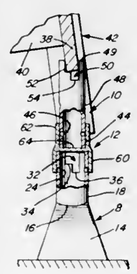
3,795,924
DRAIN PLUGS
Aurora Constantinesco Kempler, 5, Maurice Barres, La Varenne, France
Filed July 16, 1971, Ser. No. 163,301
Claims priority, application France, July 20, 1970, 70.26605
Int. Cl. A61j *19/00*
U.S. Cl. 4—287 **4 Claims**

A drain plug, more particularly for a sanitary appliance, having an upper portion and a lower portion capable of being moved towards each other whereby to clamp the wall of the appliance responsively to mere rotation of a threaded ring engaging with a screw-thread formed on said upper portion, said



ring being fast with said lower portion but being capable of leaktight rotation without axial displacement with respect thereto.

3,795,925
BED FRAME END ADJUSTABLE HEIGHT STAND
Charles J. Leagus, Jr., 3310 N. 13th St., Wausau, Wis.
Filed July 17, 1972, Ser. No. 272,219
Int. Cl. F16m *11/02, 13/00*; **A47b** *83/04*
U.S. Cl. 5—328 **5 Claims**

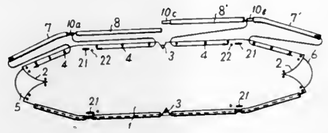


A home-type bed elevating and inclining jack or stand uniquely designed for modern beds embodying a headboard or footboard, angle iron frame types and also Hollywood beds. Two stands, when properly paired and installed, permit such beds to be elevated to assume a moderately inclined plane in a manner to better serve the requirements and medical treatment needs of persons suffering from treatable difficulties. A simplified adaptation for minimal height adjustment, say 3 inches, more or less, comprises a pedestal embodying a self-standing base whose upper end is provided with an axial upright. The terminal upper end of the upright is provided with novel notch means capable of seating and retentively holding that part of the bed structure which is cooperable therewith. For adjustment to 12 inches, if desired, extension means for the upright is available.

3,795,926
BOAT OF THE KNOCK-DOWN TYPE
Hiroe Hoshino, Hiratsuka, Japan, assignor to Tensho Electric Industrial Company, Ltd., Tokyo, Japan
Filed Oct. 3, 1972, Ser. No. 294,596
Int. Cl. B63b *7/06*
U.S. Cl. 9—2 C **2 Claims**

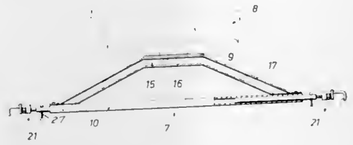
A boat of the knock-down type comprising one-piece sheet serving as a hull of the boat, gunwale which can be mounted

on the sheet, and frame to which the sheet can be detachably attached. The boat can be readily assembled and disassembled



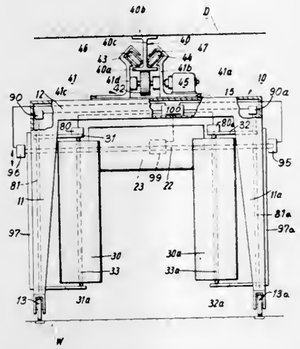
and, when the boat is disassembled, the sheet can be rolled to facilitate conveying.

3,795,927
ADJUSTABLE BASS BENCH
William N. Darwin, Jr., 1014 Linkwood Ave., and Dewayne Weldon, Rt. 6, Box 626E, both of Lufkin, Tex.
Filed Aug. 9, 1972, Ser. No. 279,188
Int. Cl. B63b *29/00*
U.S. Cl. 9—7 **10 Claims**



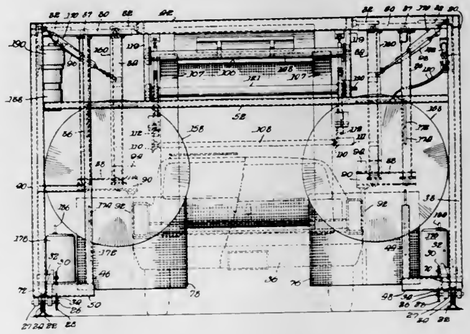
A unique seat bench adapted to be selectively positioned on the gunnels of a boat especially a flat bottom aluminum boat or row boat has a supporting frame preferably of rectangular configuration, arched seat mounts which are preferably casting which provide a flat portion for mounting a seat and adjustable extending gunnel clamps which comprise a slidable member within the supporting frame which holds a jaw member and jaw closing member for attaching the seat bench to the gunnels of a boat.

3,795,928
WASHING APPARATUS FOR VEHICLES, MORE PARTICULARLY FOR MOTOR VEHICLES
Heinz Dolitzsch, Adolfstrasse 73, Hamburg, and Gerhard Skirde, Alte Schule, Trelde, both of Germany
Filed Nov. 12, 1971, Ser. No. 198,136
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **5 Claims**



A vehicle washing apparatus consisting of a portal-shaped self propelled washing bridge with a vertically adjustable horizontal washing brush and a pair of lateral vertical washing brushes whereby at least one bearing support assembly is connected to a horizontal frame member of the washing bridge and provided with a motor driven track roller rolling on a lower surface of an overhead guide rail and two pairs of tandem arranged floatingly mounted inclined guide rollers rolling on lateral portions of the guide rail. The bearing support assembly is extensibly connected to the horizontal frame member and allows a vertical adjustment of with respect to the washing bridge.

3,795,929
VEHICLE WASHING APPARATUS
William H. Thompson, Mt. Prospect, Ill., assignor to Trans-Clean, Inc., Glenview, Calif.
Continuation-in-part of Ser. No. 189,682, Oct. 15, 1971. This application Mar. 20, 1972, Ser. No. 236,496
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **6 Claims**



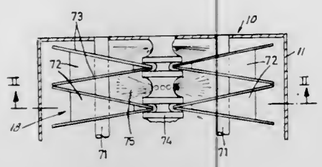
An apparatus for washing a stationary vehicle. A mobile carriage travels along a longitudinal path over the vehicle. The carriage supports opposing vehicle washing brushes rotatable about laterally movable vertical axes to wash the vertical surfaces of the vehicle, an overhead brush rotatable about a horizontal axis and movable in a vertical direction to wash the upper surfaces of the vehicle, and horizontally mounted opposed rotatable brushes for washing the windows and upper vertical surfaces of the vehicle. The vertically mounted brushes are suspended from the carriage by a linkage which has a natural pendular position urging the brushes into scrubbing contact with the vehicle. The overhead brush linkage includes a novel structure wherein counterbalancing weights are located wholly within the lateral limits of the carriage, and wherein the motor driving the overhead brush is mounted so as to eliminate the motor torque reaction when the direction of brush rotation is reversed. A control system comprising sensing elements responsive to the physical dimensions of the vehicle automatically programs the functions of the washing apparatus. A unique feature of the control system provides for stopping rearward movement of the carriage when the rear of the vehicle has been reached by the brushes, regardless of the length of the vehicle. A second unique feature of the control system prevents the carriage from stopping as it reaches the rear of the vehicle until the overhead brush cleans the rear window or upper rear vertical surface of station wagons or vans.

3,795,930

CLEANING APPARATUS

Gunter Leifheit, and Johannes Liebscher, both of Nassau/Lahn, Germany, assignors to Leifheit International Gunter Leifheit K.G., Nassau/Lahn, Germany

Division of Ser. No. 881,440, Dec. 2, 1969, Pat. No. 3,696,458.
This application July 10, 1972, Ser. No. 270,569
Claims priority, application Germany, Dec. 2, 1968, 1812081
Int. Cl. A47l *11/03*
U.S. Cl. 15—50 C **6 Claims**



A cleaning apparatus comprises a reservoir for containing a body of foamable material in unfoamed state. Converting means is connected with the reservoir for receiving from the latter unfoamed material and for converting this into foamed state. Moving means mounts the reservoir and converting means for movement over a surface to which the material is to be applied in unfoamed state.

3,795,931

QUICK-CHANGE BRUSH MOUNTING

Joseph J. Martino, Cypress, Calif., assignor to Chemut Corporation, State College, Pa.

Continuation of Ser. No. 58,625, July 27, 1970, abandoned.
This application Feb. 25, 1972, Ser. No. 229,516
Int. Cl. A46b *13/02*
U.S. Cl. 15—77 **16 Claims**

A quick-change brush mounting for use in a printed circuit board scrubber or the like. The shaft of a cylindrical brush is journaled at one end to a bearing cartridge having a flanged, cylindrical end which seats in the circular opening of a plate. A retainer extending over the flanged edge maintains the bearing cartridge attached to the plate. By rotating the cartridge until a notch in the flange is aligned with the retainer, the cartridge may be detached and the brush withdrawn through the opening in the plate. To facilitate vertical adjustment of the brush, the cartridge plates may be slidingly mounted to side panels of the scrubber and provided with micrometer screws for moving the plates and hence for adjusting the spacing between the brush and the circuit board being scrubbed. An ammeter, associated with the brush drive motor, indicates the amount of loading on the brush.

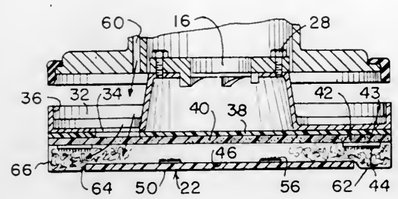
3,795,932

VERSATILE FLOW-THROUGH FOAM CARPET CLEANING APPARATUS

Edward G. Young, Gloucester, Mass., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Oct. 2, 1972, Ser. No. 293,993
Int. Cl. A47l *11/12*
U.S. Cl. 15—98 **5 Claims**

The versatility of flow-through carpet cleaning is greatly increased in an apparatus which provides means for passing foam-generating liquid through a driven surface working pad in combination with a smooth-faced stiff impervious pressure-plate positioned in the region below the liquid entry into the



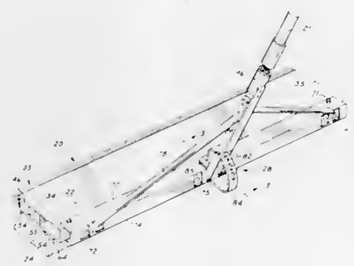
pad. The plate is in direct contact with the carpet. The pressure plate is smaller than the working pad so that the pad has a revolving margin between one edge of the plate and the corresponding edge of the pad.

3,795,933

MULTI-PURPOSE CLEANING IMPLEMENT

George E. Seufert, 140 S. Depew St., Lakewood, Colo.

Filed June 26, 1972, Ser. No. 266,152
Int. Cl. A47l *13/12, 13/257*
U.S. Cl. 15—114 **2 Claims**



A multi-purpose cleaning implement includes a base member supporting a sponge mop type work head and an auxiliary implement such as a brush, squeegee, scraper, spreader or similar implement. A rod handle is attached to the base by an adjustable attachment mechanism. The sponge mop type work head is releasably secured to the base member and a slip-on cover may be secured over the work head for polishing and similar operations. The slip-on cover includes a lamb's wool, foamed plastic or similar working surface. The base further includes structure for housing the auxiliary implement in an out-of-the-way position. The adjusting mechanism includes a latch bolt engagable in slots in a strike plate with a latch pull or trigger mechanism.

3,795,934

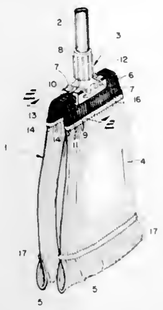
MOP WITH OPEN SCRIM HEADBAND

Theron V. Moss, 3175 Falmouth Rd., Shaker Heights, Ohio

Continuation-in-part of Ser. No. 129,504, March 30, 1971, abandoned. This application Dec. 22, 1971, Ser. No. 210,747
Int. Cl. A47l *13/12, 13/20*
U.S. Cl. 15—229 A **6 Claims**

A mop having an open scrim headband which allows penetration of the teeth of a mop holder into the headband for securely fastening the mop to a mop handle. The open scrim headband is desirably made out of a highly wear-resistant material such as nylon which is also sufficiently abrasive that it may be used to remove scuff marks and the like from surfaces

being mopped. In one form of the mop, the headband is desirably folded intermediate its length and secured in such



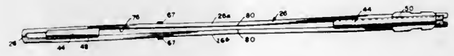
folded condition by stitching the ends of the headband together.

3,795,935

UNIVERSAL BLADE CONSTRUCTION

Harry W. Roberts, Merrick, N.Y., assignor to Pylon Manufacturing Corporation, Ft. Lauderdale, Fla.

Filed Nov. 11, 1971, Ser. No. 197,776
Int. Cl. B60s *1/38*
U.S. Cl. 15—250.42 **4 Claims**



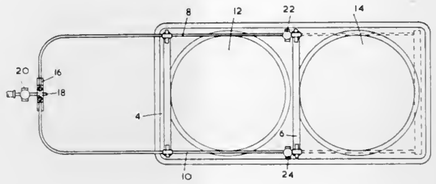
A universal blade construction adopted to fit windshield wipers having yokes with different width dimensions between the blade-straddling claws that retain the blade construction. The blade construction includes a backing strip providing a longitudinal slot-like opening formed by a pair of substantially parallel side rails which are upset at the centers inwardly of the center line of each said rail to cause a lateral bowing effect between the center and each end, whereby the blade construction will fit snugly in between claws of different width.

3,795,936

HEADLAMP CLEANING DEVICE

Robert John Lane, Marston Green, and Robert Colston James, Warley, both of England, assignors to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Oct. 24, 1972, Ser. No. 300,367
Claims priority, application Great Britain, Nov. 19, 1971, 53792/71
Int. Cl. B60s *1/06, 1/20*
U.S. Cl. 15—250.24 **3 Claims**



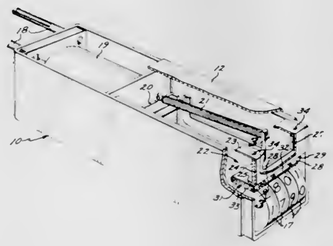
A headlamp cleaning device for a vehicle having a twin headlamp system comprises a pair of spaced, parallel actuating rods and a pair of spaced wipers extending between the actuating rods and attached thereto. The actuating rods are slidable in bearings resiliently mounted on the body of the vehicle so that the headlamps are not obscured by the rods. The rods are reciprocated by a common drive and the wipers are arranged so as to be parted off the headlamps when not in use.

3,795,937

METER CLEANER

Jim C. Garrett, 6331 Vera Crest Dr., Long Beach, Calif.; Robert H. Johnson, 4764 "M" La Villa Marina, Marina Del Rey, Calif.; Jack Shelton, 810 Rancho Dr., Long Beach, Calif., and Ross E. Sherwood, Lakewood, Calif., assignors to said Garrett, Johnson and Shelton, by said Sherwood

Filed Nov. 16, 1971, Ser. No. 199,280
Int. Cl. G06c *27/00*
U.S. Cl. 15—256.51 **17 Claims**



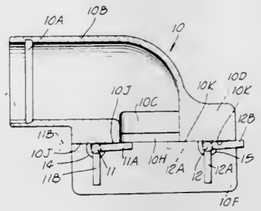
The present invention relates to meters; and more particularly relates to the cleaning of meters of the type that have rotatable wheels with indicia on the periphery of the wheel. Under certain conditions, these indicia become dusty; and it then becomes necessary to clean them. The present disclosure teaches how this cleaning may be performed continuously and automatically.

3,795,938

VACUUM CLEANER ATTACHMENT FOR SHAG RUGS

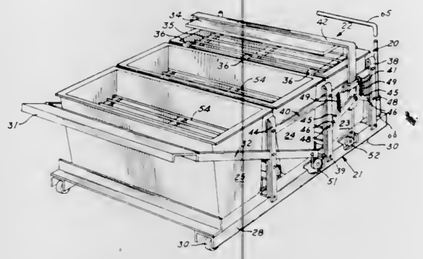
Achille J. Caporaso, San Dimas, Calif., assignor to Wayne L. McNulty, Monrovia, Calif.

Filed Oct. 8, 1971, Ser. No. 187,747
Int. Cl. A47l *9/06*
U.S. Cl. 15—369 **4 Claims**



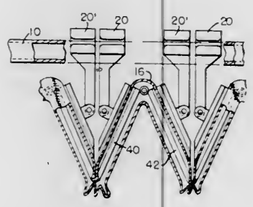
A vacuum cleaner attachment for use in cleaning shag type rugs or carpets includes two pivoted shafts from each of which a series of comblike rods extend. When the attachment is moved in one direction, one of such series produces a combing action, and the other series is displaced by the rug or carpet to a cleaning position, and when the attachment is moved in the opposite direction, said one series is cleaned and said other series produces a combing action.

3,795,939
UTILITY CONTAINER ASSEMBLY FOR USE WITH SPONGE APPLICATOR
George E. Seufert, 140 S. Depew St., Lakewood, Colo.
Filed June 26, 1972, Ser. No. 266,242
Int. Cl. A47l *13/59, 13/12*
U.S. Cl. 15—261 **7 Claims**



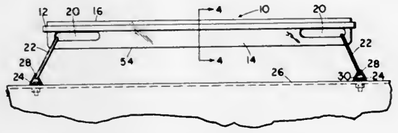
A utility container and wringer assembly includes a caster or wheel mounted frame supporting a plurality of individual containers for liquids, to be applied to a floor or other surface, together with a wringer assembly over one of the containers for squeezing liquid from a sponge mop type applicator. A foot actuated linkage mechanism is utilized for operating the sponge mop wringer. One or more of the liquid containers includes a floating plate or panel for preventing spilling of the liquid and for facilitating use with a sponge mop applicator. The sponge mop wringer operates in association with a container for receiving waste-laden liquid from the mop. An auxiliary rack is associated with the container and wringer assembly for holding cleaning tools, rags, bottles, and the like.

3,795,940
DRAPERY HARDWARE
Patrick V. DiMascio, 1901 Euclid Ave., Schenectady, N.Y.
Filed Aug. 5, 1971, Ser. No. 169,180
Int. Cl. E05d *13/02*
U.S. Cl. 16—87.2 **7 Claims**



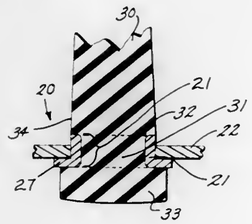
The disclosure relates to improvements in drapery hangers and pleaters. Each pleater comprises two hingedly interconnected parts each insertable into a pocket or the like formed to either side, respectively, of a preformed pleat, with means for pivotally supporting the pleater on a pair of drapery hangers which are slidable on a rod. A clearly defined accordion fold pleat is formed in the draperies, with each fold occurring to the rear, toward the supporting rod. A pair of specially formed hangers at the center of the drapery are so configured that the center edges of the respective right and left drapery panels readily overlap at the center of a center pull drapery without interference with each other. The various hanger and pleater parts are so formed as to permit them to be readily molded from plastic materials.

3,795,941
FLAT COLLAPSIBLE HANDLE WITH CLOSED-CELL FOAM FINGER GRIP
Marton Szabo, Camden, and George W. Bush, Haddonfield, both of N.J., assignors to Philadelphia Handle Company, Inc., Camden, N.J.
Filed Jan. 4, 1973, Ser. No. 320,941
Int. Cl. A47b *95/05*
U.S. Cl. 16—115 **5 Claims**



A collapsible flat-lying handle comprised of a substantially flat solid rigid elongated palm-engaging member having slotted portions adjacent its ends and depending from its lower surface, a softer resilient finger-engaging member preferably made of a closed-cell foam positioned between said slotted portions and secured to the lower surface of the rigid member by non-mechanical means which prevent movement of the softer resilient member relative to the rigid member.

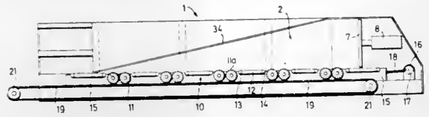
3,795,942
FLEXIBLE FINGER SUPPORT
Edward J. Crane, Ottumwa, Iowa, assignor to International Agri-Systems, Inc., Ottumwa, Iowa
Filed Oct. 1, 1971, Ser. No. 185,694
Int. Cl. A22c *21/02*
U.S. Cl. 17—11.1 R **10 Claims**



A flexible finger support for use with a mechanized poultry picking apparatus, the support being formed from relatively thin metallic stock as is the current custom. An open-ended tubular member is affixed to the support at each of the locations thereon where it is desired to position a flexible picking finger. The tubular member functions to increase the contact area between the finger and the support to retard breakage of the finger at the support-engaging shoulder thereof.

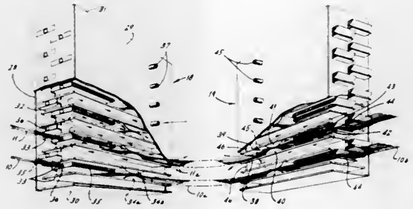
3,795,943
APPARATUS FOR THE CONTINUOUS OPENING OF BALES OF FIBROUS MATERIAL
Gunter Eckrodt, Coesfeld, Germany, assignor to Hergeth K.G. Maschinenfabrik und Apparatebau, Dulmen/Westf., Germany
Filed Oct. 27, 1971, Ser. No. 192,959
Claims priority, application Germany, Nov. 27, 1970, P 20 52 587.5
Int. Cl. D01g *9/06*
U.S. Cl. 19—80 R **9 Claims**

A device for opening or shredding bales of compressed fibrous material. The apparatus includes an elongated chamber with a series of opening or shredding elements positioned in spaced relationship along the bottom of the chamber. Means such as an endless belt or vacuum tube disposed adjacent the shredding elements move the loose fibers to the next process operation. A feeding mechanism is used to move the bales into one end of the chamber and in one longitudinal direction along a path within the chamber. A



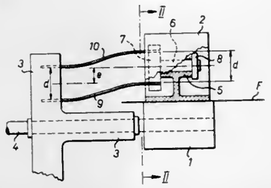
pressure member rides on the bales and provides a downward force to provide positive contact between the bales and the shredding elements. The shredding elements are mounted on a reciprocating carriage moving in the longitudinal direction of the chamber to effect removal of fibers from the bales.

3,795,944
PNEUMATIC SPREADING OF FILAMENTS
Clare G. Daniels, El Toro, Calif., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed Dec. 8, 1971, Ser. No. 205,878
Int. Cl. D01d *11/02*
U.S. Cl. 19—65 T **6 Claims**



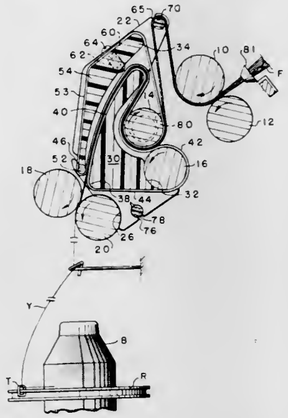
Process and apparatus for pneumatically spreading thin graphite or other carbon filaments from a tow bundle to form a sheet or tape in which the filaments are maintained in parallelism. The process includes passing the tow through at least one slot venturi spreader in which the tow is pulled through the spreader in a direction opposite to the direction of primary air flow through the venturi. For certain purposes use is made of first and second spreader units. Each of these units may have at least two side-by-side rows of slot venturies and at least two stacked modules whereby to process a plurality of tow bundles simultaneously.

3,795,945
APPARATUS FOR GUIDING AND LOADING A WEIGHTING ROLL ON SPINNING MACHINES
Werner Naegeli, Winterthur, Switzerland, assignor to Pavena AG, Basel, Switzerland
Filed Apr. 24, 1972, Ser. No. 246,859
Claims priority, application Switzerland, May 7, 1971, 6735/71
Int. Cl. D01h *5/50*
U.S. Cl. 19—282 **9 Claims**



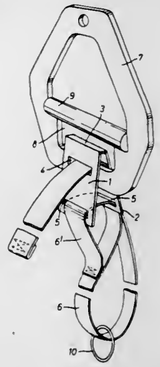
An apparatus for guiding and loading a weighting roll at spinning machines comprising two rolls forming a nip for the fiber material and defining a material transporting plane. At least one of these rolls is a weighting roll vertically movable with respect to the material transport plane. According to the invention a support for the weighting roll is anchored directly or indirectly at the machine frame via two rigidly clamped flat springs arranged parallel or substantially parallel to the material transport plane, the springs possessing the same or substantially the same length.

3,795,946
DRAFTING APPARATUS
Grady H. Sanders, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburgh, S.C.
Division of Ser. No. 179,022, Sept. 9, 1971. This application Aug. 17, 1972, Ser. No. 281,564
Int. Cl. D01h *5/88*
U.S. Cl. 19—255 **1 Claim**



Drafting apparatus and method to draft sliver which has at least some of the staple fibers therein longer than the distance between center lines of adjacent pairs of rolls in a drafting system.

3,795,947
CLAMPING DEVICE FOR ADJUSTABLE LENGTH MEANS
Peter James Thompson, 256 Beverley Rd., Anlaby Hull Yorkshire, England
Filed Jan. 26, 1973, Ser. No. 326,809
Int. Cl. A44b *21/00, 11/10*
U.S. Cl. 24—73 R **3 Claims**



A clamp, for holding flexible means in adjusted effective length extending between spaced apart attachment elements,

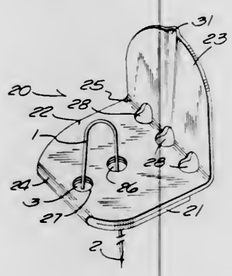
having a gripping element with flexible limbs on opposite sides of a clamping bar with apertures in said limbs passed through by one of said flexible means in arrangement such that strain on said flexible means on adjustment of the effective length thereof causes said gripping element to press part of said one flexible means onto said clamping bar and cause said part to assume a tortuous shape whereby the greater the strain on said flexible means the greater will be the clamping action to avoid possible slip of said flexible means even should it be slippery due to wetness or other cause.

3,795,948

METHOD AND APPARATUS FOR ATTACHING BUTTONS

John R. Kapitan, 405 Kipling St., Lakewood, Colo.

Filed June 12, 1972, Ser. No. 261,887
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 TA **3 Claims**



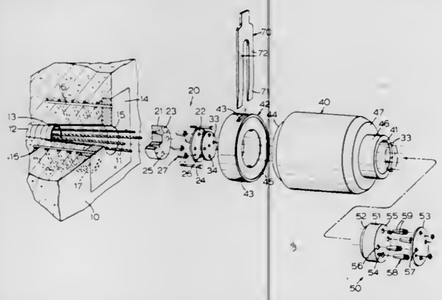
The button attaching kit or apparatus comprises a length of high tensile strength tie line and a tie line anchor. The tie line desirably comprises a relatively large cross section mono-filament of extended and drawn thermoplastic having a head at one end and a point at the other. The anchor has a series of grip holes through which the tie line is laced to fasten an end thereto. The anchor also has a guide hole through which a single loop of the tie line extends through a garment and through the holes in a button. The kit replaces needle and thread and becomes an integral part of the anchored button.

3,795,949

POST-STRESSING OF REINFORCED CONCRETE STRUCTURES

Robert William Shorter, Don Mills, Ontario, Canada, assignor to Pre-Stress Pioneers Limited, Downsview, Ontario, Canada

Continuation-in-part of Ser. No. 873,143, Nov. 3, 1969, abandoned. This application Nov. 15, 1971, Ser. No. 198,912
Claims priority, application Great Britain, Nov. 6, 1968, 52,611/68; Dec. 18, 1968, 60,126/68; Canada, Aug. 26, 1971, 121387
Int. Cl. F16g *11/00*
U.S. Cl. 24—115 R **13 Claims**



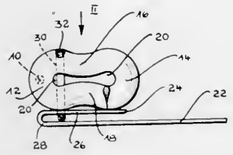
An apparatus for post-stressing cables of reinforced concrete structures, in which a template and a drift wedge are used in association with a bearing stool to retain clamping grips in registration with apertures in an anchor head and to assist in seating the grips in the apertures, when the strands of the cable are stressed by a center-hole jack.

3,795,950

CONCEALED SLIDE FASTENER

Hans-Ulrich Sohr, D 5408 Nassau, Lahn, Scheubachweg Haus Waffenschied, Germany

Division of Ser. No. 11,617, Feb. 16, 1970, Pat. No. 3,665,879. This application Nov. 1, 1971, Ser. No. 194,145
Claims priority, application Germany, Feb. 18, 1969, P 19 08 068.3; Feb. 18, 1969, P 19 08 069.4
Int. Cl. A44b *19/12*
U.S. Cl. 24—205.1 C **8 Claims**



The invention relates to a sliding clasp fastener of the concealed element type comprising series of coupling elements which are, on one side each, sewn on a carrier tape and consist of a thermo-plastics filament wound in the form of a modified helix, as well as carrier tape, which is folded back on itself on the side which is remote from the series of coupling elements.

3,795,951

GRAB HOOK CONSTRUCTION WITH CLEVIS

Ralph A. Ratcliff, P.O. Box 543, Belmont, Calif.

Filed Aug. 10, 1972, Ser. No. 279,496
Int. Cl. A43c *11/08*; **B66c** *1/36*
U.S. Cl. 24—230.5 CR **4 Claims**

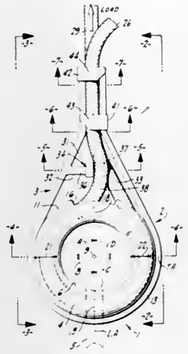
An improved grab hook construction comprising a hook body having a tip portion at one end thereof and a shank portion at its opposite end. The shank portion is defined by a pair of spaced apertured arms having an apertured boss positioned therebetween and separated therefrom by slots. A clevis member defined by a U-shaped body having spaced apertured legs is pivotally interconnected with the shank portion of the hook body by a pivot pin positioned to extend through aligned openings in the shank portion arms, the boss portion, and the clevis legs when the clevis and hook body are interfitted. A chain link is connected with the clevis body and is precluded from separation therefrom while the clevis and hook body are pivotally interconnected.

3,795,952

SLIP PROOF CABLE LOOP CONNECTOR

Ralph A. Ratcliff, Belmont, Calif., assignor to Bruce E. Ratcliff and Sandra Ratcliff Sears

Filed Aug. 10, 1972, Ser. No. 279,305
Int. Cl. F16g *11/00*
U.S. Cl. 403—210 **14 Claims**



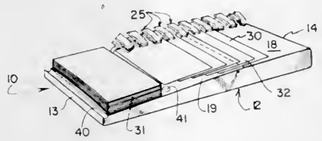
A connector for forming a loop in a cable so that the cable may be operatively connected with a load sustaining device, such as a load binder, hoist or the like. The connector is defined by a metal body having two sections, one of which comprises a central boss having an inclined wall about which the cable is to be looped in at least two turns. The inclined wall causes the cable to be securely wedged in slip proof engagement with the boss. The second portion of the body includes structure for assisting in maintaining secure engagement of the cable with the boss wall and for maintaining an unloaded reach of the cable in proper orientation relative to the boss. The connector may be secured to a hook of a load sustaining device by positioning the hook through an opening in the boss. In an alternate embodiment, the connector is provided with an integral headed shank which is releasably attachable to another load sustaining device.

3,795,953

PRIORITY CLIP BOARD AND CLIP THEREFOR

Robert M. Voitik, 1619 Imperial Dr., Glenview, Ill.

Filed Nov. 20, 1972, Ser. No. 307,961
Int. Cl. B42f *1/00*
U.S. Cl. 24—67.5 **6 Claims**



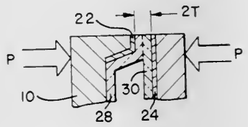
A priority clip board having along one side margin a plurality of resilient clips connected in spaced relation to a flexible endless member, the endless member and clips being movable to position memo sheets held by various of the clips to selected positions on the board. The sheets are adapted to be arranged in overlapping relation, the upper margin of each sheet being visible to expose subject matter information, and are subject to convenient rearrangement in accordance with desired priority for attention. For convenience, a pad of blank memo sheets is mounted on the board. The resilient clip is of unitary construction and formed of plastic material, and the connection thereof with the endless member biases the clamping jaws together, the jaws being opened in conventional manner by squeezing together a pair of manual parts of the clip. The clips are tiltable to expose the entire surface of a desired sheet.

3,795,954

METHOD OF MAKING A MICRO-GAP MAGNETIC RECORDING HEAD

Christos G. Alex, Waban; Sahag R. Dakesian, Sudbury; Richard D. Hautzenroeder, Framingham, and Adolph J. Ivanouskas, Dorchester, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 26, 1971, Ser. No. 202,473
Int. Cl. G11b *5/42*; **H01f** *7/06*
U.S. Cl. 29—603 **10 Claims**



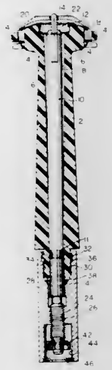
A novel transducing gap for a magnetic recording head and method of making the same is disclosed herein. The transducing gap is comprised of a highly heat and wear resistant glass which is bonded to thin metallic coatings that have previously been bonded to the ferrite pole tips of the magnetic recording head. The thin metallic coatings serve as barriers between the glass and the ferrite during the high temperature fabrication of the glass gap.

3,795,955

RAZOR WITH PLASTIC HANDLE AND GUARD

Francis W. Dorion, Jr., Hingham, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Feb. 15, 1972, Ser. No. 226,425
Int. Cl. B26b *21/32, 21/40*
U.S. Cl. 30—59 **7 Claims**



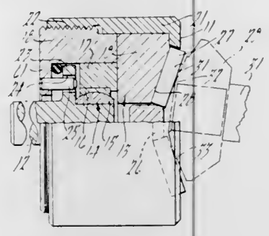
The invention relates to a razor having a plastic handle and guard. The razor is provided with a rod disposed axially of the handle and movable lengthwise in respone to rotation of a nut to open and close the cap means. Cam means are provided and are operative in response to rotation of the nut, to close the cap means, to exert an inwardly directed pressure on the rod to prevent further axial movement of the rod, whereby to prevent accidental deformation of the plastic guard after closing of the top means.

3,795,956

BURNISHING TOOL FOR AN ARCUATE SURFACE

Stuart E. Kalen, Sterling Heights, Mich., assignor to Cogsdill Tool Products, Inc., Farmington, Mich.

Filed Nov. 10, 1972, Ser. No. 305,457
Int. Cl. B21c *37/30;* **B24b** *23/00;* **B21b** *13/20*
U.S. Cl. 29—90 **10 Claims**



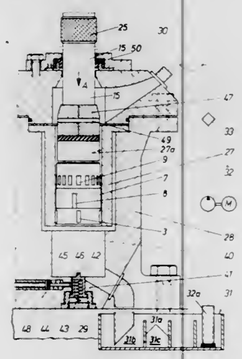
A shank for a burnishing tool has a universal drive joint with a head which contains rollers engaged with a truncated conical surface at the end of the head. A spherical workpiece which may be a ball on a stud is drivenly supported with the axis of the stud disposed at an angle to the axis of the burnishing tool shank which is also driven, the drives being in opposite directions. The rollers have a point contact with the arcuate surface and the crossed axis relation of the driven spindles producing the spreading of the points of engagement so that the entire surface of the workpiece to be burnished will be highly polished in a very short time.

3,795,957

APPARATUS FOR BORING AND BURNISHING INTERNAL CYLINDRICAL SURFACES OF METALLIC WORKPIECES

Adalbert Steusloff, deceased, late of 514 Kolnerstrasse, Erkelenz, Germany (by Herta Steusloff, heiress)

Filed Feb. 15, 1973, Ser. No. 332,747
Claims priority, application Germany, Feb. 26, 1971, 2209234
Int. Cl. B24b *39/02*
U.S. Cl. 29—90 **12 Claims**



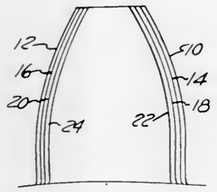
A combined precision boring and burnishing tool, particularly for use in a vertical-spindle boring machine wherein the workpiece is mounted in a support so that a stream of coolant can enter at the upper end and leaves at the lower end of the open-end hole in the workpiece. The tool has a holder which is rotatable by a spindle and supports a set of radially adjustable cutters located in front of a set of radially adjustable burnishing rollers. The chips which are removed by the cutters are evacuated from the hole by the stream of coolant whose flow is throttled between the cutters and the burnishing rollers. The rollers are retracted in automatic response to movement of the tool in a direction to withdraw it from the hole. The cutters are retracted by hand through the intermediary of an adjusting mechanism which is accessible at the front or rear end of the tool and is actuated after the spindle is arrested but before the tool is withdrawn from the workpiece.

3,795,958

GEAR TOOTH BROACH

Joseph A. Psenka, Bloomfield Hills, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 1, 1972, Ser. No. 276,905
Int. Cl. B26d *1/04*
U.S. Cl. 29—95.1 **11 Claims**



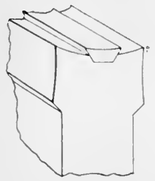
A gear tooth broach for helical gears has the last few finishing teeth, which are adapted to engage in the work piece simultaneously, having one side thereof modified to prevent cutting and to serve as a guide to prevent drift of the broach which would produce a build-up referred to in the art as a "dog leg" lead.

3,795,959

CUT-OFF BLADE WITH INSERT

Donald L. Shephard, 11500 Lambs Rd., Memphis, Mich.

Filed Mar. 13, 1972, Ser. No. 234,224
Int. Cl. B26d *1/02*
U.S. Cl. 29—96 **3 Claims**



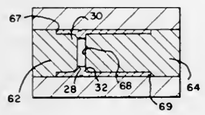
A cutting blade of the cut-off type improved in the provision of a groove in the blade face receiving a separate insert.

3,795,960

METHOD OF FORMING OUTER BEARING RACES

J. Russell Elmore, New Hartford, and Carl F. Benson, Torrington, both of Conn., assignors to The Torrington Company, Torrington, Calif.

Filed Dec. 1, 1972, Ser. No. 311,302
Int. Cl. B21h *1/12, 1/04*
U.S. Cl. 29—148.4 R **3 Claims**



A bearing is disclosed comprising a rotatable shaft and a coaxial unitary member. The shaft is shaped to provide a ball inner race and at least one roller inner race. The coaxial member has an inside annular protrusion extending toward the shaft. The protrusion has a curved shoulder on one side and a straight shoulder on the other side. The curved shoulder will support a high axial thrust along one direction of the shaft; the straight shoulder will support a relatively low axial thrust applied along the shaft in the opposite direction.

The outer unitary member is made by cold-forming a low carbon-steel tube with a die, carburizing, and then heating the thus-formed outer race in an inert atmosphere, sizing, and which after quenching, provides a hard outer race.

The shaft is made by rolling the ball inner race and at least one roller race into a rod which has been carburized and then heated in an inert atmosphere.

3,795,961

THERMAL AND ABRASION RESISTANT SINTERED ALLOY

Kentaro Takahashi, Ohmiya; Minoru Hasegawa, Saitama, and Kaoru Nara, Kawaguchi, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Sept. 5, 1972, Ser. No. 286,399
Claims priority, application Japan, Sept. 2, 1971, 46-66978
Int. Cl. B22f *1/00*
U.S. Cl. 29—182 **3 Claims**

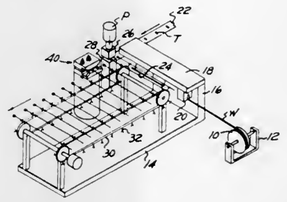
An alloy prepared by molding a powdery composition comprising 0.6 to 2% of carbon, 0.5 to 4% of nickel, 0.5 to 5% of molybdenum and 6 to 11% of cobalt, by weight, and the balance being iron, and then sintering the molded composition, has large thermal resistance and abrasion resistance.

3,795,962

TERMINAL SENSOR

Joseph W. Baldyga, Mt. Clemens, Mich., assignor to Diamond Die & Mold Co., Mt. Clemens, Mich.

Filed July 14, 1972, Ser. No. 271,836
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **9 Claims**



An automatic system for severing a length of wire from a supply, stripping insulation from one end, applying a metal terminal to the stripped wire end, attaching a terminal to the end of the wire by crimping in a press, advancing the end of the wire with the terminal attached to a sensor, determining whether or not a terminal has been applied to the wire, and terminating automatic operation of the system if the sensor determines that the wire does not have a terminal attached.

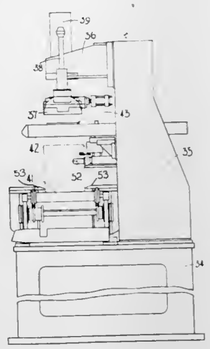
3,795,963

APPARATUS FOR USE IN THE MANUFACTURE OF ELECTRIC STORAGE BATTERIES

Kenelm Gordon Francis Sturmey, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 24, 1972, Ser. No. 228,885
Claims priority, application Great Britain, Mar. 5, 1971, 6220/71
Int. Cl. H01m *35/18;* **B23p** *19/00*
U.S. Cl. 29—204 **7 Claims**

An apparatus for welding a battery box lid to a battery box, employing a heater for melting portions of the lid between the filling tubes and around the lid. The heater is provided with bores receiving the filling tubes, the bores being substantially



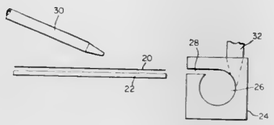
larger than the filling tubes and being undercut from the surface of the heater so that the filling tubes are not melted when the portions of the lid adjacent the filling tubes are melted.

3,795,964

FORMING AND PLACING TUBULAR BATTERY SEPARATORS

Milo H. Beckman, Madison, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Division of Ser. No. 90,641, Nov. 18, 1970, Pat. No. 3,736,655.
This application Sept. 11, 1972, Ser. No. 287,962
Int. Cl. H01m *3/00*
U.S. Cl. 29—204 **6 Claims**



Battery separator material in strip form and cut to proper size is entered tangentially into a borehole. Air streams directed tangentially to the borehole cause the strip of material to roll up into a tube of controlled diameter. When the tube is wound, a pressure differential between the two ends of the borehole causes the tube to eject into a waiting battery assembly placed on the trajectory of the rolled tube.

3,795,965

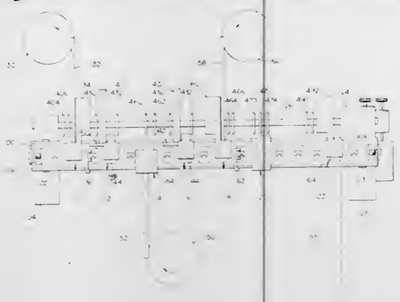
APPARATUS FOR ASSEMBLING RAZOR BLADE UNITS

Everett L. Sherman, Lexington, Mass., assignor to The Gillette Company, Boston, Mass.

Filed June 29, 1972, Ser. No. 267,521
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 D **17 Claims**

Apparatus for assembling a razor blade unit having two housing components and a blade component is disclosed. The housing components have cooperating housing alignment and blade alignment surfaces. The apparatus includes support structure for holding a first housing component, first clamp structure for applying an aligning force to a second housing component to place the cooperating housing alignment surfaces of the first and second housing components in engagement, second clamp structure for applying a clamping force to the housing components to clamp the blade components between the first and second housing components, securing

structure for modifying a portion of at least one of the housing components for permanently securing the first and second housing components with interposed blade components



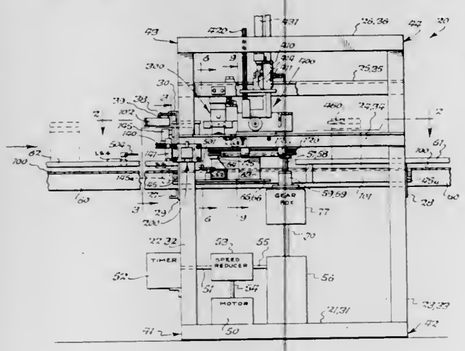
together as a unit, and common drive structure for operating the first and second clamp structure and the securing structure in coordinated relation to align, clamp and secure the housing components to form the blade unit.

3,795,966

AUTOMATIC HANDLE APPLYING MACHINE

Carl J. Fries, Jr., Philadelphia; Walton B. Jones, Richboro, and John E. Junod, Philadelphia, all of Pa., assignors to International Paper Company, New York, N.Y.

Filed Oct. 26, 1972, Ser. No. 301,133
Int. Cl. B23p *19/04*; **B23q** *7/10*; **B23p** *11/00*
U.S. Cl. 29—208 B **24 Claims**



A machine for automatically applying handles to gable top containers. The machine has a punching station for punching holes in the gable of the gable top container and a handle applicator station where the handle is automatically applied to the container, locked and cold headed. The punching station and the handle applicator station are substantially in line. Means are provided for moving containers along a straight path into and out of the punching station and into and out of the handle applicator station.

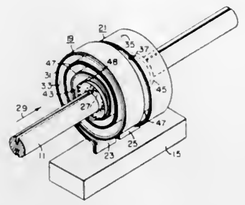
3,795,967

METHOD OF MAKING TEMPERATURE RESPONSIVE ACTUATOR

Basil S. Shepard, Lanham, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 167,937, Aug. 2, 1971, Pat. No. 3,720,107. This application Oct. 25, 1972, Ser. No. 300,615
Int. Cl. B23p *11/02*
U.S. Cl. 29—446 **4 Claims**

There is disclosed a method of making an actuator having a shaft which, responsive to temperature changes, is rotated by bimetallic coiled members. The members are wound into tightly coiled springs so that each produces a high spring torque. One member is wound with the lower-thermal-coefficient-of-expansion layer radially inward and the higher coefficient-of-expansion layer radially outwardly; the other member is with the higher thermal coefficient-of-expansion layer radially inward and the lower coefficient-of-expansion layer radially outward. Each member is clamped into a tight coil con-



figuration. The inner ends of the members are connected to the shaft and the outer ends to a fixed support; the members being positioned about the shaft with their coils wound oppositely so that the spring torques of the members counteract at any temperature but the torques produced by change in temperature act cumulatively. The clamping of the members is then released. The spring torques of the members counteract each other but the torques produced by temperature changes are cumulative.

3,795,968

METHOD OF WELDING STIFFENINGS OF PLATES, PARTICULARLY OF SHELL PLATES AND ARRANGEMENT FOR APPLYING SAID METHOD

Bonifacy Domanski, Fitelberga 5/5, Gdansk-Wrzeszcz; Michal Kleminski, Grobla I 8/11, Gdansk, and Zdzislaw Zieba, Powstania Wielkopolskiego 68/12, Gdynia, all of Poland

Filed June 17, 1970, Ser. No. 47,055
Int. Cl. B23k *31/00*
U.S. Cl. 29—457 **9 Claims**

Method and apparatus for welding stiffening elements to a plate in which the plate is clamped to a tiltable support table, a stiffening element supported in holders is placed against the plate and clamped to it and to the table by plural clamps, the stiffening element is welded to the plate by welding it progressively from opposite sides, and releasing clamps sequentially as the welding progresses.

3,795,969

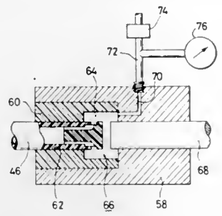
METHOD OF MANUFACTURING A BALL POINT PEN

Norimasa Tsunoda, No. 19-14, Irie 2-chome, and Tsutomu Saito, No. 17-34, Rokkaku-bashi 4-chome, both of Kanagawa-ku, Yokohama, Japan

Division of Ser. No. 193,020, Oct. 27, 1971. This application Oct. 26, 1972, Ser. No. 301,200
Claims priority, application Japan, June 21, 1971, 46-43960
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **2 Claims**

The invention concerns a method and apparatus for making a ball point pen by filling with ink and ink reservoir through an

open end opposite the writing end and providing an end closure of heat fusible material which when sealed in the opening



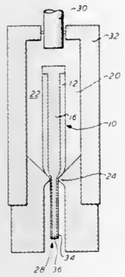
provides a compressed air chamber between the ink upper surface in the reservoir and the closure.

3,795,970

PROCESSES FOR EXTRUDING A PRODUCT

Anthony C. Keathley, P.O. Box 185, Pittstown, N.J.; Gene L. Oberley, R. R. No. 2, Minford, Ohio; Roderick J. Place, 2 Front St., Hopewell, N.J., and Jack D. Stewart, 25 Oak Dr., Doylestown, Pa.

Filed Jan. 23, 1973, Ser. No. 326,118
Int. Cl. B21c *23/08*
U.S. Cl. 29—423 **45 Claims**



Method of forming a product from a preform including a body of first predetermined material provided with a predetermined physical configuration and at least one aperture, and further including a deformable mandrel of a body of second predetermined material residing in the aperture, the mechanical properties of the second predetermined material being related predeterminedly to the mechanical properties of the first predetermined material and the first predetermined material having a predetermined volume ratio with respect to the product to be formed therefrom, and the body of second predetermined material having a predetermined volume ratio with respect to the body of first predetermined material, comprising the steps of extruding the preform through the extrusion die such that the bodies of first and second materials experience a predetermined percentage of reduction in area; subsequently annealing the extruded body of first predetermined material at a temperature and for a predetermined period of time to relieve internal stress in the body of first predetermined material caused by the extrusion, to facilitate subsequent work hardening of the body of extruded first predetermined material and to raise the elongation property of the body of extruded first predetermined material above the elongation property thereof after the extrusion; and subsequently providing work hardening to the body of extruded and annealed first predetermined material to raise the ultimate and yield strength properties of the extruded and annealed body of first predetermined material above the yield strength property thereof after the annealing.

3,795,971

METHOD OF PRODUCING A COMPOSITE MATERIAL

Joseph A. Chivinsky, 201 Primrose Dr., Sarver, Pa.

Division of Ser. No. 000,177, Jan. 2, 1970, Pat. No. 3,693,242. This application May 30, 1972, Ser. No. 258,138
Int. Cl. B23k *31/02*
U.S. Cl. 29—487 **8 Claims**

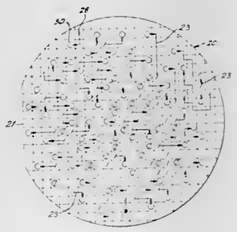
A composite material which has a substantially reduced incidence of defects after drawing, and a method of producing it. The composite material is comprised of at least one layer of plain carbon steel containing up to 1.5 percent of carbide former present in a carbide former-to-carbon ratio of from about 1.5 to about 25 and at least one layer of stainless steel. It is formed by pressure bonding carbon steel containing carbide former to stainless steel.

3,795,972

INTEGRATED CIRCUIT INTERCONNECTIONS BY PAD RELOCATION

Donald F. Calhoun, Inglewood, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 762,459, Sept. 25, 1968. This application Dec. 9, 1971, Ser. No. 206,555
Int. Cl. B01j *17/00*
U.S. Cl. 29—574 **10 Claims**



Pad relocation is a technique which allows a predetermined standard pattern of good circuits to be established on all LSI slices used to perform the same array function regardless of the varying yield patterns determined by DC wafer probe tests. This is accomplished by relocating the pads of nearby good circuits to the positions where good circuits were specified by a prescribed master pattern, but were not found during wafer probe tests. Where good circuits are found in expected good circuit locations, those circuits are used without relocation Thus, the pad relocation technique functionally establishes a specified pattern of good circuits as if there had actually been a 100 percent circuit yield in that pattern. A single wiring pattern can then be generated for all the LSI arrays of the same function to accomplish the much more complex signal interconnect between the master pattern circuits. By determining standard cross-under areas within the pad relocation layer where relocation lines need never occur, large arrays can be interconnected with the same number of total interconnect layers as required by discretionary techniques.

3,795,973

MULTI-LEVEL LARGE SCALE INTEGRATED CIRCUIT ARRAY HAVING STANDARD TEST POINTS

Donald F. Calhoun, Inglewood, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 16,867, March 5, 1970, abandoned. This application Dec. 15, 1971, Ser. No. 208,419

Int. Cl. H01l *19/00*

U.S. Cl. 29—574 **5 Claims**

A complex multi-level integrated circuit array comprising a wafer having a plurality of cells in a rectilinear array and alternating layers of dielectric insulation, and metalization formed in a laminae on top of the wafer. Vias in a first layer of insulation expose the pads of selected usable cells in a first layer of metalization to a second layer of metalization which is formed into individual conductors for effectively relocating the exposed pads of selected usable cells to master pattern cell locations where no usable cells are located, and further including "feed under" conductor segments formed over specified nonused cell locations. A second layer of insulation has vias at standard master pattern locations which expose the master pattern pads to a standard or master pattern of interconnect lines formed in a top layer of metalization which interconnect the cells into a functional circuit type. The standard pattern of interconnect lines has a plurality of test pads formed therein at standard locations for utilizing the same test pads and locations on all integrated circuits having the same part type and associated with the top layer standard mask.

3,795,974

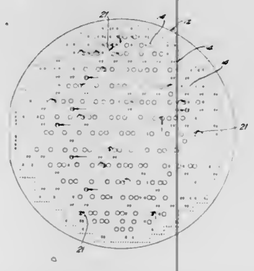
REPAIRABLE MULTI-LEVEL LARGE SCALE INTEGRATED CIRCUIT

Donald F. Calhoun, Inglewood, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 16,869, March 5, 1970, abandoned. This application Dec. 16, 1971, Ser. No. 208,969

Int. Cl. B01j *17/00*

U.S. Cl. 29—574 **9 Claims**



A multi-level complex standard circuit comprising a wafer having a plurality of cells in a rectilinear array and alternate layers of dielectric insulation and metalization formed in a laminae on top of the wafer. Vias in the first layer insulation expose the pads of N + K (where N and K are integers) desired usable cells in a first layer of metalization on the wafer. The pads are electrically connected through the vias to a second layer of metalization which is formed into individual conductors. The conductors are routed for effectively relocating the exposed pads of selected usable cells to desired positions defined by master pattern circuit locations including those usable cells whose actual positions are not in registry with the desired positions defined by master pattern circuit locations. The second layer of metallization and further includes "feed-under" conductor segments formed over specified non-used locations. A second layer of insulation has vias at standard or master pattern cell locations which expose the master pattern pads of the N + K cells to a top layer of metalization that includes a standard master pattern of interconnect lines which interconnect N of the cells into a functional circuit. The master pattern of metalization further includes pads associated with K extra cells which are located at scandard or master pattern cell locations. The extra cells can be utilized to replace faulty ones of the N interconnected cells by disabling, in the top layer of metalization, the interconnect lines associated with each faulty one of the N cells and connecting one of the extra cells to the disabled interconnect lines.

3,795,975

MULTI-LEVEL LARGE SCALE COMPLEX INTEGRATED CIRCUIT HAVING FUNCTIONAL INTERCONNECTED CIRCUIT ROUTED TO MASTER PATTERNS

Donald F. Calhoun, Inglewood, and Barry Bennett, Wilmington, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 16,840, March 5, 1970, abandoned. This application Dec. 17, 1971, Ser. No. 209,397

Int. Cl. B01j *17/00*; **H01l** *19/00*

U.S. Cl. 29—574 **8 Claims**

A complex integrated circuit comprising a waver having a plurality of cells each having signal connect pads in a first layer of metalization on the wafer and which have an imperfect yield of usable cells and further including a laminae of alternate layers of dielectric insulation and metalization formed on the wafer wherein: a first layer of insulation has vias formed therethrough to expose signal connect pads of selected usable cells; a second layer of metalization has conductors formed therein which operably interconnect the exposed signal connect pads of one or more groups of usable cells into individual functional circuits and, where needed, includes pad relocation conductors which route the signal connects of individual cells and the signal connects of interconnected groups of cells to master pattern circuit locations; a second layer of insulation has vias formed therethrough which expose signal connect portions at the master pattern circuit locations; and a third layer of metalization is formed into conductors that interconnect the signal connects at master pattern locations into a functionally specified circuit type.

3,795,976

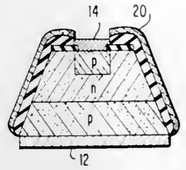
METHOD OF PRODUCING SEMICONDUCTOR DEVICE

Yasuhiko Ikeda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 32,171, April 27, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,870

Int. Cl. B01j *17/00*

U.S. Cl. 29—580 **15 Claims**



A method of producing a semiconductor device provided with a composite passivating film having excellent moisture resistance and a small surface charge density and a small leakage current, which comprises the steps of: contacting a semiconductor wafer heated to a temperature lower than about 700° C. in an atmosphere containing oxygen and a vapor of a volatile organic silicon compound capable of decomposing at a temperature lower than 700° C. in order to deposit silicon dioxide on a free surface of the wafer; forming a tantalum pentoxide film in an oxygen containing atmosphere on the silicon dioxide film by a reactive sputtering of tantalum; and subjecting the wafer to a heat treatment in a non-reducing atmosphere at a temperature of about 200° to about 400° C.

3,795,977

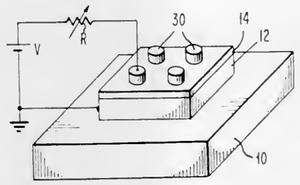
METHODS FOR FABRICATING BISTABLE RESISTORS

Melvin Berkenblit, Yorktown Heights; James N. Cole, Peekskill; Dennis J. Herrell, Yorktown Heights; Thomas B. Light, Chappaqua; Kyu C. Park, and Arnold Reisman, both of Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,159

Int. Cl. B01j *17/00*

U.S. Cl. 29—585 **27 Claims**



Methods for providing bistable resistors fabricated from insulators exhibiting a plurality of impedance states, an example of which is a niobium-niobium oxide device. These methods use thermal treatment and chemical reduction of amorphous metal oxides to form an active filament in each device. In one method consumable metal dots are located on the amorphous metal oxide and the oxide is then annealed in an inert gas, preferably having a small percentage of oxygen therein. This causes an oxidation-reduction reaction in the oxide regions directly beneath the metal dots. In a second method, the metal oxide layer is covered with a protective insulating mask except in selected portions, and the exposed metal oxide portions are then annealed in a reducing gas atmosphere. In each method, the top electrodes are deposited on the selectively reduced portions of the metal oxide layer and then the devices are electrically formed using only a small voltage (2 or 3 volts).

3,795,978

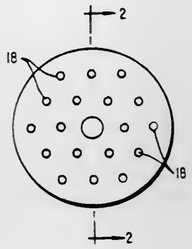
METHOD OF FABRICATING A COMPOSITE SUPERCONDUCTOR

Jan Wayne Raymond, 850 S. Oneida, Apt. 401B, Denver, Colo., and Clay N. Whetstone, 4775 Fox St., Denver, Colo.

Continuation of Ser. No. 47,390, June 18, 1970. This application Sept. 24, 1971, Ser. No. 183,544

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **4 Claims**



A plurality of rods are assembled in a predetermined configuration to form a core which is surrounded by a molten matrix metal within a heated crucible. The temperature of the thusly charged crucible's upper portion is maintained above the matrix metal's melting point. In this respect, as the heat is applied to the top of the melt, the crucible is maintained in a hot environment while the bottom of the crucible is centrally chilled. In this manner the charge is solidified from the bottom toward the top so that the solidification progresses upwardly and outwardly in a conical pattern. After the controlled solidification is completed the casting is separated from the crucible to form a cored extrusion billet. In one embodiment the rods are separated from the casting and the resulting open holes are filled with superconductive material to form a composite superconductor extrusion billet. In another embodiment the rods themselves are made of a superconductive material so as to eliminate the step of separating the rods from the casting.

ERRATUM

For Class 30—59 see:
Patent No. 3,795,955

3,795,979

HANDLE

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

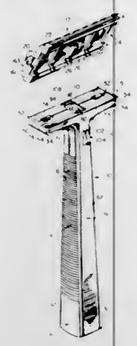
Filed Apr. 27, 1972, Ser. No. 248,108

Int. Cl. B26b *21/52*

U.S. Cl. 30—85 **15 Claims**

A safety razor handle is provided for use with a blade unit which is releasably mountable on the handle, and which includes a recess partially defined by spaced apart parallel vertical planar surfaces and a latch structure. The handle includes a head portion having fixed surfaces of size and shape conforming to the recess of the blade unit for being received therein to position the blade unit on the handle for use in a shaving operation. It also includes a latch member movable between first and second positions. In the first position, the latch member is disposed to latch the latch structure of the blade unit when the surfaces of the head portion are received in the blade unit's recess. The handle further includes biasing means disposed to exert a force on the latch member toward the first position when the latch member is removed from that position and a release member movable between first and second positions and engageable with the latch member. Movement of the release member from the first position to the

second position causes motion of the latch member from its first position to its second position and consequent unlatching



of the blade unit latch structure. Preferably, the latch member comprises a portion of a spring.

3,795,980

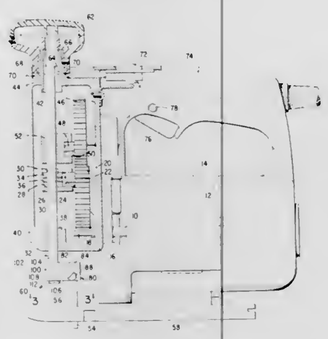
CHUCK DEVICE FOR SABRE SAWS

William A. Batson, Pickens, S.C., assignor to The Singer Company, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,304

Int. Cl. B27b *19/08*

U.S. Cl. 30—394 **5 Claims**



A chuck device for sabre saws in which said device includes a chuck block having an aperture with a tapered portion therein, fixedly connected to the outer end of the saw bar which also has a tapered portion that terminates in an end portion of reduced diameter. Connecting means clamp the chuck block on the saw bar to lock the respective tapered portions against each other and prevent turning of the chuck block relative to the saw bar. The saw blade is clamped upon the chuck block in an offset position from the axis of the saw bar.

3,795,981

DENTAL RETAINER

Mark E. Franklin, Freehold, and James R. Schmidt, Englishtown, both of N.J., assignors to Dento-Dynamic Systems, Inc., Freehold, N.J.

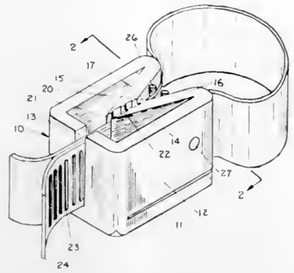
Filed Jan. 11, 1973, Ser. No. 322,787

Int. Cl. A61c *5/12*

U.S. Cl. 32—63 **12 Claims**

An improved retainer for use as a clamp to secure a band of the matrix variety in position around the periphery of a tooth, the structure of which is being restored.

The improvement of the above retainer particularly lies in its structure which insures a sure cinch having the optimum in strength and the improved tension which it supplies to the matrix.



The above insures an effective foundation for the adequate and efficient restoration of the tooth under study.

3,795,982

INDEX TAB POSITION LAYOUT

Walter F. Cunningham, Des Plaines, Ill., assignor to Superior Tabbies, Incorporated, Elk Grove, Village, Ill.

Filed Jan. 31, 1972, Ser. No. 221,989

Int. Cl. B43l *7/00*; **B42f** *21/04*; **G01b** *3/02*

U.S. Cl. 33—111 **7 Claims**

Index tab position layout to insure accurate manual placement of a set of precut index tabs in a uniformly spaced arrangement on the marginal edges of selected sheets of a volume in both directions from its transverse center line, comprising marginal scales on the reverse side of a release paper backing for the set of index tabs for use with different lengths of tab-receiving sheets and which are selectively useable according to the particular length of sheet involved to make a separate position layout on a strip of the same length as the tab-receiving edges of the sheets, and the method of making such separate position layout and using it for mounting the set of index tabs.

3,795,983

MOUNTING TEMPLATE AND INSTALLATION SHIELD

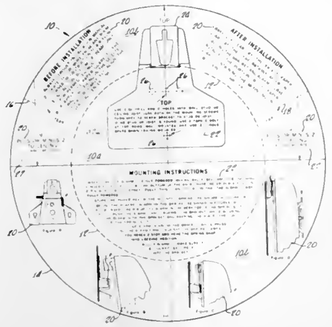
Edward L. Gallagher, Capistrano Beach, and Robert W. Limacher, Corona Del Mar, both of Calif., assignors to A-T-O Inc., Willoughby, Ohio

Filed Sept. 7, 1971, Ser. No. 178,110

Int. Cl. G01b *3/00*

U.S. Cl. 33—189 **8 Claims**

A fixture mounting template formed of a flat sheet comprising integrally formed central and peripheral elements. The central element which contains instructions of permanent usefulness to the operation of the fixture is adhesive-backed for permanent attachment to a wall. The peripheral element which contains installation instructions of only temporary



utility is removable from the central element and the wall once installation is accomplished. In addition, the peripheral element provides protection to the wall surface during installation procedures.

3,795,984

METHOD AND ARRANGEMENT FOR MEASURING THE MOISTURE CONTENT IN FIBROUS MATERIAL

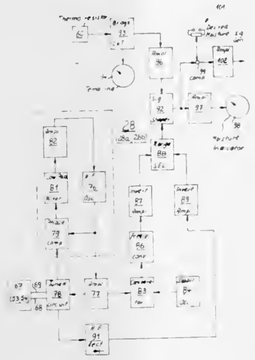
Gerhard Meyer, Bochholz, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamberg, Germany

Filed Dec. 29, 1972, Ser. No. 319,769

Claims priority, application Germany, Dec. 31, 1971, 2165819

Int. Cl. G01n *27/12*

U.S. Cl. 34—46 **13 Claims**



A measuring capacitor has a capacitance which varies with moisture content of the material. The capacitor is part of a tuned circuit which is kept in resonance by changing the frequency applied thereto. A voltage having an amplitude corresponding to the change in frequency constitutes a measuring signal indicative of moisture content in a high moisture content range. A rectified signal derived from the voltage or current in the tuned circuit constitutes a measuring signal indicative of moisture content in the low moisture content range.

3,795,985

BRAKE FOR CENTRIFUGAL EXTRACTOR

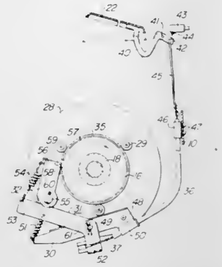
Hisakuni Hasebe, and Tosio Mori, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 20, 1971, Ser. No. 181,809

Claims priority, application Japan, Sept. 21, 1970, 45-81978; Sept. 21, 1970, 45-81979; Sept. 21, 1970, 45-92873

Int. Cl. F26b *17/24*

U.S. Cl. 34—58 **15 Claims**



A brake is provided which rapidly retards and stops the rotation of a basket in a centrifugal extractor when its door or cover is opened. A brake shoe is fitted over a brake drum carried by a rotary shaft of the basket and securely held in position by its own elasticity. The brake shoe is provided with a projection with which a brake lever engages when the door or cover is opened, thereby applying the retarding force to the brake drum. In order to ensure the positive engagement of the brake lever with the projection of the brake shoe even when the door or cover is slightly opened and the force causing this engagement is small, means for increasing or amplifying the stroke or displacement of the door or cover being opened is provided in a mechanism coupling the door to the brake lever, and the engaging surfaces of the brake lever and the projection of the brake shoe are inclined at about 15° in the direction of rotation of the brake drum.

3,795,986

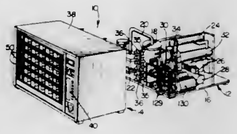
MODULAR COMPARTMENT SUBLIMATOR

David T. Sutherland, and Harold Scharf, both of New Paltz, N.Y., assignors to Cenco Medical/Health Supply Corporation, Chicago, Ill.

Filed Dec. 13, 1971, Ser. No. 207,507

Int. Cl. F26b *13/36, 5/06*

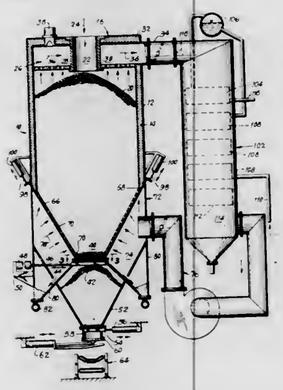
U.S. Cl. 34—92 **25 Claims**



An apparatus particularly adapted for freeze drying various materials and for stoppering, under vacuum, receptacles containing these materials after freeze drying having a plurality of individual drying chamber modules, each chamber forming a self-supporting drying module capable of receiving a number of receptacles upon one wall of the chamber also which serves as a shelf for supporting them. Each chamber is independently connected to a vacuum source, a condenser and heat transfer means mounted on an adjacent but separate equipment unit in such a manner that thermal transfer and the duration of the freeze drying cycle may be varied independently with respect to each individual module to permit freeze drying of diverse materials and allow different drying rates. A latching means

and a door support means mounted adjacent the chamber door permit doors of adjacent modules to be opened without obstruction and act to maintain each door in an open position. Stoppering means having upper and lower plates sandwiching an expansible means may be removably mounted within the separate drying modules and independently activated by operation of fluid pressure means mounted on the equipment unit to pressurize the expansible means and urge the plates apart to stopper the receptacles. Stoppering control means require the force exerted by the stoppering means on the receptacles to remain constant despite variation in height of the receptacle and permit discontinuation of the stoppering operation at any time.

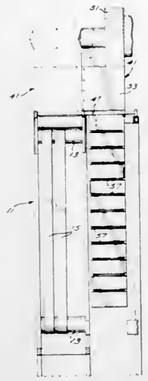
3,795,987
COOLING OR PREHEATING DEVICE FOR COARSE OR BULKY MATERIAL WITH HEAT SPACE RECOVERY EQUIPMENT
Roland Kemmetmueller, Carlton House, 550 Grant 30, Pittsburgh, Pa.
Filed Aug. 9, 1972, Ser. No. 279,224
Int. Cl. F26b *17/12, 17/14*
U.S. Cl. 34—168 **16 Claims**



An apparatus for treating material in bulk. An upright bunker is provided to accommodate the material in bulk while it flows gravitationally down the interior of the bunker. The bunker has at its lower discharge end a tapered wall formed with apertures to admit to the material in the bunker a gas at a temperature different from the material of the bunker while permitting those parts of the material which are small enough to pass through the apertures to fall out of the bunker through the apertures before reaching the lower discharge end. A plenum surrounds the apertures and communicates with a gas supply through which the gas is delivered to the apertures to flow therethrough, and a gas discharge communicates with the top of the bunker to discharge the gas therefrom. The material falling through the apertures is collected in the plenum and conveyed away from the latter. Where the gas flowing up through the material in the bunker is heated by the latter material, a boiler may receive the hot gas from the bunker to use the gas for generating steam, and the gas which is cooled in the boiler is then returned to the plenum.

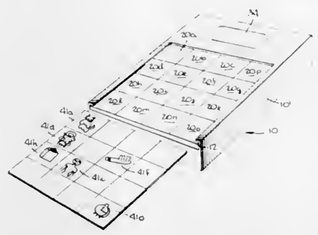
3,795,988
SHIFTAWAY PHOTOGRAPHIC STRIP DRYER
John N. Harman, Jr., La Canada, and James S. Livingood, Reseda, both of Calif., assignors to Drewry Photocolor Corporation, Burbank, Calif.
Filed June 5, 1972, Ser. No. 259,873
Int. Cl. F26b *19/00*
U.S. Cl. 34—229 **10 Claims**

A shiftaway photographic strip dryer including a stationary frame mounting a plurality of spaced apart rollers for receipt of strips of photographic print paper to form coextensive lengths of such paper which are spaced apart to define chamber-receiving spaces. Nozzle chambers are provided for receipt in such chamber-receiving spaces and include nozzle orifices for directing heated air onto such paper. The nozzle chambers are carried from the stationary frame by means of a carrier to enable such chambers to be shifted in and out of the



chamber-receiving spaces. Means is provided for blowing heated air into the nozzle chambers so print paper fed over the rollers may be dried by heated air and when it is desirable to thread such rollers, the nozzle chambers may easily be shifted to one side for convenient access to the rollers without danger of workmen threading the rollers being burned on the hot nozzle chambers.

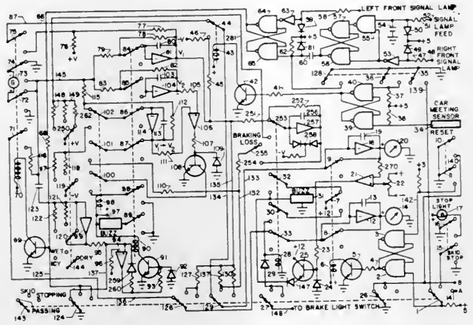
3,795,989
EDUCATION APPARATUS
Lawrence J. Greenberg, 64 Mountain Ave., Larchmont, N.Y., and Gregory E. Hyman, 19 Secard Ave., New Rochelle, N.Y.
Filed Feb. 21, 1973, Ser. No. 334,474
Int. Cl. G09b *7/00*
U.S. Cl. 35—9 B **10 Claims**



An instructional device or educational toy having a question and answer format cooperating with a tone generator for generating a series of tones resulting in a recognizable melody in response to the user correctly answering a series of problems arranged in a predetermined sequence.

3,795,990
DRIVER TRAINING APPARATUS
Hubert H. Quicker, Jr., 2311 Bartlett Ave., Altoona, Wis.
Filed July 27, 1971, Ser. No. 166,358
Int. Cl. G09b *9/04*
U.S. Cl. 35—11 **11 Claims**

A driver training apparatus adapted for mounting in a student-driven automobile is connected to receive speed, braking, and other information from the automobile. The apparatus provides reaction- and stopping-distance tests controlled by an automatic random stimuli system. Stopping distances corresponding to selected wet or icy road conditions

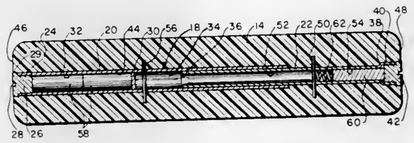


can be simulated. Other tests indicate braking losses, passing distance, and passing margin-of-safety distance. The control unit which generally houses the distance-indicating meters is operated by the instructor.

3,795,991
SKI BOOT
Karl Fridolf Borjesson, Bjasta, Sweden, assignor to AB Broderna Borjesson, Bjasta, Sweden
Filed Feb. 5, 1973, Ser. No. 329,355
Claims priority, application Sweden, Feb. 4, 1972, 1334/72
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **6 Claims**

In a footwear, particularly a ski boot, which has an upper of cellular rubber attached to a sole of plastic material, there are provided leather joining elements in the zones of the toe portion and the heel portion. Each joining element is sewn to the upper and the sole to provide an additional connection between the upper and the sole in the zones most exposed to stress.

3,795,992
SOLE INSERT FOR SKI BOOTS
Johann H. Wittman, 946 Steel St. 06, Denver, Colo.
Filed Feb. 12, 1973, Ser. No. 331,346
Int. Cl. A43b *7/02*
U.S. Cl. 36—2.6 **9 Claims**

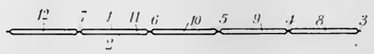


A hollow insert adapted to be incorporated into the sole of a ski boot or the like includes means for retaining a combustible material adjacent the toe of the boot which, when ignited, warms the interior of the boot and means for retaining a magnetic element whereby the wearer of the boot can be easily located by magnet detection means.

3,795,993
ICE CRAMPONS
Ludgar Simond, Les Bassons, Chamonix, Haute-Sevoie, France
Filed Jan. 17, 1973, Ser. No. 324,354
Claims priority, application France, Feb. 15, 1972, 72.05673
Int. Cl. A43b *3/10*
U.S. Cl. 36—7.6 **1 Claim**

The invention relates to an ice-crampon wherein the spikes or nails disposed under the boot sole are arranged along two rectilinear rows, one on the inner side and the other on the outer side of the boot.

3,795,994
AIR-CUSHION SOCKS
Yvan Dall Ava, 54 Cite' Belle Marie, 32 Eauze, France
Filed May 4, 1971, Ser. No. 140,132
Claims priority, application France, May 5, 1970, 70.16269; Apr. 26, 1971, 71.14749
Int. Cl. A43b *13/20*
U.S. Cl. 36—29 **1 Claim**



This sock is of the type described in the head patent i.e. arranged to constitute air cushions interposed between the wearer's foot and the boot.

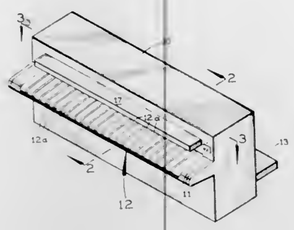
It consists of a thin, flexible and air-impervious envelope divided longitudinally into a number, for example five, of internal, air-tight compartments of relatively great dimensions, each of them forming an air cushion, since air is contained in each of them, this air being adapted to flow from one compartment to another through throttling passages.

These socks can easy by the manufactured commercially scale, in a trouble-free manner, and are adapted to prove entirely satisfactory to the wearer.

3,795,995
LAUNDRY FINISHER FOLDER
William Lawrence Johnson, 1716 E. Sunrise Blvd., Ft. Lauderdale, Fla.
Filed Feb. 23, 1973, Ser. No. 335,351
Int. Cl. D06f *61/00*
U.S. Cl. 38—2 **7 Claims**

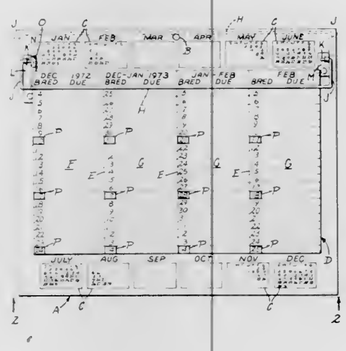
A combined apparatus for both folding and ironing textile fabric flatwork having flexible, endless belt conveyors for carrying the flatwork in sequence past a first pick-up-and-drop

folder, a first ironing drum around which the once-folded flatwork is partially wrapped, a second pick-up-and-drop folder,



and a second ironing drum around which the twice-folded flatwork is partially wrapped before being conveyed away.

3,795,996
CALENDAR FOR RECORDING BREEDING OF LIVESTOCK
Harold J. Hlavka, 402-4th Ave. N.W., New Prague, Minn.
Filed July 14, 1972, Ser. No. 272,076
Int. Cl. G09d *3/00*
U.S. Cl. 40—107 **3 Claims**



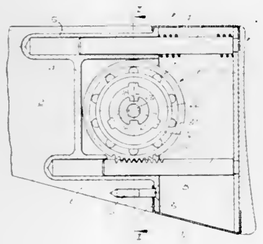
A calendar for keeping records of the condition of breeding stock and including calendar pages in a folded arrangement enabling a livestock breeder to note dates for breeding, young-bearing, and other data relative to the breeding of livestock.

3,795,997
NON-ROTATING WHEEL COVER MEMBER
Philip M. Walton, and Walter J. Berg, both of Honolulu, Hawaii, assignors to Unitron Corporation, Honolulu, Hawaii
Filed Apr. 23, 1973, Ser. No. 353,751
Int. Cl. G09f *7/00*
U.S. Cl. 40—129 B **8 Claims**

A non-rotatable wheel cover member is mounted on a plate carried by a fixed axle, the plate being mounted on a lock nut on the axle in a fixed position and has notches at top and bottom in which a lug and latch on the cover member engage to

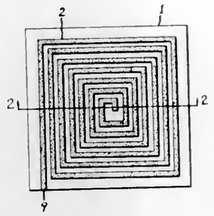
mount the cover member in upright position. The cover member may carry advertising matter on its outer side.

3,795,998
RECOIL SHOCK ABSORBER FOR A SHOULDER FIREARM
Hans Kuhl, Plochingen, Germany, assignor to Wolfgang Kammerer, Holzmaden, Germany, a part interest
Filed Apr. 17, 1972, Ser. No. 244,700
Claims priority, application Germany, Apr. 22, 1971, 2119648
Int. Cl. F41c *23/00*
U.S. Cl. 42—74 **16 Claims**



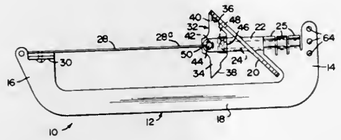
A recoil shock absorber for a shoulder firearm in which the butt of the firearm is divided into two parts which are spaced from each other in the longitudinal direction of the firearm and are connected to each other on the outer side of the butt by an elastic sleeve, for example, of leather or plastic, and in which the shock absorber comprises a multiple-disk friction brake, one set of brake disks of which is frictionally rotatable relative to the other set, an overrunning roller clutch which is engaged during the recoil of the firearm while the two butt parts move toward each other against the action of the brake and which is disengaged when the recoil is terminated, and spring means of a strength just sufficient for then returning the shoulder-engaging butt part to its original position.

3,795,999
INSECTICIDAL INCENSE AND METHOD FOR THE MANUFACTURE THEREOF
Yoshikatsu Tabita, No. 545, 2-chome, Higashi-Uenoshiba-cho, Sakai-shi, Osaka-fu, Japan
Continuation-in-part of Ser. No. 837,185, June 27, 1969, abandoned. This application June 13, 1972, Ser. No. 262,333
Int. Cl. A01m *13/00*
U.S. Cl. 43—127 **1 Claim**



An insecticidal incense device. The device has a semi-non-flammable sheet member having a body of fumous burnable material coated and adhered thereon in a continuous line. The fumous burnable material has a fumous insecticidal material therein. When the fumous burnable material is burned, the portion of the sheet member beneath the fumous burnable material supports the combustion of the fumous material while the remainder of the sheet does not burn.

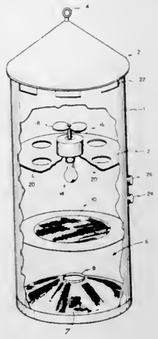
3,796,000
DEPTH CONTROL DEVICE FOR FISH LURE
Norman H. Nye, 1348 Highbridge Rd., Cuyahoga Falls, Ohio
Filed Apr. 4, 1973, Ser. No. 347,789
Int. Cl. A01k *85/00*
U.S. Cl. 43—43.13 **10 Claims**



A device attachable to a fishing line to control a lure connected to the device so that the lure is maintained at a desired temperature level in a body of water. The device has an elongated body forming a keel and a bimetal strip extends parallel to the keel. A control fin or plate is rotatably carried on the keel in an inclined position and latch means connect between an end of the bimetal strip and the control plate to provide controllable 180° rotary movement thereof dependent upon the ambient temperature conditions and its effect on the bimetal control strip. The bimetal strip is cantilevered in a direction axially of the unit and it has a freely movable end engaging the latch for control action.

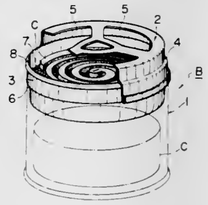
3,796,001
MOSQUITO TRAP
Spicer C. Jackson, Jacksonville, N.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 27, 1972, Ser. No. 309,846
Int. Cl. A01m *1/08*
U.S. Cl. 43—113 **4 Claims**

A weatherproof trap which will capture mosquitoes or other insects without injury and without gathering larger undesired insects. A fan and light are mounted on a support plate within the trap, and catch trap means are mounted between the open end of the trap and the support plate. The trap is closed at its



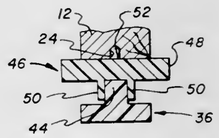
opposite end by a cover, the opposite end having air escape means therein.

3,796,002
CAN FOR MOSQUITO COILS
Yoshio Katsuda, Osaka, Japan, assignor to Dainippon Jochugiku Kabushiki Kaisha, Osaka City, Osaka-fu, Japan
Filed Aug. 29, 1972, Ser. No. 284,551
Int. Cl. A01m *13/00*
U.S. Cl. 43—125 **4 Claims**



A can for coils of a material which, when burnt, produces fumes for killing mosquitoes, said can being adapted to serve as a fumigator in which said coil may be burnt, and comprising a top lid and an inner lid, the inner lid being provided with windows to release the fumes of a burning coil, and a wire screen mounted on the inside of the top lid.

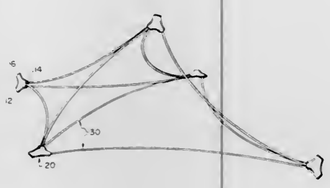
3,796,003
TOY FIGURE ACTION SET
Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif., and Howard L. Dekan, Chatsworth, Calif., assignors to said Goldfarb, by said Dekan
Filed Feb. 28, 1972, Ser. No. 229,833
Int. Cl. A63h *33/06*
U.S. Cl. 46—22 **5 Claims**



A toy figure action set comprising one or more small toy figures, a fixed support which extends up above a support sur-

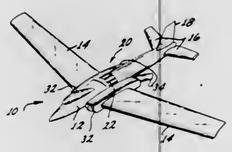
face, and separate movable carrier means to which one or more of the toy figures may be removably attached. The carrier means is removably supported on the fixed support for movement by virtue of point or line contact, whereby movement of the toy figure relative to the fixed support may be achieved.

3,796,004
CONSTRUCTION TOY
Robert S. Auerbach, Chicago, Ill., assignor to Master-Evans, Inc., Chicago, Ill.
Filed Nov. 10, 1972, Ser. No. 305,425
Int. Cl. A63h *33/10*
U.S. Cl. 46—29 **8 Claims**



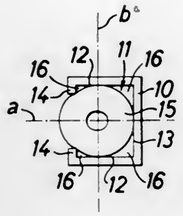
A construction toy preferably packaged in kit form comprising a plurality of intersection elements and a plurality of elongate flexible resilient strut elements; said intersection elements are envelopes of substantially polygonal configuration, the sides of said envelopes being concavely curved. The peaks or ends are blunt, openings being provided at said ends to permit introduction of the strut elements within the interior of said intersection elements. The intersection elements are formed of a pair of like, superposed planar plastic portions sealingly secured along their edges but for the blunt ends. The strut elements may be elongate plastic rods having tapered ends. The struts may be of uniform dimension or the kit may include groups of different length struts. The struts are introduced into the passageways and follow the interior curvature of the intersection elements or some may simply abut the inner wall of the intersection element opposite the point of entry. The intersection and strut elements are connected, ones to the others to form a spatial array or latticework formations of many and varied geometric configurations. Each end may receive a plurality of struts.

3,796,005
SIMULATED JET AIRPLANE TOY
Richard S. Chang, Rolling Hills Estates, and James D. Moore, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Feb. 23, 1973, Ser. No. 335,190
Int. Cl. A63h *27/06*
U.S. Cl. 46—243 AV **15 Claims**



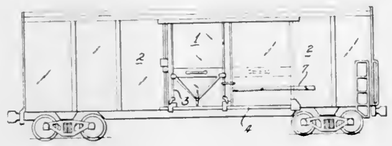
A simulated non-compressive type fan jet airplane with a cage at the center of the fuselage and a propeller in the cage that draws air rearwardly to thrust the airplane forward. The propeller is driven by a small electric motor and rechargeable electric batteries that are located in the fuselage of the airplane.

3,796,006
THRESHOLD SEALS
Bernard Dixon, Harpenden, England, assignor to Bernard Dixon and Partners Limited, London, England
Filed Jan. 31, 1972, Ser. No. 222,352
Claims priority, application Great Britain, Jan. 29, 1971, 3,506/71; Sept. 17, 1971, 43,577/71
Int. Cl. E06b *7/23*
U.S. Cl. 49—493 **6 Claims**



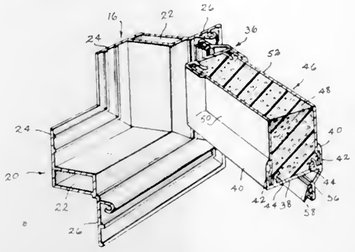
The sealing action of a draft excluder comprising an elastomeric element and a retaining member is lightened and made more complete without excessive pressures by permitting portions of the section of the element to retreat bodily under loading relative to the member. The element section is round and the member retains the element in an open rectangular section channel.

3,796,007
DOOR MOVING STRUCTURE
Luther L. Bollinger, Sr., Reading, and James J. Hennessy, Jr., Chambersburg, both of Pa., assignors to Hennessy Products, Incorporated, Chambersburg, Pa.
Filed Jan. 29, 1973, Ser. No. 327,703
Int. Cl. E05f *11/34*
U.S. Cl. 49—362 **9 Claims**



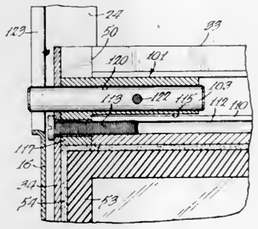
Structure for closing and opening railway boxcar sliding doors comprising a member permanently affixed to the car side wall, and a device readily applicable to the fixed member on any car by a merchandise shipper during loading, but then detached prior to shipment, a corresponding device being possessed by one or more consignees to be used in opening the door for unloading.

3,796,008
PREASSEMBLED DOOR
Harold L. Eakin, Double Springs, Ala., assignor to Mobile Vista Industries, Edwardsburg, Mich.
Filed Aug. 10, 1972, Ser. No. 279,638
Int. Cl. E06b *1/00*
U.S. Cl. 49—380 **1 Claim**



A door of preassembled construction which includes an enclosed casing strengthened by box-like frame parts and a hinged door part having the door panel interlocked with a channel-defining door frame.

3,796,009
WINDOW STRUCTURE
Wayne C. Bates, and Harold L. Stavenau, both of Owatonna, Minn., assignors to Truth Incorporated, Owatonna, Minn.
Filed May 16, 1972, Ser. No. 253,822
Int. Cl. E05d *7/08*
U.S. Cl. 49—453 **12 Claims**

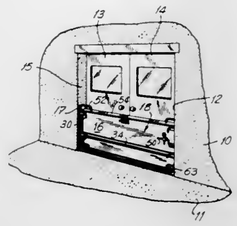


A window including a housing block mounted in each end of the upper rail of the window for use in connecting the upper rail to the end rail, and housing a pivot pin mounted in the block for longitudinal adjustment between an extended operative position mounting the window for vertical movement and pivotal movement relative to a window opening, and a retracted position flush with the end rail, enabling manipulation of the window into and out of mounted position in the window opening, together with means accessible at the front of the window for adjusting the pivot pin.

3,796,010
PNEUMATICALLY SEALABLE FLOOD PANEL ASSEMBLY
Edward Ronald Carlson, New Fairfield, Conn., assignor to The Presray Corporation, Pawling, N.Y.
Filed Dec. 7, 1972, Ser. No. 312,921
Int. Cl. E06b *7/18*; **E05c** *21/02*
U.S. Cl. 49—477 **9 Claims**

The disclosure relates to a flood panel assembly for installation in doorways and other access openings of buildings to improve water-tight integrity under moderate flood conditions. The invention is applicable particularly to stone or concrete structures, such as factory buildings which are substantially water-tight except at limited doorways and other access openings.

The apparatus of the invention includes a conversion frame, arranged for permanent installation in the access opening. A flood panel of suitable height for the conditions expected is

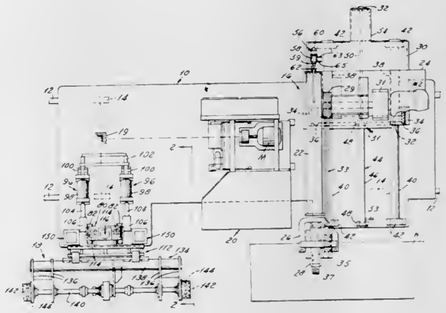


removably positioned in the conversion frame. The flood panel has an air-inflatable sealing element extending along its side and bottom edges. After initial positioning of the flood panel in the conversion frame, the sealing element is inflated, completely sealing off the access opening.

ERRATUM

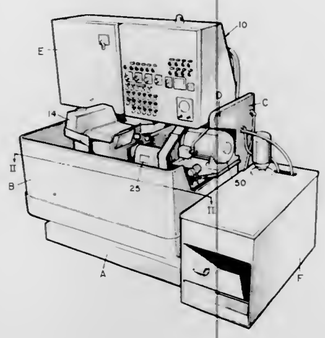
For Class 50—64 see:
Patent No. 3,796,015

3,796,011
GRINDING AND WORK HANDLING APPARATUS
Richard G. Hopkins, 5160 Lake Dr. Rt. No. 1, Owosso, Mich.
Filed Oct. 2, 1972, Ser. No. 294,384
Int. Cl. B24b *7/02, 41/02*
U.S. Cl. 51—34 D **9 Claims**



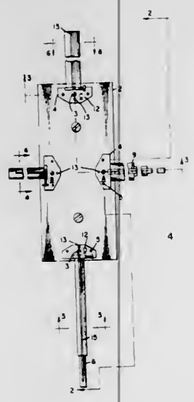
Apparatus for grinding and turning a workpiece such as a slab or billet comprising a carriage movable in a predetermined path alongside the workpiece. Mounted on the carriage are both a grinder for removing metal from a surface of the workpiece and a mechanism for turning the workpiece to present a different surface to the grinder. An operator's station is provided on the carriage between the grinder and the turnover mechanism.

3,796,012
GRINDING MACHINE WITH CONTROLLED GRINDING FORCE
Herbert R. Uhtenwoldt, Worcester, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, Mass.
Filed Feb. 25, 1972, Ser. No. 229,463
Int. Cl. B24b *49/14*
U.S. Cl. 51—165.77 **4 Claims**



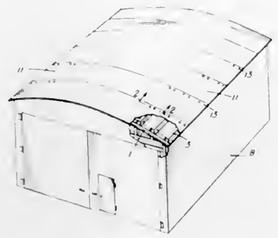
A grinding machine in which the grinding cycle is controlled by a signal from a transducer mounted in the workpiece support and capable of measuring substantially the entire grinding force.

3,796,013
SANDING ATTACHMENT
Roland Clough Brown, 425 Stratford Ct., Del Mar, Calif.
Filed Oct. 18, 1971, Ser. No. 190,167
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 R **1 Claim**



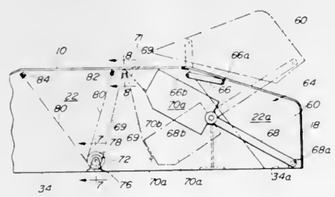
The disclosure relates to an attachment for conventional vibratory sanders, which attachment includes a plate adapted to be attached to the power section of such sander. The plate has attached thereto several mandrels of different configuration to receive shuts of abrasive material. The sander with the attachments thereon may be used to clean and smooth holes or slots of various shapes and sizes etc.

3,796,014
METAL ROOF CONSTRUCTION
Vernon H. Garbrick, 375 Pennsylvania Ave., Centre Hall, Pa.
Filed June 19, 1972, Ser. No. 264,259
Int. Cl. E04d *13/10;* **E04b** *7/00*
U.S. Cl. 52—24 **9 Claims**



In the described Metal Roof Construction a sheet metal roof cover is secured to a roof by first securing a plurality of beams to the roof trusses, the beams having outwardly extending flanges below their upper cover-supporting surfaces. The cover and flanges have aligned openings and a pin having an enlarged spherical head fits snugly in each cover opening and extends loosely through each flange opening, the pins being enlarged below the flanges to secure the cover to the beams whereby the pins can move with expansion and contraction of the roof covering.

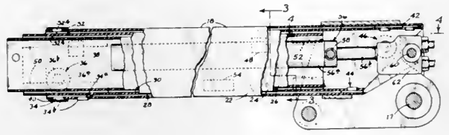
3,796,015
CAR POD
Daniel F. Kane, 555 Deep Woods Dr., Mundelein, Ill.
Filed Oct. 26, 1972, Ser. No. 301,156
Int. Cl. E04h *6/04*
U.S. Cl. 52—64 **4 Claims**



An automobile shelter providing a lightweight, open-bottomed enclosure having side walls and a counterbalanced rear overhead swinging car door which is mechanically coupled to a sectioned overhead sliding driver's side door so that opening or closing the one door automatically opens or closes the other door.

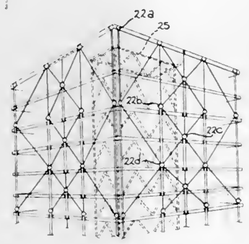
3,796,016
EXTENSIBLE MATERIAL HANDLING BOOM
Steve W. H. Wu, Portland, Oreg., assignor to Cascade Corporation, Portland, Oreg.
Filed Nov. 26, 1971, Ser. No. 202,246
Int. Cl. B66c *23/00*
U.S. Cl. 52—118 **1 Claim**

An extension-limited telescopic boom assembly for material-handling apparatus. The assembly includes nested inner and outer boom sections which, because of special projecting parts provided on and anchored to the sections, can extend but a



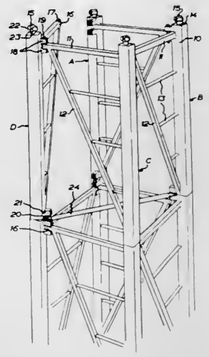
limited distance, and can be assembled and disassembled from but one end of the assembly.

3,796,017
HYDRAULIC STRUCTURAL APPARATUS
Milton Meckler, 16348 Tupper, Sepulveda, Calif.
Filed Apr. 24, 1972, Ser. No. 247,134
Int. Cl. E04b *1/36, 1/98, 9/00*
U.S. Cl. 52—292 **3 Claims**



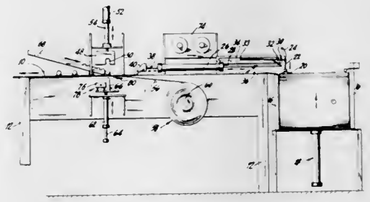
An improved building system for structural uses which employs high strength tubular elements to reduce the size, weight and extent of the structure required. The present invention utilizes tubular structural members with hollow cores filled with suitable hydraulic fluid and arranged to translate and distribute a sizeable portion of otherwise axial and lateral loads into an axial pre-stress in the thin walled tubular members which are arranged as steel columns or acts also as vertical bars in composite concrete columns or as secondary support (tension) or cross brace members. The primary columns of the building are tubular hollow members which are placed in tension through circumferential stress by means of a hydraulic system. The secondary floor support members suspended from the primary column support one or more floors by hydraulic means. Pressure equilibrium of the fluid within the column is achieved between the tubular primary and secondary support elements of the building. Other structural elements such as cross-bracing, are coupled to the hydraulic system and are used to restrain the column end conditions of the slender tubular columns. The present invention provides an improved means for constructing pressurized columns by utilizing an energized column with circulating fluid under pressure. Means are also provided in the present invention for eliminating the problem of fluid leakage within the hydraulic support members. The building system of the present invention also provides means for improving cable rod and long span structures for low rise buildings absorbing lateral and vertical shocks and displacements at the base of the support columns of conventional and hydraulic structures due to earthquakes.

3,796,018
STRUCTURAL ELEMENTS FOR THE ERECTION OF MASTS, SUCH AS HOIST AND CRANE MASTS, ANTENNA MASTS ETC.
Nils Felix Folke Holmstrom, Falsterbo, Sweden, assignor to Amaco Maskin AB, Vellinge, Sweden
Filed Nov. 12, 1971, Ser. No. 198,390
Claims priority, application Sweden, Nov. 13, 1970, 15330/70
Int. Cl. E04g *7/00*
U.S. Cl. 52—638 **5 Claims**



A hoist mast composed of planar structural elements each consisting of tube means and cantilever means extending therefrom. The tube means has a male member at one end, a female member at the opposite end, which members together form a bayonet catch, a fastening portion and locking means. When at the erection of a mast two tube means are assembled with the aid of the bayonet catch, the end of the cantilever means is swung into engagement with the fastening portion of another tube means and is interlocked with it, and the locking means of the tube means is swung into locking engagement with the fastening portion of a third tube means to prevent unintentional release of a cantilever means engaging the fastening portion.

3,796,019
PROCESS AND APPARATUS FOR FORMING DISPLAY PACKAGES
Edwin Whitney Swezey, Hackensack, N.J., assignor to Union Camp Corporation, Wayne Township, N.J.
Continuation-in-part of Ser. No. 862,586, Aug. 25, 1969, Pat. No. 3,657,855. This application Apr. 21, 1972, Ser. No. 246,429
Int. Cl. B65b *11/50*
U.S. Cl. 53—3 **7 Claims**



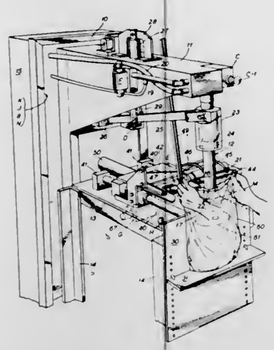
The article is further secured in the display device by a layer of suitable flexible material affixed to the underside of the transparent film and located across the aperture and open side of the loop.

3,796,020

DEVICE FOR CLOSING A BAG UNDER VACUUM

Benjamin M. Anderson, Aurora, Ill.; William Harrison Mullan, Cedar Falls, and Gerhard W. Tempel, Winona, both of Minn., assignors to Armour and Company, Chicago, Ill.

Filed June 22, 1972, Ser. No. 265,239
Int. Cl. B65b *31/06*
U.S. Cl. 53—112 B **15 Claims**



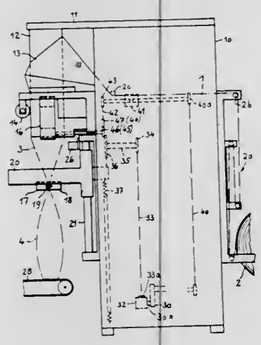
A bag closing device including a nozzle which is extendable into the open top of a bag to be closed, vacuum means for drawing a holding vacuum on the bag top until a clamping mechanism comes into place to seal the bag top against the nozzle following which vacuum is drawn on the bag interior, including mechanism for advancing a sealing device into place for sealing the bag and cutting off the top after which the sealing device retracts, all remaining vacuum is cut off, the clamping mechanism withdrawn, and air blown against the cut off bag top to remove it from the nozzle, all of such functions being performed automatically and in sequence.

3,796,021

BAG MAKING AND FILLING APPARATUS

Franco Toss, Alten-Buseck, Germany, assignor to Hamac-Hansella GmbH, Viersen, Germany

Filed June 30, 1972, Ser. No. 267,940
Claims priority, application Germany, July 10, 1971, 2134475
Int. Cl. B65b *9/12, 51/30*
U.S. Cl. 53—182 **12 Claims**



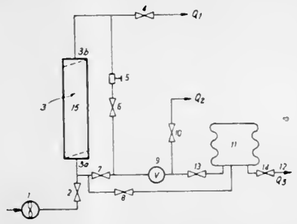
A bag making and filling apparatus wherein a web of weldable material is draped around an upright filling mandrel and is provided with a vertical seam to form a tube. The tube is moved downwardly by means of intermittently driven belt or roller conveyors which are adjacent to the outer side of the mandrel. A carriage below the conveyors supports two welding electrodes which are movable toward each other to provide the tube with a pair of transverse seams one of which constitutes the top seam of the preceding or lower bag and the other of which constitutes the bottom seam of the next-following bag. The carriage is moved downwardly during the intervals of idleness of the conveyors so that the tube is advanced alternately by the conveyors and by the electrodes. The electrodes sever the tube between the transverse seams of a freshly formed pair of seams and move apart when the carriage reaches the lower end of its downward stroke. The carriage is thereupon moved upwardly back to a starting position. The length of strokes of the carriage is adjustable and the mandrel admits a metered quantity of flowable material into the sealed lower end of the tube while the tube is moved by the electrodes and/or by the conveyors.

3,796,022

METHOD OF AND INSTALLATION FOR THE FRACTIONATION OF A GASEOUS MIXTURE BY ADSORPTION

Guy Simonet, and Claude Pivard, both of Paris, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes George Claude, Paris, France

Filed Nov. 20, 1972, Ser. No. 307,854
Claims priority, application France, Nov. 30, 1971, 71.42793
Int. Cl. B01d *53/04*
U.S. Cl. 55—25 **17 Claims**



A method of fractionation of a gaseous mixture by adsorption, utilizing at least one adsorption line including an adsorption zone having an adsorbent mass adsorbing primarily a first constituent and secondarily a second constituent of said mixture, said method employing at least one elementary adsorption cycle employing said adsorption line, and further comprising an adsorption phase in which said mixture is introduced into the adsorption zone at an adsorption pressure, an elution phase in which a gaseous fraction enriched in said first constituent circulates in the adsorption zone at a pressure lower than said adsorption pressure while enriching said fraction in said second desorbed constituent, a desorption phase in which a gaseous fraction enriched in said first constituent is extracted from the inlet of said adsorption zone under a pressure lower than said elution pressure, and a pressure-rise or inflation phase in which the pressure in the adsorption zone is increased to the adsorption pressure. The invention also covers the installations for carrying the method and its alternatives into effect, and is especially applicable to the fractionation of atmospheric air into nitrogen, oxygen and water.

3,796,023

PROCESS FOR SEPARATION OF VINYL CHLORIDE FROM INERT GASES

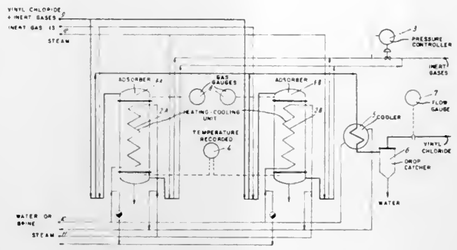
Lajos Raduly, Rimnicu Vilcea, Romania, assignor to Grupul Industrial De Chimie Rimnicu Vilcea, Rimnicu Vilcea, Romania

Filed Jan. 24, 1972, Ser. No. 220,079
Int. Cl. B01d *53/04*
U.S. Cl. 55—59 **5 Claims**

A process for separation of vinyl chloride from inert gases. Such process can be carried out

a. passing inert gases containing vinylchloride over a layer of active carbon which adsorbes vinyl chloride the inert gases being removed in the atmosphere; vinyl chloride retained on the active carbon is desorbed by means of steam separated by condensation of steam the latter being eliminated to the sewer and the layer of active carbon being dryed then coaled in order to take over the cycle

b. passing inert gases containing vinyl chloride over a layer of active carbon which is impregnated with hydroquinone and



further proceeded as shown above. One obtains a total separation of vinyl chloride from inert gases. The active carbon has a long lasting utilization and by impregnation of the active carbon layer with hydroquinone the length of time of utilization is increased.

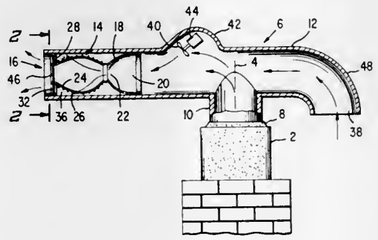
The installation is unsophisticated necessitating reduced investments and operation costs and the process is easily and safely managed. The consumption of utilities is reduced and no energy is consumed.

3,796,024

FILTER ASSEMBLY

Randall Mier, 447 Norway Ave., Trenton, N.J.

Filed Aug. 23, 1972, Ser. No. 283,194
Int. Cl. B01d *51/00*
U.S. Cl. 55—267 **3 Claims**



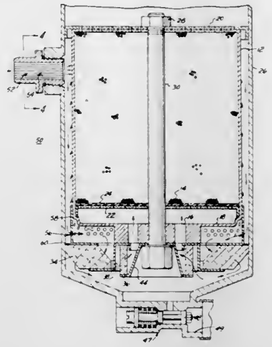
A filter assembly for application to a chimney exhaust is provided with a duct positioned at an angle to the axis of the chimney, a filter element is located in the duct at one side of said axis and a blower, communicating with the duct, serves to direct cool ambient air across said axis toward the filter to increase the chimney draft and cool the smoke, while forcing it through the filter. The filter is provided with a metal or other substantially rigid support and is removable from the duct for the cleaning or the disposal thereof.

3,796,025

ABSORPTIVE DRYER HAVING OIL MIST ELIMINATING APPARATUS

Walter Kasten, Franklin, Mich., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 23, 1971, Ser. No. 211,235
Int. Cl. B01d *50/00*
U.S. Cl. 55—316 **1 Claim**



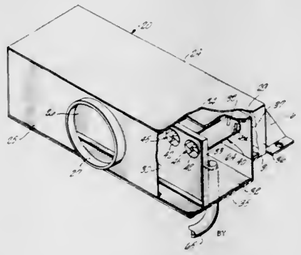
An absorptive dryer for a compressed air brake system having a desiccant material for removing moisture from air in the brake system. A filter is disposed upstream from the desiccant material to prevent contamination of the desiccant, and a coalescer is disposed upstream from the filter to coalesce any oil mist particles in the brake system to at least a sufficiently large size to be readily removed from the air by the filter. In order to minimize contamination of the filter, the coalescer and filter elements are positioned in the embodiments illustrated herein so that many of the coalesced oil droplets are removed by gravity from the air flow and do not reach the filter element.

3,796,026

LIQUID-GAS SEPARATOR

Charles C. Mugford, Hermosa Beach, Calif., assignor to Farr Company, El Segundo, Calif.

Filed Apr. 5, 1971, Ser. No. 131,290
Int. Cl. B01d *45/12*
U.S. Cl. 55—338 **20 Claims**



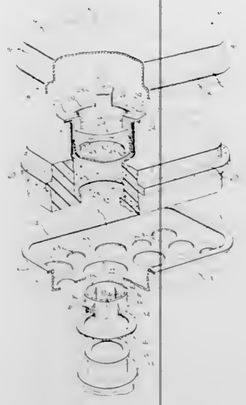
A liquid-gas separator particularly useful for removing liquid from the high velocity intake air of a truck engine and readily adaptable for mounting within a restricted space, such as the engine compartment, provides a high efficiency liquid-gas separation without an excessive pressure drop. The separator includes at least one separator element or chamber where liquid is inertially separated from a spinning stream of gas flowing therethrough onto the inner surface of the chamber. The separated liquid is bled from the chamber by a portion of the gas stream which after depositing the removed liquid is caused to return to the main stream of gas.

3,796,027

FASTENING FOR SMALL ENGINE CARBURETOR AIR CLEANER

Herbert A. Gumtow, Brookfield, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed July 21, 1972, Ser. No. 274,085
Int. Cl. B01d *39/14*
U.S. Cl. 55—502 5 Claims



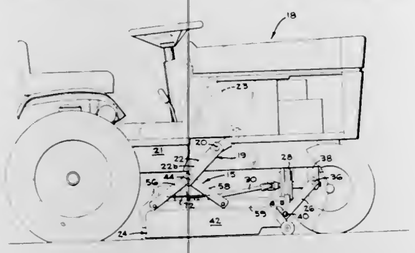
A carburetor air cleaner comprising a filter element confined between top and bottom shell members has a tube secured to its top wall and extending down through the filter element. The carburetor air duct has an extension projecting up into the tube through a hole in the bottom shell wall. A spring ring surrounds the extension, axially confined by a circumferential ledge on its upper end. The ring has integral fingers that press the bottom shell wall down against another circumferential ledge on the duct, and has other, curved, fingers that snap over an inturned circumferential flange on the bottom of the tube.

3,796,028

IMPLEMENT LIFT HITCH

Joseph A. Federspiel, Port Washington, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 4, 1972, Ser. No. 312,011
Int. Cl. A01d *55/28*
U.S. Cl. 56—15.2 13 Claims



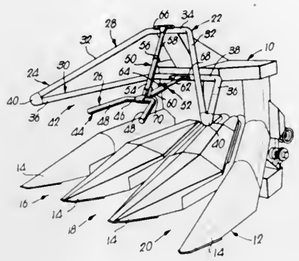
An implement is hitched to the lift assembly of a vehicle such as a tractor by cooperating lift hitches which establish a pivotal connection between the implement and the lift assembly. Each lift hitch includes rigid links pivotally fastened to the implement and provided with slots that operably engage a lift pin of the lift assembly to suspend the links from the lift pin. A tension spring interconnects the links to maintain the links in inverted V-shaped configuration when coupled to the lift pin and to prevent accidental dislodgement of the lift pin from the slots in the links. The slots each include a circular segment and an entrance opening narrower than the diameter of said segment for receiving a large diameter resilient sleeve which is loosely journaled on the lift pin and is deformed as it is moved through the narrow entrance opening but returns to its normal circular shape when rotatably received in the circular segments of the cooperating links.

3,796,029

CENTER GATHERER FOR FORAGE HARVESTERS

Rex O. Weigand, Newton, and Kenneth R. McMillen, Moundridge, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Apr. 9, 1973, Ser. No. 348,981
Int. Cl. A01d *45/02*
U.S. Cl. 56—119 10 Claims



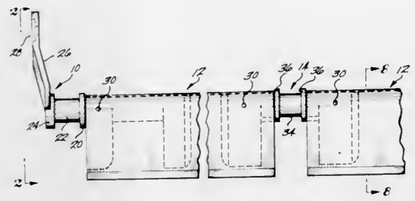
A three-row forage harvester has a header provided with a stalk gatherer above the dividers thereof which includes a primary gathering unit having a stalk receiving throat and a secondary stalk engaging unit releasably connected to the primary unit within the throat. The yoke of the secondary unit may be height adjusted not only by virtue of the use of extensible yoke supporting arms but by virtue of the invertibility of the entire secondary unit itself.

3,796,030

BAT AND TINE CONSTRUCTION FOR A HARVESTER REEL

Archie E. Neal, and Donald R. Gradwohl, both of Garfield, Wash., assignors to J. E. Love Company, Garfield, Wash.

Filed Oct. 16, 1972, Ser. No. 297,882
Int. Cl. A01d *57/02*
U.S. Cl. 56—220 6 Claims



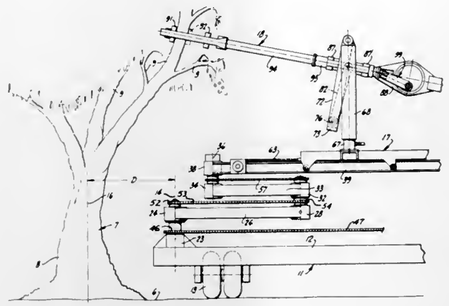
A plurality of tubular bat blade sections are interconnected by journal sections having end portions which extend into the end portions of the bat sections. Crank sections at the two ends of the bat include end portions which extend into the outer ends of the two outer bat blade sections. The bat blade sections are tapered from top to bottom. Lower portions of the bat blade sections are received in mounting channels provided at upper ends of molded plastic tines. These tines may carry buttons which snap into mounting openings formed in side wall portions of the bat sections.

3,796,031

TREE SHAKER

Robert B. Fridley, and James J. Mehlschau, both of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Nov. 15, 1972, Ser. No. 306,744
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 TS 12 Claims



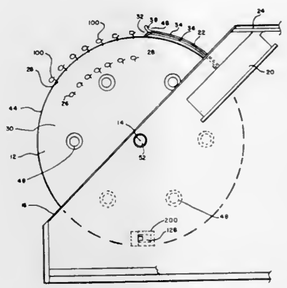
A tree shaker has a carriage for movement in an orchard into a special position with respect to a tree to be shaken. On the carriage is a four-bar linkage supporting a platform for movement about the tree in an arcuate horizontal path with the platform directed toward the tree trunk and at various radial distances therefrom. The tree shaker unit is supported on and at selected heights above the platform by a torsion bar suspension having linkage so that the tree shaker unit is pendulous below the point of support on the platform. The tree shaker unit is driven with shaking strokes of various predetermined lengths by a crank pin moved at any time and locked in any of several positions at different radii from the rotational axis of the crank.

3,796,032

AUTOMATIC YARN FEED APPARATUS

Raeford W. Clontz, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,370
Int. Cl. B65h *69/06*
U.S. Cl. 57—22 10 Claims



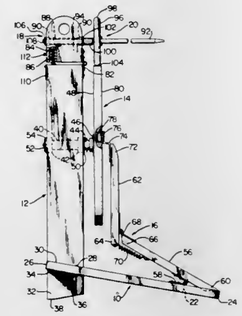
Rotatable disc carrying a plurality of yarn samples to be fed sequentially to a splicing and cutting means to form an endless yarn composed of joined sections to be fed to a yarn tester.

3,796,033

YARN SPINNING APPARATUS

Robert M. Oliver, 5893 Baseline Rd., Boulder, Colo.

Filed Feb. 25, 1972, Ser. No. 229,525
Int. Cl. D01h *3/00*
U.S. Cl. 57—37 9 Claims



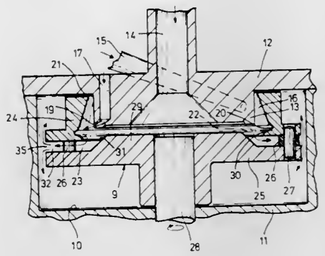
Home hobby type spinning apparatus comprises base, column, drive wheel journaled in column, and treadle and actuator link to rotate drive wheel. A quill carrier pivotally mounted on top of the column has a bearing to rotatably receive the shaft of a spinning quill. A quill wheel is fixed to the quill shaft and drivenly engages the drive wheel. The quill carrier is spring biased to urge the quill wheel into engagement with the drive wheel. The quill carrier may be manually retracted to disengage the quill wheel, and a latch is provided to retain the carrier in retracted position. Since the apparatus is intended for hobby work, it is made simple and compact, and preferably most of the parts are made of wood. The major components are readily detachable to form a minimum package for shipping and storage.

3,796,034

OPEN-END SPINNING APPARATUS

Gerhard Grau, Ebersbach, Germany, assignor to Zinser-Textilmaschinen GmbH, Ebersbach, Germany

Filed Nov. 30, 1972, Ser. No. 310,793
Claims priority, application Germany, Nov. 30, 1971, 2159248
Int. Cl. D01h *1/12*
U.S. Cl. 57—56 10 Claims



Into the rotary spinning chamber of an openend spinning apparatus there is, for cleaning purposes, periodically introduced a jet of pressurized air directed to the circumferential fiber collecting groove provided in the wall of the spinning chamber. The pressurized air, together with the impurities dislodged thereby, is withdrawn from the spinning chamber through an air outlet means having an annular inlet opening which is situated adjacent the fiber groove and which surrounds the rotary axis thereof.

3,796,035

SEMI-CONTINUOUS FILAMENT COMBINATION YARN

George A. Watson, Davidson, N.C., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 25,675, April 6, 1970, Pat. No. 3,664,115, and a continuation-in-part of Ser. Nos. 606,982, Jan. 3, 1967, abandoned, and Ser. No. 763,468, Aug. 5, 1968, Pat. No. 3,504,489, which is a division of Ser. No. 650,795, July 3, 1967, Pat. No. 3,417,560, and a continuation-in-part of Ser. No. 382,263, July 13, 1964, abandoned. This application Mar. 28, 1972, Ser. No. 238,860

Int. Cl. D02g *1/00*

U.S. Cl. 57—140 BY 5 Claims

A method, apparatus and product comprising producing a semi-continuous filament yarn having staple yarn characteristics from crimped tow comprising longitudinally slitting a deregistered tow comprising different fibers into strips of filaments either with or without a tow spreading stage and subsequently twisting the strips into yarn. The tows differ from each other in the fibers they contain, but each individual tow may contain a relatively uniform blend of different fibers.

3,796,036

METHOD OF PROCESSING YARN

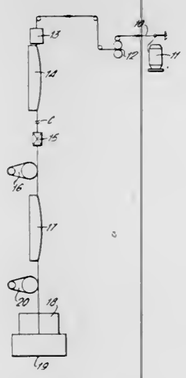
Walter Parker, Wilmslow, England, assignor to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Nov. 22, 1971, Ser. No. 200,950

Claims priority, application Great Britain, Nov. 21, 1970, 55493/70

Int. Cl. D02g *1/02*

U.S. Cl. 57—157 TS 10 Claims



Undrawn or partially drawn multifilament thermoplastic yarn is drawn in a first heating zone, and then passed through a second heating zone at heat setting temperature, through a cooling zone, through a false twist mechanism, and through a draw-roller system which effects drawing of the yarn in the first heating zone. From the draw-roller system the yarn can also be passed through a third heating zone at an overfeed rate of 10 percent to 40 percent.

3,796,037

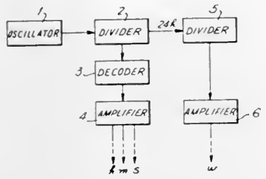
DISPLAY METHOD FOR SOLID STATE ELECTRONIC TIMEPIECE

Kinji Fujita, 10616 Takagi, Shimosuwa-machi, Suwa-gun, Nagano-ken, Japan

Filed Oct. 28, 1971, Ser. No. 193,404

Int. Cl. G04b *19/24, 19/30*

U.S. Cl. 58—4 A 3 Claims



A display method for a solid state electronic timepiece wherein separate indicia to be displayed are disposed on a display surface of said watch and means are provided for selectively visually identifying one or more of said indicia. Said indicia are preferably representative of the days of the week. Each of said indicia may have a liquid crystal or luminous diode display associated therewith which may be selectively energized to identify the desired indicia, or may be covered by a liquid crystal screen which, when selectively energized, obscures all but the desired indicia.

3,796,038

TIME CORRECTING MECHANISM

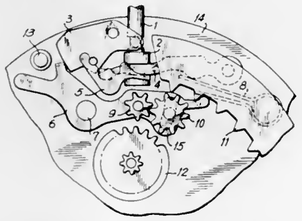
Yoshito Ushiyama, 1-12, 1-chome, Narita-machi, Nagano-ken, Osaka-shi, Japan

Filed July 7, 1972, Ser. No. 269,912

Claims priority, application Japan, July 9, 1971, 46-50868

Int. Cl. G04c *3/00*; G04b *27/00*

U.S. Cl. 58—23 R 3 Claims



An electric timepiece is provided with a time correcting mechanism having both movable and fixed parts for the manual resetting of the time display and a switching mechanism having a movable contact point and a fixed contact point for the selective stopping and starting of the driving of the time display. One of the movable parts of said time correcting mechanism serves as the movable contact point of the switching mechanism while one of the stationary parts thereof serves as the fixed contact point.

3,796,039

ELECTRIC MICROMOTOR

Paul Emile Lucien, 29, rue Pouchet, Amouriq, 75017 Paris, France

Filed July 12, 1972, Ser. No. 271,013

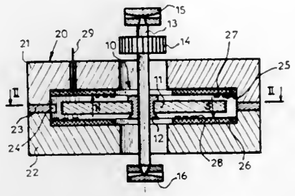
Claims priority, application France, July 16, 1971, 7126136

Int. Cl. H02k *37/00*

U.S. Cl. 58—23 7 Claims

An electric motor consisting of a stator and of an axially magnetized rotor disk is provided with a statoric winding in

the form of an insulating wafer carrying an electric circuit formed by way of electro-deposition, to which are fed pulses of alternate polarities causing said motor to rotate step by



step. Such a motor can exhibit minute dimensions of the order of a few tens of an inch, and thus can be used for driving the movement of a watch or the like.

3,796,040

TIME-KEEPING ARRANGEMENT

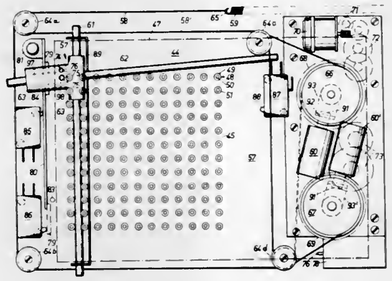
Werner Giersiepen, Wuppertal, and Walter Rich, Boblingen, both of Germany, assignors to Elektrotechnische Industrie Gustav Giersiepen, Radevormwald, Germany

Filed July 7, 1972, Ser. No. 269,566

Claims priority, application Germany, Jan. 8, 1972, P 22 00 867.9

Int. Cl. G04p *3/06*

U.S. Cl. 58—39.5 30 Claims



A time-keeping device includes a display panel comprising a plurality of uniformly disposed identical panel divisions arranged in rows and columns, each capable of transmitting a visual signal and each representing a predetermined number of minute time units. A mechanical follower is movable along the panel divisions of each row for effecting the transmission of visual signals by successive ones of the panel divisions. A drive arrangement advances the follower from one panel division of a row to the succeeding panel division of that row at predetermined time intervals corresponding to the aforementoned predetermined number of minute time units.

3,796,041

RESET MECHANISMS

Cecil Leslie Boult, Clydach, near Swansea, Glamorganshire, Wales, assignor to Smiths Industries Limited, London, England

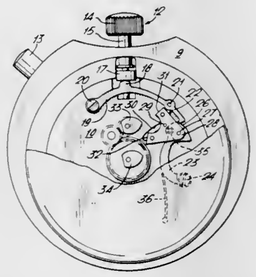
Filed Aug. 10, 1972, Ser. No. 279,401

Claims priority, application Great Britain, Aug. 20, 1971, 39087/71

Int. Cl. G04f *7/04*

U.S. Cl. 58—76 7 Claims

A reset mechanism for a stop-watch is operable to rotate two cams on the staves of the minute and second hands respectively of the watch, back into datum angular positions. Depression of a reset button of the mechanism actuates an operating lever that engages with a cam surface of a pivotally-mounted support-member to pivot the support member towards the cams against the action of a spring. A striker of unitary construction and having camming surfaces for engaging the cams is pivotally mounted on the support member but is restrained from more than small angular displacement relative to the support member by a pin which from the striker member engages in an oversized hole in the support member. Pivoting of the support-member carries the striker to bring its two camming-surfaces into engagement with the two cams respectively, the loose mounting of the striker on the support



member permitting it limited adjustment of orientation relative to the support-member to ensure that the camming surfaces are both brought into positive engagement with their respective cams. The striker is constrained to movement along a path which is defined by a slot in the base plate of the mechanism and which is spaced from the support-member pivot, the slot being engaged by a pin which is carried on the striker and which is spaced from the pivot of the striker with the support member.

3,796,042

WATCH CASE

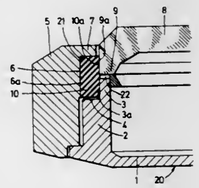
Hansjorg Finger, 2543 Lengnau, Germany

Filed Oct. 6, 1972, Ser. No. 295,566

Claims priority, application Switzerland, Oct. 25, 1971, 15493/71

Int. Cl. G04b *37/08*

U.S. Cl. 58—90 R 3 Claims



A watertight watch case wherein the central portion of the casing and the floor thereof consist of one piece and the watch crystal is retained via its clamping edge by means of an annular body seated upon the central portion of the casing. According to the invention, there is provided a sealing and retaining ring member which is clamped on the one hand between the outer surface of the clamping edge of the watch crystal and the outer surface of an annular projection of the casing central portion which is directed towards the watch crystal and on the other hand the inner surface of the annular body.

3,796,043

CONTINUOUS WIPE-OUT CLOCKS

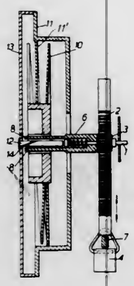
Ronald William Ebdon, 70 Vectis Rd., Gosport, England

Filed June 7, 1972, Ser. No. 260,450

Claims priority, application Great Britain, June 13, 1971, 9239/71

Int. Cl. G04b *19/00*

U.S. Cl. 58—127 R **10 Claims**



This invention relates to timing devices.

It is an aim of this invention to produce a timing device which provides a pictorial representation of the passage of time. This is achieved by defining a point in time by an interface between two adjacent surfaces of contrasting shades, and enabling this interface to move at a substantially constant speed which is related to the passage of time. The interface can thus "wipe out" the previously visible surface and replace it with another.

3,796,044

GAS TURBINE AIR STORAGE SYSTEM

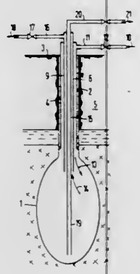
Theodor Schwarz, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Rhur), Germany

Filed Apr. 5, 1972, Ser. No. 241,300

Claims priority, application Germany, Apr. 6, 1971, P 21 16 850.3

Int. Cl. F02c *9/14*

U.S. Cl. 60—39.29 **10 Claims**



Gas turbine air storage system with subterranean air storage space, for example, in a cavern formed in a salt stratum to which a bore hole extends, includes a plurality of tubes including an outer protective tube extending through the bore hole into the air storage space, a lining for the bore hole spaced from and surrounding the outer protective tube, the lining and the outer protective tube defining therebetween an annular space communicating with the air storage space, and means for feeding air to the air storage space at least partly through the annular space.

3,796,045

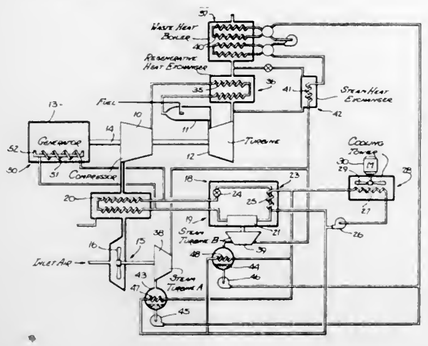
METHOD AND APPARATUS FOR INCREASING POWER OUTPUT AND/OR THERMAL EFFICIENCY OF A GAS TURBINE POWER PLANT

Richard W. Foster-Pegg, Warren, Pa., assignor to Turbo-Development, Inc., New York, N.Y.

Filed July 15, 1971, Ser. No. 162,911

Int. Cl. F02c *3/06, 7/10*

U.S. Cl. 60—39.02 **6 Claims**



A gas turbine power plant having a modified gas turbine cycle (Brayton cycle) wherein the compressor inlet air is super-chilled before it enters the compressor. Superchilling, as defined herein, means to supercharge the inlet air to increase the pressure thereof to a pressure level moderately greater than the atmospheric pressure and to chill the supercharged air to decrease the temperature thereof, the preferred temperature level being in the vicinity of about 40° Fahrenheit. A heat recovery cycle is provided to supply the energy necessary to superchill the compressor inlet air.

3,796,046

PROCESS FOR DETOXICATING EXHAUST GASES FROM OTTO-COMBUSTION ENGINES AND APPARATUS FOR CARRYING OUT SUCH PROCESS

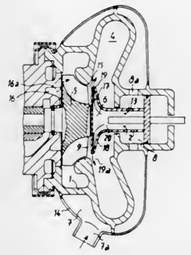
Hans Joachim Klaue, and Josef Reisacher, both of Frankenthal, Germany, assignors to Aktiengesellschaft Kuhnle, Kapp & Kausch, Frankenthal, Germany

Filed Apr. 30, 1971, Ser. No. 139,157

Claims priority, application Germany, May 2, 1970, 2021663; July 8, 1970, 2033794; July 8, 1970, 2033795

Int. Cl. F02b *37/04*

U.S. Cl. 60—619 **3 Claims**



Exhaust gases emanating from an internal combustion engine, such as an Otto-cycle engine, have a swirl imparted thereto by a twist generator to expand the exhaust gases and to reduce the pressure thereof. Air is aspirated into the expanded exhaust gases for admixture therewith to provide a combustible gas-air mixture which is delivered to a diffusor for afterburning of the toxic ingredients of the exhaust gases with an increase in pressure of the products of combustion. The exhaust gases flowing to the twist generator pass through a heat exchanger serving to preheat the combustion air. The twist generator may be a set of stationary whirl-imparting vanes, or may be the rotor of an exhaust gas turbo charger directly driving an air compressor which delivers the air through the heat exchanger to the turbo charger, with some of the compressed air being delivered back to the engine. The flow area of the outlet of the twist generator is adjustable to adjust the quantity of air aspirated into the exhaust gases supplied to the diffusor.

3,796,047

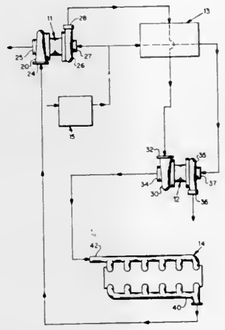
ENGINE SUPERCHARGING AIR COOLING SYSTEM

James E. Crook, Speedway; John F. Cutler, Jr., and Jai K. Khanna, both of Indianapolis, all of Ind., assignors to Wallace-Murray Corporation, New York, N.Y.

Filed July 5, 1972, Ser. No. 269,062

Int. Cl. F02b *37/04*

U.S. Cl. 60—612 **6 Claims**



Disclosed is a method and system utilizing two turbochargers (gas driven compressor) for providing compressed air at relatively cool ambient temperature to an internal combustion engine. Interposed between the two turbochargers is an air-to-air intercooler. The first turbocharger is driven by the exhaust gases from the engine to provide compressed heated fresh air to the turbine side of the second turbocharger. The intercooler acts to lower the temperature prior to entrance into the second turbocharger and the remaining heat loss occurs by turbine expansion of this air across the turbine wheel, thus providing cool fresh compressed intake air into the engine. Cooling air for the intercooler is provided by the compressor or fan portion of the second turbocharger combination through the suction of the intake air to that compressor being placed across the intercooler.

3,796,048

TURBOCHARGED INTERNAL COMBUSTION ENGINE WITH RESONANCE INDUCTION PIPE SYSTEM

Imre Annus; Gyula Cser; Sandor Florian; Gyorgy Horvath, and Ferenc Kocsis, all of Budapest, Hungary, assignors to Autoipari Kutato Intezet, Budapest and Csepel Autogyar, Szigethalom, both of, Hungary; part interest to each

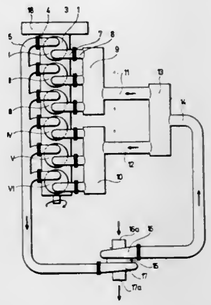
Filed Sept. 27, 1972, Ser. No. 292,532

Claims priority, application Austria, Sept. 28, 1971, 8374/71

Int. Cl. F02b *37/04*

U.S. Cl. 60—598 **4 Claims**

The invention concerns a supercharged internal combustion multi-cylinder engine, an exhaust-turbo supercharger driven by exhaust gases from the cylinders which are divided into groups so that the suction strokes of the cylinders within a given group do not overlap, and a resonance induction pipe system connecting the inlet means in each cylinder to the delivery side of the supercharger so as to create conditions of



dynamic charging in the induction pipe system to supplement the action of the supercharger.

3,796,049

EXHAUST GAS RECIRCULATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

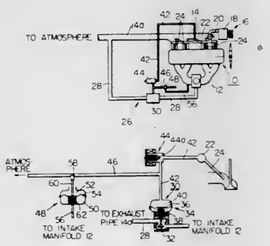
Yoshimasa Hayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Dec. 26, 1972, Ser. No. 318,404

Claims priority, application Japan, Dec. 25, 1971, 46-3837

Int. Cl. F01n *3/00;* **F02m** *25/06*

U.S. Cl. 60—278 **7 Claims**



An exhaust gas recirculation system for an internal combustion engine and adapted for recirculating a portion of engine exhaust gases from the exhaust manifold to the intake manifold to reduce the quantity of nitrogen oxides contained in the finally discharged exhaust gases. The exhaust gas recirculation system has an exhaust gas recirculation conduit communicating at its one end with the exhaust manifold and at the other end with the intake manifold, and a flow control valve disposed in the exhaust gas recirculation conduit to control the rate or amount of exhaust recirculation. The flow control valve is responsive to the pressure of secondary air of a secondary air supplying device incorporated in the engine, the pressure of secondary air being controlled in dependence on the variations in intake manifold vacuum.

3,796,050

HIGH ENERGY RATE ACTUATOR

Allan T. Fisk, Newton Center, and Andrew C. Harvey, Waltham, both of Mass., assignors to Foster-Miller Associates, Waltham, Mass.

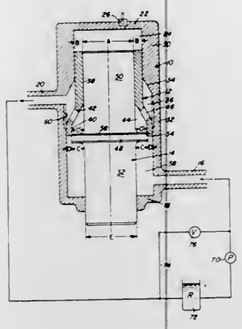
Filed May 18, 1972, Ser. No. 254,482

Int. Cl. B30b *1/30*

U.S. Cl. 60—371 **15 Claims**

An hydraulic actuator including a cylinder, a sleeve slidable in the cylinder, and a piston slidable in the sleeve with an im-

pacting end extending out of the cylinder. A first chamber formed in the cylinder surrounds the impact end of the piston, and energy storage means is provided in the housing at the other end, which energy storage means is in communication with the sleeve and piston. A collar is carried on the piston having one face exposed to the pressure on the first chamber and having a second opposed face which in part defines a second chamber. Means are connected to the first chamber



for increasing the pressure therein to retract the sleeve and piston in unison so as to develop stored energy in the energy storage means, and means are provided for equalizing the pressures on opposite faces of the collar as the piston and sleeve retract to release the stored energy to drive the piston in a power stroke in the direction of the impacting end and also causing the stored energy to drive the sleeve in the same direction. The second chamber is constantly open to the atmosphere.

3,796,051

WATER TURBINE CONTROL MEANS

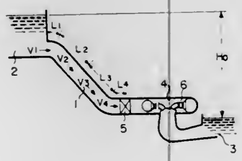
Takao Kuwabara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 21, 1972, Ser. No. 291,024

Claims priority, application Japan, Sept. 23, 1971, 46-74384

Int. Cl. F16h *41/04*

U.S. Cl. 60—398 **3 Claims**



In a control means of a water turbine generator, it has been known that the inertia effect of water in a water conduit for directing water to the turbine has an adverse effect on the controllability of the water turbine. In this view, said control means is combined with means for imitating the inertia effect to compensate the inertia of the water in the conduit, so that the controllability of the water turbine is improved.

3,796,052

HYDRAULIC TRANSMISSION SYSTEM

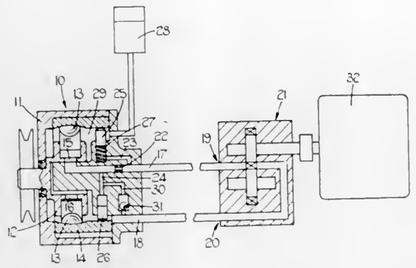
Frank George Freeman, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 10, 1972, Ser. No. 270,283

Claims priority, application Great Britain, July 9, 1971, 32260/71

Int. Cl. F16h *39/46*

U.S. Cl. 60—450 **5 Claims**



An hydraulic transmission system comprises a pump **10** with a housing **11**, a rotor **12** therein and a plurality of radial pistons **13** in the rotor. A ring **14** surrounds the rotor and causes the pistons **13** to reciprocate in use. A servo device **25,26** for displacing the ring is fed by a pressure signal derived by a flow restrictor, through which liquid returning to the pump from an associated motor **21** passes. The speed of the motor is controlled automatically by variation of the eccentricity of the ring **14**.

3,796,053

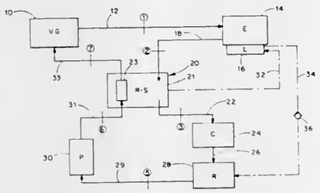
LUBRICANT SEPARATION SYSTEM

William Peter Teagan, Billerica, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Feb. 28, 1972, Ser. No. 229,886

Int. Cl. F01k *25/06*

U.S. Cl. 60—36 **15 Claims**



A vapor engine includes an expander, a lubricant storage zone, and a combination regenerative heat exchanger and lubricant separator. The combination device receives a mixture of lubricant and vaporized working fluid from the expander; the vaporized working fluid passes through the combination device to a condenser and the lubricant is separated from the working fluid and directed back to the lubricant storage zone. The lubricant storage zone is vented to a locus in the engine at a lower pressure than the pressure in the combination device to insure that the lubricant storage zone pressure will not exceed the pressure in the combination device.

3,796,054

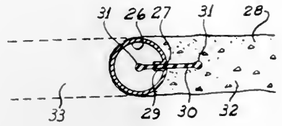
METHOD FOR THE CONSTRUCTION OF IMPERMEABLE WALLS

Ugo Piccagli, 4511 Harry's Ln., Dallas, Tex.

Filed Dec. 24, 1971, Ser. No. 207,916

Int. Cl. E02d *5/20, 27/00*

U.S. Cl. 61—35 **6 Claims**



A method is disclosed for the construction of an impermeable concrete wall in the ground, the wall constitutes a series of vertical concrete panels cast in individual consecutive slots, made in such a way that each slot intersects the cross-section of the adjacent previously formed vertical panel. A first series of slots are first excavated and at the same time the soil is removed from these slots and it is replaced with a thixotropic fluid after the slot has been excavated. A vertical flexible membrane is inserted in at least one end of the slot, the concrete is then poured into the slot leaving half the vertical membrane within the concrete panel. The spaces between the slots are then excavated and the second series of concrete panels poured surrounding the exposed half of the flexible membrane. Thus between each concrete panel there is a flexible membrane to stop water leaking through the wall.

3,796,055

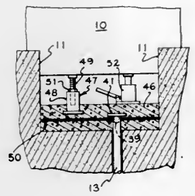
METHOD AND APPARATUS FOR UNDERPINNING AND RAISING A BUILDING FOUNDATION

Robert D. Mahony, 806 Tamarack Ave., San Carlos, Calif.

Filed May 19, 1972, Ser. No. 255,145

Int. Cl. E02d *17/02, 3/08*

U.S. Cl. 61—51 **8 Claims**



A method and apparatus for carrying out the underpinning and raising of portions of a building foundation uses the steps of forming a pit alongside the foundation portion to be raised, disposing an elongate pipe upright in the pit, gripping the side of the pipe while progressively extending hydraulic drive means against the reactive force of the weight of the foundation portion so as to urge the pipe into the ground. The last step is repeated until the pipe has been driven to a desired depth and then a jacking pad is formed and supported upon the upper end of the pipe. Subsequently after the pad hardens, the foundation portion is jacked upwardly away from the pad to a predetermined position. Jacks at each of a number of stations are operated simultaneously whereby the foundation portion acts as a beam in lifting both the foundation and the building thereon.

3,796,056

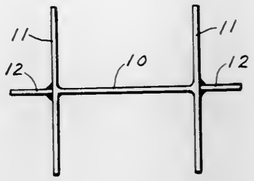
H-PILE COMBINATION WITH PROJECTING PLATE MEANS

John J. Dougherty, Cedar Grove, N.J., assignor to APF Corporation, Clifton, N.J.

Filed Apr. 18, 1972, Ser. No. 245,248

Int. Cl. E02d *5/22*

U.S. Cl. 61—53 **4 Claims**



An H-pile is disclosed having plate means welded to surfaces of the pile providing outwardly projecting plates for increasing the surface in contact with the soil thereby increasing the resistance offered by the pile to upward pressures. In addition the pile is stiffened thereby and driving of the pile is more stable with less likelihood of the pile deviating from a vertical position or being bent in driving. The outwardly extending plates may be provided by various structural forms.

3,796,057

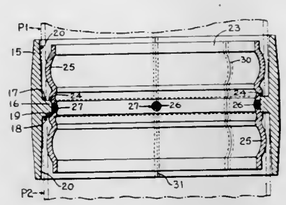
PILE SPLICER WITH RETAINING MEANS

John J. Dougherty, Cedar Grove, N.J., assignor to APF Corporation, Clifton, N.J.

Filed May 15, 1972, Ser. No. 253,229

Int. Cl. F16l *21/00, 27/10;* **E02d** *5/22*

U.S. Cl. 61—53 **16 Claims**



A pile splicer or coupling is disclosed by which the ends of two piles are spliced together for further driving into the earth and to align the ends of two piles. A double ended splicer includes an outer sleeve having an inwardly directed ledge between its ends. An inner retaining means for the end of each pile is carried by or secured to the ledge and is spaced from the outer sleeve so as to receive the end of the pile therebetween. The end of each pile engages opposite shoulders of the ledge. Each retaining means has a bulge extending outwardly therefrom and located between the ledge and the end of this means to frictionally engage the inner surface of the pile and more securely retain the end of the pile within the splicer. The inner surface of the outer sleeve tapers inwardly so as to freely guide the pile into the splicer. This taper also preferably is a little smaller at the inner end of the taper than the diameter of the pile so that the end of the pile is compressed to add its grip to the splicer as well as to contract the end of the pile somewhat. The retaining means may be a sleeve which also may be slotted for greater flexibility. A single ended splicer to frictionally receive the end of one pile has a shorter outer sleeve and a single inner retaining means.

3,796,058

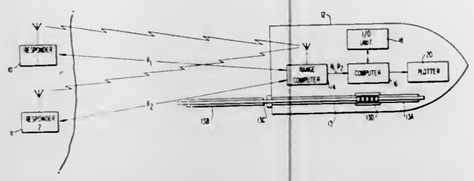
METHOD AND APPARATUS FOR WORKING WITH OFFSHORE PIPELINES

Jerry J. Jones, and Joe C. Lochridge, both of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Mar. 9, 1973, Ser. No. 339,964. The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed

Int. Cl. F161 *1/00*; B63h *25/42*

U.S. Cl. 61—72.3 6 Claims



A technique and apparatus for laying offshore pipelines wherein the manipulating of a pipeline is controlled in response to visually observed relationships between a preplotted pipeline route and the plotted actual position of a pipeline lay barge.

3,796,059

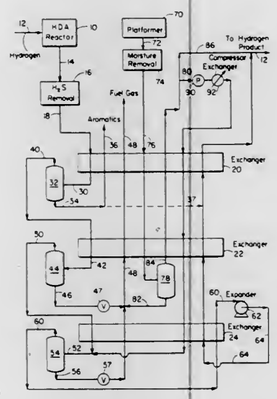
CRYOGENIC PURIFICATION OF HYDRODEALKYLATION AND REFINERY HYDROGEN OFF-GAS STREAMS

Gregory C. Banikiotes, Seaford, N.Y.; Joseph Meisler, Teaneck, N.J., and Edward H. Van Baush, Pearl River, N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed May 17, 1972, Ser. No. 253,988

Int. Cl. F25j *3/00*, *3/06*

U.S. Cl. 62—23 1 Claim



The hydrodealkylation of toluene to benzene involves the utilization of large quantities of relatively expensive hydrogen. Of the hydrogen consumed, part is obtained by the recovery of unused hydrogen from the reactor through purification and recycling, while the remainder is supplemented by make-up hydrogen recovered from refinery off-gas streams. An integrated cryogenic process handles the dual purification of these two separate hydrogen streams to recover a single high purity hydrogen product and the valuable by-product components contained in said streams while maintaining optimum energy consumption.

3,796,060

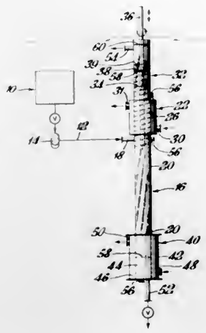
PROCESS FOR PURIFICATION BY CRYSTALLIZATION

Charles Guthrie Moyers, Jr., Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,526

Int. Cl. B01d *9/04*

U.S. Cl. 62—58 3 Claims



A process and apparatus are disclosed for the purification of multi-component liquid feed material having a crystallizable component employing a centrally-fed purification column substantially free of internal obstructions, a freezing chamber in communication with one end of the purification column, a melting chamber in communication with the other end of the purification column, and displacement means in the freezing chamber for passing frozen crystallizable component from the freezing chamber to the purification chamber and melting chamber.

3,796,061

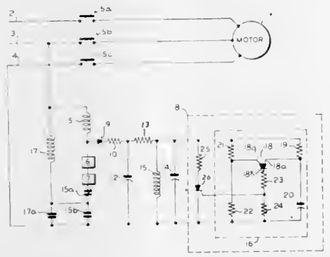
PROTECTIVE DEVICE FOR REFRIGERATION COMPRESSORS

Steven P. Weihl, Logansport, Ind., assignor to Essex International, Inc., Ft. Wayne, Ind.

Filed Dec. 15, 1972, Ser. No. 315,341

Int. Cl. G05d *23/32*

U.S. Cl. 62—158 6 Claims



A protective device for protection of a refrigeration compressor from burnout caused by short cycling. A time delay means is provided which prevents the compressor motor from being started again until a predetermined time interval has elapsed after the system thermostat has opened. If a power failure should occur, the compressor motor is prevented from being started until a predetermined time interval has elapsed after power resumption to the refrigeration system.

3,796,062

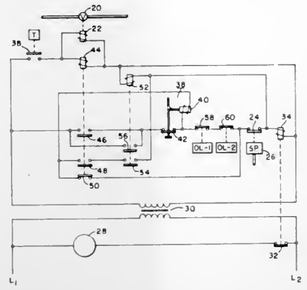
DUAL FUNCTION LOW PRESSURE CUTOUT FOR REFRIGERATION SYSTEM

Robert S. Stewart, Staunton, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 26, 1973, Ser. No. 345,158

Int. Cl. F25b *41/00*

U.S. Cl. 62—203 6 Claims



A single low pressure cutout is provided in a control arrangement to provide normal low pressure protection during a cooling demand, and to shutdown the compressor after a pumpdown operation. The arrangement includes a lockout circuit and switch means which function to switch the low pressure cutout into the lockout circuit for normal low pressure protection, and out of it for the pumpdown operation.

3,796,063

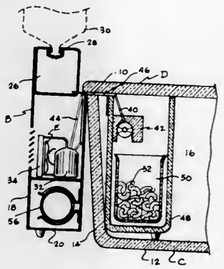
ICE CUBE MAKING DEVICE

William L. Wulke, 1313 N. Thornburg, and Reinhart J. Rabska, 917 Haslam Dr., both of Santa Maria, Calif.

Filed Apr. 6, 1972, Ser. No. 241,732

Int. Cl. F25c *1/04*

U.S. Cl. 62—340 1 Claim



A portable, lightweight, power-driven ice cube making device that is particularly adapted for being operatively associated with an insulated chest for cooling the interior thereof, as well as being mounted within the confines of a wall or closet to supply ice cubes to a movable container to which a user has access.

3,796,064

SUCTION ACCUMULATOR

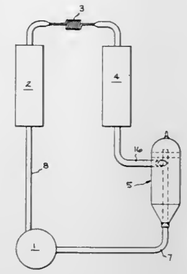
William T. Ladusaw, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 20, 1972, Ser. No. 307,857

Int. Cl. F25b *43/00*

U.S. Cl. 62—503 3 Claims

A suction accumulator for a refrigeration system comprising a cylindrical casing having a trangential inlet opening in the upper portion thereof and a suction conduit extending upwardly through the bottom wall of the casing and terminating in an upper end adjacent the top of the casing above the tangential inlet. The accumulator includes a baffle between the inlet opening and the upper end of the conduit, this otherwise imperforate baffle including a passage for receiving the conduit. The passage has a larger cross-sectional area than the conduit and includes a plurality of spaced radially extending tabs or arms resiliently engaging the conduit to position the conduit centrally of the passage and provide flow of refrigerant through the spaces between the tabs or arms.



3,796,065

STONE WITH EMERALD CUT CROWN AND MODIFIED BRILLIANT CUT BASE

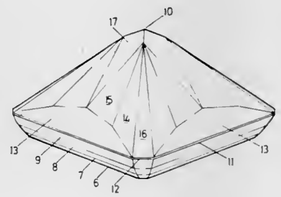
Basil Watermeyer, Johannesburg, South Africa, assignor to Jooste's Diamond Cutting Works (Proprietary) Limited, Johannesburg, South Africa

Filed Nov. 15, 1971, Ser. No. 198,615

Claims priority, application South Africa, Feb. 1, 1970, 70/8135

Int. Cl. A44c *17/00*

U.S. Cl. 63—32 5 Claims

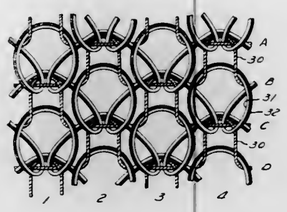


A diamond is cut to emerald shape with the conventional crown breaks and girdle. The base of the diamond is formed to pyramidal shape, the pyramid forming about 41° with the girdle plane. Adjacent the girdle base breaks are made at between 52° and 65° to the girdle plane. Between these breaks and the collet pairs of halves are formed with the result that the base breaks acquire a half-moon shape or become lunulae. At the short sides of the emerald cut shape point corners are cut to extend to the apices of the halves. The crux of the matter resides in the base breaks that become lunulae.

3,796,066
METHOD OF MAKING A RUN RESISTANT STOCKING TAB

John J. Millar, Laconia, N.H., assignor to Scott & Williams, Inc., Laconia, N.H.

Division of Ser. No. 13,700, Feb. 24, 1970, Pat. No. 3,611,755, which is a continuation-in-part of Ser. No. 765,821, Oct. 8, 1968, abandoned. This application June 3, 1971, Ser. No. 149,451
Int. Cl. D04b *9/54, 9/56*
U.S. Cl. 66—95 2 Claims

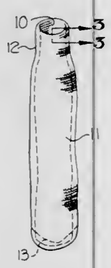


Fine-gauge, circularly knit seamless stocking has a tab portion of fabric formed after a transfer operation and which represents a terminal portion of knitting. Raveling or runs in the tab portion are prevented by having courses in the tab including a polyamide yarn having a much lower melting point than the yarn used in the remainder of the stocking and which fuses or becomes tacky at boarding temperature so that the fusing takes place during this stage of processing.

3,796,067
TWO-PLY TERRY SOCK AND METHOD OF FORMING SAME

Raymond B. East, Englewood, Tenn., assignor to Crescent Hosiery Mills, Niota, Tenn.

Filed Mar. 5, 1973, Ser. No. 338,396
Int. Cl. D04b *11/00*
U.S. Cl. 66—178 6 Claims

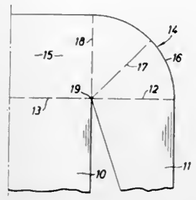


The leg and foot of this sock has a two-ply construction with terry loops extending inwardly on the inner ply and terry loops extending outwardly on the outer ply so that both the outer and inner faces of the sock have terry loops thereon. The sock is formed by knitting a substantially straight seamless tube while forming terry loops throughout the inside of the tube. One half of the tube is drawn over the other half to form a two-ply tube which is joined along a fold line at the upper end and the free ends at the other end are aligned and joined together to form the toe of the sock.

3,796,068
KNITTING METHOD

Max William Betts, Coventry, and Frank Robinson, Borrowash, both of England, assignors to Courtaulds Limited, London, England

Filed Apr. 8, 1971, Ser. No. 132,586
Int. Cl. A41b *9/06*
U.S. Cl. 66—176 10 Claims

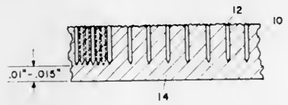


A method of knitting a sleeved garment in which sleeve tubes and a body tube are knitted and joined to one another on the knitting machine, said joining being brought about by means of sleeve extensions knitted integrally with the sleeve and during the knitting of which needles are taken out of action whilst still holding their loops and are subsequently reintroduced to cause portions of wales of the sleeve extensions to lie at an angle to other portions of those extensions.

3,796,069
LEATHER AND METHOD OF MAKING IT

Lowell E. Statler, Bellevue, Ohio, assignor to Frank F. Kovacs, Mayfield Village and Edwin W. Oldham, Akron, both of, Ohio, part interest to each

Filed Jan. 21, 1972, Ser. No. 219,792
Int. Cl. C14b *1/44*
U.S. Cl. 69—21 7 Claims



A leather wherein the suede surface is formed by a large number of closely adjacent, needle-like penetrations extending into the leather from one or both surfaces and breaking the leather fibers and cells, the penetrations being of a depth to leave an unpenetrated leather layer of less thickness than that penetrated.

A method of making suede leather by forming a plurality of rows of needle-like penetrations into at least one surface of the leather, and penetrating the forming of the penetrations after relative movement of the leather until the entire surface of the leather is roughened to suede-like appearance by closely adjacent penetrations.

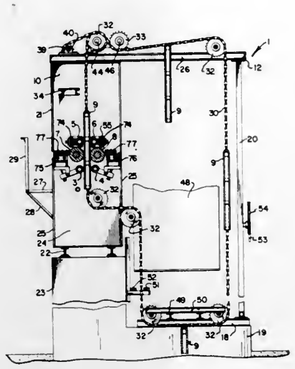
3,796,070
APPARATUS FOR REMOVING FLESH FROM ANIMAL HIDES

Lee R. Lyon, Lee's Summit, Mo., assignor to M. Lyon & Co., Kansas City, Mo.

Filed Jan. 29, 1973, Ser. No. 327,410
Int. Cl. C14b *17/00*
U.S. Cl. 69—44 4 Claims

An apparatus for removing flesh from animal hides during processing thereof for producing leather therefrom and comprising a pair of rotatably mounted spreading rollers spaced along and centered on a defined path through a supporting frame and a pair of rotatably mounted fleshing cylinders

spaced along the defined path between said pair of spreading rollers and a pair of restraining rollers and centered on the defined path and adapted to remove flesh from an exposed side of an animal hide supported on one of a plurality of planar members moved along the defined path. Each of opposed end portions of the supporting frame has a pair of arms centered

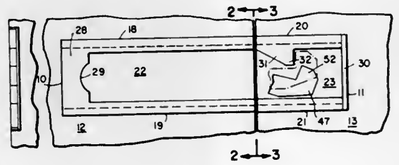


on the defined path and each with one end thereof pivotally mounted thereon and respective extensible members pivotally connected to an other end of each of the arms for selectively moving the arms which are operative to move the pair of fleshing cylinders toward and away from the defined path and the animal hide on the respective planar member moving along the defined path.

3,796,071
SLIDABLY REMOVABLE PADLOCK ASSEMBLY

Alois Crepinsek, San Jose, Calif., assignor to Security Technology Corporation, San Jose, Calif.

Filed Sept. 5, 1972, Ser. No. 286,029
Int. Cl. E05b *63/12, 65/06, 67/36*
U.S. Cl. 70—32 2 Claims

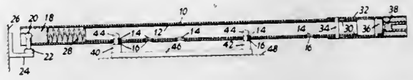


A padlock assembly is disclosed which includes a padlock which can be slidably mounted on tracks of mating base plates mounted on a door and door jamb, respectively. The padlock has a latch which is adapted to engage a latch-retaining member mounted on the base plate of the door jamb and be locked in position. The latch and latch-retaining member are entirely enclosed by the body of the padlock when the padlock is mounted in position on both base plates, thereby eliminating conventional hasps, shackles, loops, etc. The padlock can be quickly and easily removed from the base plates.

3,796,072
WINDOW STAY ASSEMBLY

Wilfred Gwyn Weeks, Bristol, England, assignor to Malcolm A. Taylor, Bristol, England, a part interest

Filed Apr. 4, 1972, Ser. No. 241,047
Claims priority, application Great Britain, Apr. 7, 1971, 8979/71; July 1, 1971, 30881/71; Mar. 6, 1972, 10411/72
Int. Cl. E05c *17/12*
U.S. Cl. 70—89 12 Claims

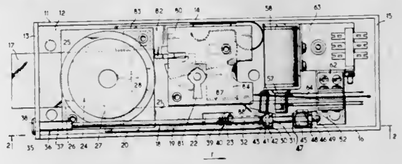


Safety locking stay assemblies for windows and the like are disclosed comprising two tubular members, one within the other each having a plurality of apertures. When an aperture in each tubular member are aligned a locking pin with an enlarged head may be inserted, movement of the tubular movement so as to move the apertures out of alignment trapping the enlarged head of the pin.

3,796,073
LOCK DEVICE

Francois Guiraud, Chambourcy, France, assignor to Societe dite: Fichet-Bauche, Suresnes, France

Filed Apr. 20, 1972, Ser. No. 245,965
Claims priority, application France, June 28, 1971, 71.15142
Int. Cl. E05b *47/06, 41/00*
U.S. Cl. 70—134 6 Claims

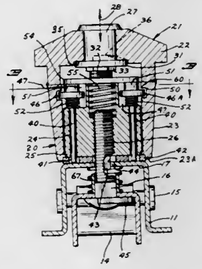


A lock device, particularly for a compartment of a strong room comprising a key operable bolt and a member for locking the bolt operated by an electromagnet. An actuator co-operates with the fillister of the compartment provided with the device. The actuator controls a series of electric switches arranged in a supply circuit for the electromagnet, whereby the condition of the switches represents the open and/or closed position of the door of the compartment.

3,796,074
LOCK FOR TRAILER HITCH COUPLER NUT

Albam M. Vik, New Brighton, Minn., assignor to Dempco, Inc., Minneapolis, Minn.

Filed Aug. 10, 1972, Ser. No. 279,648
Int. Cl. B60d *1/12*; F16b *41/00*
U.S. Cl. 70—231 9 Claims



A lock for a trailer hitch coupler nut which can be used on couplers for trailer hitches to prevent the theft of a trailer

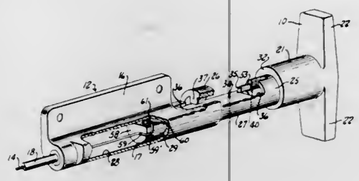
when the trailer is connected to a towing vehicle, or is disconnected from the towing vehicle. The coupler nut has lockable elements that when locked prevent the nut from being turned to loosen the coupler.

3,796,075

LOCKABLE HOOD LATCH RELEASE MECHANISM

Robert D. Grogan, Brookfield, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed June 19, 1972, Ser. No. 264,369
Int. Cl. B60r *25/00*; E05b *65/19*
U.S. Cl. 70—240 15 Claims



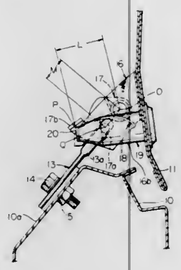
A hood latch release handle, for mounting in the interior of an automobile, is provided with a key controlled lock mechanism for locking the handle against latch releasing motion. A pull on the handle, when the lock mechanism is in an unlocked condition, effects release of the hood latch through a flexible cable which is attached to a stem on the handle in an exceptionally simple manner.

3,796,076

DEVICE FOR LOCKING A LID OF A LUGGAGE COMPARTMENT OF A MOTOR VEHICLE

Yoshiyuki Miyabayashi, and Kazuo Yamaha, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Mar. 1, 1973, Ser. No. 337,197
Claims priority, application Japan, June 20, 1972, 47-72101; Mar. 2, 1972, 47-25175
Int. Cl. E05b *65/19*
U.S. Cl. 70—240 7 Claims



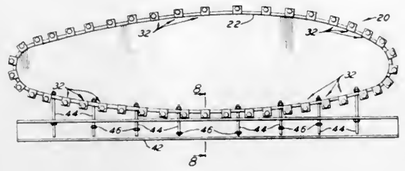
A locking device comprises a striker and a lock lever which is rotatably mounted on a shaft extending perpendicularly to the longitudinal direction of a motor vehicle. The shaft is carried by a base member secured to a lid, while the striker to a luggage compartment. The lock lever has a lug extending transversely therefrom and also has a hook. A distance between the lug and the shaft is longer than a distance between the hook and the shaft. A cam is provided in the device which is operated by a key through a lock. The cam lifts the lug when the key is turned to its "unlock" position to release the hook from the striker. The lug and the hook are arranged about the shaft at a acute angle.

3,796,077

METAL FORMING METHOD AND APPARATUS

Paul F. Swenson, Cleveland, Ohio, assignor to Great Lakes Sports Mfg. Co., Cleveland, Ohio

Division of Ser. No. 176,519, Aug. 31, 1971, Pat. No. 3,742,745. This application Jan. 29, 1973, Ser. No. 327,525
Int. Cl. B21d *24/12*
U.S. Cl. 72—57 4 Claims



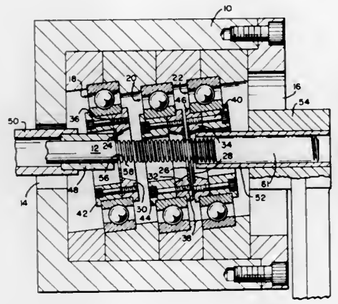
The specification and drawings disclose a method and apparatus for forming dish-shaped metal elements through the use of a combined fluid pressure and sheet tensioning process. The disclosed method is particularly intended for forming dish-shaped sheet metal elements having a length substantially greater than their width and includes applying a longitudinal tension to the sheet while permitting the lateral edges to move toward one another substantially unconstrained while the fluid pressure acts to bow the sheet. The disclosed apparatus includes a flexible frame of generally eliptical shape which clamps to the edge of the sheet. The frame is arranged so that as the sheet bows outwardly, the lateral sides of the frame are pulled inwardly driving the ends of the frame apart.

3,796,078

APPARATUS FOR MAKING SPIRAL CORRUGATIONS

John L. Vaill, Cheshire, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Oct. 30, 1972, Ser. No. 302,481
Int. Cl. B21b *13/20*
U.S. Cl. 72—77 3 Claims



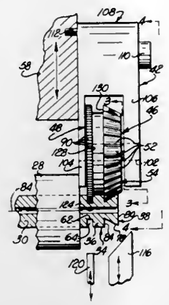
Three tilted indenting members are used to form spiral corrugations in thin-walled metal tubes. The first indenting member starts the formation of the ridges and grooves. The second and third indenting members compress or pinch the previously formed ridges, resulting in a final corrugated tube having an outside diameter greater than the outside diameter of the tube originally fed into the corrugating machine.

3,796,079

METHOD AND APPARATUS FOR MAKING A FASTENER

John F. Wedler, Pepper Pike, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Filed Aug. 2, 1972, Ser. No. 277,388
Int. Cl. B21h *7/00*
U.S. Cl. 72—70 27 Claims



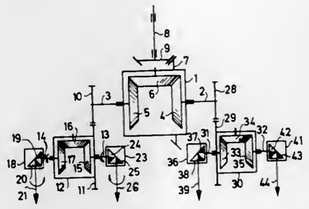
An improved method and tool are utilized to form flat side surfaces on the outwardly flaring shank of an insert as it is rotated by the chuck of a screw machine. The insert is made by forming a blank having a cylindrical head and a frustro-conical shank which extends from one end of the head. The flat side surfaces are formed on the frustro-conical shank by the improved tool which has a form roller which is rotated by a drive roller. The drive roller has teeth or serrations which are pressed against the rotating insert to provide a positive driving action from the insert to the drive and form rollers. The form roller has a plurality of arcuate segments arranged in an annular array about its surface. These arcuate segments are shaped so as to form the flat surfaces on the rotating shank as the form roller is rotated by the drive roller and pressed against the shank.

3,796,080

COMBINED STRETCH-TYPE STRAIGHTENING APPARATUS FOR METAL STRIPS

Curt Munchbach, Pforzheim-Sonnenberg, Germany, assignor to Irma Ungerer, Pforzheim-Brotzingen, Germany

Filed May 15, 1972, Ser. No. 253,263
Claims priority, application Germany, May 13, 1971, 2123655
Int. Cl. B21b *39/08*; B21d *1/04*
U.S. Cl. 72—160 5 Claims



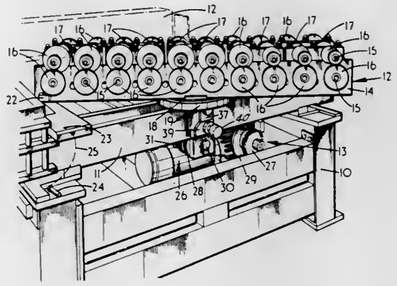
In a stretch-type straightening apparatus for a metal strip of indefinite length running therethrough, between a hold-back roll assembly and a drawing roll assembly there is disposed a bending machine having a plurality of power-driven rolls about which the running strip is trained in an S-shaped path. Each roll pair of the bending machine is driven by a differential gearing while every two said differential gearings are driven by a main differential gearing, the input shaft of which is rotated by a motor means. In this manner the rpm of the successive rolls in the bending machine adjusts itself in accordance with the strip elongation from roll to roll, in order to ensure a slippage-free engagement between any of the rolls in the bending machine and said running strip.

3,796,081

ROLL-FORMING MACHINES

Alan Stanley Boardman, Ramsbottom, England, assignor to The Oliver Machinery Company Limited, Manchester, England

Filed July 6, 1972, Ser. No. 269,365
Claims priority, application Great Britain, July 7, 1971, 31812/71
Int. Cl. B21d *5/08*
U.S. Cl. 72—181 8 Claims



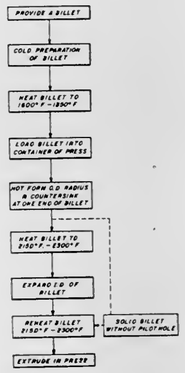
A roll-forming machine comprising a roll-forming head including shafts or spindles for mounting two series of rolls, the head being adjustable so that the shafts or spindles can be arranged to permit either series of rolls to be brought into an operable position.

3,796,082

METHOD FOR HOT FORMING OF BILLETS INTO SLUGS FOR AN EXTRUSION PRESS

Chester M. Honsinger, Daytona Beach, Fla.; William A. Engelke; Richard C. Rosenfield, both of Troy, N.Y., and Francis L. Muscatell, Londonville, N.Y., assignors to Allegheny Ludlum Industries Inc., Pittsburgh, Pa.

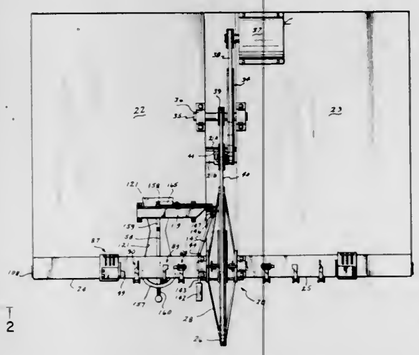
Filed Oct. 2, 1972, Ser. No. 294,132
Int. Cl. B21c *29/00*
U.S. Cl. 72—256 9 Claims



The method of processing a ferrous or non-ferrous metal billet to form an extrusion slug is characterized by heating a suitably selected billet to a temperature within the range of 1,600° and 1,850° F. The billet is then loaded into a preheated

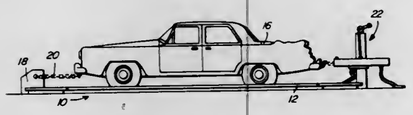
container of a press. In one embodiment of the invention, a push block is positioned at one end of the container; while the other end of the container is enclosed by a die supported in the press. The billet is then pressed against the die to form at one end of the billet an outside diameter radius or chamfer and a lead-in countersink to an axially extending pilot hole previously drilled in the billet. The billet is then further processed by reheating and expanding the axially extending pilot hole to a desired diameter during which the lead-in countersink provides a reservoir for a vitreous or the like lubricant. The resulting slug is then again reheated to an extrusion temperature and loaded into an extrusion press with the previously formed outside diameter radius adjacent the extrusion press die.

3,796,083
METAL STRAP TWISTING MACHINE
James R. Dawson, 8621 N. New Braunfel, San Antonio, Tex.
Filed Apr. 11, 1972, Ser. No. 243,002
Int. Cl. B21d *11/14*
U.S. Cl. 72—299 **7 Claims**



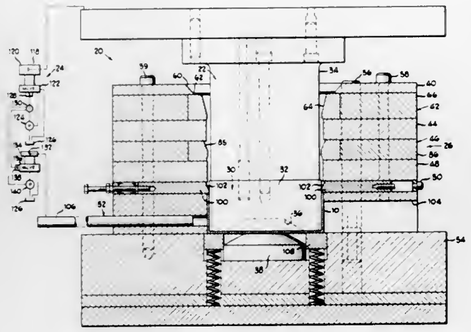
A metal strap twisting machine comprising first and second longitudinally aligned carrier members, a transversely extending wheel intermediate said carrier members, a strap holder detachably secured in said wheel, an end holder mounted on each of said carrier members and adapted to secure a selected portion of said strap, a plurality of members mounted on each of said carrier members adapted to position said end holder and said strap, means to automatically stop said wheel after a predetermined number of revolutions, and means to vary the twisting force applied by said wheel to said strap.

3,796,084
VEHICLE STRAIGHTENING DEVICE
Davis R. Jarman, 1619 Norwich St., Brunswick, Ga.
Filed May 24, 1972, Ser. No. 256,560
Int. Cl. B21d *1/12*
U.S. Cl. 72—447 **16 Claims**



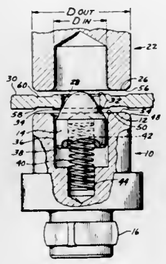
A vehicle straightening device comprising a pull tower including a stationary support column, a horizontal pull frame reciprocally mounted to the support column for movement relative thereto between extended and retracted positions, movable locking means associated with the pull frame for grasping and pulling a chain or the like during retraction of the frame, and stationary locking means for grasping the chain and maintaining tension thereon during return of the pull frame to its extended position.

3,796,085
METHOD FOR MAKING SPROCKETS AND/OR GEARS
Harold R. Fisher, 110 Warwick Pl., Ithaca, N.Y.; Thomas H. McGough, 404 Elm St., Groton, N.Y., and Charles M. Borden, RD. No. 1, Trumansburg, N.Y.
Division of Ser. No. 157,903, June 29, 1971. This application Oct. 24, 1972, Ser. No. 299,988
Int. Cl. B21d *22/00*
U.S. Cl. 72—348 **3 Claims**



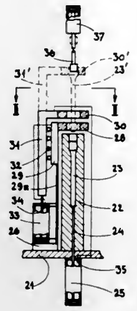
Sheet metal sprockets and/or gears are manufactured by cold metal working comprising die drawing a disc into a cup-shaped member while simultaneously forming the sprocket teeth thereon. Specially constructed apparatus is used to so cold form the sprocket.

3,796,086
RING PAD STRESS COINING
Austin Phillips, Santa Monica, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Aug. 2, 1972, Ser. No. 277,359
Int. Cl. B21d *31/00*
U.S. Cl. 72—377 **6 Claims**



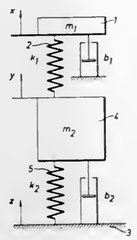
A method for improving the fatigue strength of a metallic structural member and the member having a discontinuity therein. A ring-shaped pad of material spaced about the aperture is cold-worked into a plastic state and then allowed to rebound into an elastic state thereby generating a region of residual compressive stress about the aperture which results in a member having improved fatigue strength.

3,796,087
APPARATUS FOR CONVEYING AN ELONGATED WORKPIECE
Rudolf Liebergeld, Gernotstrasse 51-55, Nurnberg, Germany
Division of Ser. No. 63,784, Aug. 14, 1970, Pat. No. 3,719,069. This application Dec. 19, 1972, Ser. No. 316,560
Claims priority, application Germany, Aug. 16, 1969, 1941835
Int. Cl. B21d *43/02*
U.S. Cl. 72—421 **2 Claims**



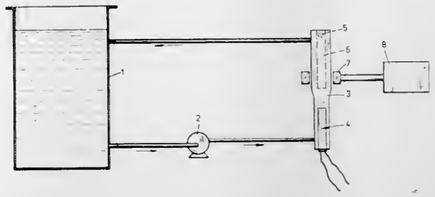
An apparatus for conveying an elongated workpiece into and out of a die of a press, said apparatus including an ejector slidable in the die, a workpiece gripper movable longitudinally and transversely with respect to the die and mounted in front of the die. The workpiece gripper is movable as a result of actuation by the ejector and a further workpiece gripper is provided. The further workpiece gripper is movable transversely of the die but is fixed against longitudinal movement relative to the die.

3,796,088
METHOD AND DEVICE FOR MEASURING THE VISCOSITY OF A LIQUID OR THE CONCENTRATION OF SOLID MATTER SUSPENDED IN A LIQUID
Berth Ulrik Gustafsson, Osterskar, and Erik Gunnar Attebo, Saffle, both of Sweden, assignors to Projectus Industriprodukter Aktiebolag, Stockholm, Sweden
Filed Mar. 29, 1972, Ser. No. 239,077
Claims priority, application Sweden, Dec. 1, 1971, 15413/71
Int. Cl. G01n *11/16*
U.S. Cl. 73—59 **37 Claims**



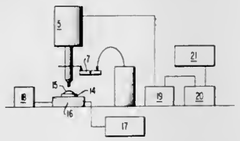
The viscosity of a liquid or the concentration of solid matter suspended in a liquid is measured by determining the damping of a vibrating measuring body introduced in the liquid or the suspension, the body vibrating at resonance frequency. In a first embodiment the body is vibrated with constant vibration amplitude and the energy supplied is measured. In a second embodiment the body is vibrated with constant energy supplied and the vibration amplitude is measured.

3,796,089
METHOD AND APPARATUS FOR MEASURING THE CONTENTS IN LOW BOILING COMPONENTS IN A LIQUID
Wilhelm Schuster; Hans-Joachim Hampel, and Jurgen Wittekind, all of Frankfurt, Germany, assignors to Ipsen Industries International Gesellschaft mit beschiankter Haftung, Kleve, Germany
Filed Oct. 25, 1972, Ser. No. 300,723
Int. Cl. G01n *9/00*
U.S. Cl. 73—61.1 R **5 Claims**



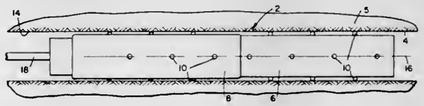
Method of and apparatus for measuring in a continuous manner the content in low boiling components present in a liquid, especially for ascertaining the water content in steel hardening oil by continuously heating sample quantities of the liquid above the boiling point of the low boiling components in said sample quantities, and by ascertaining the buoyancy of the liquid-steam-mixture formed by heating up the respective sample quantities.

3,796,090
DEVICE FOR MEASURING SWELLING OF MATERIAL
Yosuke Nakajima, and Katsuhiko Ohtani, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan
Filed July 14, 1971, Ser. No. 162,460
Claims priority, application Japan, July 14, 1970, 45-61573
Int. Cl. G01n *19/00*
U.S. Cl. 73—73 **4 Claims**



A cam operated cyclically shifted holder moves a weight toward and away from an underlying material to measure the degree of swelling of liquid absorbed by the material by means of a device which measures the pressure acting on the material due to the oscillating weight.

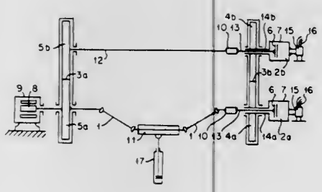
3,796,091
BOREHOLE STRESS-PROPERTY MEASURING SYSTEM
Shosei Serata, 14 Calvin Ct., Orinda, Calif.
Filed Oct. 2, 1972, Ser. No. 294,431
Int. Cl. G01b *7/24*
U.S. Cl. 73—88 E **12 Claims**



A stress-property measuring system for in situ determination of stress states and material properties of soil and rock

media into which the apparatus is disposed via a borehole. The apparatus used in carrying out the instant method comprises two axially-aligned cylindrical chambers. The first of said chambers is capable of exerting fluid pressure in a transaxial direction relative to the chamber and normal to the inner cylindrical surface of said borehole; the second of said chambers is completely unpressurized and pressure-insulated from said first chamber. Both chambers are fitted with a plurality of sets of diameter-measuring transducers for measuring changes in borehole diameter at a number of points in one diametrical direction along the borehole longitudinal cylindrical axis. Using this measuring device, stress state and material properties of surrounding ground medium may be determined as follows. Fluid pressure is introduced into said first pressurized chamber, and is varied through a gradient of ever-increasing pressures up to a predetermined pressure limit. These ever increasing pressurizations cause corresponding incremental changes in borehole diameters in various radial directions in both the pressurized and non-pressurized sections of said borehole, the magnitude of such changes being determined by the stress conditions and material properties of the surrounding medium. By measuring the diameter change indicated by said diameter-measuring transducers, sufficient and accurate data may be collected to enable computation of the various in situ stress states and material properties of the ground medium.

3,796,092
TORSION TEST STAND
Friedrich Klinger, Darmstadt-Arheilgen, and Jan Brezina, Ober-Ramstadt, both of Germany, assignors to Carl Schenck Maschinenfabrick GmbH, Darmstadt, Germany
Filed Nov. 26, 1971, Ser. No. 202,364
Claims priority, application Germany, Nov. 25, 1970, 2057872
Int. Cl. G01n *3/32*
U.S. Cl. 73—99 **11 Claims**

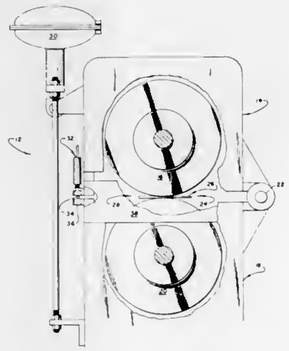


Torsion test stand for testing power-transmitting structural members such as axles, shafts or similar members, includes a test section including at least two spaced reversing transmissions, each having a pair of meshing gears, means for disposing a plurality of the structural members therebetween, at least one of the structural members being a test specimen to be tested, drive means for applying rotary motion to the reversing transmission and, accordingly to the structural members disposed therebetween, and torque transmission couplings corresponding in number to the number of the reversing transmissions for superimposing a torque on the rotary motion and stressing the test specimen against a gear of one of the reversing transmissions with a total torque by a torsion angle that is a function of the ratio of the elasticity of the test specimen of the test section to the elasticity of all of the plurality of structural members of the test section.

3,796,093
PHASE DISPLACEMENT MEASURING APPARATUS FOR MEASURING A CHARACTERISTIC OF A SYSTEM WHEN THE SYSTEM IS AT STANDSTILL
James R. Parkinson, R.D. No. 3, Vergennes, Vt.
Filed June 26, 1972, Ser. No. 266,479
Int. Cl. G01l *3/10*
U.S. Cl. 73—136 A **11 Claims**

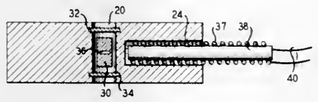
A phase displacement measuring apparatus for measuring a torque characteristic of a system capable of making measurements at all speeds (including when the system is at standstill), the apparatus deriving the signals having a phase relationship related to the torque characteristic from the relative movement between the system and a movable sensing means.

3,796,094
METHOD AND APPARATUS FOR CONTINUOUSLY DETECTING ABNORMAL CROSS-SECTIONAL AREAS IN RUNNING TOW
David E. Cook, and John W. Clapp, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 25, 1972, Ser. No. 292,068
Int. Cl. G01n *33/36*
U.S. Cl. 73—159 **5 Claims**



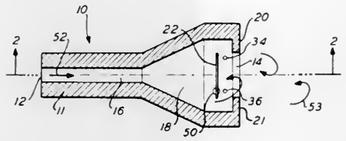
Method and apparatus by which a tow having hundreds of thousands of continuous length filaments may be continuously monitored for abnormal cross-sectional areas while the tow is being processed and wherein the tow is continuously and momentarily compressed and forced into a predetermined minimum cross-sectional area, as between two rolls and side plates at the ends of the rolls, substantially eliminating all voids; and then detecting as by an electronic displacement gage a predetermined threshold change in the minimum cross-sectional area, which change may be caused by abnormal cross-sectional areas occurring in the cabinet ends or creel ends constituting the tow and passing through and within the momentarily compressed tow minimum cross-sectional area, or by dropped or missing or added cabinet or creel ends.

3,796,095
BLUFF BODY FLOWMETER UTILIZING A MOVABLE MEMBER RESPONSIVE TO VORTEX SHEDDING
Theodore John Fussell, Jr., Bridgewater Township, Somerset County, N.J., assignor to Eastech, Inc., South Plainfield, N.J.
Filed Oct. 1, 1971, Ser. No. 185,746
Int. Cl. G01f *1/00;* **G01p** *5/00*
U.S. Cl. 73—194 B **24 Claims**



A bluff body flowmeter includes a bluff body having a base surface facing fluid flow, a pair of converging downstream surfaces, a pair of orifices proximate the downstream surfaces, means movable in response to vortex induced pressure changes in the orifices (e.g., a cylindrical shuttle body having an encapsulated ferromagnetic disc) and means responsive to the motion of the movable means for producing an electrical signal related to volumetric flowrate (e.g., a magnetic detector which detects perturbations produced by the disc in a magnetic field established near the movable means.)

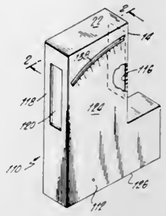
3,796,096
VORTEX FLOWMETER
Ulrich Sielaff, McFarland, and John W. Miller, Portage, both of Wis., assignors to Airco, Inc., New York, N.Y.
Filed July 6, 1972, Ser. No. 269,356
Int. Cl. G01f *1/00;* **G01p** *1/00*
U.S. Cl. 73—194 B **10 Claims**



A flowmeter for measuring fluid flow rates in an enclosed conduit. A symmetrical plate-like body is mounted in the conduit and is pivotable about a central axis. The body is positioned with a plane thereof normally transverse to the flow to be measured, the body being so dimensioned in relation to the conduit as to provide predetermined clearance between the conduit wall and each adjacent lateral edge of the plate. Fluid flowing about the lateral edges of the plate sheds vortices alternately from such edges at a rate related to the fluid flow velocity. Resulting unbalanced forces cause the body to oscillate between a pair of stops at a rate which is a function of the vortex shedding frequency and thus of the flow.

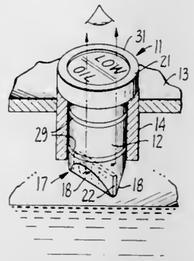
3,796,097
SPORTS SPEEDOMETER
Asa P. Ruskin, 865 West End Ave., New York, N.Y.
Filed June 27, 1972, Ser. No. 266,667
Int. Cl. G01f *1/06*
U.S. Cl. 73—228 **2 Claims**

An air-actuated speedometer for use in measuring the speed of a human body or vehicle comprising a housing having an opening for air intake and an opening for allowing air out of the housing. A plate is pivotally mounted in the housing and moves along an arc corresponding to an arcuate slot in the housing. Springs are provided for urging the plate to an initial position, the plate being initally spring held and counterbalanced to a zero speed position and movable by air passing through the housing to indicate the actual rate of speed. Frictionally engaging the housing and extending through the slot



and adapted to be engaged by the slot is a device for indicating the highest speed attained during a predetermined period.

3,796,098
LIQUID LEVEL GAUGE
Frank C. Trayer, 25690 LaLanne Ct., Los Altos Hills, Calif.
Filed Apr. 19, 1972, Ser. No. 245,373
Int. Cl. G01f *23/02*
U.S. Cl. 73—327 **5 Claims**

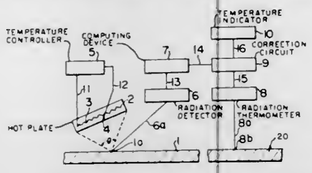


A combination visual liquid level warning gauge and filler plug for liquid filled tanks such as medium voltage switchgear and distribution equipment, having a cylindrical body of transparent material forming the plug which passes through the wall of the tank. The inner end of the cylinder is bevelled into two internally reflecting facets, which reflect a legend from both sides of a generally planar symbol-bearing area which bisects the angle between the facets within the transparent body. The refractive index of the transparent plug is selected to be close enough to that of the liquid in the tank that contact of the liquid with the facets will eliminate the internal reflection from the facets and render the legend invisible from the outer end of the plug. A socket is provided in the wall of the tank to receive the plug, and an expanded head on the plug seats against a collar on the socket to limit the plug movement into the tank. Mating apertures through the plug and collar permit insertion of a retaining pin, which then may be sealed against tampering by a lead seal.

3,796,099
METHOD FOR MEASURING THE SURFACE TEMPERATURE OF A METAL OBJECT
Teruo Shimotsuma, and Takeo Yamada, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 26, 1972, Ser. No. 318,691
Claims priority, application Japan, Dec. 27, 1971, 47/1258
Int. Cl. G01j *5/52, 5/24*
U.S. Cl. 73—355 EM **14 Claims**

An improved method for measuring the surface temperature of objects, such as metals on a color coated sheet iron line, by means of a radiation thermometer, wherein a radiation

source hot plate having a surface whose surface temperature is substantially constant and whose emissivity is nearly equal to unity is located opposite to an object to be measured and above that portion of the object to be measured. The temperature of the object portion below the hot plate is considerably lower than that of the portion of the object subject to direct



temperature measurement by the radiation thermometer. The emissivity of the metal surface is obtained from a measurement of the reflected radiation from the radiation source hot plate off of the surface of the object, and the value of emissivity of the surface is used to automatically correct the output of the radiation thermometer to provide more accurate temperature measurements.

3,796,100

ELEMENT HAVING BIMETAL PROPERTIES

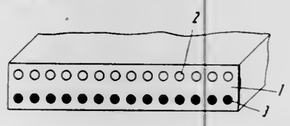
Friedrich Schneider, and Dieter Stockel, both of Pforzheim, Germany, assignors to G. Rau, Pforzheim, Germany

Filed June 26, 1972, Ser. No. 266,351

Claims priority, application Germany, July 20, 1971, 2136171

Int. Cl. G01k *5/62*

U.S. Cl. 73—363.5 **10 Claims**



The subject of this invention is an element having bimetal properties and made of a composite fiber material comprising a matrix material and at least one group of fibers embedded therein. The bimetal properties may be achieved by using a matrix material having a coefficient of thermal expansion differing from that of at least one group of embedded fibers. Alternatively, the coefficients of thermal expansion of at least two groups of embedded fibers may differ from each other to achieve such properties. Yet another possibility is to combine these two methods to achieve the desired bimetal properties.

3,796,101

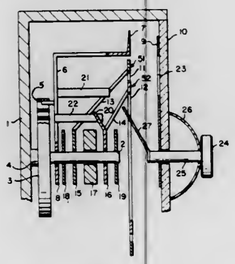
MAXIMUM AND MINIMUM THERMOMETER

Charlie Jerry Howard, Asheville, N.C., assignor to Sybron Corporation, Rochester, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,802

Int. Cl. G01d *4/04;* **G01k** *5/64*

U.S. Cl. 73—363.7 **6 Claims**



A maximum and minimum registering thermometer presents maximum and minimum readings as numbers on movable scales. The scales are on arcuate scale elements comprising nesting, spoked annular elements rotated through one-way and other-way couplings, by the thermometric pointer.

3,796,102

STARTING MECHANISMS FOR INTERNAL COMBUSTION ENGINES

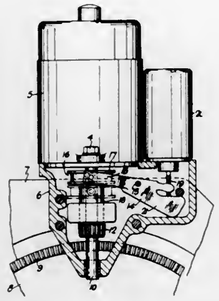
Alan Hawker Chamberlain, 95 Dow St., Port Melbourne, Australia

Filed Oct. 6, 1972, Ser. No. 295,783

Claims priority, application Australia, Oct. 7, 1971, 6557/71

Int. Cl. F02n *15/02*

U.S. Cl. 74—8 **3 Claims**



In combination with an internal combustion engine, an electric starter motor is mounted with the axis of the starter motor substantially radial to the crankshaft of the engine and having the slidable pinion of the starter motor counter-balanced to resist gravity induced movement of the pinion in a direction to mesh with the gear mounted on the crankshaft.

3,796,103

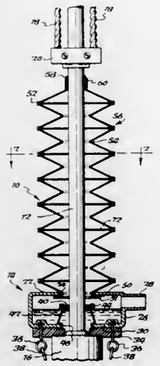
POLISHED ROD PROTECTOR

Mason C. Winfield, Jr., Orchard Park, N.Y., assignor to Rodgard Manufacturing Co., Inc., Orchard Park, N.Y.

Filed May 1, 1972, Ser. No. 249,261

Int. Cl. F16j *15/52*

U.S. Cl. 74—18.2 **11 Claims**



An extensible protector shroud having alternating inner and outer diameter portions defining adjacent convolutions, and formed of a plurality of one-piece sections molded in collapsed condition and each comprising a pair of generally radial walls of radially inwardly progressively decreasing thickness joined at their inner peripheral edges. The protector is connected to a polished rod for extension therewith, and retainer rings inside the outer diameter portions of the composite protector prevent inward collapsing thereof upon extension while a floating connection makes the protector self-aligning with the polished rod extending axially therethrough.

3,796,104

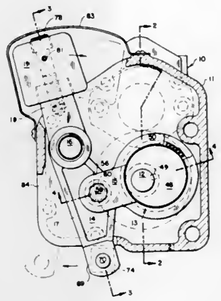
COUNTERBALANCED DRIVE FOR RECIPROCATING CUTTER

William E. Templeton, 1807 W. Hanley Rd., Lexington, Ohio

Filed Aug. 9, 1971, Ser. No. 170,268

Int. Cl. F16h *21/18*

U.S. Cl. 74—42 **8 Claims**



A counterbalanced transmission drive for reciprocating the sickle of a mower. A rocker arm pivotally mounted intermediate its ends is oscillated by an eccentric. One end of the rocker arm connects with the sickle. The opposite end carries a counterweight. By this arrangement, the counterweight and the sickle oscillate in opposing directions.

3,796,105

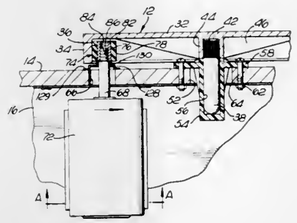
POTTER'S WHEEL DRIVE SYSTEM

George Menard, 4237 Coloma, Woodland Hills, Calif.

Filed Oct. 30, 1972, Ser. No. 302,301

Int. Cl. F16h *13/10;* **B28b** *21/42*

U.S. Cl. 74—209 **9 Claims**



A drive system for a potter's wheel which is rotatable about a shaft. The wheel has a downwardly depending lip whose inner surface forms a drive surface. A motor includes a drive shaft which is connected to a drive member which is spring loaded against the wheel drive surface to impart rotational movement of the wheel. The motor is positioned on a mount which is pivotably movable with respect to the wheel housing, enabling the motor to be spring biased and impart frictional engagement between the drive member and the drive surface. A motor control enables the motor to rotate at any variable speed and remain constant irrespective of load.

3,796,106

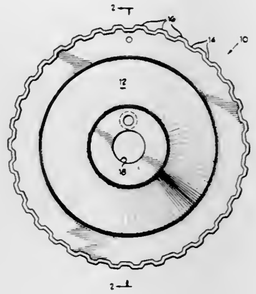
METHOD AND APPARATUS FOR MAKING SPROCKETS AND/OR GEARS

Harold R. Fisher, Ithaca; Thomas H. McGough, Groton, and Charles M. Borden, Trumansburg, all of N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed June 29, 1971, Ser. No. 157,903

Int. Cl. F16h *55.30, 55/44*

U.S. Cl. 74—243 R **2 Claims**



Sheet metal sprockets and/or gears are manufactured by cold metal working comprising die drawing a disc into a cup-shaped member while simultaneously forming the sprocket teeth thereon. Specially constructed apparatus is used to so cold form the sprocket.

3,796,107

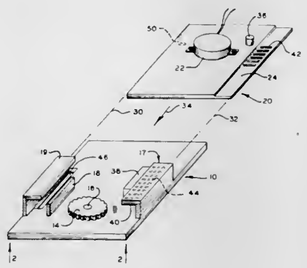
TIMING ASSEMBLY

Michael D. Snyder, Chenango Bridge, and John G. Radice, Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,507

Int. Cl. F16h *35/06*

U.S. Cl. 74—397 **4 Claims**

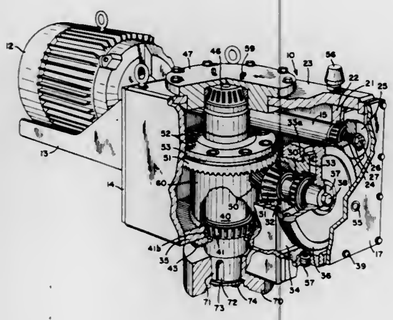


The pinion gear of a motor meshes with a timing gear when a motor mounting plate upon which the motor is mounted is inserted into guideways of a gear mounting plate upon which the timing gear is mounted. A spring loaded ball assembly mounted on the motor plate bears on one of the guideways whereby teeth deployed on the motor plate mesh with teeth deployed on the gear plate.

3,796,108
RIGHT ANGLE SPEED REDUCER

Donald L. Kime, Dayton, and Ronald G. Stogdill, Trotwood, both of Ohio, assignors to Chemineer, Inc., Dayton, Ohio

Filed Dec. 18, 1972, Ser. No. 315,921
Int. Cl. F16h *1/20*
U.S. Cl. 74—417 6 Claims

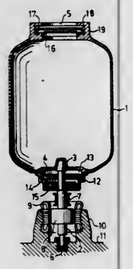


A right angle speed reducer incorporates speed change gears for varying the output shaft speed, spiral bevel gearing, all tapered roller bearings, splash lubrication of all high speed bearings, and a dry well output for the lower output shaft bearing.

3,796,109
AUTOMATIC BALANCING DEVICE

Johannes Lagerwey, Leidschendam, Netherlands, assignor to Reactor Centrum Nederland, The Hague, Netherlands

Filed Apr. 8, 1971, Ser. No. 132,505
Claims priority, application Netherlands, Apr. 1, 1970, 7006072
Int. Cl. F16f *15/32*
U.S. Cl. 74—573 6 Claims

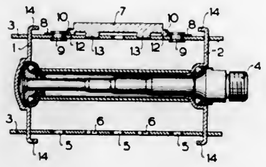


An automatic self-adjusting balancing device for a member mounted for rotation around a vertical spindle comprising a hollow housing rotating with said member and having an inner circular wall component which is coaxial with the spindle; at least two loose rotational bodies within said housing, each body having a circular rim edge which spans said vertical spindle, said rim edge having a smaller diameter on its upper side than on its lower side, at least one of said bodies being tiltable about its larger diameter against said inner wall component of said housing.

3,796,110
BICYCLE PEDAL WITH REFLECTORS

Hans-Gerhard Hagenah, Menden/Sauerland, Germany, assignor to Union Sils, van de Loo & Co., Frondenberg/Ruhr, Germany

Filed Jan. 7, 1972, Ser. No. 216,048
Claims priority, application Germany, Jan. 9, 1971, 2100825
Int. Cl. B62m *3/12*
U.S. Cl. 74—594.4 12 Claims

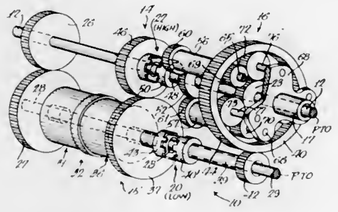


A bicycle pedal having longitudinal sides provided with at least one opening in which at least one reflector is anchored and firmly held. The openings are so distributed over the longitudinal sides of the pedal so as to permit mounting of the pertaining reflector selectively symmetrically or asymmetrically with regard to the transverse plane of symmetry of the pedal.

3,796,111
HYDROMECHANICAL MULTI-RANGE TRANSMISSION

George A. Schauer, Belvidere, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 18, 1971, Ser. No. 172,761
Int. Cl. F16h *47/04*
U.S. Cl. 74—687 16 Claims

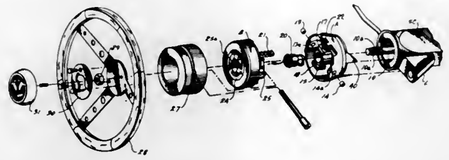


A hydromechanical transmission having an input shaft driven mechanical path and an input shaft driven hydraulic drive path with a four element differential for combining torque from the mechanical path and the hydraulic path, the transmission being provided with low and high speed ranges effecting zero to full forward output shaft speeds in both the low and high range, and a reverse in at least one of the speed ranges. The two speed ranges are effected by selectively connecting the third or the fourth control element of the differential to either the mechanical path or the hydraulic path. In one embodiment the third and fourth differential elements are selectively connected to be driven by the hydraulic path with the mechanical path continuously driving one of the differential elements. In another embodiment, the low and high speed ranges are effected by selectively connecting the third and fourth gear elements to the mechanical path with the hydraulic drive continuously drivingly connected to another of the differential elements. Also provided is a common control handle for varying the drive ratio of the hydraulic drive and also the engagement of clutches effecting the low and high speed ranges, with the control consisting of a handle member having two resiliently biased handle bars slidable in a slot with the bars being frictionally held in position within the slot and also locked in recesses in the slot defining zero output shaft speed in each of the low and high speed ranges.

3,796,112
STEERING WHEEL KIT

Edward H. Hoffman, Simi, Calif., assignor to Royal Industries, Inc., Pasadena, Calif.

Filed July 13, 1972, Ser. No. 271,414
Int. Cl. B62d *1/18*
U.S. Cl. 74—493 8 Claims

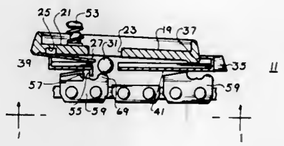


A steering wheel assembly kit for converting a motor vehicle having a non-tiltable steering wheel to a tiltable steering wheel. The kit includes a first housing member adapted to be secured to the steering shaft of the vehicle and carries a steering shaft adapter and one of the elements of a universal coupler for rotation therewith. A second housing member rotatably mounts the second element of the universal coupler to provide a direct drive to the steering shaft. The second housing member is adapted to be pivotably connected to the first housing member to allow it to be positioned in axial alignment with the steering shaft and to be moved into a tilted position relative thereto whereby the steering shaft is controlled at all positions to the universal coupling elements.

3,796,113
DEPTH GAUGE ATTACHMENT

Elof Granberg, 201 Nevin Ave., San Rafael, Calif.

Filed July 17, 1972, Ser. No. 272,322
Int. Cl. B23d *63/16*
U.S. Cl. 76—74 8 Claims



A depth gauge attachment for use with a motorized grinder for sharpening a saw chain. The gauge is removably fixed to the grinder with the rotating grinding element thereof extending beyond the gauge. The grinder may then be adapted to grind the cutter gauge of a saw chain tooth whereby the cutter gauge portion of each cutter link of a saw chain may be sequentially ground to substantially the same clearance.

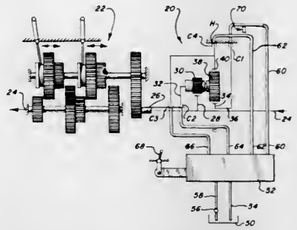
3,796,114
TRANSMISSION CONTROL CIRCUIT

Eugene D. Taylor, Kenosha, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed July 3, 1972, Ser. No. 268,464
Int. Cl. F16h *57/10, 37/00;* F16d *25/12*
U.S. Cl. 74—761 5 Claims

The disclosure of this application relates to a hydraulic control circuit for a plural speed drive transmission that incorporates fluid operated devices for conditioning the transmission in a plurality of speeds at least one of which is in the reverse direction of the others. The hydraulic control circuit incorporates two way check valve means between first and second conduits that are respectively connected to fluid operated devices which are engaged when the transmission is operating in the lowermost forward direction and in the reverse direction.

The two way check valve means accommodates limited flow from one conduit to the other after pressurization of the one

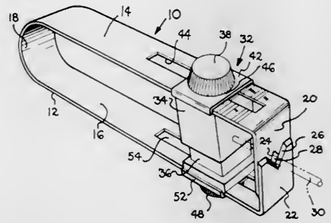


conduit when the other conduit is connected to a reservoir to delay the pressurization of a fluid actuated device and produce smooth engagement of the transmission.

3,796,115
WIRE STRIPPING TOOL

Robert L. Dane, 3140 Talmadge Rd., Toledo, Ohio

Filed Sept. 25, 1972, Ser. No. 292,088
Int. Cl. H02g *1/12;* B21f *13/00;* B26b *27/00*
U.S. Cl. 81—9.5 B 6 Claims



A wire stripping tool is provided which is capable of stripping a predetermined depth and length of insulation from the end of various size insulated wires. A generally U-shaped frame member has the free ends of its leg portions bent inwardly into parallel overlapping relationship with each other to form reciprocating stripping jaws. Each of these reciprocating stripping jaws has a mating V-shaped cutting edge formed therein which cooperate to form an adjustable wire receiving aperture therebetween. A pair of telescoping spacer members are positioned between the legs of the frame member and adjustable laterally to control the amount of movement of the cutting edges toward one another for regulation of the depth of the wire insulation being removed. The telescoping spacer members, which serve as a stop for the wire to be stripped, are also adjustably mounted for longitudinal movement relative to the legs of the frame member and the stripping jaws for regulation of the length of insulation that is to be removed from the wire. This tool incorporates easy-to-read numerical gauges to facilitate accurate adjustment for the desired length and size (diameter) of wire that is to be stripped.

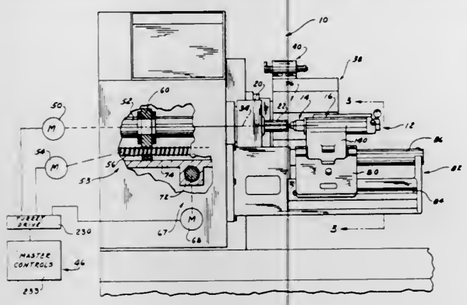
3,796,116
MACHINE WITH TAILSTOCK

Henry W. Spreitzer, Shaker Heights, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Nov. 7, 1972, Ser. No. 304,408
Int. Cl. B23b *23/00, 7/04*
U.S. Cl. 82—2 R 17 Claims

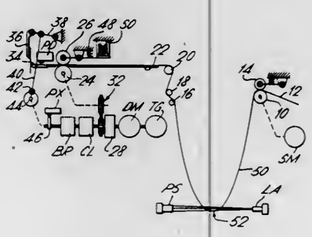
An improved machine tool includes a tailstock having a center assembly which is movable between operating and retracted positions by a piston and cylinder assembly. When

the center assembly is in the operating position, a main axis of the center assembly is aligned with the axis of rotation of a workpiece. In the retracted position, the center assembly is offset to one side of the workpiece. When the center assembly is in the operating position, a tailstock motor is activated to press the center assembly against the outer end of the workpiece to thereby support the workpiece in a known manner. A control system coordinates movement of the center assembly



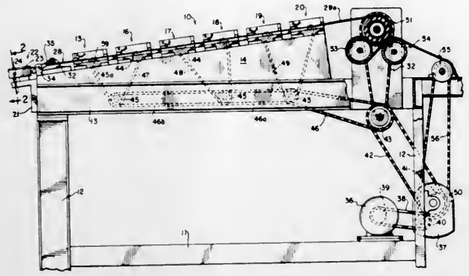
with movement of a turret to avoid interference between the tailstock and tools mounted on the turret.

3,796,117
APPARATUS FOR INTERMITTENT PROCESSING FOR WEB MATERIALS
Hideo Mukai, and Toshiaki Yamaguchi, both of Kyoto, Japan, assignors to Nishimura Seisakusho Co., Ltd., Kyoto and Fuji Xerox Co., Ltd., Tokyo, both of, Japan
Filed Dec. 27, 1971, Ser. No. 212,493
Claims priority, application Japan, Dec. 28, 1970, 45-128524
Int. Cl. B26d *5/32, 5/34*
U.S. Cl. 83—210 **8 Claims**



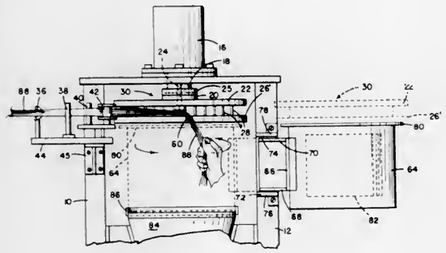
An apparatus for intermittent processing of web material includes means for effecting alternate material feed and material processing operation. The web of material to be processed is supplied by material supply means to the processing means via a generally U-shaped loop portion the lower end of which is detected by photoelectric detector. The apparatus further includes control circuit means which are electrically connected to the photoelectric detector such that the control circuit may actuate processing means into initiating the cycle of feed and processing operation each time the photoelectric detector senses the lower end of the looped web portion. The control circuit also brings supply means out of operation when the photoelectric detector continues to sense the lower end of the looped web portion for a predetermined period of detecting time.

3,796,118
CHANNEL CLOTH SLITTER
Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.
Filed Apr. 10, 1972, Ser. No. 242,336
Int. Cl. B26d *3/00*
U.S. Cl. 83—170 **6 Claims**



There is disclosed an apparatus for slitting or separating a channel cloth backing between pile rows thereof, incorporating rotary knives or fixed blades and means for guiding the channel cloth during cutting.

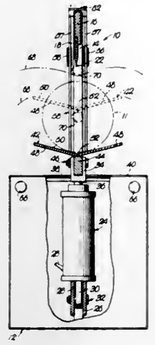
3,796,119
STAPLE FIBER CUTTER
Calvin M. Fox, Front Royal, Va., assignor to FMC Corporation, Philadelphia, Pa.
Filed Nov. 24, 1972, Ser. No. 309,075
Int. Cl. B23d *1/40*
U.S. Cl. 83—346 **3 Claims**



A commercially known fiber cutter which can be laced up for operation only when stationary or shut down is modified so that it may be laced while in operation and becomes useful with a tow which is being continuously produced as by a rayon or other continuous fiber spinning machine.

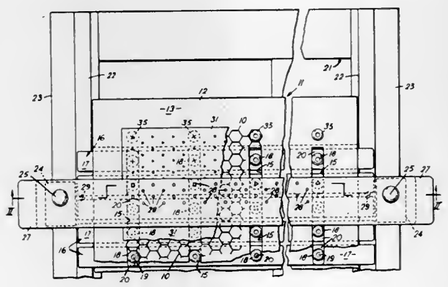
3,796,120
WASTEPAPER ROLL CUTTER
Larry B. Wolfberg, and John Harper, both of Wichita, Kans., assignors to Service Business Forms, Inc., Wichita, Kans.
Filed Sept. 5, 1972, Ser. No. 286,171
Int. Cl. B26d *7/06, 7/22*
U.S. Cl. 83—437 **7 Claims**

A high-speed wastepaper roll cutter throws the roll rapidly and with great force against the downwardly facing cutting edge of a solidly supported, stationary knife to initially cut through several convolutions and release the tight winding of the paper in the roll. The full momentum of the rising, roll-supporting platform and the roll thereon is added to the thrusting force to start the cutting action. Once the tight winding of the roll has been released as a result of such intense impact, high, uninterrupted, steady pressure of the roll im-



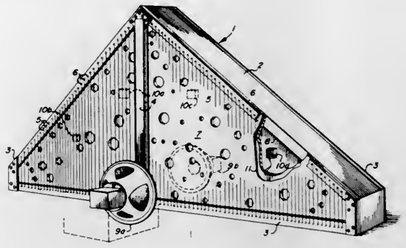
mediately and continuously exerted against the knife edge quickly and efficiently completes the cutting operation.

3,796,121
METHOD OF AND APPARATUS FOR LOCATING SHEETS OF OPEN-CELLED RETICULAR MATERIAL
Joseph James Scott, Newtownards, Northern Ireland, assignor to Short Brothers and Harland Limited, Belfast, Northern Ireland
Filed Dec. 2, 1971, Ser. No. 204,090
Claims priority, application Great Britain, Dec. 2, 1970, 57,323/70
Int. Cl. B26f *1/24*
U.S. Cl. 83—451 **13 Claims**



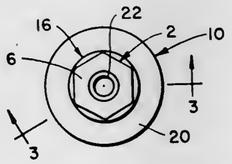
An apparatus for constructing a composite structure including a sheet of open celled reticular material, comprising a jig including a base and a plurality of lateral rows of projecting members each row of which is restrained against movement relative to the base in the lateral direction but is individually capable of a degree of movement in the longitudinal direction so as to enable a sheet with non-uniform or irregular cell pitch dimensions to be located on the base and a piercing assembly for alignment with the cells of the material for piercing a sheet of thermoplastic adhesive covering the ends of the cells of the material, for piercing the adhesive substantially in the center of each cell.

3,796,122
MUSIC PROCESSING AND PURIFYING APPARATUS
Abraham R. Kaminsky, 4527 N. 74th Pl., Scottsdale, Ariz.
Filed May 19, 1972, Ser. No. 254,876
Int. Cl. G10d *1/00*
U.S. Cl. 84—173 **8 Claims**



Apparatus is provided to process or purify music, which apparatus comprises a plurality of carefully tuned strings utilized in conjunction with and secured to a framework in which extraordinary means are employed to insure that each string responds only at its fundamental frequency and only vibrates in a plane perpendicular to the plane defined by the entire set of strings. In variant configurations, the sturdy framework may be lined with lead about its inner periphery to inhibit response of the individual strings in any other plane. A single, centrally positioned series of strings may be utilized or a pair of strings may be disposed on each side of the framework. One or more removable soundboards may be incorporated into the apparatus, and each soundboard is configured to be extremely flexible. Flexibility may be enhanced by providing a number of apertures in a soundboard according to a predetermined layout. Music to be processed from a live source or from a prerecorded source may be directed at the apparatus from one or, preferably, both sides to achieve the sought after purification and conditioning. Microphones to pick up the purified sound may be placed within the apparatus or between the source of music and the apparatus. In order to achieve further control over the conditioning and purification of the music source, isolation baffles are provided, selectively, between the strings of each octave or between adjacent strings in such a manner that the vibratory communication therebetween can be controlled in degree at the option of the operator of the apparatus.

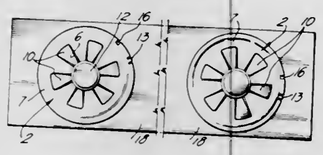
3,796,123
SHEET METAL NUT
William B. Duffy, Berkeley Heights, and Charles K. Fisher, Belford, both of N.J., assignors to TRW Inc., Cleveland, Ohio
Filed Jan. 17, 1972, Ser. No. 218,246. The portion of the term of this patent subsequent to May 2, 1989, has been disclaimed.
Int. Cl. F16b *37/02*
U.S. Cl. 85—32 R **3 Claims**



A sheet metal nut having an inner threaded barrel portion connected to an outer, hexagonally shaped barrel portion by a connecting web adjacent one end of said barrel portions has an hexagonally shaped depression formed in the inner barrel

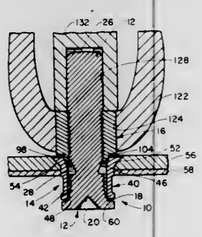
portion over a limited axial extend thereof adjacent the connecting web. The internal faces of the hexagonal depression are disposed opposite to and match the hex wrenching faces on the outer barrel portion and are effective to transmit torque to the inner barrel portion when the nut is turned onto a mating bolt thereby reducing the torsional strain on the connecting web incident to tightening of the nut.

3,796,124
CLAMPING SYSTEM
Valentin L. Crosa, Mones Roses 6486, Carrasco, Montevideo, Uruguay
Filed Nov. 9, 1971, Ser. No. 197,017
Int. Cl. F16b *21/00*
U.S. Cl. 85—36 **15 Claims**



A system for clamping a first member to a second member — to be preferably used in the building art — by means of a rod passing at least through one of the members, comprising a resilient sealing member to be fit on the rod to insulate said rod from said at least one of said members, a multiclamp fastener consisting of superimposed plate member to be press-fitted on said rod above said resilient sealing member to press said resilient sealing member into sealing engagement with said one member and to retain said rod in proper position to which end said fastener has a plurality of resilient tongue members entering in clamping contact with said rod.

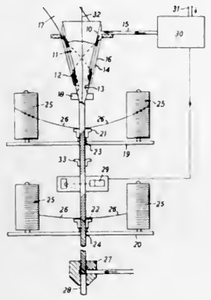
3,796,125
BLIND FASTENER CONSTRUCTION
James R. Campbell, South Laguna, and Miles Rainwater, Costa Mesa, both of Calif., assignors to Thomas P. Mahoney, Santa Monica, Calif., by said Rainwater
Filed Nov. 17, 1971, Ser. No. 199,514
Int. Cl. F16b *13/06*
U.S. Cl. 85—77 **4 Claims**



A blind fastener incorporates a carrier having a forming area or portion thereupon. Mounted on the carrier is a securement member having a deformable lower extremity. Also mounted on the carrier is a driver which is utilized to drive the securement member against the forming portion of the carrier to urge the extremity of the securement member into securement relationship with an object or objects with which the fastener is associated.

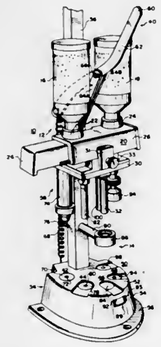
The carrier incorporates an elongated shank having a frangible shear zone and the driver incorporates driving and locking portions also separated by a shear zone. The locking portion of the driver is received in a locking recess in the securement member and the shear zones are ruptured successively when predetermined loads are imposed thereupon resulting from the complete deformation of the extremity of the securement member and the reception of the locking portion in said locking recess.

3,796,126
CONTROLLED FEEDING OF POWDERED MATERIAL
Trevor John Turner, Ardrossan, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Filed June 19, 1972, Ser. No. 264,404
Int. Cl. C06b *21/02*
U.S. Cl. 86—1 R **10 Claims**



A method of controlled feeding of powdered material, for example, an explosive powder, comprises feeding a material through the outlet of a mass flow hopper, feeding gas under pressure to the material above the hopper outlet, and adjusting the gas pressure to maintain the flow of powdered material at a predetermined value. The invention also includes an apparatus for feeding the powdered material and a method and apparatus for manufacturing explosive fuse-cord wherein the explosive material is fed by the aforesaid method.

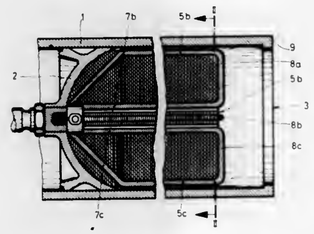
3,796,127
SHELL RELOADER WITH IMPROVED SIZING DIE
Robert R. Deitemeyer, Grand Island, Nebr., assignor to Pacific Gun Sight Co., Grand Island, Nebr.
Filed Nov. 1, 1972, Ser. No. 302,664
Int. Cl. F42b *33/04*
U.S. Cl. 86—30 **9 Claims**



To simplify and reduce the cost of a shotshell reloader (1) an aluminum retaining tube having internal threads and an inwardly extending flange is threaded onto one end of an aluminum sleeve of a sizing tool, with an annular steel sizing die being held within the inner side of the aluminum retaining tube above the flange to shape the outer side of the brass ferrule of the shotshell, the flange of the aluminum retaining tube

spacing the bottom surface of the steel die to compensate for the rim of the shotshell; (2) an aluminum pilot holds a steel punch along the longitudinal axis of the sleeve with its point extending therebeyond to remove the primer from a shotshell; (3) the charge bar holder has an open back and a longitudinally extending groove on its inner surface adapted to fit a complementarily formed longitudinally extending locating ridge on the charge bar, with the charge bar having a different stop on each end so that the charge bar may be inserted through the open back of the charge bar holder before assembling the powder and shot containers thereto, the column of the shotshell reloader closing the open back of the charge bar holder to hold the charge bar in place; (4) the wad guide body is a one piece aluminum cylinder having an annular recess in it to receive the rim of a nylon wad guide to hold the nylon wad guide in place; and (5) the pressure scale for indicating the pressure applied to the over-powder wad and powder is the pressure pad that forms the bottom of the powder, shot and wad loading station, which is exposed by a cut-away portion of the base with markers being located along the side of the cut-away portion of the base.

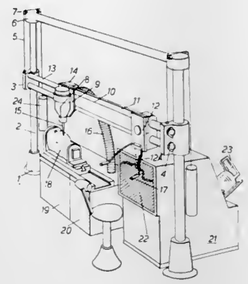
3,796,128
RECOILLESS DISCHARGE DEVICE
Fritz Zeyher, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany
Filed May 3, 1972, Ser. No. 250,028
Claims priority, application Germany, May 12, 1971, P 21 23 411.7
U.S. Cl. 89—1.701 **9 Claims**



A recoilless discharge device for projectiles includes a discharge tube which is open at both ends and which carries an inert mass which is directed toward one end when a projectile is fired out of the other end. The inert mass advantageously comprises four separate circular sector stacks arranged around the tube and guided longitudinally by radially extending supporting ledges. Each stack comprises relatively thin foil material having a very large surface per unit of mass. The stacks are held together by strings and the stacks are divided easily when they are ejected from the rear tube opening.

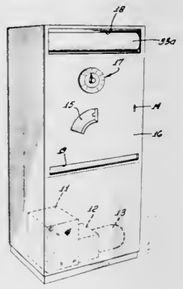
3,796,129
APPARATUS FOR THE MANUFACTURE OF THREE-DIMENSIONAL REPRODUCTION OF AN OBJECT
John Smith Cruickshank, "Rosemount", Kintillo Rd., Bridge of Earn, Perth, Scotland
Filed Sept. 25, 1970, Ser. No. 48,536
Int. Cl. B23c *1/16*
U.S. Cl. 90—13.1 **8 Claims**

Apparatus for the manufacture of three dimensional reproductions of an object from a series of photographic records thereof taken at predetermined angular and longitudinal intervals. It has means for projecting the series of photographed outlines of the object one by one onto a screen, means for scanning the outlines, means for transmitting the scanning movements onto a cutting tool, and a table carrying a



block of material into which the cutting tool cuts or carves the scanning tool.

3,796,130
KEY DUPLICATING AND VENDING MACHINE
Klaus W. Gartner, Palos Verdes Penninsula, Calif., assignor to Sargent & Greenleaf, Inc., Rochester, N.Y.
Filed Feb. 10, 1972, Ser. No. 225,071
Int. Cl. B23c *1/16*
U.S. Cl. 90—13.05 **29 Claims**



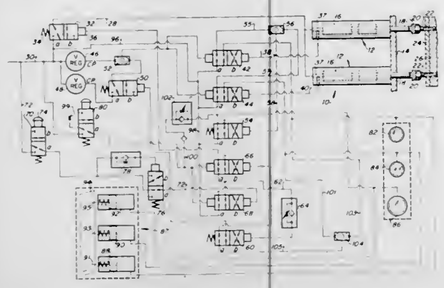
An unattended semi-automatic, coin operated duplicate key vending machine for use by members of the general public, the machine having a supply of key blade blanks with different cross sectional shapes in storage. The correct blank may be quickly selected by a customer by placing his key into one of a plurality of slots or selector openings, each of the slots adapted to receive a key blade of different shapes which cross section corresponds to the shape of one of the blanks in storage. Positioning the key in the correct slot thus selects a blank of appropraite cross section and automatically positions such blank for milling a duplicate profile. By placing the key to be duplicated in a second slot or key receiving opening, the profile of the key blade blank is cut with great precision to provide a faithful representation of the original key that will smoothly and without jamming operate the tumbler of the original lock. Simultaneous with the discharge of the duplicate key blade, the machine provides a durable plastic, snap, fit, irremovable head which may be easily secured to one end of the blade so as to complete the key with a conventional key head.

3,796,131

CONTROL SYSTEM FOR NUTSETTER

William Workman, Jr., and James H. Boeger, Spring Lake, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.

Division of Ser. No. 841,354, July 14, 1969, Pat. No. 3,657,964. This application Jan. 17, 1972, Ser. No. 218,607
Int. Cl. F01b *25/26*; F15b *21/02*
U.S. Cl. 91—1 3 Claims



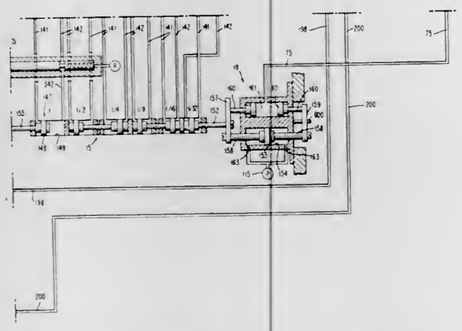
A control system for a pneumatic multiple nutsetter which includes control valves operable to sense motive air pressure at each tool motor inlet port. In response to a predetermined motor inlet pressure the control valves operate to turn on visual indicators and to actuate pneumatic card perforating recording apparatus for registering the completion of a fastener torquing operation. The control system includes pneumatic circuitry operable to shut off the motive air supply to deenergize the nutsetter after all individual motor units have completed their fastener torquing operations. The system also includes circuitry operable to fail to deenergize the nutsetter if a motor does not reach the predetermined inlet pressure and to deenergize the nutsetter if any one motor reaches the predetermined inlet pressure prematurely.

3,796,132

COCKED DAMPING MECHANISM

Hugo A. Panissidi, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 824,424, May 14, 1969, Pat. No. 3,726,190. This application Mar. 20, 1972, Ser. No. 236,520
Int. Cl. F15b *11/18*
U.S. Cl. 91—167 7 Claims



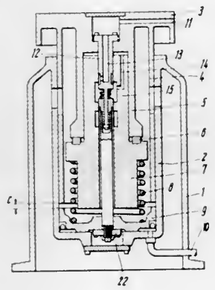
A digital hydraulic system converts binary digital input information into displacement of a digital drive. An air reader is used to operate binary latch valves through an air hydraulic interface. A flow sensing system and a hydraulic logic unit cooperate to provide high speed exchange between the piston adders of the digital drive prior to displacement of the load. A hydraulic cylinder sweeps the load about a vertical axis. A self-cooling, air-driven hydraulic pump with an accumulator, provides relatively constant pressure. A damper secured to the piston adders has an additional drive for providing precise location at the end of damping. An incremental paper tape feed with a four motion rack with toggle action indexes the air reader.

3,796,133

JOLTER CONTROL

Gunter B. Weiss, Sollinger, Germany, assignor to Badische Maschinenfabrik GmbH, Karlsruhe, Germany

Filed Aug. 3, 1971, Ser. No. 168,701
Claims priority, application Germany, Aug. 3, 1970, P 20 38 504.0
Int. Cl. F01l *31/00*; F01b *15/02*
U.S. Cl. 91—207 15 Claims



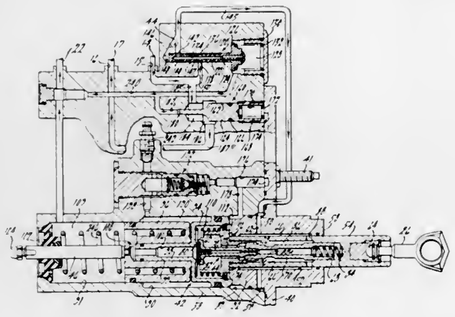
A jolter control in which the outlet control element is displaceably arranged with respect to the inlet control element that is connected with the table of the jolter whereby the outlet control element is displaced by the movement of the squeezing piston.

3,796,134

HYDRAULIC BOOSTER BRAKE MECHANISM

Alfred R. Kaptrosky, Ovid, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Dec. 6, 1972, Ser. No. 312,614
Int. Cl. F15b *11/10, 12/042, 13/10*
U.S. Cl. 91—418 10 Claims



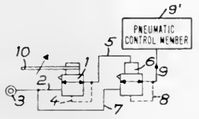
A hydraulic booster brake mechanism for use with an open center power steering system of a motor vehicle in which a booster brake mechanism employs a mechanism permitting operation of the booster brake mechanism utilizing the pressures already made available due to operation of the power steering system. In the event the available pressure from the power steering system is not sufficient to accomplish the degree of braking desired, the control mechanism is actuated to increase and maintain the pressure produced by the power steering system at predetermined minimum pressure levels slightly above the pressure level necessary to accommodate the requirements of the booster brake mechanism.

3,796,135

PNEUMATIC CONTROL DEVICE WITH PROGRAMMED CHARACTERISTIC, PARTICULARLY FOR A VEHICLE BRAKING DEVICE

Simeon Lekarski, St. Cloud; Pierre Hardy, and Leon Hardy, both of Paris, all of France, assignors to Jean Gachot, Enghien-les-Bains, France

Filed Jan. 4, 1971, Ser. No. 103,682
Claims priority, application France, Aug. 1, 1970, 7000644
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—461 3 Claims



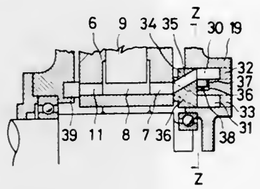
A pneumatic control having programmed characteristic for use especially for a vehicle braking device comprising at least one pilot reducing valve connected to a source of compressed fluid supply, to the atmosphere and to a fluid outlet conduit terminating in a pneumatic control member. The reducing valve has members for controlling the passage of fluid that is operably connected with a programming device that is capable of being corrected by a device for applying different parameters.

3,796,136

FLUID PUMP OR FLUID MOTOR

Hiroshi Oguni, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobi-shi, Hyogo-ken, Japan

Filed Sept. 24, 1971, Ser. No. 183,324
Claims priority, application Japan, Sept. 24, 1970, 45-94576
Int. Cl. F01b *13/06*
U.S. Cl. 91—485 1 Claim



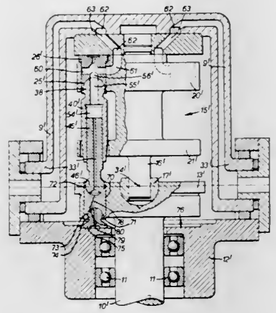
A fluid motor or fluid pump of the piston or vane type having a plurality of pistons or vanes, a mounting means for said pistons or vanes, a cam ring, a rear cover, a valve plate interposed between said rear cover and said mounting means and a valve mounted outside of said rear cover. A plurality of annular grooves having openings on an inner side surface of the rear cover are formed in said rear cover. Each groove has a port opening on outer side of the rear cover. The valve plate with passages is disposed between the mounting means and the rear cover for covering said annular grooves and for communicating passages formed in said mounting means with said annular grooves. Between the valve plate and the annular grooves, a plurality of rings or inner and outer rings can be mounted for sliding contact with said valve plate. By changing the connection of said annular grooves with a power source by means of said valve and/or by rotating said inner and outer rings the connection or disconnection of said grooves with said passages are selected.

3,796,137

ROTARY HYDRAULIC MACHINES

Jean Ulrich Thoma, Zug, Switzerland, assignor to Renzo Galdabin, Gallarate, Italy, a part interest

Filed Feb. 7, 1972, Ser. No. 224,134
Claims priority, application Switzerland, Feb. 11, 1971, 2320/71
Int. Cl. F01b *13/04*
U.S. Cl. 91—489 11 Claims



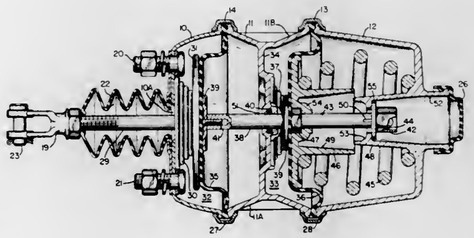
A hydraulic pump or motor of the tilting head or tilted head type including a number of separate piston and cylinder units each capable of independent pivotal movement and each including a ball and socket joint at opposite ends and a bearing slipper at one end abutting against a stationary thrust surface. The fluid is admitted and discharged from the cylinders either through the bearing slipper or through a door in the piston.

3,796,138

PNEUMATIC SERVICE EMERGENCY ACTUATORS FOR TRUCKS, BUSES AND TRAILERS

John F. Doyle, Long Beach; Gary E. Gardner, Los Alamitos, and Raymond S. Elliot, South Gate, all of Calif., assignors to TMR Products Co., Inc., South Gate, Calif.

Filed July 19, 1972, Ser. No. 273,349
Int. Cl. F01b *7/00*
U.S. Cl. 92—63 4 Claims

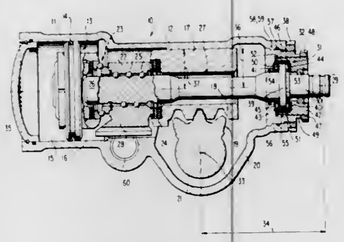


This invention relates generally to pneumatic braking systems such as used on trucks, buses and trailers and more particularly to an improved fail-safe mechanical release mechanism, incorporated with the powerful emergency actuator booster which is used as a parking brake and particularly as an emergency brake to provide safe stops under certain contingencies and particularly upon failure of some part of the pneumatic system.

3,796,139
SERVO STEERING FOR VEHICLES

Hans-Joachim M. Forster; Klaus Katz, both of Stuttgart, and Anton Scheuter, Aichschiess, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Dec. 3, 1971, Ser. No. 204,489
Claims priority, application Germany, Dec. 5, 1970, 2060022
Int. Cl. F01b 9/10
U.S. Cl. 92—136 17 Claims

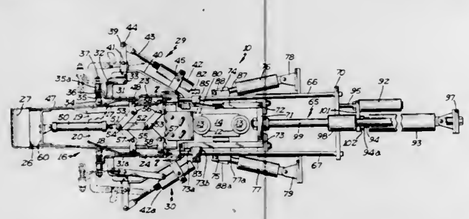


A servo-steering mechanism for vehicles with a steering gear housing which is constructed as pressure medium cylinder and is subdivided into a wide cylinder section for the effective piston pressure surfaces acted upon by the pressure medium and into an axially adjoining narrow cylindrical section for the guidance of the working piston; the steering shaft which is in driving connection with the working piston is supported in the narrow cylinder section, while the inner end of the steering worm is helically movably connected with the working piston and the other end of the steering worm extends through the steering gear housing by means of a bearing arrangement constructed as radial support as well as axially nondisplaceable bearing of the steering worm; the bearing arrangement of the steering worm is thereby inserted into the narrow cylindrical section and is equipped with two adjusting rings connected directly with each other by a threaded connection which are each provided with a radially extending abutment surface for the axial bearing support of the steering worm; detachable means, for example, in the form of a nut, are provided between the adjusting rings whereby the outer diameters of the latter are at most equal to the inner diameter of the narrow cylinder section.

3,796,140
BAG LOADING MANDREL

Richard C. Adams, West Barrington; David R. Snowman, Providence; James R. Ambler, Pawtucket, and Philip J. Houle, Smithfield, all of R.I., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Filed Dec. 17, 1971, Ser. No. 209,159
Int. Cl. B31b 1/28, 1/98
U.S. Cl. 93—32 8 Claims

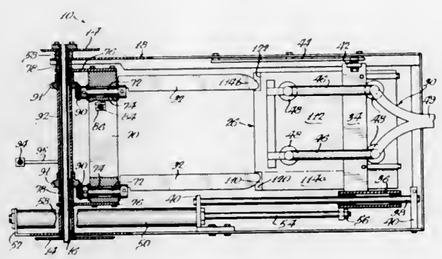


Bag loading mandrel means for receiving and cuffing a plurality of bags arranged thereon in nested disposition, the mandrel including means for internally and externally gripping the nested bags firmly during the cuffing operation in order to provide accurate and repeatable cuffing. The mandrel is arranged to dimensionally expand those surfaces contacting the bag interior during the cuffing operation, in order to enhance the retention of the bags on the mandrel. Cuffing is accomplished by means of the forward motion of a plurality of cuffing rods normally disposed radially inwardly of the bag surfaces. Forward motion of the rods is initiated while the rods are in contact with the inner wall of the innermost bag in the nested stack at a point adjacent the upper lip, and continued until the upper edge portion of the bag becomes inverted and the cuff accordingly formed.

3,796,141
TRAY AND TRAY OPENING MECHANISM

Martin Mueller, Glenview, Ill., assignor to Owens-Illinois, Toledo, Ohio

Filed Oct. 16, 1972, Ser. No. 297,998
Int. Cl. B31b 5/02, 1/78
U.S. Cl. 93—53 BF 11 Claims



A tray opening mechanism and an improved tray are disclosed in this application. The opening mechanism consists of a pair of blades that are supported for both pivotal movement about a fixed shaft and rotational movement about axes perpendicular to the shaft. The trays are removed from a stack and inserted onto the blades while the blades are in a raised position and the blades are automatically rotated 180° in one direction and then rotated 90° in the opposite direction to initially over-bend the tray and then return the tray to an erected position, while the blades and tray are provided from the raised position to a lowered position.

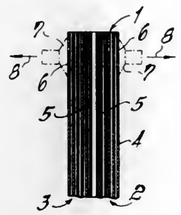
The improved tray has cutouts located at specific locations so that the blades may be moved directly into engagement with the top wall of the tray to insure that the blades are inserted between the top and bottom walls of the trays.

3,796,142
METHOD OF MAKING BAGS HAVING FOLDED BASES, AND BAGS SO MADE

Gustav Kuckhermann, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed May 30, 1972, Ser. No. 257,892
Claims priority, application Germany, June 7, 1971, 2128264
Int. Cl. B31b 1/12
U.S. Cl. 93—35 R 3 Claims

In the manufacture of paper or plastics bags with folded bases from multi-ply flattened tube sections, the ends of the tube sections are opened by suction means applied to the outermost ply of at least one wall of the tube sections at locations

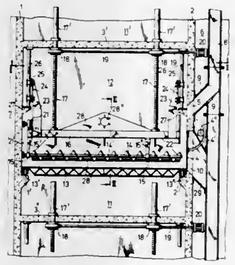


where all except the innermost ply have been provided with air holes or incisions.

3,796,143
DEVICE FOR THE GERMINATION AND DRYING OF MALT

Gisbert Schlimme, Braunschweig, and Manfred Tschirner, Wolfenbuttel, both of Germany, assignors to Miag Muhlenbau Und Industrie GmbH, Braunschweig, Germany

Filed Dec. 8, 1972, Ser. No. 313,422
Claims priority, application Germany, Dec. 15, 1971, 2162167
Int. Cl. C12g 3/00
U.S. Cl. 99—277.2 7 Claims



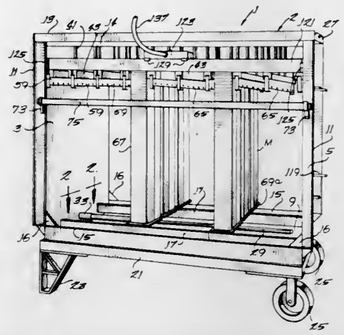
A device for the germination and drying of malt charged onto the radially outer portion of an annular rotating rack and gradually shifted radially inwardly by means of rotary worm means extending radially across said annular rack and being suspended by threaded spindles for movement downwardly and upwardly between charge and discharge openings in an outer wall surrounding said annular rack.

3,796,144
APPARATUS FOR COOKING AND CHILLING MEAT IN MOLDS

Ralph M. Foldenauer, c/o Foldenauer Equipment Co., 7848 W. 80th St., Bridgeview, Ill., and William H. Neubeck, Jr., Chicago, Ill., assignors to said Foldenauer, by said Neubeck

Filed May 17, 1972, Ser. No. 253,975
Int. Cl. A47j 27/20
U.S. Cl. 99—355 10 Claims

A transportable apparatus for cooking and chilling food products such as meat in molds comprises a housing with a series of plastic bars therein. The plastic bars suspend the molds at the laterally outwardly projecting flanges normally present at the upper ends of the molds. Troughs are secured to and depend from the bars and are provided with a series of holes opening toward the mold bodies for discharging a liquid coolant therefrom onto the sides of the mold bodies below the flanges so that the coolant flows downwardly over the mold bodies in a spreading film to chill the molds in an efficient manner. The ends and top of the housing are permanently closed but the sides of the housing have removable side clo-

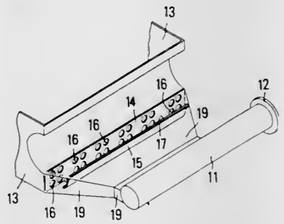


sures that are in place during the steam-cooking operation but may be removed during the chilling process.

3,796,145
OIL RECTIFYING APPARATUS

Yoshitomo Yoshioka, 23-23,2-Chome Naka-Ikegami, Ohta, Tokyo, Japan

Filed Dec. 30, 1971, Ser. No. 213,868
Claims priority, application Japan, Feb. 26, 1971, 46-9587
Int. Cl. A47j 37/12; B01d 33/22, 35/02
U.S. Cl. 99—408 1 Claim



A device for treating oil used in potato chip frying apparatus comprises a housing which has a passage for the circulation of the oil therethrough and with a filter extending completely across the passage which has openings for the passage of the oil for circulating it back to the fryer. A rectifying plate is pivotally mounted across the passage and positioned in the oil stream ahead of the filter. The plate defines a means for deflecting the oil immediately ahead of the filter so that the full flow pressure of the oil does not impinge directly against the filter.

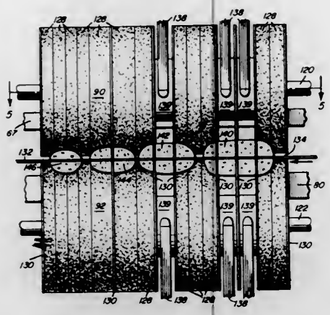
3,796,146
METHOD AND APPARATUS FOR CUTTING NONUNIFORM ARTICLES INTO UNIFORM PIECES

Edward H. Lacey, Rural Rt., Trent, S. Dak.

Filed Oct. 19, 1971, Ser. No. 190,572
Int. Cl. A23n 15/00; A47j 44/00; B26d 4/06, 5/34
U.S. Cl. 99—514 13 Claims

Nonuniform articles, such as potatoes, are cut into uniform pieces by subjecting the articles to a centrifugal force for orienting each article along its longitudinal axis, transferring tangentially each oriented article to a conveyor defining a conveying path for forming a single row of articles moving in a conveying direction and oriented with their longitudinal axes parallel to the conveying path, feeding the single row of articles past a plurality of measuring stations, measuring a longitu-

dinal length for each article passing a measuring station, removing from the conveyor each article having a longitudinal length greater than a length predetermined for the respective measuring station, and cutting each article into uniform pieces. Apparatus for performing the method has a cylindrical wall defining an opening for the transfer of the articles to the conveyor and a cone-shaped disc mounted for rotation and ar-



ranged within the cylindrical wall for supplying the centrifugal force. A plurality of sensing devices is used to measure the length of the passing articles, and a plurality of associated plungers is provided to remove the articles from the conveyor and move the articles into a cutting assembly. The sensing devices are arranged in the conveying direction to remove articles having progressively shorter longitudinal lengths.

3,796,147

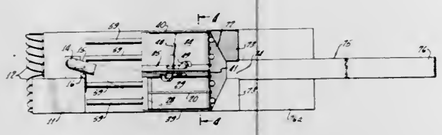
APPARATUS AND METHOD FOR COMPACTING AND REMOVING SNOW

David L. Richardson, Rt. 3, Box 123, Bishop, Calif.

Filed Dec. 30, 1971, Ser. No. 214,042

Int. Cl. B30b *13/00*

U.S. Cl. 100—39 **21 Claims**



The apparatus comprises a plurality of open-topped chambers disposed adjacent each other and adapted to be filled with snow by means of a rotary snow blower. After each chamber is filled, a lid is slid over the open top thereof, following which a compression plate is moved forcefully toward one end of the chamber to compress the snow therein. Immediately after the snow is compressed, the wall at such one end of the chamber is elevated out of position, so that further movement of the compression plate ejects the compressed snow to a discharge chute and conveyor. Thereafter, such wall at the chamber end moves over the forward surface of the compression plate to scrape such surface free of snow. The lid moves back and forth between the adjacent chambers and is automatically scraped of snow in response to such movement. Such lid forms the bottom of a bin which holds excess snow delivered by the snow blower. The side walls of the bin are connected to the chamber side walls by means of knifelike gussets, the arrangement being such that the snow may not pack adjacent the edges of the lid. The invention further comprises the method of performing various ones of the above-indicated operations.

3,796,148

PRESSING DEVICE FOR THE REMOVAL OF WATER FROM CELLULOSE OR THE LIKE

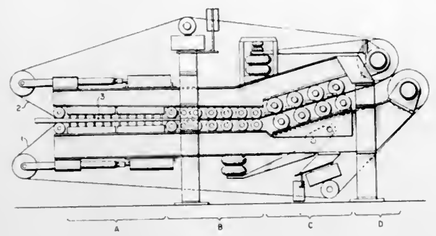
Otto Heissenberger, Graz, Austria, assignor to Maschinenfabrik Andritz Actienopellschaft, Reichstrasse, Graz, Austria

Filed Mar. 27, 1972, Ser. No. 238,414

Claims priority, application Austria, Apr. 5, 1971, 2892/71

Int. Cl. B30b *9/24, 5/04*

U.S. Cl. 100—118 **4 Claims**



This invention relates to an improvement in a pressing device for the removal of water from solid materials, particularly cellulose or similar fibrous material, comprising a registering station, a preliminary pressing station, and a main pressing station including pairs of upper and lower horizontal rollers between which a sheet or web of material to be dehydrated is passed, on a sieve or between two sieves. The improvement comprises a roller of at least one roller pair mounted offset with respect to the other roller in the traveling direction of the sieve, in said registering station.

3,796,149

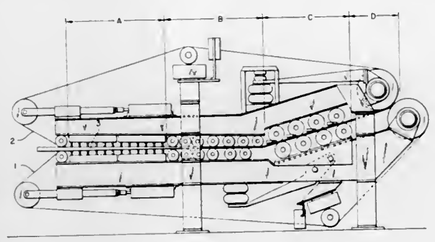
PRESSING DEVICE FOR THE REMOVAL OF WATER FROM CELLULOSE OR THE LIKE

Otto Heissenberger, Graz, Austria, assignor to Maschinenfabrik Andritz Actiengesellschaft, Graz, Austria

Filed Mar. 27, 1972, Ser. No. 238,491

Int. Cl. B30b *9/24, 5/04*

U.S. Cl. 100—118 **8 Claims**



This invention relates to an improvement in a pressing device for the removal of water from solid materials, particularly cellulose or similar fibrous material, comprising pairs of upper and lower horizontal rollers between which a sheet or web of material to be dehydrated is passed on a sieve or between two sieves in a preliminary pressing station, and common bar means supporting at least part of the rollers on one side of said sieve or sieves and being adjustable in the direction toward the sieve. The improvement comprises means pivotally mounting said common bar means at a pivot axis which is pivotal in the direction toward the sieve and which is offset from the center of gravity of the roller axle bearings in the traveling direction of the sieve.

3,796,150

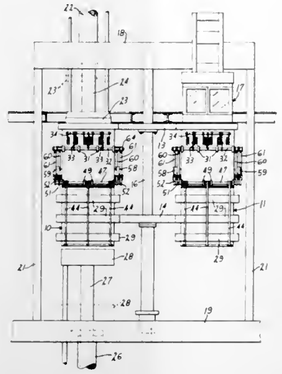
APPARATUS FOR BALING FIBERS AND THE LIKE

Donald W. Van Doorn; James B. Hawkins; William C. Pease, III, and Jack L. Colquett, all of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed June 9, 1972, Ser. No. 261,293

Int. Cl. B30b *1530*

U.S. Cl. 100—215 **12 Claims**



A baling press for fibers and like materials in which the bale is initially or partially compressed in a fiber collection chamber and then brought to final compression outside of the chamber. The press comprises a compression ram and a restraining ram between which the fibers in the chamber are initially compressed. Upon reaching predetermined compression in the chamber the two rams move together, pushing the fiber from the chamber. Means such as the beams or other framework of the press frame positively arrest movement of the platen carried by the restraining ram so that final compression of the bale takes place without substantial load on the restraining ram, permitting the use of a much lighter restraining ram than would be required if it had to take the full force of compressing the bale.

3,796,151

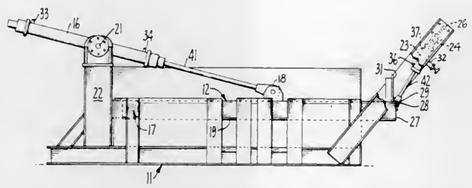
AUTO FLATTENING PRESS

Jerome Williams, 823 W. 17th St., National City, Calif.

Filed June 19, 1972, Ser. No. 264,050

Int. Cl. B30b *7/00*

U.S. Cl. 100—233 **8 Claims**



An apparatus for flattening junked vehicles having a rectangular bed and a crushing head pivoted to swing downwardly and crush flat a vehicle positioned on the bed. The swinging movement is accomplished by a first long throw hydraulic ram, which moves the head through most of its arc, and a second shorter hydraulic ram which engages the head and adds its force to that of the first ram in urging the head downwardly through the final stages movement of the head so as to overcome the increased resistance to crushing encountered as the vehicle body is progressively flattened. Manually operable valving means is provided for effecting the sequential action of the rams.

3,796,152

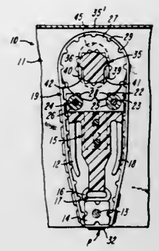
FLEXIBLE BIASED SELECTIVE WEB PRINTER

Eugene W. Finke, Miamisburg, and Paul H. Hamisch, Jr., Franklin, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 208,037, Dec. 8, 1971, abandoned. This application June 4, 1973, Ser. No. 366,834

Int. Cl. B41j *1/60*

U.S. Cl. 101—111 **3 Claims**



There is disclosed a print head with selectively settable printing bands, a selector for selectively driving any one of the printing bands, a wheel for supporting the printing band at the printing zone, brackets for adjusting the amount of tension in the bands, flexible resilient fingers for detenting the wheel, and flexible resilient fingers for diminishing increases in the tension in the bands during printing band selection.

3,796,153

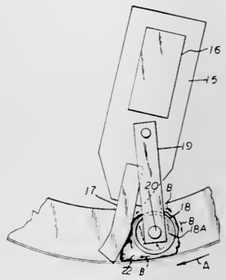
SQUEEGEE ASSEMBLY WITH LAST MOTION FLOOD ROLLER MOUNT

David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machines Inc., Hawthorne, N.J.

Filed Feb. 25, 1972, Ser. No. 229,402

Int. Cl. B41l *13/04*

U.S. Cl. 101—120 **9 Claims**



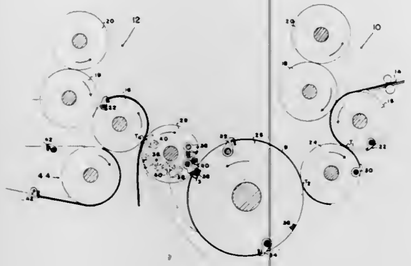
This disclosure is directed to a rotary printing screen assembly adapted for use on a screen printing machine. The assembly includes a rotary screen having an associated squeegee disposed within the rotary screen to force the color therethrough. A roller flood bar is operatively disposed within the screen which is free to rotate relative to the screen during a printing operation to effect a flood stroke along the internal surface of the screen in advance of the squeegee.

3,796,154

SHEET HANDLING APPARATUS FOR A MULTI-COLOR PERFECTOR PRESS

Willi Weisgerber, Johannisberg-Rheingau, Germany, assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed May 25, 1972, Ser. No. 257,006
Claims priority, application Germany, July 7, 1971, P 21 33 693.6
Int. Cl. B41f *21/04*
U.S. Cl. 101—232 10 Claims



A nonrotatable tumbler cam mechanism is positioned coaxially with the transfer cylinder on the operator's side of the press and is movable axially thereto. A cam actuated device is provided on the transfer cylinder for tumbling the perfector and two color grippers inwardly to transfer the trailing edge of the sheet from the perfector grippers to the two color grippers. A cam follower on the cam actuated device is actuated by the tumbler cam mechanism. A pair of gripper actuating cams are coaxially and nonrotatably mounted relative to the transfer cylinder on the drive side of the press. One of the pair of cams, referred to as a two color cam, is arranged to open and close the two color grippers for two color printing and the other of the pair of cams is arranged to open and close the perfector grippers and the two color grippers for perfector printing. The pair of cams, i.e., the two color cam and perfector cam, are secured to each other and movable axially relative to the transfer cylinder. The perfector grippers and two color grippers have a cam follower associated therewith that is actuated by either the two color cam or the perfector cam. The two color and perfector cams are connected through a lever mechanism to an actuator device that is arranged to move the pair of cams axially relative to the transfer cylinder. The tumbler is also connected to the actuator device located on an exterior portion of the press so that the actuator device simultaneously moves the pair of gripper actuating cams and the tumbler cam to adjust the transfer cylinder for either the two color or perfector printing.

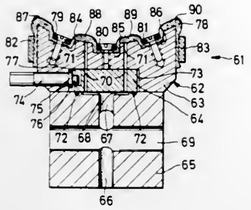
3,796,155

DEVICE FOR DOSED DISPENSING OF A LIQUID MEDIUM, FOR INSTANCE, A DYE, TO ROLLERS IN PRINTING MECHANISMS OF PRINTING MACHINES

Wilhelm Schluckebier, Bismarckstr. 1, Koblenz, Germany

Filed Aug. 31, 1971, Ser. No. 176,588
Claims priority, application Germany, July 27, 1971, P 21 37 498.1; Aug. 31, 1970, P 20 43 078.8
Int. Cl. B41f *31/08*
U.S. Cl. 101—365 4 Claims

An apparatus for supplying liquid to a printing roller or the like, for example, liquid dye, in which at least one body extending axially of the roller to be supplied is provided with passage means distributed therein in the direction of the length of the roller and adapted for adjustment as to effective cross sectional area thereby to control the liquid supply to the roller. Preferably, a plurality of such bodies are ar-



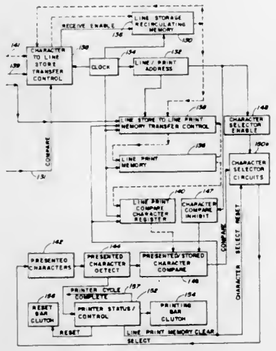
ranged in end to end relation along the roller and each passage and each body supplies a certain axial region of the periphery of the roller.

3,796,156

LINE PRINTER WITH RECIRCULATING LINE STORE AND LINE PRINT MEMORIES

Cedomir Marinkovich, Laconia, N.H.; James T. Bracken, deceased, late of Des Plaines, Ill., and by Barbara Bracken, representative, 855 Hinman Ave., Apt. 411, Evanston, Ill.

Filed July 12, 1971, Ser. No. 161,602
Int. Cl. B41j *5/00*; G06f *1/00*
U.S. Cl. 101—93 C 26 Claims



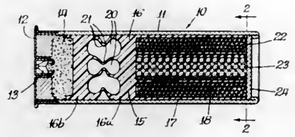
A printer for simultaneously printing an entire line of characters in accordance with information received in the form of binary coded characters includes a plurality of discs respectively located at a plurality of aligned print locations. Each disc has a plurality of type characters embossed around its peripheral surface, and is rotated to successively present its type characters at the print location. The received characters are stored and provided with addresses corresponding to the print locations. Each type character, as it is presented, is successively compared with all of the stored characters, and the disc at each location which corresponds to the address of a stored character that compares with the presented type character is stopped from further rotation to maintain the corresponding presented type character thereon at the print location. After all the discs have been stopped, all of the selected type characters at the aligned print locations are simultaneously impacted with a print receiving surface to transfer the entire line of print thereto.

3,796,157

SHOTGUN SHELL

Ray C. Anderson, 6655 S. New Haven, Tulsa, Okla.

Filed Mar. 3, 1972, Ser. No. 231,698
Int. Cl. F42b *7/08*
U.S. Cl. 102—42 C 9 Claims



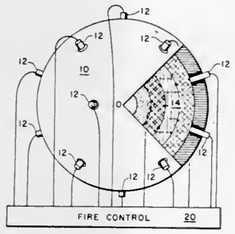
An improved shotgun shell including a plastic insert constructed to provide an inner and outer tubular arrangement for retaining two different sizes of shot in one shell.

3,796,158

EXPLOSIVE LUNEBERG LENS WARHEAD

Robert L. Conger, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 1, 1966, Ser. No. 524,351
Int. Cl. F42b *13/48, 1/00*
U.S. Cl. 102—67 2 Claims



An aimable warhead in the form of an explosive Luneberg lens with individually controlled detonators evenly spaced about its spherical surface for aiming and firing same in any given direction by detonating a specific detonator on a side of the warhead opposite to the direction of aim, and containing a plurality of concentric spherical shells of explosive which upon detonation develop an explosive plane wave that propagates in the direction of aim.

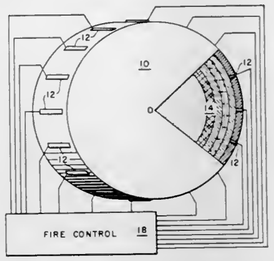
3,796,159

EXPLOSIVE FISHEYE LENS WARHEAD

Robert L. Conger, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 1, 1966, Ser. No. 524,352
Int. Cl. F42b *13/48, 1/00*
U.S. Cl. 102—67 3 Claims

An aimable warhead in the form of an explosive cylindrical lens with detonators spaced about its circumference for simultaneously aiming and firing the warhead in any direction by selectively firing a detonator on a side thereof opposite to the



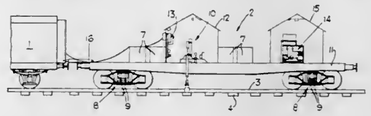
direction of aim and focusing the detonation waves in the aimed direction.

3,796,160

MAINTENANCE OF RAILWAY TRACK

John M. Waters; Michael J. Shenton, both of Derby, and Donald L. Heath, London, all of England, assignors to British Railways Board, London, England

Filed Nov. 29, 1971, Ser. No. 202,900
Int. Cl. E01b *27/16, 33/00*
U.S. Cl. 104—7 R 15 Claims



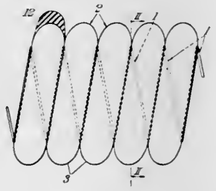
A method of correcting the level of a sleeper of railway track supported on a ballast bed comprises applying a loading, for example, through the sleeper to the ballast beneath the sleeper towards at least one end of the sleeper of an intensity greater than the intensity of normal traffic loading, the loading being applied a number of times sufficient to deform the ballast vertically in order to support the sleeper end at a desired lower level. The loading may be applied directly to a high sleeper end or a low sleeper end may be raised above its desired level and a packing of ballast placed beneath it prior to the application of the loading.

3,796,161

HANDRAILS FOR PASSENGER CONVEYORS

Pierre Colombot, Saint-Michel-sur-Orge, France, assignor to Agence Nationale De Valorisation De La Recherche (Anvar), Courbevoie, France

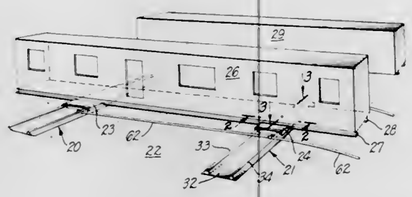
Filed Feb. 23, 1972, Ser. No. 228,693
Claims priority, application France, Feb. 26, 1971, 71.06793
Int. Cl. B66b *9/14*
U.S. Cl. 104—25 14 Claims



Handrail suitable for use with a passenger conveyor having a treadway which is moved at a speed which is variable along

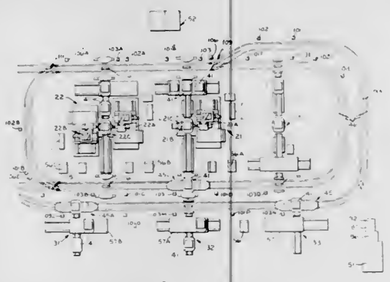
its path. The handrail comprises a helical coil which is covered on part of its lateral portion throughout its length by a sheath, consisting of a corrugated booting or overlapping tube lengths. Driving means comprising a plurality of wheels distributed along the path impress a variable speed to the handrail.

3,796,162
CONVEYOR SYSTEM
Robert E. Burdick; Henry W. Huthsing, and Robert B. Kieding, all of Santa Barbara, Calif., assignors to Rolair Systems, Inc., Santa Barbara, Calif.
Filed June 28, 1972, Ser. No. 267,188
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **13 Claims**



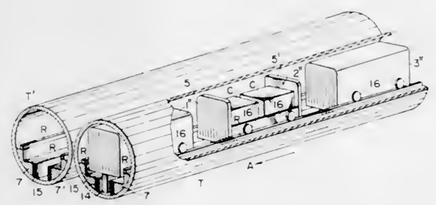
A conveyor system for moving large objects, such as mobile homes, along a production line or the like. A pair of tracks laid on the factory floor, comprising plates with upstanding rails. Load carriers for movement along the tracks, each load carrier comprising a platform with guide members for engaging the rails and a frame with a plurality of removable air cushion units.

3,796,163
MANUFACTURING SYSTEM
Ronald E. Meyer, New Berlin; Frank J. Schalk; Robert K. Sedgwick, both of Brookfield, and John E. Schluge, Hales Corners, all of Wis., assignors to Kearney & Trecker Corporation, Milwaukee, Wis.
Division of Ser. No. 32,226, April 27, 1970, abandoned. This application July 12, 1972, Ser. No. 270,972
Int. Cl. B61l *25/00*
U.S. Cl. 104—88 **4 Claims**



A manufacturing system having one or more loading and unloading stations and a plurality of spaced apart numerically controlled machine tools, the operation of which is effected by direct computer control. The manufacturing system includes a workpiece supply system comprising a closed loop trackway on which one or more cars are supported for guided movement to the various stations. The car carries a pallet on which a work holding fixture with a workpiece is secured, and transports the pallet to a computer selected machine station. At the selected station the pallet is automatically removed from the car and placed on a multiple positionable table which serves as a workpiece receiving and storage device from which a desired next workpiece to be supplied to the machine tool is automatically selected and transferred thereto by computer control. The computer automatically directs an empty car to the unloading side of the machine tool to receive a pallet work a workpiece that a work operation has been performed on and then by computer direction returns to the unload station where the pallet is removed or the car will be directed to advance the workpiece to a different machine tool.

3,796,164
SPACING CONTROL METHOD FOR RUNNING BODIES OPERATED IN A TUBULAR TRANSPORT SYSTEM
Sadaharu Nogi; Toshimitsu Miyamoto; Tikio Uchida, all of Tokyo; Hiroto Yasuhara, Matsudo; Tomoaki Kudo, and Ryosuke Shiki, both of Tokyo, all of Japan, assignors to Japanese National Railways, Tokyo, Japan
Filed Oct. 18, 1971, Ser. No. 189,894
Claims priority, application Japan, Oct. 17, 1970, 45-90908
Int. Cl. B61b *13/10*
U.S. Cl. 104—138 R **3 Claims**



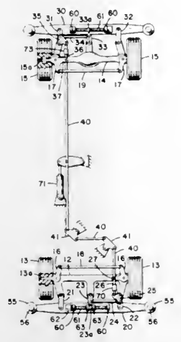
The present invention relates to an air-column method of controlling the spacing of running bodies when running bodies, say, freight cars, are successively operated on a running path constituted longitudinally within a hollow tube. A running path is constituted longitudinally on the inside surface of a hollow tube. Single freight cars or sets of several freight cars coupled are released or driven to run on this path with an arbitrary spacing. The total area at the end section of the freight car as compared with the sectional area of this hollow tube is selected at a predetermined ratio. In this case, the inside profile of the hollow tube and the lateral and sectional profiles of the freight car are appropriately selected such that, when the flow of gas (air) between the outside surface of a running freight car and the inside wall of the hollow tube is made to change, the effective sectional area formed thereby can be secured sufficiently large enough to change the desired result.

Under this arrangement, when two freight cars are running one after another at different speeds on the running path of the hollow tube, the air column enclosed between the opposing ends of said two cars and the corresponding walls of said hollow tube is compressed or expanded and with the relative speed difference reduced thereby thus eliminating the possibility of impact collision between the two cars can be eliminated.

3,796,165
GUIDE FOLLOWING STEERING APPARATUS
William P. Goode, Dallas, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed Nov. 29, 1971, Ser. No. 202,921
Int. Cl. B61b *13/04*
U.S. Cl. 104—247 **7 Claims**

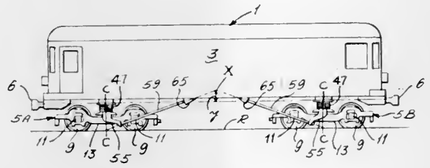
Disclosed is a system for steering a wheeled vehicle along a guideway. The system includes guide means parallel the desired course of the vehicle, front and rear guide followers adapted to follow the guide means, and apparatus for alternatively interconnecting either the front or rear guide follower

with the steering mechanism on the vehicle. The front and rear steering linkages are interconnected so that steering of all



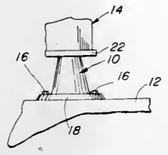
wheels is provided by the guide follower on the leading end of the vehicle.

3,796,166
RAILWAY LOCOMOTIVE SUSPENSION STABILIZING
Douglas G. K. Wilmot, Creve Coeur, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.
Filed Jan. 17, 1972, Ser. No. 218,352
Int. Cl. B61f *3/04, 5/16, 5/22*
U.S. Cl. 105—199 R **11 Claims**



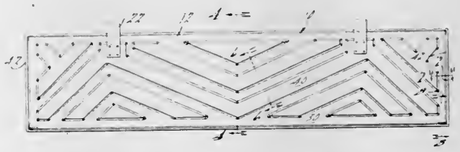
A stabilizing railway locomotive suspension includes a pair of swivel trucks having frames supported from the axles by a primary suspension and supporting the underframe by a secondary suspension. The trucks are connected to the locomotive underframe by longitudinally inclined links so that axle-to-axle load transference in each truck is minimized, and to eliminate traction load-responsive variations in coupler height, even with a soft secondary suspension, the links at each side of the locomotive are arranged so that their axial projections intersect in the region of the line of draft.

3,796,167
ELASTOMERIC RAILWAY CAR SIDE BEARING
John H. Van Moss, Jr., 3 Mavor Ln., Highland Park, Ill.
Continuation-in-part of Ser. No. 176,119, Aug. 30, 1971, abandoned. This application Feb. 1, 1973, Ser. No. 328,858
Int. Cl. B61f *5/14;* **F16c** *17/04, 17/08*
U.S. Cl. 105—199 CB **8 Claims**



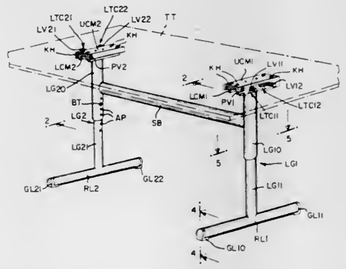
A side bearing or snubber having an upright body member constructed of a hard elastomeric material such as polyurethane and having an integral flanged base for attachment to the truck bolster of a railroad car providing for the resilient support of the car frame when installed for the absorption of dynamic forces of car motion by the compressive travel thereof, the snubber having a central bore extending through said body and base containing a shortened steel column therein for limiting said compressive travel, the bore being relieved adjacent to said base whereby under substantially full compression with the tilting of the car against the snubber, the snubber is compressed into a shallow oval-like bulbous shape, whereby the upper portion of the body grips the upper end of the column and urges it in frictional restraint forcing it to return to static position and in support of the car frame from its dynamic travel from car swaying and tilting.

3,796,168
RAILROAD HOPPER CAR HATCH COVER ASSEMBLY
Robert G. Zeller, Ashtabula, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Aug. 3, 1972, Ser. No. 277,667
Int. Cl. B61d *39/00*
U.S. Cl. 105—377 **8 Claims**



A fiberglass reinforced, plastic, weather stripped cover for elongated hatches of covered railway hopper cars and the like which can be retained in weather tight relation to the periphery of the hatch merely by clamps located at the opposite ends of the hatch cover.

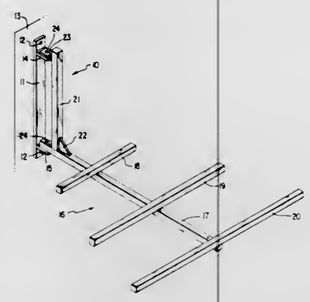
3,796,169
TILTABLE TABLE STRUCTURE
Emmett R. Bales, and Clarence F. Estes, Jr., both of Manchester, Ind., assignors to American Standard Inc., New York, N.Y.
Filed Sept. 25, 1972, Ser. No. 291,861
Int. Cl. A47b *3/08*
U.S. Cl. 108—116 **14 Claims**



This covers a table structure having two parallel vertical legs and a tabletop which is tiltable over a predetermined angle, such as 90°. The structure includes pivot means held stationary alongside both legs and two pairs of spring-loaded latching devices associated respectively with the two legs. Each latching device includes a lever and a cam which are held together under constant pressure by a spring. The tabletop may be tilted from a horizontal position to a vertical position by manipulating two of the levers which are respectively associated with the two legs, so that the tabletop may be

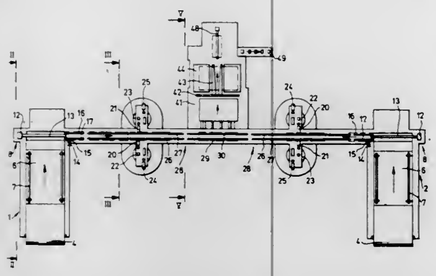
tilted from its vertical position to its horizontal position by manipulating the other two levers respectively associated with said legs.

3,796,170
DEVICE FOR ROTATABLY SUPPORTING ARTICLES
Alfredo A. Viera, Padres Capuchinos 1135, Rio Piedras, P.R.
Filed Apr. 21, 1972, Ser. No. 246,408
Int. Cl. A47b *49/00*
U.S. Cl. 108—139 **1 Claim**



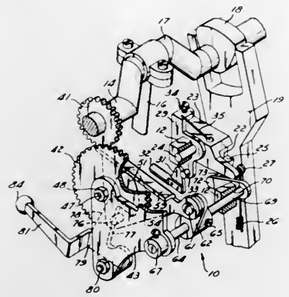
A wall-mounted device for rotatably supporting articles relative to the surface of the wall. A main member of a frame is aligned with, and pivotally mounted in, a bracket on the wall. A plurality of other frame members are secured in spaced relationship along the main member to extend transversely therefrom and to provide support portions for an article-support platform carried in overlying relationship on the frame.

3,796,171
APPARATUS FOR PROCESSING TEXTILE MATERIALS IN FLAT STRIPS, SUCH AS BEDDING MATERIALS
Conrad Arbter, Mittelweg 1 1/10, Saal a.d. Saale, Germany
Filed Dec. 26, 1972, Ser. No. 318,241
Claims priority, application Germany, June 9, 1972, 2228159
Int. Cl. D05b *27/00*
U.S. Cl. 112—121.15 **3 Claims**



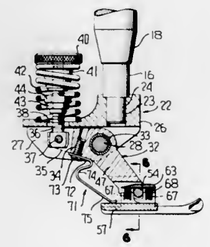
An apparatus for the guiding and processing of articles such as textile materials of certain lengths which have at least two side edges to be hemmed, including a supply station, a cutting station adapted to cut the material to predetermined lengths as supplied from the supply station, a conveyer for delivering the cut materials away from the cutting station to a sewing station where a hemming operation is performed, the hemmed material is delivered away from the sewing station by a conveyer, a folding apparatus coupled to the delivery conveyer and receiving the material therefrom and performing a folding of material, wherein a pair of sewing stations are arranged parallel with respect to each other and, an intermediate conveyer is arranged after the pair of sewing stations and operating at a higher delivery speed than the conveyer receiving the piece of material from the sewing station, a transfer conveyer arranged along the longitudinal side of the intermediate conveyer for transferring the hemmed piece of material to the folding apparatus.

3,796,172
SEWING MACHINE
Matsuzo Seiriki, Shijonawate, Japan, assignor to White Sewing Machine Company, Cleveland, Ohio
Filed Aug. 16, 1972, Ser. No. 281,176
Int. Cl. D05b *27/12*
U.S. Cl. 112—210 **13 Claims**



A mechanism in a sewing machine for producing a stretch stitch sewing pattern of alternating forward and reverse feed strokes including cam means operating in timed relationship to the main shaft and manually controlled linkage for selectively transmitting cam movement to a feed control slide. Various elements of the mechanism are arranged to move in planes parallel to the plane of movement of the feed control slide to provide mechanical simplicity and reliability and avoid adjustment sensitivity and operating noise. Preferably, the control slide is spring biased to a forward feed position and moved to a reverse feed position by the linkage so that the mechanism may be engaged or disengaged at any point in a machine cycle whether or not the machine is operating.

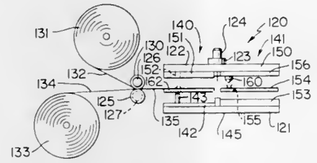
3,796,173
PRESSER MECHANISM FOR SEWING MACHINES
Ronald A. Godsen, Chicago, Ill., assignor to Union Special Machine Company, Chicago, Ill.
Filed Nov. 29, 1971, Ser. No. 202,892
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 **4 Claims**



This disclosure relates to a low inertia adjustable stroke presser foot for sewing machines which is operable to feed the uppermost ply of superimposed plies being sewn to compensate for the drag exerted by the presser foot sole upon the upper ply. The presser foot is automatically driven through its

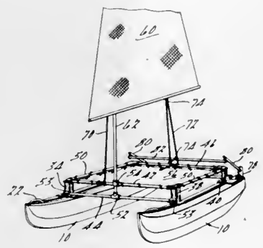
cooperation with the feed dog and effects the feeding of the upper ply at the termination of the work feeding action of the feed dog. The presser foot includes two sole plates mounted for operation in unison while being relatively movable to one another to compensate for a variation in the number of plies between the two sole plates.

3,796,174
APPARATUS FOR MAKING ARTICLE-SUPPORTING WALL FOR COOKING PAN
Calvin L. Wilson, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Division of Ser. No. 220,275, Jan. 24, 1972, which is a continuation-in-part of Ser. No. 844,442, July 24, 1969, Pat. No. 3,640,209. This application July 18, 1972, Ser. No. 272,803
Int. Cl. B21d *51/06*
U.S. Cl. 113—1 R **9 Claims**



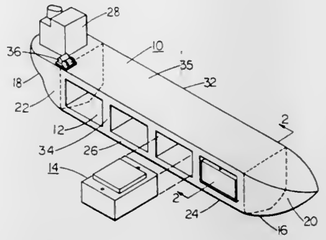
A disposable cooking pan which is particularly adapted for broiling food products is provided and such pan has metallic foil defining practically its entire exposed inside and outside surfaces. The pan has an article-supporting wall arranged above a bottom wall with a space provided therebetween for collecting juice, or the like, exuding from a product contained in the pan and the article-supporting wall has means for absorbing such juice. An improved apparatus for and method of making the article-supporting wall are also presented herein.

3,796,175
CATAMARAN
Frederick S. Ford, Jr., Grosse Pointe Shores, Mich., assignor to Woodall Industries Inc., Detroit, Mich.
Filed Sept. 22, 1971, Ser. No. 182,743
Int. Cl. B63b *1/12*
U.S. Cl. 114—39 **5 Claims**



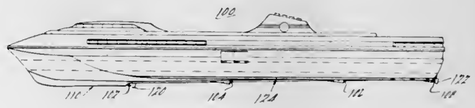
A catamaran is made with two hollow plastic hulls. Each hull consists of two vacuum formed plastic sheets heat sealed together at a vertical peripheral flange. The flange is enlarged on the lower side of the hull to define a keel. A load supporting framework is mounted on the hulls.

3,796,176
APPARATUS FOR AND METHOD OF CARRYING MARINE CARGO
Emilio C. Garcia, 441 Gravier St., New Orleans, La.
Filed Jan. 20, 1972, Ser. No. 222,423
Int. Cl. B63b *35/42*
U.S. Cl. 114—43.5 **2 Claims**



A marine vessel in which oppositely disposed ends are connected by a bottom and a crate structure therebetween. The ends and bottom define floatation spaces, and, in combination with the crate structure, define side opening cargo spaces in the interstices between longitudinal and transverse elements. And in detachable combination with the vessel, a plurality of floatable cargo modules that are complementary in size and shape, either singly or in combination, to the respective cargo spaces, to serve as lighters, then as individual holds, and as interstice closures when fastened in place in the crate structure. Propulsion machinery can be mounted in the after of the oppositely disposed ends either permanently or as a detachable propulsion module as described in my push-tow U.S. Pat. No. 3,613,628. Remotely controlled flood valves and evacuation pumps are mounted in the flotation spaces for controlling the draft of the vessel for loading and unloading the cargo modules in and out of the side opening cargo spaces by floating.

3,796,177
WATERCRAFT
Jack J. Szpytman, 910 N. Brys Dr., Grosse Point Woods, Mich.
Continuation-in-part of Ser. No. 150,419, June 7, 1971, Pat. No. 3,702,598. This application Dec. 6, 1971, Ser. No. 205,017
Int. Cl. B63b *1/00*
U.S. Cl. 114—66.5 S **13 Claims**



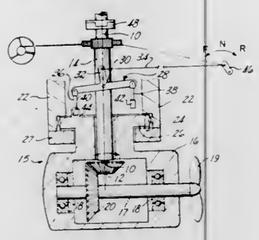
A watercraft is disclosed having an upwardly and aftwardly sloping central hull with a plurality of longitudinally-spaced drives located on parallel, distinct, longitudinally-extending axes to provide an efficient propeller arrangement with reduced drag from water turbulence. A pair of pontoons flank the central hull to compensate for the aftwardly-progressive reduction in the central hull displacement due to the upwardly-sloped hull and to provide efficient planing surfaces.

3,796,178

BOAT STEERING AND REVERSING SYSTEM

Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Continuation-in-part of Ser. No. 249,168, May 1, 1972. This application Aug. 28, 1972, Ser. No. 284,179
Int. Cl. B63h 25/42
U.S. Cl. 114—144 R 21 Claims



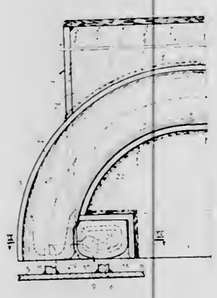
A system for controlling the forward and reverse operation of a boat having a propulsion unit mounted on the boat and rotatable to provide normal steering of the boat. Included is a mechanism for initiating a rapid rotating of the propulsion unit through a turn of approximately one-half circle to redirect the force of propulsion forwardly and thus provide reverse drive of the boat. The mechanism comprises a rotating gear associated with the propulsion unit itself for generating and applying a turning moment of force or torque for reorienting the propulsion unit through the half-circle turn. A detent means is coupled to the unit and selectively positioned by a manual control lever in the path of a stop mounted on the unit during its turning to retain it in either the forward or the reverse drive position.

3,796,179

SEALING DEVICE, IN PARTICULAR FOR A HATCH-COVER OR THE LIKE

Henri Kummerman, Geneve, Switzerland, assignor to MacGregor-Comarain, Ville D'Avray, France

Filed Jan. 3, 1972, Ser. No. 214,860
Claims priority, application France, Jan. 5, 1971, 71.00073
Int. Cl. B63b 19/12
U.S. Cl. 114—201 R 9 Claims



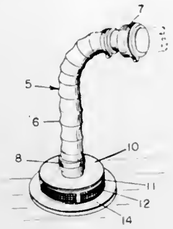
A sealing device for use between two separable bodies capable of being placed in pressed contact with one another along at least one joint line and at least one of which is removable with respect to the other, comprising a continuous flexible pipe secured along said joint line on one of said two bodies to co-operate over its whole length with a narrower elongated bearing element fast with the other body, wherein the improvement consists in that said pipe permanently contains a substantially constant amount of gaseous fluid.

3,796,180

VENTILATOR FOR ENGINES OF SMALL BOATS

Henry M. Ebbighausen, 397 Piermont Rd., Cresskill, N.J.

Filed Feb. 18, 1972, Ser. No. 227,453
Int. Cl. B63b 13/00
U.S. Cl. 114—211 2 Claims



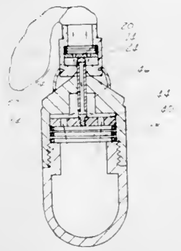
This invention consists of an inverted L-shaped flexible tube having its upper and horizontally disposed end suitably secured to the flame arrestor on the carburetor of the internal combustion engine in a boat. The lower and vertically disposed end of the aforesaid flexible tube being clamped to structure having a tubular screen suitably secured on the top of a flotation ring that is located in the bilge of the aforesaid boat.

3,796,181

HELP OR LOST BALLOON

Hassel Collins, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,217
Int. Cl. G09f 9/00
U.S. Cl. 116—124 B 3 Claims



A safety device comprising an inflatable balloon having an open neck; a hollow cylinder having opposite open ends, an end being secured to the neck, the cylinder having a first aperture intermediate the ends normally closed by a first spring loaded disc; a container of lighter than air gas having an opening coupled to the other end of the cylinder, the container having a second aperture in the opening which is normally closed by a second spring loaded disc; and a prong secured to the second disc and in contact with the fuel disc, whereby squeezing container and cylinder together causes the prong to bear against both discs and open both apertures to inflate the balloon with gas.

3,796,182

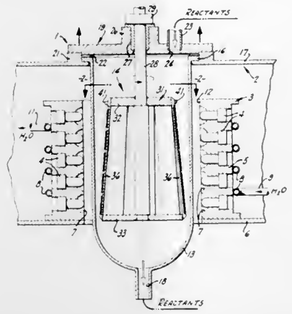
SUSCEPTOR STRUCTURE FOR CHEMICAL VAPOR DEPOSITION REACTOR

Richard S. Rosler, Saratoga, Calif., assignor to Applied Materials Technology, Inc., Santa Clara, Calif.

Filed Dec. 16, 1971, Ser. No. 208,732
Int. Cl. C23c 13/08
U.S. Cl. 118—48 11 Claims

Improved susceptor means for supporting a series of substrates to be coated with a film in a chemical vapor deposition reactor. The susceptor means comprises a supporting frame structure positioned within a reaction chamber surrounded by a source of heat energy. A plurality of separable discrete susceptor slabs, each of which is formed from a material which is capable of absorbing the heat energy emanating from the heat source, are heated to insure uniform eating of the substrates carried by the slabs.

The susceptor slabs are supported in a generally vertical orientation at a slight angle to the vertical to insure maintenance of the substrates in recesses formed therein without



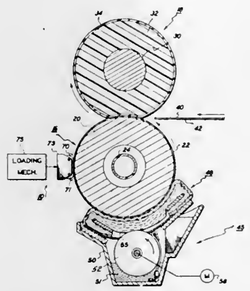
requiring additional retaining means. The susceptor means is separable from the reaction chamber to facilitate attachment of the susceptor slabs to the frame structure thereof. The susceptor slabs are separable from the frame structure so that the slabs may be horizontally oriented to facilitate loading of substrates therein prior to attachment of the susceptor slabs to the frame structure. The frame structure is operatively connectable with means for rotating the frame structure within the reaction chamber to insure uniform heating of the substrates carried thereby.

3,796,183

FREE FLOATING PRESSURE BIASING APPARATUS FOR CLEANING ROLL FUSER

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 17, 1972, Ser. No. 254,269
Int. Cl. B05c 11/02
U.S. Cl. 118—70 5 Claims



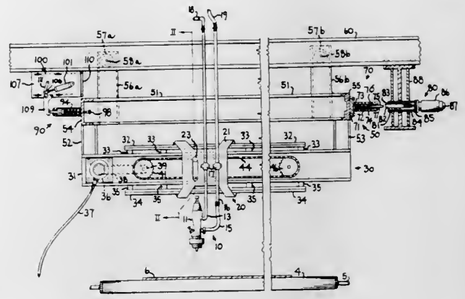
A free floating pressure biasing apparatus for applying predetermined pressure on cleaning roll devices cleaning residual toner particles from the heated fuser roll of a heated pressure fusing system in an electrostatic copy machine. Two springs, one heavy and one light or low rate, are employed in a housing urging the cleaning roll devices against the heated fuser roll. During the non-fusing condition the pressure is low to insure proper temperature due to biasing from a low rate spring. During the fusing operation both springs act against the cleaning roll devices to maintain an effective cleaning operation. A modified embodiment of the apparatus including an additional spring normally urging the cleaning rolls away from the fuser roll surface during the non-fusing operation.

3,796,184

RECIPROCATING DEVICE HAVING VIBRATION REDUCING MEANS

Charles T. Hawkins, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 25, 1972, Ser. No. 229,385
Int. Cl. B05c 5/02
U.S. Cl. 118—323 7 Claims



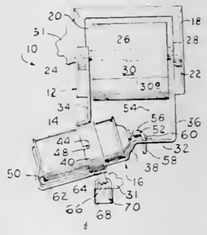
A reciprocating spray device is provided with means for reducing vibration associated with reversal of motion at the end of each path of reciprocation. The vibration reducing means includes accelerative force transfer means which are contacted by the reciprocating spray apparatus at the points of reversal of its motion for transfer of substantially all of the reciprocating spray device accelerative forces to a spray bridge which is rigidly mounted to a carriage having shock absorbing means connected thereto and movably mounted on support means so that transferred accelerative forces from the reciprocating spray apparatus cause the carriage to move substantially parallel to and in an opposite direction from the motion of the reciprocating spray apparatus, and providing for the shock absorber to contact a fixed stop mounted in fixed relation to the supporting beam.

3,796,185

DEVICE FOR CLEANSING AND SANITATION PURPOSES

Philip Boone, 15 Fenwick Rd., Winchester, Mass.

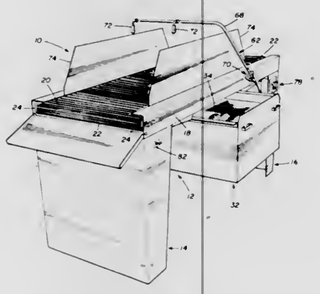
Continuation-in-part of Ser. No. 48,916, June 18, 1970, Pat. No. 3,707,945, and a continuation-in-part of Ser. No. 715,768, March 25, 1968, Pat. No. 3,652,174, said Ser. No. 48,916, is a continuation of Ser. No. 678,600, Oct. 27, 1967, abandoned. This application Mar. 20, 1972, Ser. No. 236,072
Int. Cl. B05c 5/00
U.S. Cl. 118—325 4 Claims



A device comprising a container and dispensing element for a flowable substance such as a liquid in combination with a

mounting bracket therefor and a sheet-material supply means, e.g., a cleansing- or toilet-tissue supply unit. The device is adapted to provide given areas of the sheet material treated with the substance which are interspersed with untreated areas at the option of the user, the sheet material being suitable for use as an improved cleansing or other medium.

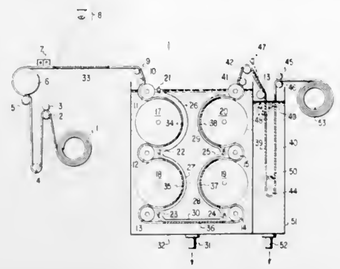
3,796,186
MOP TREATING APPARATUS
Joseph W. Bounds; Lynn E. Goldstein, and Franklin E. Willard, all of Dallas, Tex., assignors to Texel Industries, Inc., Cleburne, Tex.
Filed Jan. 31, 1972, Ser. No. 222,040
Int. Cl. B05c *11/00, 11/10*
U.S. Cl. 118—603 **14 Claims**



A mop treating apparatus includes a relatively small volume reservoir drawer wherein mop treating fluid is maintained at an elevated temperature. The volume of mop treating fluid in the reservoir drawer is held constant by a centrifugal pump which withdraws fresh mop treating fluid from a source and a float controlled valve mounted in the drawer which governs the level of mop treating fluid in the reservoir drawer. An air actuated reciprocating pump withdraws mop treating fluid from the reservoir drawer and forces the mop treating fluid through a pair of spray heads mounted over a conveyor. The conveyor is actuated through a slip clutch to transport dust mops under the spray heads whereupon mop treating fluid is applied to the dust mops. Excess fluid is returned to the reservoir drawer through a filter screen situated in the upper portion thereof.

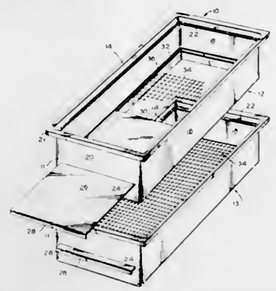
3,796,187
APPARATUS FOR DEVELOPING CONTINUOUS ELECTROPHOTOGRAPHIC PHOTOSENSITIVE WEB MATERIAL
Masamichi Sato; Osamu Fukushima, and Seiji Matsumoto, all of Asaka, Japan, assignors to Fuji Photo Film Co. Ltd., Kanogawa, Japan
Filed July 2, 1971, Ser. No. 159,345
Claims priority, application Japan, July 3, 1970, 45-58130
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **4 Claims**

An apparatus for developing continuous electrophotographic photosensitive web material which comprises plural support drums in an array in a container for liquid developer, plural developing electrodes which are larger in dimension than the latent image area formed on the photosensitive material and which are arranged along the periphery of the support rollers so as to be in facing relationship with slight spacing therebetween with the continuous electrophotographic photosensitive web material to be wound the support drums at least over the length of the latent image area with the rear side thereof towards the drums, a means for supplying liquid developer into the space between the developing electrodes and the photosensitive material, and advancing the photosensitive material intermittently so as to bring all the latent image areas in the developing section into facing rela-



tionship with developing electrodes respectively when the photosensitive material is brought to standstill.

3,796,188
REUSABLE SANITARY PET LAVATORY
Samuel R. Bradstreet, 849 F St., Lake Oswego, Oreg.
Filed Oct. 12, 1972, Ser. No. 296,758
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **4 Claims**

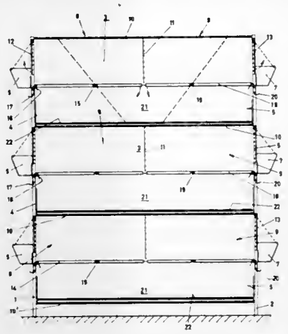


A reusable, sanitary pet lavatory comprises a pair of identical nested box-like receptacles with each of the receptacles having a screened or perforated plate positioned above a slideable floor member. In use, the upper receptacle, which contains pet litter, nests within and is supported by the lower receptacle; the floor members located in each receptacle being in a closed position with respect to the perforated plate. The closed floor member in the upper receptacle prevents the pet litter, in which pet excrement is deposited, from falling into the lower receptacle until separation of the excrement from the litter is desired. The apertures perforated in the plate member are sized to screen out the solid pet excrement while permitting the separated pet litter to pass through to the lower receptacle for collection when the slide in the upper receptacle is opened. The components are interchangeable so that each receptacle can serve as either the separating or collecting means for the lavatory.

3,796,189
CAGE BATTERY, PARTICULARLY FOR TABLE CHICKENS
Paul Marie Joseph Blondeel, Schoten, Belgium, assignor to Hendrix' Fabrieken N.V., Boxmeer, Netherlands
Filed July 13, 1972, Ser. No. 271,465
Claims priority, application Netherlands, July 13, 1971, 7109684
Int. Cl. A01k *31/06*
U.S. Cl. 119—17 **5 Claims**

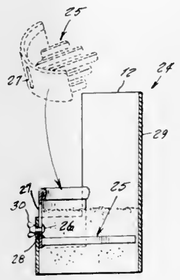
A cage battery, particularly for slaughter chickens, comprises an assembly of cages arranged in one or more layers,

each cage being delimited by two side walls, an intermediary wall, a bottom, a front and a back wall, wherein below each layer of cages a continuous reception and transport space is



formed, at least a portion of the bottom of each cage being movable between a closed position and an opened position in which the cage space communicates with the reception and transport space.

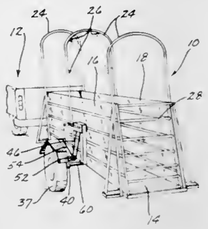
3,796,190
HOG FEEDER
Howard B. Stoll, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y.
Filed May 25, 1972, Ser. No. 256,795
Int. Cl. A01k *5/00*
U.S. Cl. 119—63 **1 Claim**



A feeder for use to feed hogs, the feeder having the distinct feature of preventing the hogs to root the feed out; the feeder consisting of a singular part that is cut out from a length of cylindrical steep pipe and in which a deep notch is provided from one end so to give access for the hog to reach the feed.

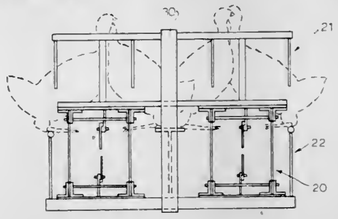
3,796,191
LOADING CHUTE WITH RETRACTABLE LANDING GEAR
Daryl C. McIntire, Seymour, Iowa
Filed Oct. 12, 1972, Ser. No. 296,974
Int. Cl. A01k *29/00*
U.S. Cl. 119—82 **10 Claims**

An animal loading chute with retractable landing gear and capable of serving as a loading chute, a holding chute and a trailer device. A first shaft is secured to and extends beneath the floor of the chute and has triangular supports pivotally secured, at one point thereof, to the opposite ends thereof. Each of the triangular supports has an axle spindle extending from its second point which has a wheel mounted thereon. A winch means is connected to the third points of the triangular supports for selectively pivoting the supports with respect to the chute so that the wheels will be raised and lowered with respect to the chute. A removable safety bar selectively interconnects the triangular supports when the chute is being used



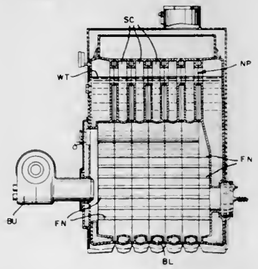
as a trailer device. A spray attachment is also provided on the chute for spraying disinfectant or the like on the animal in the chute.

3,796,192
METHOD AND APPARATUS FOR HANDLING LIVE POULTRY
Alonzo E. Parker, Jr., 1031 S. Plum St., Durham, N.C.
Filed Oct. 14, 1971, Ser. No. 189,295
Int. Cl. A01k *37/00*
U.S. Cl. 119—97 R **10 Claims**



A method and apparatus for handling live poultry are based on using a coop-like structure which incorporates processing plant type conveyor shackles as part of the coop structure. The shackles are loaded at the farm with the poultry, are transported with the loaded poultry as part of a coop structure between the poultry farm and the poultry processing plant and at the plant are then removed from the coop structure and placed directly on the poultry processing conveyor.

3,796,193
BOILER CONSTRUCTION
Allan E. Martin, Hacketstown, N.J., and Edmund C. Shirley, Albany, Ind., assignors to American Standard Inc., New York, N.Y.
Filed Apr. 11, 1973, Ser. No. 350,220
Int. Cl. F22b *23/00*
U.S. Cl. 122—225 R **21 Claims**



This application covers a wet base boiler of the multi-section type, that is, a boiler in which the firebox is "surrounded"

by water, but one of the legs of each section, i.e., the left leg, is finned to increase the rate of heat transfer to that leg, while the other leg, i.e., the right leg, may remain unfinned. This one-sided finned construction results in an improved quality of steam for boilers operated to generate steam. A tankless water coil may be added to the boiler, either positioned in the water chamber above the firebox or in the nipple port area. In either case, there will be a clockwise water movement throughout the sections of the boiler due to the difference in the heat transfer properties of the right and left legs, causing the water to move downwardly in all of the right legs where the temperature will be somewhat lower and to move upwardly in all of the left legs. This circuital travel of the water through the legs of the various sections also improves the heat transfer to the water flowing through the tankless coil.

3,796,194

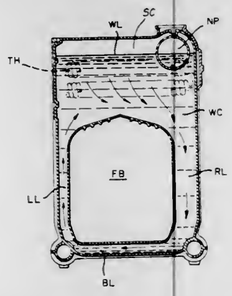
LARGE WATER LEG BOILER

Edgar M. Peterson, Fanwood, N.J., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,221

Int. Cl. F22b *23/00*

U.S. Cl. 122—225 R **21 Claims**



This application covers a wet base boiler of the multi-section type, that is, a boiler in which the firebox is "surrounded" by water, but one of the legs of each section, i.e., the right leg, is made different in cross-sectional area from the left leg. Thus, the right legs may be made much larger in cross-sectional dimensions than the left legs, especially if the nipple port of the boiler is positioned above the right legs. This results in an improved quality of steam for boilers operated to generate steam. A tankless water coil may be added to the boiler, either positioned in the water chamber above the firebox or in the nipple port area. In either case, there will be a clockwise water movement throughout the sections of the boiler due to the difference in the sizes of the right and left legs, causing the water to move downwardly in all of the right legs and to move upwardly in all of the left legs. This circuital travel of the water through the legs of the various sections improves the heat transfer to the water flowing through the tankless coil.

3,796,195

CIRCUIT ARRANGEMENT FOR ONCE THROUGH VAPOR GENERATOR

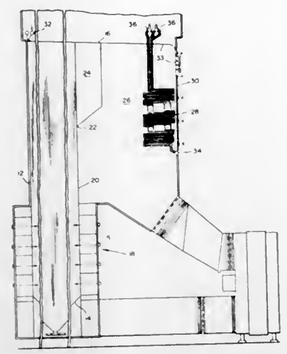
Walter P. Gorzegno, Florham Park, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Apr. 24, 1972, Ser. No. 247,068

Int. Cl. F22b *29/06*

U.S. Cl. 122—406 S **6 Claims**

A once-through vapor generator in which the roof and heat recovery area rear wall comprise a single continuous downflow pass feeding the generator primary superheater. An outlet header for the pass, at the lower end of the pass, also serves as the inlet header for the primary superheater, flow from the header being upwardly in the superheater. A plurality of diaphragms at spaced intervals along the axis of this common header divide the header into a plurality of separate sections which in turn form in the downflow pass and superheater a plurality of narrow-width parallel down-up flow circuits. The invention prevents the occurrence of recirculation of flow at low loads within the roof and heat recovery area rear wall.



A plurality of mix headers may be employed in each down-up flow circuit, at a midpoint in elevation in the heat recovery area rear wall. This reduces the possibility of recirculation within a particular down-up flow circuit in large sized units having a large difference in elevation between the roof inlet header and the lower common header.

3,796,196

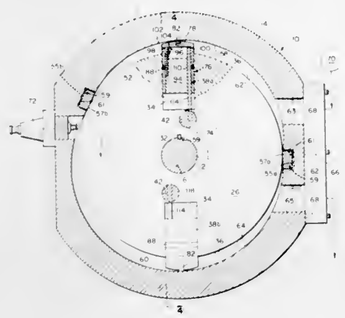
ROTARY ENGINE

James A. Baker, 3104 Main St., Bridgewater, Mass.

Filed July 10, 1972, Ser. No. 270,503

Int. Cl. F02b *53/00*

U.S. Cl. 123—8.17 **18 Claims**



A rotary engine comprising a housing, a rotor mounted within the housing for rotation relative thereto about an axis, the peripheral surface of the rotor and the interior surface of the housing defining therebetween first and second chambers, a piston carried by the rotor and movable generally radially thereof in engagement with the housing interior surface, the piston including an interior chamber therein, a first opening extending from the interior chamber through a first piston wall, a second opening extending from the interior chamber through a second piston wall opposite the first wall, and the engine including first control means for permitting flow from the first chamber through the first opening into the interior chamber and second control means for permitting fluid flow from the interior chamber through the second opening to the second chamber.

3,796,197

ELECTRONIC REGULATOR WITH FUEL INJECTION CONTROL FOR DIESEL ENGINES

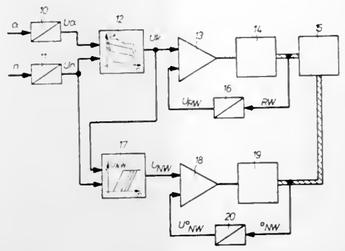
Johannes Locher; Edgar Schonart, both of Stuttgart, and Karl-Heinz Adler, Leonberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 5, 1971, Ser. No. 121,405

Claims priority, application Germany, Mar. 12, 1970, 2011712

Int. Cl. F02p *5/04;* **F02b** *3/00*

U.S. Cl. 123—32 EA **22 Claims**



Arrangement for controlling fuel injection. Transducers generate first and second signals indicative of first and second engine operating conditions. Fuel-quantity selector generates electrical quantity signal indicative of the quantity of fuel to be injected per combustion cycle as a predetermined function of said first and second signals. Timer generates electrical timing signal indicative of time of commencement of fuel injection with respect to the combustion cycle as a predetermined function of said first and second electrical signals. Fuel-injection means commences fuel injection at a time with respect to the combustion cycle indicated by said timing signal, and at such time injects an amount of fuel indicated by said quantity signal.

3,796,198

FUEL INJECTION ARRANGEMENT

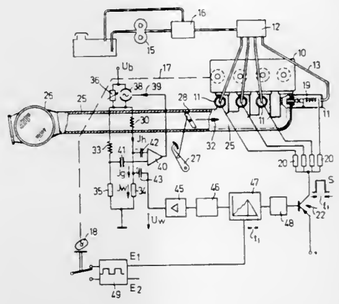
Harald Mauch, Korntal; Norbert Rittmannsberger, Stuttgart, and Hermann Scholl, Korntal, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 5, 1972, Ser. No. 295,364

Claims priority, application Germany, Oct. 8, 1971, 2150187

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA **20 Claims**



The arrangement includes a temperature-dependent resistor positioned in the air-intake passage of the engine. A heating current is made to flow through the resistor. The current has a first component sufficient to maintain the resistor at a predetermined temperature in the absence of air flow in the air-intake passage. The current has a second component superimposed upon but distinguishable from the first component and equal to zero in the absence of air flow; the second current component increases sufficiently in response to the cooling effect of air flow as to maintain the resistor at the predetermined temperature. A timer generates fuel-injection pulses whose pulse duration is a function of the second current component.

3,796,199

FUEL INJECTION APPARATUS

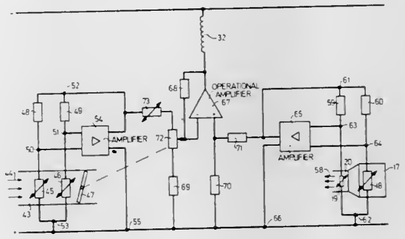
Heinrich Knapp, Leonberg-Silberberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 4, 1973, Ser. No. 320,961

Claims priority, application Germany, Jan. 11, 1972, 2201135

Int. Cl. F02b *3/00;* **F02m** *39/00*

U.S. Cl. 123—32 EA **7 Claims**



In a fuel injection apparatus, in order to maintain a constant fuel-air ratio, the position of the movable valve member of a fuel quantity distributor and metering valve is affected by an electromagnet. The intensity of the energizing current for the electromagnet is derived from a comparison between the output of a first and a second bridge circuit. The first bridge circuit contains a temperature-dependent resistance which is located in the engine suction pipe and the resistance value of which is a measure for the flow rate of air. The second bridge circuit contains a temperature-dependent resistance which is located in the distributor and metering valve and the resistance value of which is a measure for the flow rate of fuel.

3,796,200

FUEL INJECTION APPARATUS

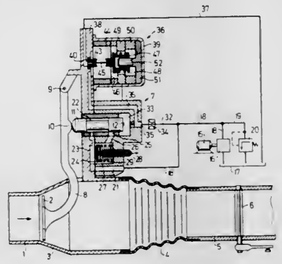
Heinrich Knapp, Hummelbergweg 24, 725 Leonberg-Silberberg, Germany

Filed Jan. 10, 1973, Ser. No. 322,382

Claims priority, application Germany, Jan. 26, 1972, 2203507

Int. Cl. F02m *69/00*

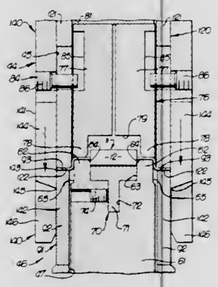
U.S. Cl. 123—119 R **4 Claims**



In a fuel injection apparatus in which an air sensor deflected as a function of the intake air quantities maintains the air-to-fuel ratio at a constant value and wherein the return force af-

fecting the air sensor and opposing the deflecting force of the air flow is derived from pressurized liquid, the pressure of said liquid is varied by altering, in response to at least one engine variable, such as the oxygen content of the exhaust gas, the energizing current of a movable coil armature. The latter, together with a stationary permanent magnet, is incorporated in a pressure control valve that affects the pressure of said liquid.

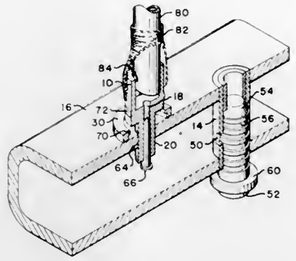
3,796,201
APPARATUS FOR SHAPING A PLURALITY OF LEAD WIRES OF A MINIATURIZED CIRCUIT
Seymour Golub, Woodland Hills, Calif., assignor to Electronic Packaging Associates, Inc., Tarzana, Calif.
Filed Jan. 4, 1971, Ser. No. 103,759
Int. Cl. B21f *1/00, 11/00*
U.S. Cl. 140—1 **10 Claims**



Apparatus for shaping a plurality of lead wires of a miniaturized circuit includes a base mounting a C-shaped frame with guide rails on which a movable carrier is mounted. An upper jaw assembly is mounted on said carrier while a lower jaw assembly, fixed to said frame, has a saddle with locating plates for receiving and properly locating the body of the miniaturized circuit. Lead wires extending therefrom rest on anvil portions of the saddle to be clamped thereto by opposing clamping members carried by the upper jaw assembly. The clamped leads are bent between opposing die members in response to relative movement of the jaw assemblies, into a stepped configuration and mating shear plates trim them to a desired length. The jaw assemblies move in response to manual movement of a handle member mounted to a lever member pivoted on a frame and engaging a cam member on the carrier. The clamp members and the upper die members are spring mounted to insure independent and correct clamping and shaping of the lead wires. The saddle is mounted on a calibrated adjuster for movement relative to the lower die members to very accurately adjust the stepped configuration of the lead wires. Cam lever and handle members are mountable on either side of the frame for right or left hand operation. The lever member is pivoted on an eccentric bushing in the frame for selectively changing the location and length of the stroke of the carrier. The handle member-lever member junction is provided with a clutch permitting the arcuate relationship therebetween to be selectively changed for ease in operation.

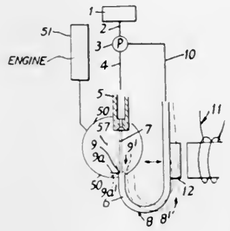
3,796,202
SYSTEM AND FITTING FOR CHOKE TUBE REPAIR
Kenneth James Guhman, 7 Depot Rd., South Grafton, Mass.
Filed Mar. 20, 1972, Ser. No. 236,370
Int. Cl. F02m *1/10*
U.S. Cl. 123—119 F **6 Claims**

A choke tube repair fitting having an elongated body tapered at one end to be driven into the stub of a broken choke tube, having a breakaway collar adapted to receive the driving force and to break away when a predetermined level is reached, and having a counterbore at its other end to receive the remainder of the choke tube is disclosed as an effective means for the repair of choke tubes on automobile engines.



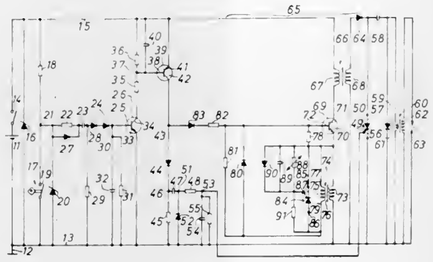
Drive fasteners with break-away collars of the kind described are not limited to this particular repair; but have general utility.

3,796,203
FUEL ATOMIZATION
Norman Moss, Ilford, and Michael John Broad, Enfield, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland
Filed Jan. 13, 1972, Ser. No. 217,497
Claims priority, application Great Britain, Jan. 18, 1971, 2,245/71
Int. Cl. F02m *39/00*
U.S. Cl. 123—139 AW **12 Claims**



Fuel is continuously supplied through a nozzle to form a jet which normally remains coherent across an air-induction line and is intercepted in a collector aperture for return to the fuel system, but is during a period whose length is controlled according to fuel requirements, during each engine cycle or revolution, prevented (wholly or mainly) from reaching the collector aperture by a mechanical arrangement which destroys the alignment of the jet formed by the nozzle with the collector orifice so that the jet, with the whole or part of its cross-section, will strike an impact surface causing it to break-up into a spray which becomes mixed with combustion air. The impact surface may be struck by the jet when it is deflected, for example by an electromagnet acting through an armature on a flexible tube whose end forms the orifice, or when the collector orifice is moved out of line of the jet, or a separate baffle may be arranged to penetrate into the path of the jet without moving the orifice or the jet relative to each other.

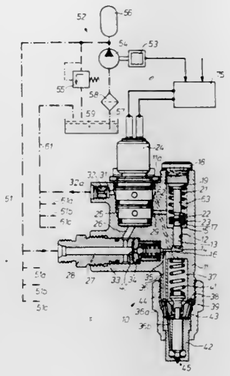
3,796,204
IGNITION ARRANGEMENT FOR INTERNAL COMBUSTION ENGINES
Gerd Hohne, Ludwigsburg; Klaus Meyer, Schwieberdingen; Helmut Roth, and Herman Roozenbeek, both of Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Dec. 17, 1971, Ser. No. 209,197
Claims priority, application Germany, Dec. 28, 1970, 2063931
Int. Cl. F02p *3/06;* **H05b** *41/36*
U.S. Cl. 123—148 E **33 Claims**



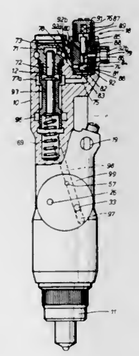
An electronic ignition arrangement for internal combustion engines in which an ignition capacitor is connected to a charging circuit and a discharging circuit. A controlled electronic switch in the discharging circuit is connected in series with the primary winding of an ignition transformer which applies ignition pulses to the spark plugs. A signal generator coupled to the crankshaft of the engine operates the controlled electronic switch in the discharge circuit, synchronously with the engine. A charging transformer in the charging circuit has its primary winding interconnected with the primary winding of a control transformer, the secondary winding of which functions as a feedback winding. An auxiliary controlled electronic switch is connected in circuit with the primary winding of the charging transformer, and a limiting switch is connected to the primary winding of the control transformer.

3,796,205
FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES
Heinz Links, Stuttgart, and Heinz Kuschmierz, Gerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed May 24, 1972, Ser. No. 256,361
Claims priority, application Germany, May 28, 1971, 2126787
Int. Cl. F02m *39/00;* **F02b** *3/00*
U.S. Cl. 123—139 E **5 Claims**

There is described a pump-and-nozzle assembly which forms part of a fuel injection apparatus serving an internal combustion engine and which includes a reciprocating pump piston performing its injection strokes by virtue of hydraulic pressure intermittently applied thereto in a servo pressure chamber. Between two injection strokes the pump work chamber is charged with pressurized fuel while the pump piston executes its return or charging stroke. During this period the fuel in the servo pressure chamber is discharged through a throttle which brakes the motion of the pump piston during its charging stroke to effect a charging period which is substantially longer than the injection period. By varying the switching periods of a solenoid valve which controls the admission of pressure into the servo pressure chamber, the duration of the charging strokes and thus the injected fuel quantities may be altered.

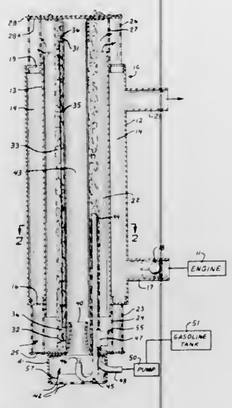


3,796,206
PUMP-AND-NOZZLE ASSEMBLY FOR INJECTING FUEL IN INTERNAL COMBUSTION ENGINES
Heinz Links, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
Filed May 26, 1972, Ser. No. 257,386
Claims priority, application Germany, May 28, 1971, 2126777
Int. Cl. F02b *3/00;* **F02m** *39/00*
U.S. Cl. 123—139 E **8 Claims**



There is described a pump-and-nozzle assembly which forms part of a fuel injection apparatus serving an internal combustion engine and which includes a reciprocating pump piston, the angular position of which determines the injected fuel quantities during the delivery strokes. The pump piston is driven by a servo piston which is intermittently exposed to pressurized fuel delivered by a pressure source. The intermittent admission of pressurized fuel to the servo piston is controlled by a valve plunger which is exposed to pressurized fuel for periods controlled by a solenoid valve.

3,796,207
CATALYTIC TANK HEATER FOR ENGINES
Ellis W. Olson, Eden Prairie, Minn., assignor to Walbro Corporation, Cass City, Mich.
Filed May 21, 1971, Ser. No. 145,616
Int. Cl. F02n *17/02*
U.S. Cl. 123—142.5 R **2 Claims**

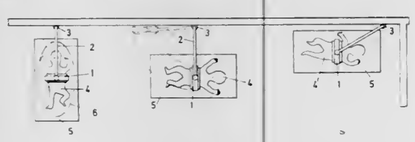


A catalytic tank heater for internal combustion engines which uses vaporized gasoline as a combustion fuel. The vaporized gasoline is air aspirated by air flow through a venturi onto a tubular catalytic heat producing reactor element to produce heat for heating the cooling liquid of an engine. The heater is efficient, and includes a electric heater element that preheats the catalyst, and also initially vaporizes the fuel, in order to obtain ignition of the catalytic heater automatically.

ERRATA

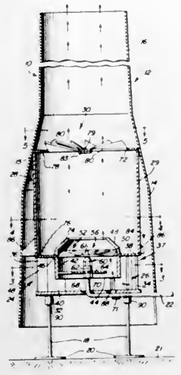
For Classes 126—59 and 126—92 see:
Patents Nos. 3,796,209 and 3,796,212

3,796,208
MOVEMENT MONITORING APPARATUS
John Anthony Bloice, Isleworth, England, assignor to Memco (Electronics) Limited, Isleworth, England
Filed Feb. 14, 1972, Ser. No. 225,934
Claims priority, application Great Britain, Sept. 7, 1971, 41720/71
Int. Cl. A61b *5/08*
U.S. Cl. 128—2 R **11 Claims**



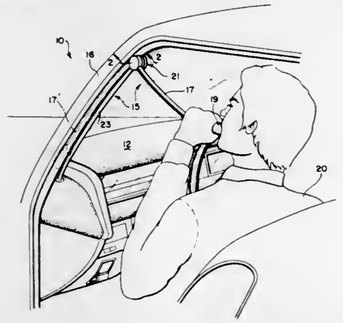
A system for monitoring movements of a patient and indicating when the degree of movement is such as to require attention includes a scanner providing a limited movement sensitive field surrounding at least part of the patient. Circuitry monitors variations in the field caused by the patients movements and controls alarm circuitry for calling attention to the patient, for example on cessation of normal breathing or at the onset of undue restlessness in a patient to be kept quiet. The scanner is suitably a microwave radar unit.

3,796,209
SPACE HEATER
Alfred N. Luft, 3031 Regatta Dr., Sarasota, Fla.
Filed Dec. 21, 1971, Ser. No. 210,470
Int. Cl. A01g *13/06*
U.S. Cl. 126—59.5 **11 Claims**



A space heater having a flame induced draft burner including a circular plate baffle provided with a central opening and radially extending fins with associated openings for imparting a rotary motion to an air and fuel mixture, and a combustion chamber arranged to receive mixed air and fuel from the plate baffle. The combustion chamber has a circular baffle member provided with radially extending fins and associated openings for retarding the speed of gases leaving the combustion chamber for ensuring complete combustion of the fuel and high heat transfer between the gases and the baffle member. In this manner, a portion of the baffle member is heated to a sufficient heat to assure spontaneous re-ignition in the event of a temporary interruption of fuel supply. A stackable sleeve having a tapered windshield pipe portion, tapered windshield increaser portion, and tapered exhaust pipe portion, is selectively mountable in symmetrical relation on the burner by frictional engagement with projecting members connected to the burner. The burner is supported by a plurality of legs, and if it is to be supported in the earth, stop members, or bearing plates may be provided on the legs for bearing against the earth surface.

3,796,210
VEHICLE BREATH INPUT UNIT
Donald F. Hoeg, Mt. Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed May 8, 1972, Ser. No. 251,207
Int. Cl. A61b *5/00*
U.S. Cl. 128—2 C **4 Claims**

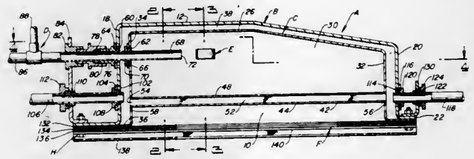


A breath input unit for a vehicle having both an A pillar and breath testing means is disclosed. The unit includes an elongated member defining a breath passageway through which breath may be blown. One end of the member is mounted at the upper part of the A pillar. The member is arcuately movable so that its other (breath input) end can move from a storage position adjacent the lower part of the A pillar to a use position away from the A pillar.

3,796,211
BIOPSY SAMPLING METHOD AND DEVICE FOR THE FEMALE GENITAL TRACT
Gerald C. Kohl, Tacoma, Wash., assignor to Medics Research & Development, Inc., Spokane, Wash.
Filed Aug. 7, 1972, Ser. No. 278,608
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B **20 Claims**

The device comprises an elongated tubular sheath which is adapted to be inserted into the vagina of a patient, and the distal end portion of which is adapted to engage the cervix of the patient to locate the sheath in the vagina. An aspirator pipette is slidably engaged in the sheath, to be extended from the sheath into the endocervical canal and/or the uterine cavity of the patient, or alternately to be retracted into the sheath from the canal, while the sheath is engaged with the cervix. In addition, there are means whereby after the pipette has been retracted into the sheath, a specimen can be discharged from the same onto a repository for the specimen, as well as means whereby the sheath can be maintained in the vagina while the specimen is discharged onto the repository.

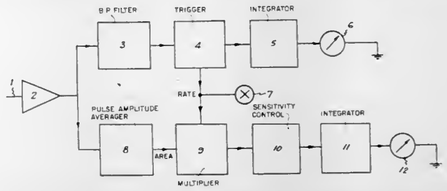
3,796,212
HIGH TEMPERATURE INFRA-RED GENERATOR
Carl C. Heuckroth, Lodi, Ohio, assignor to Van Dorn Company, Cleveland, Ohio
Filed Jan. 22, 1973, Ser. No. 325,134
Int. Cl. F24c *3/04*
U.S. Cl. 126—92 B **13 Claims**



A high temperature infra-red generator includes a housing having an emitter screen and a fuel supply. A reflector is positioned in the housing between the fuel supply and the infra-red emitter. The reflector or the interior of the housing includes a fluid coolant conduit for cooling the housing or the reflector.

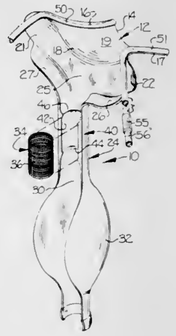
3,796,213
PERFUSION MONITOR
Frederick Richard Neason Stephens, 67 Coolawin Rd., Northbridge, N. S. W., Australia
Filed Sept. 10, 1971, Ser. No. 179,516
Claims priority, application Australia, Sept. 18, 1970, 2587/70
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **8 Claims**

A perfusion monitor for monitoring blood flow in a body. A transducer, associated with a part of the body, generates signals representing pulse wave forms. The signals are fed to a circuit which generates output signals corresponding to pulse rate and the area under the pulse curve. These latter signals



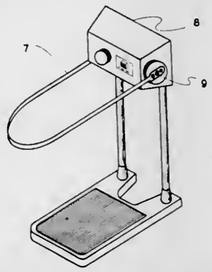
are then multiplied and the result integrated. A signal proportional to the integrated result is then fed to a perfusion index meter which displays a reading of the blood flow.

3,796,214
PERINEAL RETRACTOR
Rachel D. Davis, 111 E. Gordon St., Kinston, N.C.
Filed Dec. 4, 1972, Ser. No. 311,747
Int. Cl. A61b *17/02, 1/30*
U.S. Cl. 128—20 **18 Claims**



A perineal retractor for use in conducting diagnostic examinations and various surgical operations in and through the vagina to the cervix and corpus uteri. The retractor includes fiber optic lighting means mounted on the retractor blade for providing internal vaginal illumination, and a fenestrated basket may be removably positioned in the discharge trough to receive and collect the tissue specimens which are entrained in the fluids passing therealong.

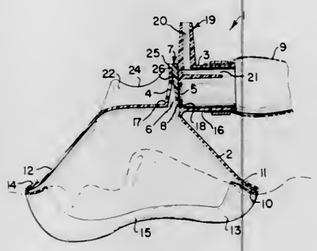
3,796,215
VIBRATOR BELT
Lewis Lazarus, 648 W. Grace St., Chicago, Ill.
Filed Oct. 18, 1972, Ser. No. 298,662
Int. Cl. A61h *7/00*
U.S. Cl. 128—63 **3 Claims**



A thin and narrow vibrator belt unit for use on automatic massaging machines which make use of conventional flexible

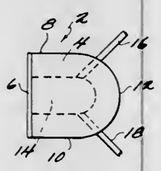
U-shaped vibrator belts serves to impart deeper massage penetration and massage concentration to a small desired area. The thin and narrow vibrator belt unit includes a thin and narrow flexible belt portion and two larger free ends. An easy attaching and intentional removal means to and from a massaging machine is an integral part of the larger free ends of the thin and narrow vibrator belt unit.

3,796,216
RESUSCITATOR
Karl H. Schwarz, 6034 Windsor Dr., Shawnee Mission, Kans.
Filed Apr. 24, 1972, Ser. No. 246,869
Int. Cl. A62b *7/00*
U.S. Cl. 128—145.7 **4 Claims**



A respiratory assisting device for use to support and to re-establish substantially normal breathing when same has been halted or impaired as by immersion or other suffocatory circumstances and including a mask or face piece having an exhalation port in one end of a body member and an inhalation port within the body member and with an aperture between the ports and communicating with the mask and a valve member having a flap portion normally closing the inhalation port and movably to open the inhalation port and close the exhalation port in response to manual pressure on a gas bag mounted on the other end of the body member and which receives gas from a suitable source.

3,796,217
DRUG RELEASE SYSTEM
Myron Arlen, Great Neck, N.Y., assignor to Hydr-Med. Sciences, Inc., New York, N.Y.
Division of Ser. No. 233,685, March 10, 1972, Pat. No. 3,765,414. This application May 17, 1973, Ser. No. 361,153
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **9 Claims**



There is disclosed a device and method for delivery of a chemotherapeutic over a prolonged period of time to the body. In case the therapeutic has an adverse effect on the body the device can be flushed and a more suitable therapeutic substituted.

3,796,218
SYRINGE ADAPTOR FOR USE WITH A WET/DRY MIXING VIAL
George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.
Filed Mar. 28, 1972, Ser. No. 238,831
Int. Cl. A61j *5/00;* **A61m** *5/32*
U.S. Cl. 128—272 **19 Claims**

A syringe adaptor for use with a wet/dry mixing vial having two chambers therein separated from one another by a displaceable plug and each containing a different material to be admixed with the other, comprising an elongate relatively rigid piercing tip having a pointed end and a tubular base, an open end on the tubular base for attachment of the adaptor to a syringe or the like, and a finger grip on the tubular base for grasping the adaptor to insert the piercing tip into the vial. The length of the piercing tip is such as to engage and displace a plug within the vial when the tip is inserted to thus enable said materials to be admixed, and a passageway is in the tubular base for withdrawing the admixed materials from the vial and into a syringe attached to the adaptor.

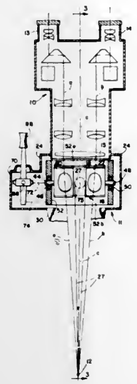
3,796,219
COATED TAMPON
David E. Hanke, Winnebago, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 24, 1971, Ser. No. 127,853
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **4 Claims**

A water-soluble, thermoplastic compound especially suitable for hygienic and medical applications, such as for use as an insertion aid coating for tampons and as the matrix structure for suppositories. The compound is composed of a thermoplastic, film-forming water-soluble polymer and a compatible plasticizer for the polymer. The preferred polymer is hydroxypropyl cellulose. The preferred plasticizer is an olefinic glycol of predetermined molecular weight. One example of a preferred plasticizer is polyethylene glycol having a molecular weight of less than about 1,500. Another example of a preferred plasticizer is propylene glycol and polymers thereof below a molecular weight of about 750. These compounds are thermoplastic and may be cast, thermoformed, hot melt dip coated, or transfer molded.

3,796,220
STEREO LASER ENDOSCOPE
Herbert C. Bredemeier, 5 Bridle Path, Sherborn, Mass.
Filed Mar. 24, 1972, Ser. No. 237,790
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.1 **35 Claims**

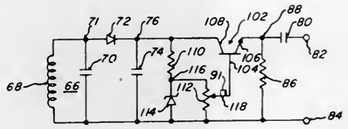
A converging laser operating beam is directed to a target site by a gimbal mounted mirror having a pair of apertures

through which the work site is viewed simultaneously by a stereo microscope. To locate the focal point of the operating beam, diverging light from a marker light point source is reflected back through the microscope by reflective means mounted over the apertures on the mirror. The marker light provides a virtual image which appears to the viewer as a spot



coincident with the focal point of the operating beam. A joy stick is mechanically linked to the mirror so that the beam, along with the marker light spot, may be steered to any desired location within a few degrees of the central optical axis of the microscope. Means are also provided for using a conventional stereo microscope's self-contained light source for the marker light source.

3,796,221
APPARATUS FOR DELIVERING ELECTRICAL STIMULATION ENERGY TO BODY-IMPLANTED APPARATUS WITH SIGNAL-RECEIVING MEANS
Norman R. Hagfors, 4414 Tyler St. N.E., Minneapolis, Minn.
Filed July 7, 1971, Ser. No. 160,368
Int. Cl. A61n *1/36*
U.S. Cl. 128—421 **3 Claims**

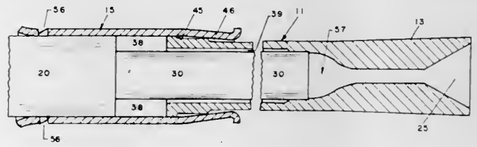


An apparatus for delivering electrical stimulation energy to body-implanted apparatus with signal-receiving means is described which is particularly useful in implanted devices, including nerve and muscle stimulators, artificial organs, and certain electro-mechanical devices such as implanted dispensers for the administration of fluids to the body system. The electrical portion of the system includes a transmitter and receiver, with the transmitter normally being disposed or worn externally of the body of the patient or user and being arranged to generate pulses of predetermined amplitude at radio frequencies. The receiver includes a pick-up, a receiver and an output electrode arrangement which is normally subcutaneously implanted within the body of the patient. Since variations in signal energy received by the receiver from its coupled transmitter may occur due to relative positioning of the transmitter-receiver pair, the receiver serves to regulate the amount of energy delivered to the output electrodes such that relatively uniform impulses are normally applied to the output electrodes. Thus, even though there may be variations in the energy coupled from the transmitter to the receiver, a uniform output occurs; the arrangement providing a means for coupling an electrical signal of variable magnitude to provide an output or stimulation signal of constant energy amplitude or magnitude to an implanted device.

3,796,222
METHOD OF MAKING A SMOKING PRODUCT FROM COFFEE BEAN HULLS
Edward J. Deszyck, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Mar. 17, 1971, Ser. No. 125,343
Int. Cl. A24b *15/00, 3/14*
U.S. Cl. 131—2 **1 Claim**

This disclosure relates to a smoking product derived from coffee bean hulls. Smoking compositions are described which contain coffee bean components alone or mixed with tobacco or non-tobacco substances. The hulls, which contain pectinaceous substances, are treated with reagents that attack the alkaline earth metal cross-links causing the release of the coffee pectins. The latter acts as a binding agent and together with the treated hulls may be handled or used similarly to a tobacco product.

3,796,223
CIGARETTE HOLDER
John G. Tarrant, 218 Seabreeze Ave., Palm Beach, Fla.
Filed Nov. 15, 1971, Ser. No. 198,902
Int. Cl. A24f *13/10*
U.S. Cl. 131—182 **8 Claims**

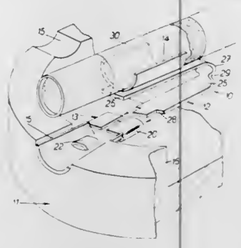


A two-part cigarette holder comprising a plastic mouthpiece, adapted to receive and hold a removable filter and a metal sleeve moveably mounted on said mouthpiece forming a slidable joint extending from an airtight cigarette holding position to a butt-ejecting position. The sleeve is tapered in part to snugly fit the corresponding taper in a telescopic manner about the mouthpiece to prevent air leakage when extended to a smoking position. The filter or a constrictable flanged rim on the ejector end of the mouthpiece positively removes butts when the sleeve is retracted. A plurality of perforations about the metal sleeve circumference reduces the heat flow. The diameters of both parts are sized to prevent inadvertent separation.

3,796,224
ASH-TRAY ATTACHMENT
Jacob Menachem Feinstat, Ramat Gan, Israel, assignor to Fine-Gen Investment Corporation, Benei-Beraq, Israel
Filed Jan. 15, 1973, Ser. No. 323,458
Claims priority, application Israel, Jan. 28, 1972, 38665
Int. Cl. A24f *19/09*
U.S. Cl. 131—240 E **4 Claims**

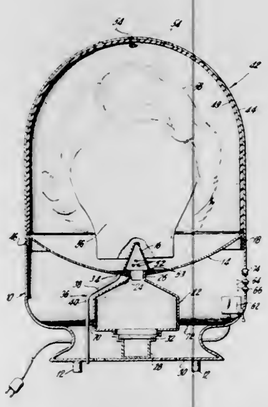
An ashtray attachment for safely holding cigarettes made from a T-shaped blank and comprising a normally flat flexible support having on one surface a self-adhesive layer for effecting attachment of the support to the edge of an ashtray, the support having a main portion with a tab projecting from the other surface thereof and defined by a pair of substantially parallel transverse slits centrally located within the main portion, the support also including a head portion at one end thereof comprising a pair of lateral projections that have been folded over and which are slightly spaced therefrom to define a socket on the same side of the support as the tab, and a pair

of confronting transverse slits extending partially into the main portion on opposite sides thereof at the juncture of the head and the main portion, and a U-shaped thermo-bimetal spring having a pair of spaced legs, the first of which has a free end portion slideably receivable in the tab of the main portion and an intermediate portion slideably received in the socket



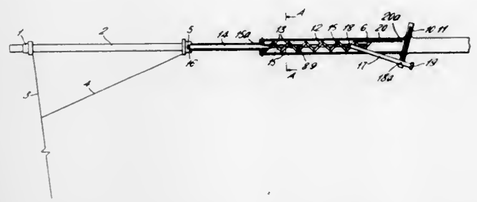
on the head portion, and the second of which has a holder to retain a cigarette thereon so that the lighted end is adjacent a web interconnecting the legs for causing a lighted cigarette placed on the holder to heat the web and causing the angle between the legs to increase and thereby tilting the cigarette into the ashtray.

3,796,225
APPARATUS FOR PERMANENTLY SETTING SYNTHETIC HAIR
Joseph Peters, Staten Island, N.Y., assignor to Vapor-Set Corporation, New York, N.Y.
Filed Feb. 25, 1972, Ser. No. 229,443
Int. Cl. A45d *2/36*
U.S. Cl. 132—9 **3 Claims**



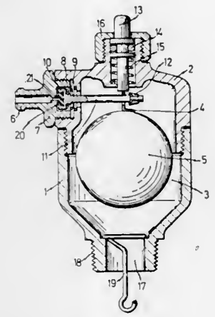
Apparatus for permanently setting synthetic hair. The apparatus includes a support base and a cover mechanically coupled thereto to form a chamber interior of the cover. A tank for holding a liquid solution is mounted within the support base, and means for mounting synthetic hair in the chamber, is mechanically coupled to the support base. Means, placed within the support base, is provided for vaporizing the liquid solution, wherein the vaporized liquid solution rises into the chamber so as to treat the synthetic hair within the chamber. The temperature distribution within the chamber is held uniform throughout by providing ventilating holes within the top portion of the cover for permitting the escape of vapor. The interior of the cover is lined with closed cell rubber or other suitable heat insulating material to reduce the heat transfer to the outer surface thereof and also to reduce the condensation of the vapor on the inner surface thereof.

3,796,226
UMBRELLA, SUNSHADE OR THE LIKE
Yung Kwong Yuen, 320, Lily House, So Uk Estate, Kowloon, Hong Kong
Filed Apr. 24, 1972, Ser. No. 246,691
Claims priority, application Great Britain, Apr. 30, 1971, 12438/71; Aug. 13, 1971, 38,139/71
Int. Cl. A45b *25/14*
U.S. Cl. 135—24 **10 Claims**



An umbrella or sunshade which can be conveniently opened and closed while held in one hand by means of an operating member co-operative between the stem and a runner slide to which the stretchers, pivoted to the ribs, are connected, a first half movement of the operating member to open the umbrella producing a relative axial movement between the runner slide and the stem to perform the main opening movement and the final half movement of the operating member producing a relatively short relative axial movement between the runner slide and the stem co-inciding with the required stronger force to flex the ribs and tension the cover. The movement of the operating member may be by swing of the thumb or a finger or fingers of the hand holding the umbrella in a direction transverse to the stem with the operating member pivoted to the runner slide and controlled in movement by a guide oblique to the stem or by a radius rod or with the operating member co-operating with the runner slide by cam action.

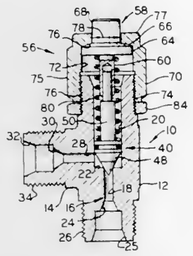
3,796,227
AIR VENT
Katsuji Fujiwara, 191, Nishitani, Hiraoka-cho, Kakogawa-shi, Hyago-ken, Japan
Filed Aug. 23, 1972, Ser. No. 283,041
Claims priority, application Japan, Aug. 27, 1971, 46/77627
Int. Cl. F16k *45/02, 31/18*
U.S. Cl. 137—202 **7 Claims**



An air vent is formed of a hollow chamber containing a metal float with a valve member forming the air outlet attached to the exterior of and disposed in communication with

the hollow chamber. At the lower end of the hollow chamber an inlet port is located containing a syphon rod. Within the hollow chamber, a connecting member is attached to the float and a lever is loosely fitted into the connecting member and extends outwardly from the hollow chamber into a valve chamber in the valve member. Within the valve chamber a valve holder is fixed to the end of the lever and a valve body, preferably formed of a synthetic rubber, is fitted into the valve holder and is biased against a valve seat so that normally the air outlet is closed. When an excess of air accumulates in the hollow chamber, the float is displaced and it moves the lever causing the valve body to pivot about the valve seat so that the air is discharged from the hollow chamber through the valve member.

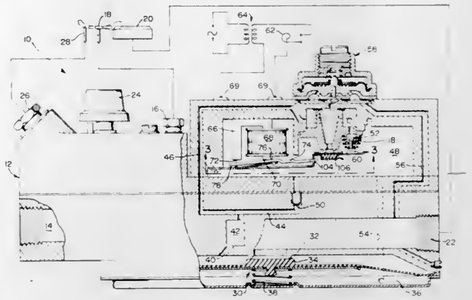
3,796,228
RELIEF VALVE
Alfred Bedo, 7225 Spanghurst Dr., Walton Hills, Ohio, and Edward Beck, 1384 S. Taylor St., Cleveland Heights, Ohio
Continuation of Ser. No. 153,904, June 15, 1971, abandoned. This application Aug. 25, 1972, Ser. No. 283,969
Int. Cl. F16k *15/06*
U.S. Cl. 137—536 **8 Claims**



The specification and drawings disclose a relief valve which is particularly suited for high pressure use. The disclosed valve includes a housing with a longitudinal inlet passage and a laterally extending discharge passage. The inlet passage is counterbored to a larger diameter inwardly of one end to a point slightly past the intersection of the outlet passage. The shoulder formed at the end of the counterbore defines a seat which cooperates with a cylindrical valve member slidingly received in the counterbore. The end of the valve which engages the seat is conical and the other end has a reduced diameter portion which serves as a guide stem. A guide member slidably receives the guide stem and is adjustably connected to the housing. A compression spring is positioned about the guide stem between the valve member and the underside of the guide member. In the embodiment shown, the guide member is connected to the housing by a bonnet nut so that by adjusting the bonnet nut, the spring pressure can be varied to vary the valve setting.

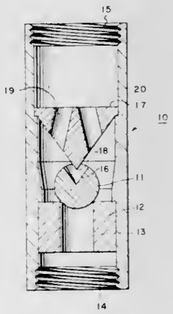
3,796,229
DUAL VALVE ACTUATOR ASSEMBLY
John W. Wright, Anaheim, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Nov. 20, 1972, Ser. No. 307,906
Int. Cl. F16k *31/10*
U.S. Cl. 137—495 **11 Claims**

A dual valve actuator assembly for substantially simultaneously operating a pair of bleed line valves for controlling a differential pressure operated valve in a control device, the assembly including an electromagnetic operator controlling an armature which operates a spring member having an operating end controlling valve members for the bleed line valves and a keeper spring pinned to the armature and tensioned to bias a



central portion of the armature against a pole face of a core of the electromagnetic operator.

3,796,230
BALL CHECK VALVE HAVING IMPROVED GUIDE ASSEMBLY
Robert B. Meripol, Fayetteville, Ark., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 16, 1972, Ser. No. 298,164
Int. Cl. F16k *15/04*
U.S. Cl. 137—533.11 **4 Claims**

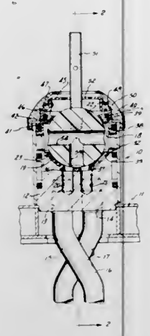


The ball in the valve assembly has a conical cavity which is used to guide the ball onto a cone whose tip extends into the conical cavity of the ball at rest on the seat of the valve. The tip of the cone guides the ball onto the cone each time the ball rises. In an alternative embodiment, the cavity within the ball is cylindrical shaped, and the tip of a cylindrically shaped guide extends into the cavity whereby the tip of the cylinder guides the ball onto the cylinder each time the ball rises. In yet another embodiment, a cylindrical shaped guide is molded as an integral part of the ball, the tip of the cylinder extending into a cylindrical shaped housing whereby the cylinder is guided into the housing each time the ball rises. The embodiments utilizing cylindrical shaped guides and cavities or receptacles are sized such that a limited amount of rotation of the ball can occur.

3,796,231
SINGLE HANDLE FAUCET VALVE
Terence G. Hare, 22600 Middlebelt G11, Farmington, Mich.
Filed Mar. 20, 1972, Ser. No. 236,079
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.4 **22 Claims**

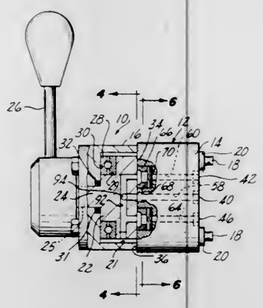
The single handle faucet disclosed herein comprises a faucet body which has a pair of inlets for hot and cold water and a

liquid outlet. A spherical valve body is mounted for swinging movement within the body and has a spherical surface that is complementary to a similar compressible spherical surface on



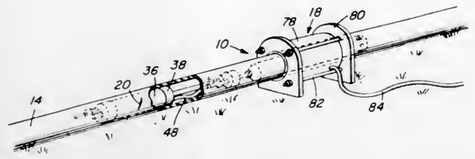
the faucet body. The valve body has passages extending from the spherical surface of the valve body. The passages of the valve body and the passages of the faucet body are adapted to be selectively aligned.

3,796,232
ROTARY DIRECTION FLOW CONTROL VALVE
Thomas B. Dalton, Muskegon, Mich., assignor to Westran Corporation, Muskegon, Mich.
Filed Oct. 19, 1972, Ser. No. 298,943
Int. Cl. F15b *13/04*
U.S. Cl. 137—625.21 **8 Claims**



A rotary valve for selectively controlling the direction of fluid flow between a source of pressure fluid and a fluid user. The rotary valve comprises a housing having a stator with a valve face having four diametrically opposed and arcuately spaced ports adapted to register in a selected manner with a plurality of arcuately spaced ports formed in the adjacent face of a coaxially disposed rotor. One of the stator ports is adapted to be communicated to a source of fluid pressure, while a second diametrically opposed port is adapted to be communicated to a reservoir. The remaining diametrically opposed ports in the valve face of the stator are each adapted to be communicated to a fluid user. The rotor has a T-shaped passage connecting three of the ports and a pair of separated transversely extending passages connecting pairs of ports disposed intermediate the ports connected with the T-shaped passages. The transverse passages are disposed at a different depth than the T-shaped passages so that there is no intersection between the passages.

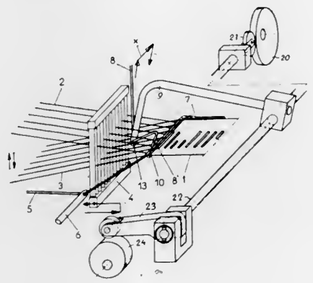
3,796,233
HOSE SPLICING APPARATUS
Edward H. Lacey, P.O. Box 796, Trent, S. Dak.
Filed Mar. 1, 1972, Ser. No. 230,635
Int. Cl. F16l *55/18*
U.S. Cl. 138—97 **10 Claims**



A portable, self-contained apparatus for use in repairing and splicing flexible hoses such as cord reinforced hoses employed in irrigation systems with the apparatus including an inflatable member, a compressed air tank and control valves for inflating and deflating the inflatable member with all of these components being disposed interiorly of the hose when repairing or splicing the same with the control valves being operable exteriorly of the hose by deflecting a portion of the periphery of the hose for manipulating the control valves.

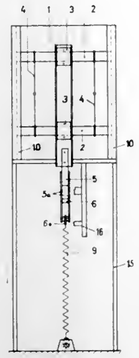
The apparatus also includes a metallic body that forms a core for an electromagnet with the metallic body being disposed interiorly of the hose and connected to the compressed air tank and the winding of the electromagnet being disposed exteriorly of the hose in encircling relation thereto whereby the apparatus may be moved relative to the hose while disposed in the interior thereof to facilitate proper orientation of the apparatus in the hose during the repairing and splicing operation.

3,796,234
METHOD AND APPARATUS FOR ANCHORING A FLOATING YARN PORTION IN A WOVEN FABRIC
Jakob Muller, 5262 Frick, Aargau, Switzerland
Continuation of Ser. No. 34,475, May 4, 1970, abandoned. This application May 15, 1972, Ser. No. 253,455
Int. Cl. D03c *7/06*
U.S. Cl. 139—46 **5 Claims**



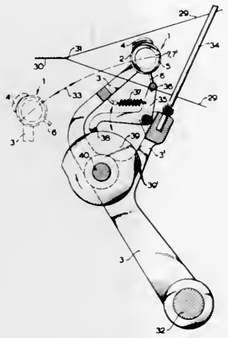
In a shuttleless loom, a yarn is inserted into an open warp shed to form a yarn loop which is anchored by a weft thread passing therethrough upon changing of the warp shed. The yarn is laid across a warp part inserted and anchored again by a following weft thread so that a floating yarn portion, anchored at the ends, is formed on the fabric. The yarn may be a fancy yarn having an ornamental effect, or the floating yarn portion may be used for attaching objects to the fabric.

3,796,235
HARNESS ARRANGEMENT FOR A LOOM
Jakob Muller, 5262 Frick, Aargau, Switzerland
Filed Apr. 21, 1972, Ser. No. 246,416
Claims priority, application Switzerland, Apr. 23, 1971, 5914/71
Int. Cl. D03d *5/00;* **D03c** *9/06, 13/00*
U.S. Cl. 139—79 **7 Claims**



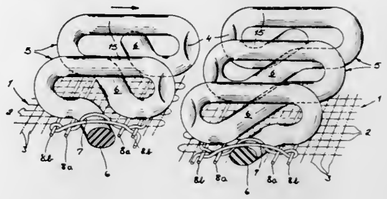
Two horizontal parallel heddle rails connected by heddles have center portions secured to a single vertical supporting rod whose lower end is engaged by an oscillating cam follower so that the heddle rails and heddles are reciprocated with the single supporting rod. The ends of the heddle rails are preferably guided in vertical grooves of stationary vertical guide bars.

3,796,236
WEFT THREAD INSERTING MEANS
Heinz Kamp, Rickelrath, Germany, assignor to W. Schlafhorst & Co., Monchengladbach, Germany
Filed Dec. 7, 1972, Ser. No. 312,890
Claims priority, application Germany, Dec. 9, 1971, 2160998
Int. Cl. D03d *47/24*
U.S. Cl. 139—126 **10 Claims**



A device for inserting weft threads in looms having stationary supply spools includes a conduit disposed between the warp threads of the shed and through which the weft threads are passed by on air stream passing through the conduit. A plurality of segments having weft thread egress slots are disposed adjacent one another and sleeves are mounted on the segments for movement parallel to the direction of the weft thread to connect the segments to form the closed conduit.

3,796,237
TAPE-SUPPORTED SLIDE-FASTENER AND METHOD OF MAKING SAME
August Heidermann, Wuppertal-Elberfeld, Germany, assignor to Opti-Holding A.G., Glarus, Switzerland
Continuation-in-part of Ser. No. 886,567, Dec. 19, 1969, abandoned. This application Sept. 14, 1971, Ser. No. 180,300
Int. Cl. D03d *1/00*
U.S. Cl. 139—384 B **9 Claims**



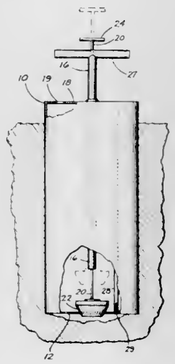
In a slide fastener a helicoidally wound filament of synthetic resin having laterally extending coupling heads is interwoven with a stringer tape of primary warp and weft threads by a heavier secondary weft thread which passes over generally longitudinally extending root portions of the helicoid interconnecting successive loops thereof. The secondary weft threads, whose throw is substantially limited to the width of the helicoid, may consist of heat-shrinkable material and are anchored to the tape by being interwoven with secondary warp threads heavier than the primary warp threads.

The interweaving involves use of a lower and an upper bobbin for the primary and secondary wefts, shedding of the secondary warp threads above and below a central level at which the helicoid is maintained, and shedding of the primary warp threads solely below the central level.

ERRATUM

For Class 140—1 see:
Patent No. 3,796,201

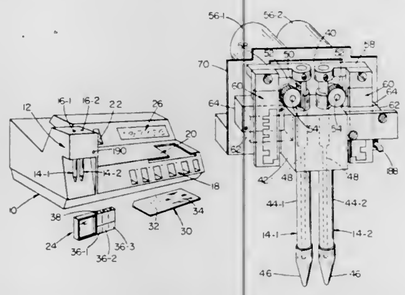
3,796,238
DEVICE FOR LIFTING WATER FROM GOLF CUP HOLES
Milton Roth, 733 1/2 Roseburg Rd., Myrtle Point, Oreg.
Filed May 3, 1972, Ser. No. 249,869
Int. Cl. B65b *3/04*
U.S. Cl. 141—18 **3 Claims**



A device for lifting water from the hole in a golf green which receives a golf cup. The device includes a hollow cylindrical body which snugly fits within the hole after the golf cup has been removed. A wall at the base of said body has a centrally

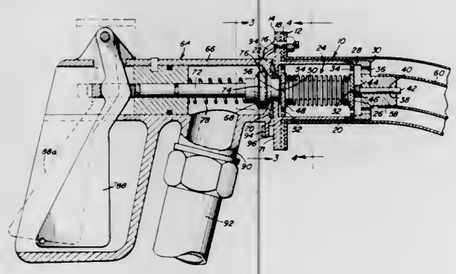
located valve opening therein. A plunger mounted for up and down movement in said body has a valve element comparable to close said opening on downward movement of the plunger. Guide means support said plunger with the same extending axially of said body. A handle for manipulating the body and means for manipulating the plunger are provided with such disposed above the upper end of the cylindrical body.

3,796,239
DISPENSER SYSTEM
Jerrold Zindler, Cambridge, and Norman F. F. J. Rolfe, Wakefield, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.
Filed July 22, 1971, Ser. No. 165,011
Int. Cl. B65b *3/30, 57/18, 57/20;* **B01j** *4/02;* **B26d** *5/34*
U.S. Cl. 141—83 **14 Claims**



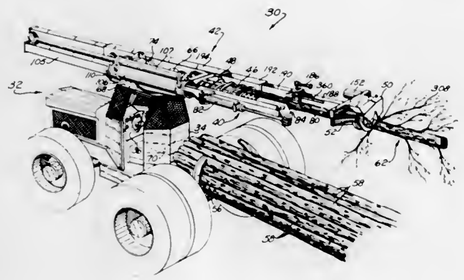
A dispenser system for introducing a precise amount of material to be analyzed into a container includes a sample chamber, and apparatus for storing material in the sample chamber. A data record is associated with the container and operation of the storage apparatus is controlled in response to the data record to store a precise amount of material in the chamber which is then transferred to the container for analysis.

3,796,240
CLOSED FUELING DEVICE WITH AUTOMATIC CUTOFF
William A. Miller, Jr., 400 Joppa Farm Rd., Joppa, Md.
Filed Nov. 30, 1971, Ser. No. 203,323
Int. Cl. B65b *57/14*
U.S. Cl. 141—198 **7 Claims**



A fuel tank inlet pipe including an inlet end and an outlet end opening downwardly into an associated tank. The inlet end of the pipe includes structure by which the outlet nozzle of a fuel discharge line may be coupled to the inlet pipe in fluid-tight sealed engagement therewith and also a fuel flow control valve for controlling the flow of fuel into the inlet pipe and operable, upon actuation of the valve, to move a valve member into closed position with a force generated by the pressure of the fuel delivered to the discharge nozzle. The valve includes a bleed port rendering the pressure of fuel delivered to the nozzle inoperative to move the valve member to the closed position and the bleed port itself has a valve member operatively associated therewith for closing the bleed port and rendering the line pressure of fuel delivered to the nozzle capable of moving the valve member of the control valve to its closed position in response to the tank and/or the inlet pipe being filled.

3,796,241
TREE HARVESTING APPARATUS AND METHOD
Theodore B. Golob; Sylvester J. Hauck; Stan C. Jasinski; Bruce A. Margerum, all of Woodstock, Ontario, Canada, and Antti Jarvi, Niittykumpu, Finland, assignors to Timberjack Machines Limited and Eaton Yale Ltd., both of Woodstock, Ontario, Canada
Filed Dec. 29, 1969, Ser. No. 888,746
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D **16 Claims**

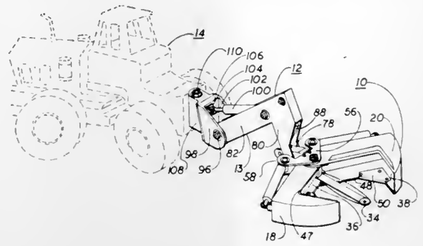


An improved tree harvesting method is performed by a machine which includes a pair of booms mounted on a vehicle. A clamp assembly is mounted on a first boom for gripping a standing tree which is then severed close to the ground by a shear assembly which is also mounted on the first boom. The severed tree is positioned relative to a delimbing mechanism mounted on the second boom by moving the clamp assembly to place the tree in a generally horizontal position. The tree and clamp assembly are then pivoted about a longitudinal axis of the first boom to position the tree for engagement by the delimbing mechanism. The severed tree is delimbed by extending the second boom to move the delimbing mechanism along the trunk of the tree while the tree is gripped by the clamp assembly. When the delimbing mechanism senses or encounters a portion of the tree having a predetermined cross-sectional dimension, a topping assembly is automatically operated to top the tree by severing the tree trunk under the influence of movement of the topping assembly along the tree trunk. The log formed by delimbing and topping the severed tree is then deposited in a bunk assembly for transporting. The bunk assembly advantageously includes a support member or roller which is raised upon operation of the bunk assembly to an open condition to at least partially disengage logs from the bunk assembly.

3,796,242
TREE CUTTING AND HANDLING APPARATUS
Alva Z. Albright, Rt. 1, Eudora, Ark.
Filed Dec. 20, 1971, Ser. No. 209,639
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 R **10 Claims**

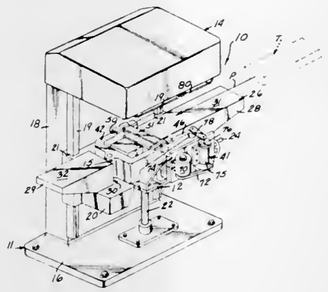
A clamp comprising a pair of dogleg jaws pivoted together with opposed double edges defining a variably sized rectangular aperture for transversely engaging a tree at four points on its circumference with each of said double edges. A chain saw is pivoted with the dogleg jaws and between the double edges and adapted to swing between said jaws to cut a tree held

therein. The jaws are pivoted to a dogleg boom that itself is pivoted to a carrier link, the respective pivots being horizontally parallel and allowing the jaws to pivot over 180° and the boom less than that. The carrier link is vertically pivoted to a power train. Opposed shearing plates are fixed in the respective angles of the dogleg jaws on one only of the opposed double edges for shearing small trees. Hydraulic cylinders and pistons are adapted to swing the jaws and chain saw about



their common pivot, the free ends of the jaws nesting in closed position. Additional hydraulic cylinders and pistons are adapted to swing the boom and clamp about their respective pivots. An hydraulic motor drives the chain saw in endless rotation. A flow divider mounted in the hydraulic power lines to the motor and chain saw regulates the speed of the chain saw swing inversely with the size of the rectangular apperture defined by the dogleg jaws.

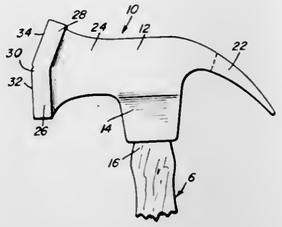
3,796,243
VENEER SLICER MACHINE
Saiji Komaki, 1 Naga Yoshi-cho, Kagoshima 890, Japan
Filed Apr. 12, 1972, Ser. No. 243,368
Int. Cl. B27l *5/06*
U.S. Cl. 144—162 R **7 Claims**



A veneer slicer machine and method for slicing thin veneer strips from dry wood including a support body, a bench unit carried by the body and selectively movable vertically along the body for supporting the wood to be sliced, a drive unit for selectively moving the wood across the bench unit along a prescribed path, and a vibrator slicer assembly carried by the bench unit for slicing the veneer strips from the wood as it is moved across the bench unit by the drive unit. The slicer assembly includes a U-shaped yoke pivoted on the bench unit with a thin cutting blade carried between the projecting ends of the legs of the yoke under tension and positioned to engage the wood as it is moved across the bench unit. A vibrator drive is connected to the yoke for rapidly pivoting it back and forth to cause the cutting blade to slice the veneer strip from the wood.

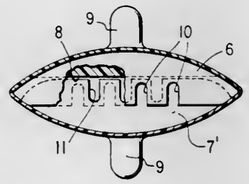
The method of the invention includes moving a piece of wood along a prescribed path, engaging the wood with a cutting blade, and rapidly moving the cutting blade generally lengthwise to slice a veneer strip from the wood.

3,796,244
DOUBLE HEADED HAMMER
Berkeley J. Florian, 88 West St., Plantsville, Conn.
Filed Sept. 25, 1972, Ser. No. 291,633
Int. Cl. B25d *1/00*
U.S. Cl. 145—29 D **2 Claims**



A hand tool, a double headed hammer or a hatchet for example, constructed for acceptably expedient use by carpenters, roofers, lathers, floor layers and mechanics. The over-all multipurpose head means embodies the usual eye or socket in which the shaft or shank of the handle is securely anchored. A curved claw, alternatively a hatchet blade, is provided at one end. The other end is unique in that it is provided with two angularly oriented selectively usable main and auxiliary impact heads. Each head is provided with a planar driving, pounding, and impact applying face. The face of the main head is disposed in a plane substantially parallel to the longitudinal axis of the handle. The face of the auxiliary head is slanted at a 20° angle oblique to the axis of the handle in a manner to offset the usable position of the handle and in so doing, to effectually prevent the knuckles and fingers of the user's hand from striking the work surface.

3,796,245
DRIP METERS
Otto M. Wildensteiner, 10201 Grosvenor Pl. No. 1603, Rockville, Md.
Filed Oct. 4, 1971, Ser. No. 186,059
Int. Cl. B65d *33/36*
U.S. Cl. 150—1 **8 Claims**

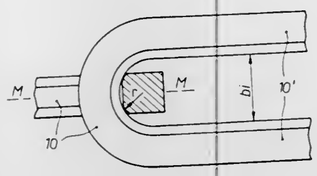


A drip meter that is an integral part of a flexible parenteral solution container.

3,796,246
WELDED CHAIN LINK AND CHAIN
Gottfried Walenta, Baumschulgasse 14, Graz, Austria
Filed Oct. 20, 1972, Ser. No. 299,560
Claims priority, application Austria, Dec. 23, 1971, 11102/71
Int. Cl. B60c *27/00*
U.S. Cl. 152—231 **6 Claims**

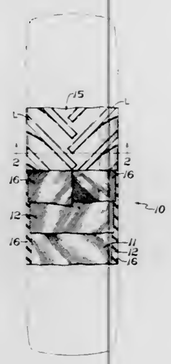
A non-skid chain for a tire is disclosed having a link construction of welded steel wire which is sustantially polygonal

in cross-section perpendicular to the longitudinal direction of the link. The link cross-section has a cylindrical surface portion with two bearing surface portions located toward the in-



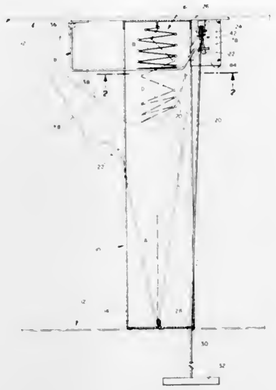
side of the link. Adjacent chain links are adapted to contact each other only at points disposed on the bearing surface portions between the links.

3,796,247
PNEUMATIC TIRE
Kirby B. Martin, Jr., Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed June 16, 1970, Ser. No. 46,633
Int. Cl. B60c *9/20*
U.S. Cl. 152—361 **6 Claims**



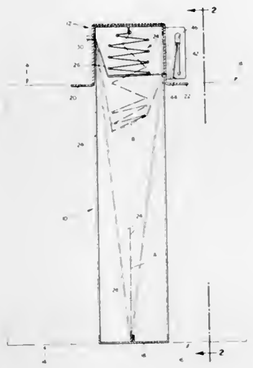
A tire of vulcanized elastomer having at least two carcass plies having reinforcing cords embedded therein with the cords in each ply extending continuously at a bias angle from one bead to the opposite bead of the tire. An overhead ply having metal reinforcing wires therein is provided over the carcass ply, with the wires in the overhead ply spliced in the crown region of the tire and extending at equal but opposite bias angles on axially opposite sides of the tire through the sidewalls and terminating adjacent the beads.

3,796,248
REMOTELY RESETTABLE FIRE DAMPER
Francis J. McCabe, Rt. 413, P.O. Box 181, Buckingham, Pa.
Continuation-in-part of Ser. No. 178,111, Sept. 7, 1971, Pat. No. 3,725,972. This application Aug. 28, 1972, Ser. No. 284,221
Int. Cl. E05f *15/20*
U.S. Cl. 160—1 **12 Claims**



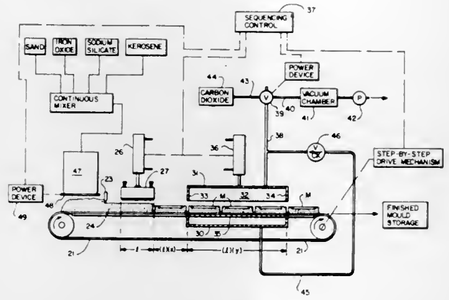
A folding blade type fire damper is provided with a thermally actuated resettable release link and retraction means co-operating with the link to reset the blades in their retracted condition upon actuation from outside the duct in which the damper is mounted.

3,796,249
RESETTABLE FIRE DAMPER
Francis J. McCabe, Rt. 413, P.O. Box 181, Buckingham, Pa.
Continuation-in-part of Ser. Nos. 178,111, Sept. 7, 1971, Pat. No. 3,725,972, and Ser. No. 284,221, Aug. 28, 1972. This application Sept. 29, 1972, Ser. No. 293,460
Int. Cl. E05f *15/20*
U.S. Cl. 160—1 **2 Claims**



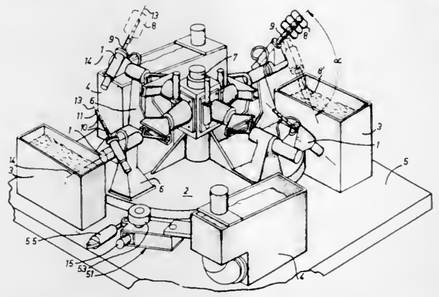
The folding blade type fire damper is provided with a thermally actuated resettable release link and retraction means cooperating with the link to reset the blades in their retracted condition upon actuation from outside the duct in which the damper is mounted.

3,796,250
APPARATUS FOR MAKING FOUNDRY MOULDS
Kent Woonton, Kitchner, Ontario; Jeffrey T. Short, III, Willowdale, Ontario; Don Mills, Willowdale, Ontario, and Kenneth N. Roach, Willowdale, Ontario, all of Canada, assignors to J. R. Short Milling Company, Chicago, Ill.
Continuation-in-part of Ser. No. 154,763, June 21, 1971, Pat. No. 3,739,834. This application June 19, 1973, Ser. No. 371,532
Int. Cl. B22c *15/02*
U.S. Cl. 164—161 **10 Claims**



Apparatus for continuous, high speed production of foundry mould parts by pressing them from a continuous bed of foundry sand mix which is based on a curable binder, pressing of the part being carried out at a time when the mix has adequate plastic flowability for pressure moulding and adequate potential curability to assure a strong, rigid cured product. Advantageous embodiments include curing means operating in conjunction with the pressing means.

3,796,251
MACHINE FOR MANUFACTURING SHELL MOULDS FOR LOST-PATTERN PRECISION CASTING
Philippe Jasson, and Pierre Chatourel, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault Billancourt and Automobiles Peugeot, Paris, both of, France
Filed Aug. 23, 1971, Ser. No. 173,866
Claims priority, application France, Sept. 15, 1970, 70.33368
Int. Cl. B22c *13/08*
U.S. Cl. 164—166 **19 Claims**



A machine for the manufacture of lost-pattern shell-moulds for precision casting, comprising a plurality of eliminable central pattern armatures or a group of eliminable patterns, each fixed on an operating head by means of which the pattern or cluster is successively dipped into immersion tanks of liquid refractory slurry and of refractory grains in fluidized suspension, in which the armature is rotatably mounted about three axes of rotation, the first being the vertical axis of a roundabout carrying operating heads on frames and bringing the heads by a discontinuous movement on rotation, successively above the various tanks located round the roundabout, the second axis of continuous rotation coinciding substantially with that of the armature and the third axis, perpendicular to the second, passing through the center of a circumference to which the second axis is tangential, the armature being external to the circumference while the roundabout, each armature and each operating head are respectively driven by first, second and third motors, the first and third motors being controlled automatically in such manner that the rotation of the armatures and their operating heads about their third axis is an angularly limited pivotal movement sufficient to dip the pattern or the cluster of patterns into each tank and to remove them from the tanks during the interruptions in the rotation of the roundabout.

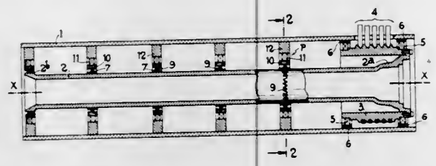
3,796,252
SUPPORT ARRANGEMENT FOR A CONTINUOUS CASTING WITH DRAWING BOLT AND HEAD
Hans G. Baumann, and Wilhelm Koch, both of Duisburg, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany
Filed June 22, 1971, Ser. No. 155,562
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 **1 Claim**

In commencing a continuous casting operation where the strand is conducted along an arcuate, deflecting or vertical path from the mold, a withdrawing bolt and head is positioned within the mold and is withdrawn with the strand through a support arrangement adapted to the cross-section of the strand being cast. As it passes through the support arrangement, the withdrawing bolt and head is pressed against spaced, fixed support rollers in the support arrangement by adjustable pressure rollers which are released from contact with the withdrawing bolt and head when the head begins to pass the pressure roller.

3,796,253
DEVICE FOR CENTERING A CENTRIFUGAL CASTING MOULD FOR TUBULAR BODIES
Pierre Edourd Lorang, Nancy, France, assignor to Societe Des Fonderies De Pont-A-Mousson, Nancy, France
Filed Sept. 2, 1971, Ser. No. 177,558
Claims priority, application France, Sept. 9, 1970, 70.32687
Int. Cl. B22d *13/02*
U.S. Cl. 164—291 **4 Claims**

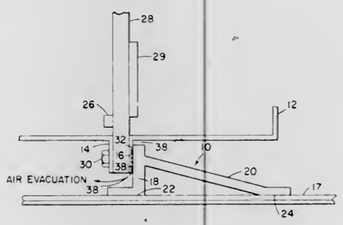
Device for centering a rotary mould in a case of a centrifu-

gal casting machine. The device comprises rolling bearings in-



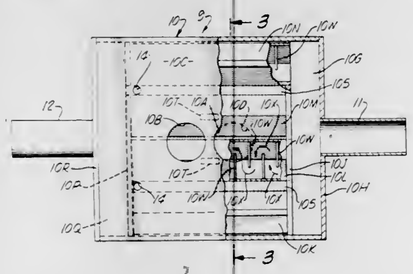
terposed between the case and the mould at the mould ends and at at least one point intermediate the mould ends.

3,796,254
TEMPERATURE CONTROL CONDUCTIVE DEVICE
Franklin D. Stooksberry, Stanton, and Frank H. Schneider, Los Angeles, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed May 25, 1972, Ser. No. 257,996
Int. Cl. F24h *3/00*
U.S. Cl. 165—47 **3 Claims**



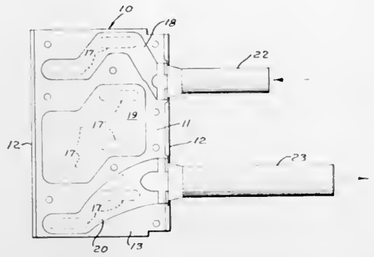
A passive temperature conductive device for use in mounting flight control units in a missile. The device controls conduction of heat to provide maximum conduction during pre-launch operation from the units and minimum conduction to the units at high altitude flights. The mating surfaces of a conductive joint allows heat to flow freely from the units to the missile skin during pre-launch operation, but restricts the reverse flow of aerodynamic heating into the units during flight.

3,796,255
HEAT TRANSFER UNIT
Federico E. F. Streitz, 10828 Otsego St., North Hollywood, Calif.
Filed Apr. 10, 1972, Ser. No. 242,684
Int. Cl. F02n *31/08*
U.S. Cl. 165—52 **2 Claims**



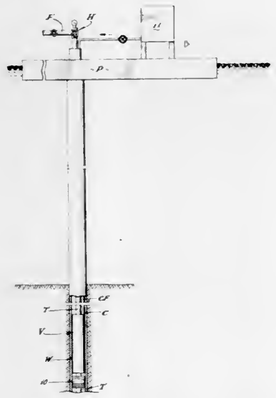
A heat exchanger for heating a fuel-air mixture by exhaust gases of an engine. The exchanger is generally rectangular with heat exchanger tubes extending therethrough from an inlet exhaust gas manifold section to an outlet exhaust gas manifold section. The exchanger is adapted to be mounted between the carburetor and intake manifold of the engine.

3,796,256
HEAT EXCHANGER HEADER
Douglas E. Foster, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.
Filed Jan. 17, 1972, Ser. No. 218,176
Int. Cl. F28b *9/04*
U.S. Cl. 165—76 **5 Claims**



A tube and header plate heat exchanger having a header and a header plate or tube sheet with the header having sides with lugs extending therefrom engaging the top and bottom surfaces of the header plate and holding it in position against movement either from side to side or up and down preparatory to permanently joining the plate and header.

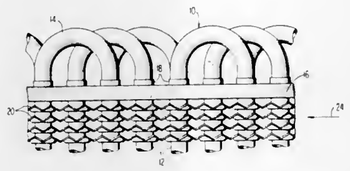
3,796,257
SUBSURFACE SAFETY VALVE
Delbert L. Hudson, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.
Filed Mar. 20, 1972, Ser. No. 236,256
Int. Cl. E21b *7/12, 33/035*
U.S. Cl. 166—.5 **30 Claims**

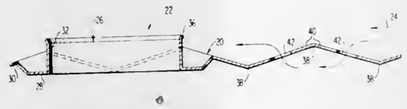


A subsurface safety valve for wells, including a ball valve closed by well fluid pressure and opened by control fluid pressure supplied from the surface. The subsurface valve includes a control fluid pressure responsive balancing valve for equalizing pressure across the closed ball valve to relieve the ball valve seating pressure. The ball valve is rotatable by support pins and is also slightly axially movable in its support. A sealing and operating sleeve below the ball valve is spring loaded upwardly. One of more additional springs are incorporated

above the ball valve to assist in overcoming hydrostatic pressure in the control tubing. The subsurface valve assembly is incorporated in a production tubing string or is removably received in a seating nipple so as to be wireline retrieveable.

3,796,258
HIGH CAPACITY FINNED TUBE HEAT EXCHANGER
Ravi K. Malhotra, and Anthony M. Castello, both of Harrisonburg, Va., assignors to Dunham-Bush, Inc., Harrisonburg, Va.
Filed Oct. 2, 1972, Ser. No. 293,892
Int. Cl. F28d *7/00*
U.S. Cl. 165—151 **2 Claims**





The fins of a finned tube heat exchanger extend in spaced parallel fashion across a plurality of fluid carrying tubes. The fins are bent into shallow angulated convolutions in the direction of flow of an external fluid passing between the fins and around the tubes. The fins carry a plurality of aligned openings within each convolution wall to increase heat transfer capacity with little increase in the fluid pressure drop of the external fluid flowing through the exchanger.

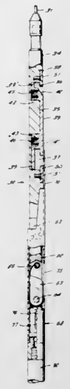
ERRATUM

For Class 166—.5 see:
Patent No. 3,796,257

3,796,259
APPARATUS FOR INSTALLING AND REMOVING FLOW VALVES
James V. Outhouse, Houma, La., assignor to Production Specialties, Inc., Lafayette, La.
Filed Feb. 7, 1973, Ser. No. 330,291
Int. Cl. E21b *23/02*
U.S. Cl. 166—117.5 **3 Claims**

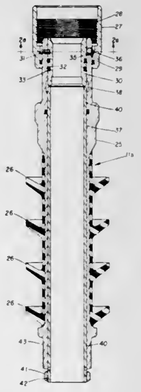
An apparatus for installing and removing flow valves in a well tubing having a plurality of flow control receiving stations off-set from the tubing each of which is provided with a seat for a flow control unit including an elongated housing means with a shifting tool pivotally supported at its upper end to the housing means. Sleeve means slidably surrounds the housing means and shifting tool and is initially positioned to lock the pivotal support to thereby retain the shifting tool aligned with the housing means as the apparatus is lowered in well tubing with a wire line. The housing means carries spring urged guide means that are normally retracted within the housing by engagement with the sleeve means as the apparatus is lowered in the well tubing and the shifting tool is provided with spring urged cam means that is also retained within the shifting tool by the sleeve means as the apparatus is lowered in the well tubing.

The well tubing is provided with a plurality of orienting means one of which is positioned immediately above each off-set flow control receiving station in the well tubing and when the predetermined off-set flow control receiving station is reached in which valve means is to be set or valve means removed therefrom the brake on the lowering cable is set so that downward movement of the housing means is arrested which enables the sleeve means to continue moving downward and thereby disengage from the spring urged guide means car-



ried by the housing means; to unlock the pivotal support so that the shifting tool may move laterally; and alignes a slot in the sleeve means with the spring urged cam means of the shifting tool so that the cam means may move outwardly of the shifting tool to engage the well tubing wall and shift the shifting tool laterally. The spring urged guide means carried by the housing means engages the orienting guide in the well tubing to orient the shifting tool in a desired manner relative to the off-set section or station so that a flow control unit may be either installed therein or removed therefrom.

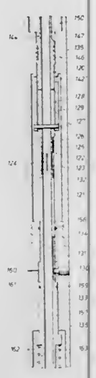
3,796,260
MULTIPLE PLUG RELEASE SYSTEM
B. Jack Bradley, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Continuation-in-part of Ser. No. 64,522, Aug. 10, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,598
Int. Cl. E21b *33/16*
U.S. Cl. 166—153 **8 Claims**



This invention relates to liner plugs used in oil and gas well cement operations. More particularly, the invention is con-

cerned with a locking device within the plugs which permits two or more plugs to be suspended in the well bore and released individually as required.

3,796,261
RELEASABLE CONNECTION FOR PRESSURE CONTROLLED TEST VALVE SYSTEM
Benjamin P. Nutter, Bellville, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Division of Ser. No. 199,554, Nov. 11, 1971. This application Sept. 11, 1972, Ser. No. 287,931
Int. Cl. E21b *23/00*
U.S. Cl. 166—237 **4 Claims**



Methods and apparatus for performing a drill stem test of an offshore well utilizing a pressure controlled test valve. The test valve includes a valve element having a transverse pressure area with the high pressure side exposed to the pressure of fluids in the well annulus and the low pressure side subject to the pressure of a compressible fluid medium contained within a chamber in the test valve. The pressure in the chamber is equalized with the hydrostatic head of the well fluids so that at test depth the same pressure is acting on both sides of the transverse pressure area, whereupon this pressure is confined within the chamber. Then a fluid pressure in excess of the hydrostatic head is applied to the well fluids externally of the test valve to develop a pressure difference across the valve element which causes it to shift from closed to open position.

3,796,262
METHOD FOR RECOVERING OIL FROM SUBTERRANEAN RESERVOIRS
Joseph C. Allen, Bellaire; Marc F. Fontaine, and Richard H. Widmyer, both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 9, 1971, Ser. No. 206,306
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 **9 Claims**

A method for recovering oil from a subterranean oil reservoir which has a finite water saturation and is deficient in energy so that it will not flow by natural means, whereby, first, steam is injected into the reservoir at a faster volumetric rate than production is taken from the reservoir in order to raise the pressure and temperature of the reservoir and then injection is ceased and production of the oil is commenced so that the pressure of the reservoir drops at least to the flash point of the water in the reservoir. Then continuing to produce oil from the reservoir.

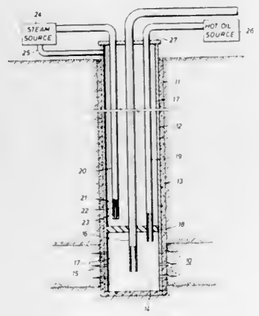
3,796,263
TREATMENT OF AN UNDERGROUND FORMATION
Phillip E. Hudson, Austin, and William B. Braden, Jr., Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.
Filed June 15, 1972, Ser. No. 263,063
Int. Cl. E21b *33/138*
U.S. Cl. 166—295 **9 Claims**

A method of treating underground formations, especially those containing clays or clay-like materials which are sensitive to fresh water, to desensitize the clays so they will not swell or disperse on contact with fresh water. The treatment consists of contacting the clay-containing formation with solutions which accomplish the electroless deposition of metal on the clay particles. Optionally, the formation can be resin coated prior to electroless plating.

3,796,264
PERMEABILITY IMPROVEMENT TECHNIQUE
Arnold B. Thigpen, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,546
Int. Cl. E21b *43/24*
U.S. Cl. 166—302 **10 Claims**

A water sensitive subterranean fluid reservoir, a petroleum reservoir, for example, previously damaged by swelling due to contact with water is improved in permeability by treating the reservoir with potassium chloride at about 100° C. for several hours.

3,796,265
METHOD FOR PRODUCING HIGH HYDROGEN SULFIDE CONTENT GAS WELLS
James R. Eickmeier, 403 309 Eighth Ave. S.W., Calgary, Alberta, Canada
Filed June 7, 1972, Ser. No. 260,682
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 **10 Claims**

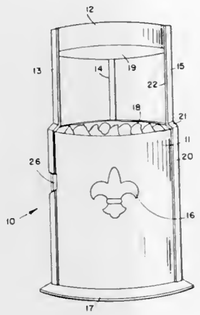


Sulfur precipitation in the production tubing string of wells producing gas with a high hydrogen sulfide content is reduced by circulating a hot fluid down an insulated circulating tubing string and up the casing-production tubing annulus to heat produced fluid in the production tubing string and, simultaneously, injecting a hot oil into produced fluid adjacent the productive interval to dissolve precipitated sulfur and/or otherwise prevent sulfur deposition on the inside of the tubing string as the hot oil mixes with this fluid and is produced up the tubing string.

3,796,266
SURFACTANT OIL RECOVERY PROCESS
Joseph T. Carlin; Kenoth H. Flournoy, and Ricardo L. Cardenas, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 13, 1972, Ser. No. 314,869
Int. Cl. E21b *43/22*
U.S. Cl. 166—305 R **21 Claims**

An aqueous solution comprising an alkalinity agent such as sodium hydroxide, a water soluble guanidine salt such as guanidine hydrochloride and an anionic surfactant such as an aliphatic sulfate, specifically dodecyl sulfate or cetyl sulfate, or a water soluble salt of an unsaturated aliphatic monobasic carboxylic acid, such as sodium oleate, is injected into a subterranean petroleum containing formation, followed by the injection of water to displace a surfactant-guanidine solution through the formation. A plurality of benefits result from the use of this combination, including increased injection solution viscosity for mobility ratio improvement, inhibition of clay swelling which causes formation permeability damage, and improved salt tolerance of the surfactant solution so that surfactant-emulsion flooding may be carried out in subterranean petroleum containing formations whose formation water salinity is as high as 4 percent.

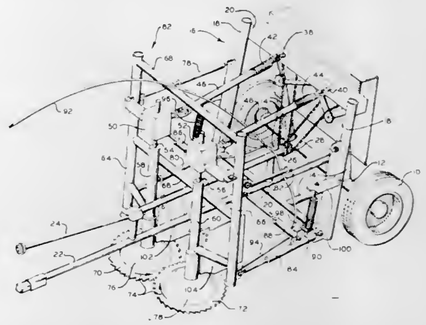
3,796,267
WASTE PAPER BASKET FIRE EXTINGUISHER
Earl C. Hunter, 7895 Kimlough Ave., Indianapolis, Ind., and Ernest L. Peterson, 4007 N. Keystone Ave., Indianapolis, Ind.
Filed Aug. 28, 1972, Ser. No. 284,287
Int. Cl. A62c *35/02*
U.S. Cl. 169—57 **5 Claims**



An apparatus for holding waste paper which has an automatic fire extinguishing capability. A fire extinguishing container is mounted to and above a waste paper container by a plurality of pillars which are received in grooves provided in the waste paper container. The fire extinguishing container has a bottom wall which will fall under the force of gravity when heated. A fire extinguishing substance is contained within the fire extinguishing container and will fall onto any fire within the waste paper container as the bottom wall of the fire extinguishing container falls therefrom.

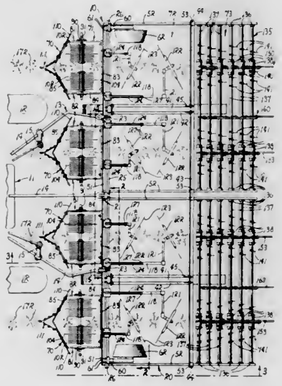
3,796,268
ONE-ROW CROP CUTTING OR DIGGING MACHINE
Wellington W. Porter, R.D. 2 Dublin Rd., Waterloo, N.Y.
Filed Oct. 25, 1972, Ser. No. 300,459
Int. Cl. A01d *31/00*
U.S. Cl. 171—88 **7 Claims**

Apparatus for cutting crops, particularly those planted in spaced rows, at or near ground level, thereby cutting off and "windrowing" an upper portion of the crop and leaving a lower portion in the ground. The machine may also be used for digging and windrowing crops growing in rows a short distance below ground level. The apparatus is drawn and powered by a tractor, the power takeoff unit of which provides counter rotation to a pair of overlapped disks having saw-



toothed cutting edges, and the tractor hydraulic system actuating a pair of cylinders to lift and lower the cutting mechanism. The cutter disks are preferably located approximately midway between the rear-mounted wheels and the point of attachment of the cutting machine tongue to the tractor drawbar.

3,796,269
CULTIVATOR
James J. Carlucci, 716 Monroe Ave., Los Banos, Calif.
Filed Feb. 10, 1972, Ser. No. 225,070
Int. Cl. A01b *49/02*
U.S. Cl. 172—149 **1 Claim**



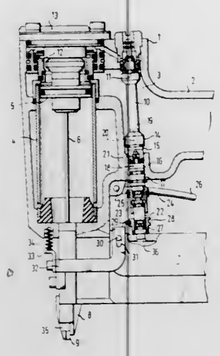
A cultivator for cultivating several crop rows simultaneously having a tool bar supported for earth traversing movement in a predetermined direction of travel; and a plurality of cultivating units individual to the crop rows mounted on the tool bar, each unit having a forwardly disposed mounting shaft mounted on the tool bar, a plurality of disk blades adjustably positionable on each shaft for cultivation on opposite sides of their respective crop row, each unit having rearwardly disposed freely rotatable cultivating wheels oblique to the direction of travel for cultivation in the crop row, a sweep disposed forwardly of the disk blades, and a harrow disposed rearwardly of the cultivating wheels to exert a cooperative effect on the earth along said rows and between plants in the rows.

3,796,270

RELEASE STOP MEANS FOR PNEUMATIC NAIL DRIVING OR STAPLING DEVICE

Wilfried Lange, Altenhagen, Germany, assignor to Bukama GmbH, Hannover, Germany

Filed June 26, 1972, Ser. No. 266,491
Claims priority, application Germany, June 26, 1971, 2131849
Int. Cl. B27f *7/22*
U.S. Cl. 173—15 6 Claims



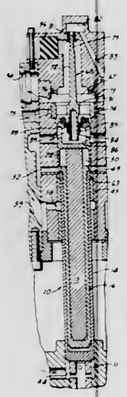
A release block or stop means for use with a pneumatically operated nail driving or stapling device comprises a slidable actuating member or slip-on part slidable in the direction it is slipped or installed on the device. The part protrudes from its position of rest beyond the mouthpiece of the device. Placing both the slip-on part and a release or tripping lever in operating position actuates a valve tappet mounted above an auxiliary member for causing a working stroke of the pneumatically operated nail driving device. Said auxiliary member is non-slidable, but has bushings slidably mounted thereon, the first of said bushings being coupled to the release lever and the second of said bushings being coupled to the slip-on part.

3,796,271

ROCK DRILL HAVING A TRIPLE COAXIAL HAMMER

Lester A. Amtsberg, 2200 Bleecher St., Utica, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,592
Int. Cl. E21b *1/02*; E21c *7/00*
U.S. Cl. 173—102 18 Claims



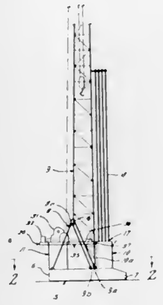
A triple coaxial hammer comprised of three hammer elements in telescopic relation is provided for a rock drill and caused to rapidly reciprocate to pound a drill-steel. The hammer is hydraulically movable on a work stroke, and is returnable by hydraulic force supplemented by force of pressure air. The telescoped arrangement of the hammers provides a compact hammer assembly which effects a relatively wide impact pulse against the drill-steel.

3,796,272

DEEP WELL DRILLING APPARATUS

Donald R. Branham; Paul E. Borg, and Douglas C. Goerner, all of Houston, Tex., assignors to Pyramid Derrick & Equipment Corp., Houston, Tex.

Filed Feb. 17, 1972, Ser. No. 227,185
Int. Cl. E21c *5/00*
U.S. Cl. 173—151 4 Claims



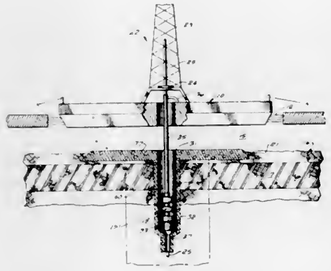
A base structure is provided with a gin pole structure, a mast pivotally mounted in front of and adjacent the gin pole structure, a pipe setback structure mounted in front of and adjacent the mast on the base structure and independent of the mast, and a separate vertical structure forming a guide to enable a drawworks to be moved vertically from the base structure upwardly therethrough to a desired height above the base structure.

3,796,273

UNDERWATER WELL STRUCTURE

Paul R. Rininger, Westlake Village, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Oct. 22, 1971, Ser. No. 191,712
Int. Cl. E21b *48/01*
U.S. Cl. 175—7 35 Claims



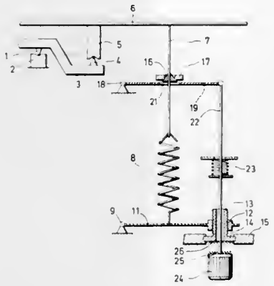
A substantially cylindrical container has opposite ends one of which is at least partially closed and the other of which is open. The container has an interior sized to receive entirely therein a blowout preventer and associated equipment related to the drilling of oil and gas wells at submerged locations. The one end of the container carries cutting means which are operable upon rotation of the container to penetrate an earth formation engaged by the cutting means. Means are provided for rotating the container about its axis and for circulating fluid under pressure through the one end of the container for removing cuttings from the cutting means.

3,796,274

SCALE, AND METHOD OF ZERO-SETTING THE SAME

Ernst Kuhnle, and Josef Schwarz, both of Balingen, Germany, assignors to Bizerba-Werke Wilhelm Kraut KG, Balingen, Germany

Filed July 24, 1973, Ser. No. 382,203
Claims priority, application Germany, July 26, 1972, 2236546
Int. Cl. G01g *23/14*
U.S. Cl. 177—1 9 Claims



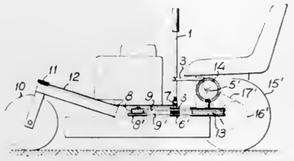
A scale having digital weight indication is weighted with a weight whose magnitude is exactly half that of the smallest weight increment that can be indicated by the scale, and thereafter the scale is tared until the weight indication provided by the scale is indifferent between two consecutive ones of the smallest weight increments.

3,796,275

DRIVING DEVICE FOR POWERED VEHICLES, AND MORE PARTICULARLY TO LAWN-MOWER VEHICLES

Jean Felix Henri Bouyer, 12-14, Bld Jean-Jaures, Tomblaine, France

Filed Apr. 28, 1972, Ser. No. 248,619
Claims priority, application France, June 8, 1971, 71.20667
Int. Cl. B62d *11/08*
U.S. Cl. 180—6.4 5 Claims



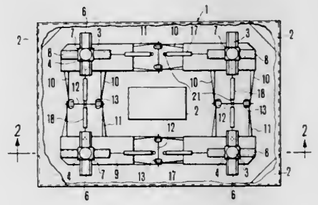
The driving device includes a pair of coaxial driving pulleys, of respective different diameters, driven directly by the motor of the vehicle, and a driven pulley connected to a shaft in turn connected, by respective coupling means, to a pair of rear driving wheels. The vehicle includes a dirigible front steering wheel. Each driving pulley has a respective endless belt trained therearound and arranged to drive the driven pulley. A single control lever is pivoted, intermediate its ends, for swinging about mutually perpendicular first and second axes, the first axis extending transversely of the vehicle and the second axis extending longitudinally of the vehicle. The lower, or operating, end of the single control lever is connected to a pair of tensioning pulleys each cooperable with a respective endless belt. When the lever is swung, from a neutral position, in one direction about the first axis, one endless belt is tensioned to drive the driven pulley and, when the lever is swung in the opposite direction about the first axis, the other endless belt is effective to drive the driven pulley. On one embodiment of the invention, each endless belt drives the driven pulley at a respective different forward speed and, in another embodiment of the invention, one endless belt drives the driven pulley at a respective forward speed and the other endless belt drives the driven pulley at a respective reverse speed. A cable, trained over pulleys, connects the operating end of the control lever to the dirigible wheel so that, as the control lever is swung in either direction about the second axis, the dirigible wheel is steered in a corresponding direction. Link means connect the single control lever to the driven axle to shift the same paraxially and, responsive to the control lever being swung to make a tight turn, the linkage means, through the driven shaft, disengages the coupling means connecting the driven shaft to the rear driving wheel then on the inside of the tight turn.

3,796,276

CARRIAGES FOR TRANSPORTING HEAVY ARTICLES AND CONTROLLING POSITIONS THEREOF

Kazuo Maeda, Chiba, Japan, assignor to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan

Filed May 25, 1972, Ser. No. 256,973
Claims priority, application Japan, May 28, 1971, 46-37192
Int. Cl. B62d *57/02*
U.S. Cl. 180—8 C 6 Claims



A carriage for transporting heavy articles comprises a base frame, a plurality of supporting legs secured to the base frame, a plurality of vertical fluid pressure cylinders connected to the lower surface of the base frame, a plurality of shoes, each connected to the lower end of the piston rod of the fluid pressure cylinder through a pair of cooperating slide members, one of them being disposed to be slidable in the longitudinal direction, whereas the other in the transverse direction of the shoe, and a plurality of fluid pressure piston-cylinder assemblies for moving the shoes in the transverse and longitudinal directions of the base frame.

3,796,277

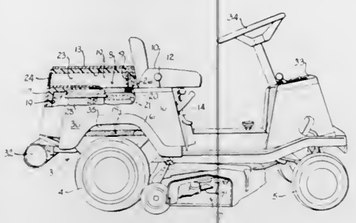
RIDING TRACTOR WITH ENGINE ENCLOSURE FOR NOISE ABATEMENT

Douglas Gordon, Hartford, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed July 28, 1972, Ser. No. 276,246
Int. Cl. B60k *11/06*
U.S. Cl. 180—54 A 4 Claims

A riding gasoline engine powered lawn mower with a noise abating hood enclosing the engine, an air passage in the hood leading from a screened inlet in an outside wall thereof to the inlet of the blower housing of the engine to bring outside air to the blower, which upon being conducted by the blower housing over the hot surfaces of the engine is discharged through a

port in the deck of the mower, and air for combustion is supplied to the air cleaner of the engine carburetor from a zone



inside the blower housing where the air is fresh and clean, while the engine exhaust is piped to a muffler outside the hood.

3,796,278

ELECTRIC CONTROL SYSTEM FOR DRIVING AN ELECTRIC VEHICLE

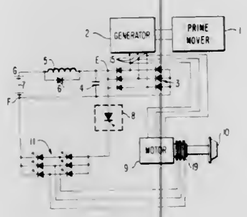
Fukuo Shibata, Nishinomiya, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Sept. 15, 1972, Ser. No. 289,383

Claims priority, application Japan, Sept. 15, 1971, 46-71542

Int. Cl. B60k *1/00*

U.S. Cl. 180—65 **11 Claims**



An electric motor for driving a wheel of a vehicle may be arranged to be supplied with electric power, through a chopper control system using controlled rectifiers, from an electric battery group connected in parallel with an electric generator driven by a driving machine such as a prime mover. The efficiency of the driving system can be increased and the temperature rise of the electric battery can be kept low by providing an inductor which permits discharging D.C. current to flow from the electric battery and prevents charging current of high frequency from flowing to the electric battery.

3,796,279

TRANSPORTER WITH BUILT-IN DISTRIBUTION AND DAMPING

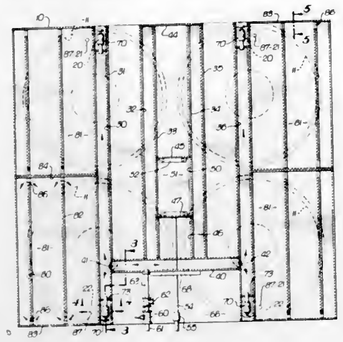
Robert E. Burdick, and Baxter K. Wolf, both of Santa Barbara, Calif., assignors to Rolair Systems, Inc., Santa Barbara, Calif.

Filed Oct. 18, 1972, Ser. No. 298,464

Int. Cl. B60v *1/06*

U.S. Cl. 180—124 **5 Claims**

An air cushion transporter with a platform and a plurality of replaceable air bearings. A platform formed of welded rectangular steel tubing providing built-in air distribution and air damping with the only piping being that used for making the



connection to the external air supply. A low profile platform with no exposed or exterior piping.

3,796,280

INTERNAL COMBUSTION ENGINE WITH SOUND-PROOFING CASING

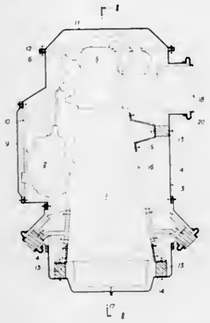
Gerhard Thien; Heinz Fachbach, and Othmar Skatsche, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Sept. 1, 1972, Ser. No. 285,772

Claims priority, application Austria, Sept. 3, 1971, 7715/71

Int. Cl. E04b *1/99;* **G10k** *11/04*

U.S. Cl. 181—33 K **6 Claims**



An internal combustion engine having a sound-proofing casing comprising at least one spaced bottom portion raised sump-fashion and surrounding the engine and attached to the latter by means of sound-proofing supporting members attached to the engine in its bottom-most area, the spaced bottom portion of the casing being closed on top by means of a cover.

3,796,281

APPARATUS FOR USE IN ESCAPING FROM HIGH STRUCTURES

Thomas Barrow Dowling, Emsworth, England, assignor to RFD-GQ Limited, Surrey and Mobell Marine Development Company Limited, Havant, Hampshire, both of, England

Filed Aug. 24, 1972, Ser. No. 283,280

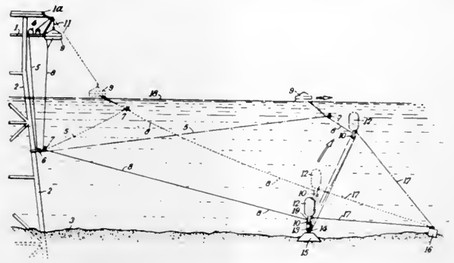
Claims priority, application Great Britain, Aug. 26, 1971, 40133/71; Mar. 20, 1972, 12827/72

Int. Cl. B63c *9/22*

U.S. Cl. 182—48 **16 Claims**

Apparatus for use in escaping from a high structure at sea, the apparatus comprising a buoyant member which, when

positioned under water, provides a source of potential energy, an outhaul cable, and bowsing brake means which are operative to retain the outhaul cable, against the influence of the buoyant member, in an inoperative position in which the



outhaul cable passes into the sea beside the structure, release of the bowsing brake means causing the outhaul cable to be drawn by the buoyant member away from the structure for escape purposes.

3,796,282

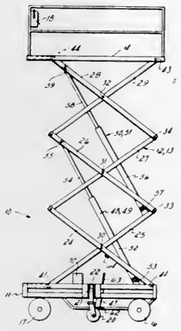
STABILIZER FOR ELEVATABLE PLATFORM

Dennis J. Denier, and Lee R. Garrett, both of Cincinnati, Ohio, assignors to Howard H. Denier, Cincinnati, Ohio

Filed Oct. 17, 1972, Ser. No. 298,456

Int. Cl. E04g *1/22*

U.S. Cl. 182—141 **10 Claims**



Apparatus in which a platform is supported by a scissors linkage on each side of the platform and upper and lower hydraulic rams are connected to each scissors linkage with means for supplying hydraulic fluid to the hydraulic rams to expand them to raise the linkage. Each lower ram is connected to an upper ram on the opposite linkage in such a way that the interconnected rams expand in unison and by equal amounts to maintain the platform level as it is being raised regardless of the loading on the platform.

3,796,283

BEARING LUBRICATION SYSTEM

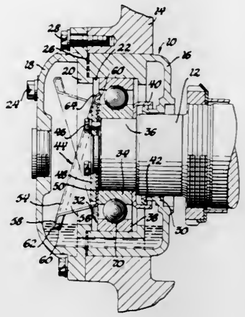
Virgil W. Raby, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 8, 1972, Ser. No. 261,083

Int. Cl. F16n *7/16*

U.S. Cl. 184—11 A **5 Claims**

A lubrication system for a bearing has a dynamic lubricator which when rotated picks up oil from a sump and delivers it to the bearing through a combination of momentum, centrifugal force and screw action. Two embodiments of a simple stamped sheet metal lubricator are disclosed for tolerating low



oil levels in the sump thereby permitting a tilted orientation of the bearing housing and longer periods of time between oil replenishment. Both of the lubricators accommodate a significantly offset access to the oil sump.

3,796,284

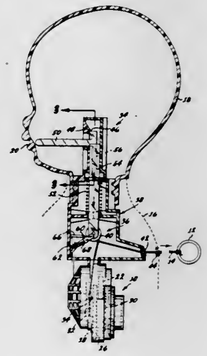
STARTING MECHANISM FOR TOY WITH PHONOGRAPH

Willard L. Zeigner, Fountain Valley; Gordon J. Popitt, Westminster; John E. Sargeant, Palos Verdes, and Ronald J. Zawistowski, Redondo Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Mar. 10, 1972, Ser. No. 233,466

Int. Cl. G05g *17/00;* **A63h** *5/00, 13/16*

U.S. Cl. 185—39 **3 Claims**



A simple toy with a phonograph which begins playing only when a child performs a predetermined operation such as pressing a certain location on the toy, the toy including a pull-string phonograph and a mechanism for preventing inward movement of the string until the predetermined operation is performed. One toy housing is in the form of a doll with a resilient mouth portion that moves inward when the child kisses the doll, to operate a string engaging member so it releases the pullstring. Another toy is in the form of a jack-in-the-box, and includes a string engaging member that releases the pullstring of the phonograph when a child pushes a button to allow the lid on the box to open.

3,796,285

LOAD RAISING AND LOWERING

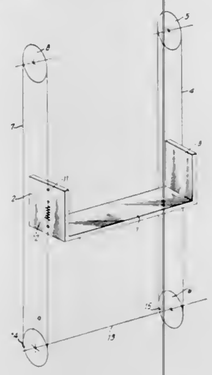
Hermann Grebenstein, Unter-Erlinsbach, Switzerland, assignor to Oehler-, Wyhlen-Lagertechnik AG, Aarau, Switzerland

Filed July 6, 1972, Ser. No. 269,464

Claims priority, application Switzerland, July 14, 1971, 10450/71

Int. Cl. B66b *11/04*

U.S. Cl. 187—20 **1 Claim**



A load raising and lowering apparatus includes a load-supporting platform which is suspended on a pair of chains and is movable between an extreme upper and an extreme lower position. The pair of chains are positioned about an upper pair of sprockets and a lower pair of sprockets. The two ends of each chain are connected to the platform. The upper end of each chain is directly connected to respective sides of the platform. The lower end of each chain is connected, via respective springs, to the respective sides of the platform at points below those points to which the respective upper ends of the chains are connected. The spring constants of the springs are at least approximately equal to the spring constants of the respective chains.

3,796,286

DEVICE FOR COMPENSATING RUPTURE FORCES IN INSTALLATION COMPONENTS AND STRUCTURES, PARTICULARLY IN NUCLEAR POWER PLANTS

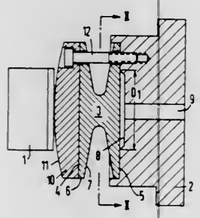
Werner Kraupa, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Dec. 9, 1971, Ser. No. 206,395

Claims priority, application Germany, Dec. 10, 1970, 2060794

Int. Cl. F16f *7/12*

U.S. Cl. 188—1 C **9 Claims**



To compensate rupture forces in equipment components and structures plastically deformable damping elements having a load capacity that is central as well as inclined to the longitudinal axis thereof, and formed of a material that flows or yields at a predetermined pressure and having a cross-sectional dimension which varies substantially over the entire length thereof, are disposed between respective adjacent structural members.

3,796,287

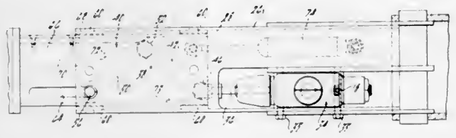
SURGE-ACTUATOR FOR BRAKE SYSTEM

Richard H. Kolm, Waukesha, Wis., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Mar. 16, 1972, Ser. No. 235,337

Int. Cl. B60t *7/20*

U.S. Cl. 188—112 **5 Claims**



A surge type brake actuator for actuating hydraulically actuated brakes on a towed vehicle and including apparatus for providing a force multiplication whereby an increased fluid pressure output can be obtained particularly for disk brake actuation. The force multiplication apparatus includes a toggle linkage system and a cam that actuates the joint of the toggle linkage. Furthermore, a shock absorber is interposed in the apparatus for providing a smoother brake operation.

3,796,288

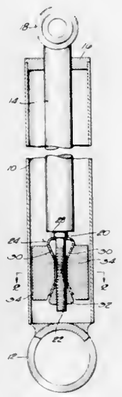
ONE OR TWO WAY ENERGY (SHOCK) ABSORBER

Harold S. Hollnagel, 918 W. Laramie Ln., Milwaukee, Wis.

Continuation-in-part of Ser. No. 220,762, Jan. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 195,934, Nov. 5, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,471

Int. Cl. F16f *7/08*

U.S. Cl. 188—129 **16 Claims**



Various embodiments of energy or shock absorbers are disclosed; however, they all have in common the inclusion of a casing with a rod movably supported in the casing for movement relative thereto. In each embodiment there is included a plurality of friction blocks which are urged into engagement with the inner walls of the casing by inclined surfaces coacting with wedge members attached to the rod. As the rod is moved relative to the casing, the wedge member disposed on the rod is moved into further wedging engagement with the friction blocks to urge the friction blocks outwardly and into engagement with the inside walls of the casing. The particular novelty generic to all of the embodiments is the feature of being able to adjust the degree to which the friction blocks are urged outwardly into engagement with the casing in the static condition. This is accomplished by effecting a relative rotation between the casing and the rod upon which the wedge members are supported. More specifically, this adjustment is accomplished by the threaded engagement between the rod and the wedge members whereby upon rotation of the rod relative to the casing, the wedge members are moved into greater or lesser wedging engagement with the friction blocks.

3,796,289

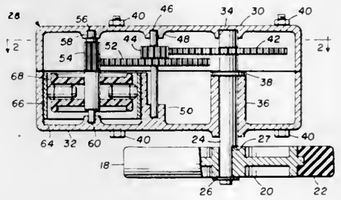
CENTRIFUGAL BRAKING DEVICE

John W. Benjamin, and Edward Thorne Holland, both of Lancaster, Pa., assignors to Control Flow Systems, Inc., Lancaster, Pa.

Continuation of Ser. No. 800,513, Feb. 19, 1969, abandoned. This application Feb. 1, 1971, Ser. No. 111,718

Int. Cl. F16d *51/12*

U.S. Cl. 188—185 **10 Claims**



A braking device for use in retarding and limiting the speed of an object gravitationally moving along a conveyor. The braking device is connected to a rotatable wheel which engages the moving object. The wheel is operatively conneced to a centrifugal device through a gear train, and as the speed of the wheel increases, the braking force of the centrifugal device increases to limit the speed of the wheel and thus retard further acceleration of the moving object in engagement with the wheel.

3,796,290

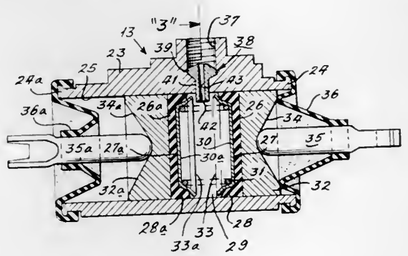
BRAKE WHEEL CYLINDER AND BLEEDING SYSTEM

John F. Limberg, Rockford, Ill., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Sept. 25, 1972, Ser. No. 291,779

Int. Cl. B60t *11/30*

U.S. Cl. 188—352 **2 Claims**



An abutment member is provided within the bore of a wheel cylinder for engagement with the wheel cylinder cups to prevent the movement thereof into blocking or overlapping engagement with the port hole opening in said bore upon vacuum bleeding of the brake system.

3,796,291

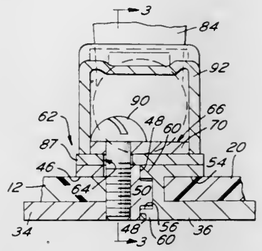
LUGGAGE CASE

Thomas J. Cahill, Jr., Wilmington, Del., assignor to Rapid-American Corporation, New York, N.Y.

Filed June 19, 1972, Ser. No. 264,221

Int. Cl. A45c *13/36*

U.S. Cl. 190—49 **7 Claims**



A luggage case of the type for carrying papers and the like having first and second molded sections with valence strips thereon. The valence strips are relatively narrow and are engageable with each other when the sections are closed to define the case. One of the valence strips has a handle retainer which extends into overlying relation with the other valence strip when the case is closed. The handle retainer is operative to bring the two valence strips into mating contact with each other if they are misaligned due to the shape of the molded sections. The handle for the luggage case is supported on the valence so that it is positioned at the mid-portion of the case.

3,796,292

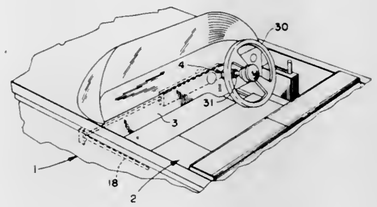
STEERING SYSTEM

Robert R. Harrison, Elyria, Ohio, assignor to Nemo Corporation, Cleveland, Ohio

Filed Apr. 13, 1972, Ser. No. 243,652

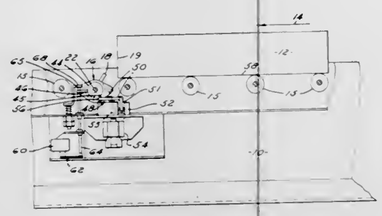
Int. Cl. F16c *1/10;* **B63h** *25/52;* **F16d** *51/00*

U.S. Cl. 192—8 C **17 Claims**



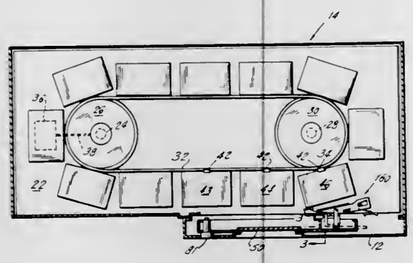
Steering system includes a single push-pull element which is moved linearly in either direction by rotation of a drive element to provide either a pushing or pulling force at the output. Releasable brake elements restrain the drive element against rotation in either direction when external forces are applied to the output thereby preventing undesirable movements at the output. However, the operator is free to rotate the drive element by turning an input shaft which releases the brake elements during rotation thereof.

3,796,293
ARTICLE STOP FOR CONVEYORS
Bruno Warmann, Livonia, Mich., assignor to Jervis B. Webb Company, Detroit, Mich.
Filed Aug. 19, 1971, Ser. No. 173,019
Int. Cl. B65g *13/75*
U.S. Cl. 193—35 A **12 Claims**



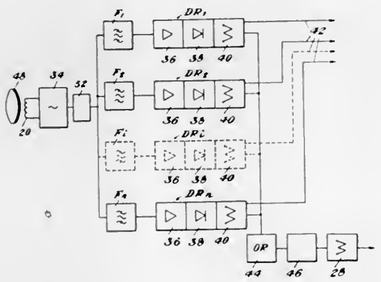
A device for arresting movement of an article on a roller conveyor consists of a bar projecting outwardly from a cylindrical sleeve rotatably mounted on a shaft which in turn is rotatably supported on the conveyor between and parallel to an adjacent pair of rollers. Rotation of the sleeve on the shaft is resiliently opposed by a cluster of flexible rods mounted within the sleeve and extending parallel to the shaft, the rod ends being inserted in sockets of a pair of collars on the shaft, one collar being secured to the sleeve and the other to the shaft. A counterweight on the shaft urges the device to an obstructing position in which the bar extends into the path of movement of an article on the conveyor rollers, and a releasable latch prevents movement of the shaft from this position so that engagement of the bar by an oncoming article results in movement of the bar and sleeve being resiliently opposed by the flexible rods to absorb the momentum of the article.

3,796,294
VENDING MACHINE DOOR LOCK AND VENDED ITEM CARRIER MOTION CONTROL
Arthur Hoffer, Dix Hills, and William Danziger, Lynbrook, both of N.Y., assignors to Transvac Electronics Inc., Plainview, N.Y.
Filed July 13, 1972, Ser. No. 271,230
Int. Cl. G07f *11/58*
U.S. Cl. 194—10 **27 Claims**



A vending machine having a number of levels of carriers for items to be vended. The carriers on each level are all moved along a predetermined pathway, thereby delivering the carriers in sequence to an access door at each level. Each door is blocked closed by a solenoid controlled door blocking abutment. Each solenoid is in circuit with a proper deposited coinage activated switch and with a separate manually operable selector switch associated with each level. A door is released when a vendee deposits his money and selects an item to be vended at a particular level. After an item on a level has been vended, the machine includes means for moving the carriers at that level to move the next carrier into position adjacent to the door. The moving means is switched on when the access door is reclosed after an item has been vended, and the door blocking abutment moves back to the door blocking position. The means that operates the carrier moving means includes a switch which senses the position of the carriers and activates the moving means until the next carrier moves adjacent to the access door.

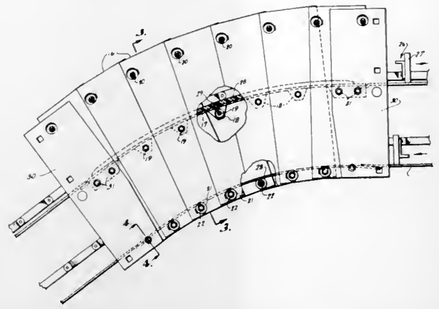
3,796,295
ELECTRONIC METAL COIN ANALYSER
Sergio Montolivo, and Giorgio Squartini, both of Rome, Italy, assignors to F.A.T.M.E. S.P.A., Rome, Italy
Continuation-in-part of Ser. No. 24,316, March 31, 1970, abandoned. This application Feb. 29, 1972, Ser. No. 230,382
Claims priority, application Italy, Mar. 31, 1969, 36093/69
Int. Cl. G07f *3/02*
U.S. Cl. 194—100 A **5 Claims**



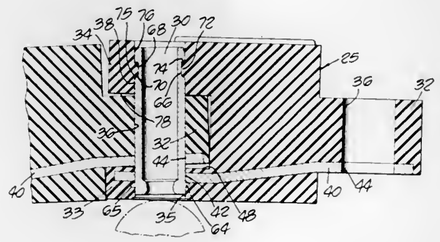
The novel electronic metal coin analyzer is disclosed wherein a coin to be analyzed falls through an inductance coil which is coupled to the resonance circuit of an oscillator. As the coil falls through the coil, a dynamic change in inductance is produced in the coil and a resultant dynamic change of operating frequency of the oscillator occurs. Specifically, for each coin, a band or plurality of frequencies will be generated as the coin drops through the coil. These frequency signals are further processed through a plurality of band pass filters, one band pass filter for each different type of coin, and serve to actuate a relay-operated coin deflector only if the signals are originated by a coin for whose acceptance the device is preset.

3,796,296
CONVEYOR WITH ANGULARLY ADJUSTABLE TRANSITION SECTION
Donavon L. Bakker, Fort Atkinson, Wis., assignor to Butler Manufacturing Company, Kansas City, Mo.
Filed Feb. 2, 1972, Ser. No. 222,822
Int. Cl. B65g *41/00*
U.S. Cl. 198—109 **2 Claims**

A conveyor having an angularly adjustable transition section which permits angular adjustment of a straight infeed section with respect to a straight outfeed section through a range from longitudinal alignment of the sections to an angular relationship of approximately 45° without adding or removing parts of the conveyor.



3,796,297
CUP CHAIN CONVEYOR FOR FRUIT
Franklin K. Holbrook, Whittier, Calif., assignor to Brown International Corporation, Covina, Calif.
Filed Feb. 5, 1973, Ser. No. 329,876
Int. Cl. B65g *19/04*
U.S. Cl. 198—131 **11 Claims**



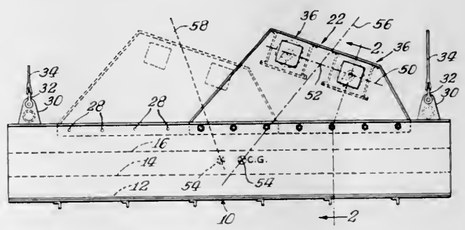
In a fruit processing apparatus incorporating a chain of elastomer conveyor cups with each cup formed with a single ear at one end and a pair of ears at the other end, each pair of ears straddling a single ear of an adjacent cup with a pivot bushing extending through aligned pivot bores of the three ears and wherein a drive wheel has a circumferential series of laterally projecting drive pins that enter inner ends of the successive pivot bushings briefly to actuate the conveyor, the present invention improves the anchorage of the pivot bushing by providing the opposite ends of the pivot bushing with oppositely facing outer circumferential shoulders and by providing the bores through the two straddling ears with inner oppositely facing circumferential shoulders that cooperate with the outer circumferential shoulder to prevent axial shift of the pivot bushing in opposite axial directions.

3,796,298
METHOD AND APPARATUS FOR CONVEYING MATERIAL
John D. Russell, R.D. No. 1, Portersville, Pa.
Filed Oct. 21, 1971, Ser. No. 191,174
Int. Cl. B65g *15/00*
U.S. Cl. 198—139 **12 Claims**

Material dislodged by a continuously advancing mining machine is deposited in a hopper that is movable with the mining machine. At a fixed discharge station a flexible belt has one end portion coiled on a first rotatable spindle and the other end portion coiled on a second rotatable spindle positioned thereabove. The intermediate portion of the belt is reeved about an idler pulley mounted on the mining machine and movable therewith. The intermediate portion of the flexible belt forms a lower strand portion extending from the coil on the first spindle to the idler pulley and an upper strand portion extending from the second spindle to the idler pulley. The lower strand is arranged to slide along the mine floor and the upper strand is arranged to slide on the dislodged material being conveyed on the lower strand. A drive motor rotates the lower spindle to coil the flexible belt thereon and move successive portions of the lower strand from the mining machine toward the fixed discharge station while the upper strand is being uncoiled from the upper spindle. Material is discharged

from the hopper onto the moving lower strand and is conveyed to the fixed discharge station where the conveyed material is transferred to a fixed conveyor. In one embodiment a second coil of flexible belt is positioned on the second spindle when the first flexible belt is uncoiled therefrom. The end of the second flexible belt is spliced to the end of the first flexible belt to form a continuation thereof. When the first flexible belt is coiled on the first spindle the end portion is disconnected from the end portion of the second coil of flexible belt and removed from the first spindle. In another embodiment when a preselected amount of the flexible belt is coiled on the first spindle, the second spindle is rotated to uncoil the belt on the first spindle and coil the flexible belt on the second spindle, thus providing a predetermined length of the lower strand for conveying additional dislodged material from the hopper to the discharge station.

3,796,299
VIBRATORY MATERIAL HANDLING DEVICE WITH VARIABLE FORCE APPLICATION
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.
Filed July 8, 1971, Ser. No. 160,679
Int. Cl. B65g *27/20*
U.S. Cl. 198—220 DB **1 Claim**

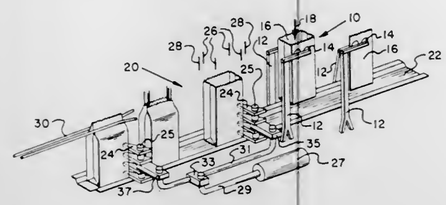


An apparatus for performing work on material through vibration. An elongated material receiving surface is provided along with a mount for the same that permits the surface to be vibrated. A vibrating mechanism including two spaced vibratory force generating devices may be adjustably secured to the material receiving surface in any of a variety of positions with respect to the center of gravity of the latter so that the direction of the vibratory force applied to the material receiving surface may be varied.

3,796,300
MULTIPLE FINGER PUSHERS

Doyle R. Hudson, West Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.

Filed July 17, 1972, Ser. No. 272,125
Int. Cl. B65g *25/08*
U.S. Cl. 198—221 7 Claims

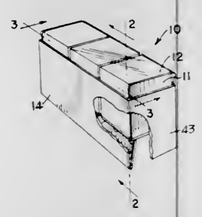


An improved pusher member for use in a gusset re-forming machine of the type having a reversible moving carriage for conveying a bag from a filling station towards a sewing station while re-forming the gussets of the bag with the carriage reversing and returning to its original position to pick up the next successive bag. The pusher members comprise a plurality of pivotally mounted pusher fingers which are mounted on the carriage and retract to a non-pushing position whenever the carriage is returning to the original position. With the use of the retracting multiple fingers, a more positive control of the bag position is obtained and aids the re-forming of the gussets of the bag.

3,796,301
PHOTOFLASH CUBE PACKAGE

Edwin L. Arneson, Hillsdale, and Patrick S. Maio, River Vale, both of N.J., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed May 26, 1971, Ser. No. 147,057
Int. Cl. B65d *5/50, 25/54*
U.S. Cl. 206—45.14 1 Claim

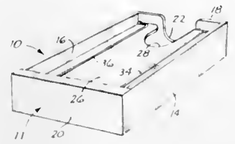


A package of photographic flash cubes which comprises a plurality of the cubes enclosed in a container formed from a blank of paperboard or similar foldable sheet material which is cut and creased to provide side and end wall forming panels and a pair of extension flaps hinged to the top edge of the side wall panels which, in the set up and filled container, are folded inwardly and secured to the inside margins of the side wall panels so as to capture oppositely disposed marginal portions of a transparent film sheet, with the body of the film sheet forming the top side wall of the container through which top portions of the cubes may be observed and with infolded panels hinged to the bottom edges of the side walls and having their free edges engaging bottom portions of the cubes so as to lock the latter in the container.

3,796,302
DOCUMENT HOLDER

Rocke A. Warren, 3843 S.E. 41st Ave., Portland, Oreg.

Filed Apr. 10, 1972, Ser. No. 242,355
Int. Cl. B65d *1/34*
U.S. Cl. 206—74 13 Claims

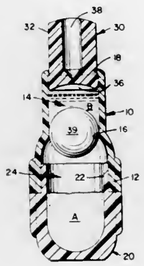


A document holder including a vertically shiftable support platform, a clamping arm overlying the platform, and springs yieldably urging the platform and arm toward each other. The clamping arm is shiftable laterally of the platform. Operator mechanism engaged by the platform when it is depressed shifts the arm laterally of the platform for insertion of a document. When the platform shifts back to its raised position the arm moves back over the platform to grip the document.

3,796,303
CONTAINERS

Pierre Allet-Coche, Paris, France, assignor to Jean-Jacques Goupil, Cachan, France

Continuation of Ser. No. 703,422, Feb. 6, 1968, abandoned. This application Feb. 25, 1972, Ser. No. 229,478
Claims priority, application France, May 5, 1967, 67105329
Int. Cl. B65d *81/32*
U.S. Cl. 206—47 A 21 Claims



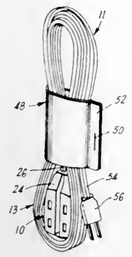
Containers for storing, transporting and intermixing pre-proportioned substances, such as a metallic powder and mercury, for producing dental amalgam. The containers have two separable sections, each with a compartment therein; a partition is provided, preferably in the form of a ball, for separating the compartments during filling and transportation, and for assisting in the mixing of the substances, once the ball has been forced from its separating position into the lower compartment.

The upper section of the containers have a passage therein through which one or both substances may be introduced successively, with the partition or ball being interposed after the first substance has been introduced into the lower compartment. A pusher is insertable in the passage of the upper container section and slidably movable therein toward the partition so as to unseat and displace the same from said separating position by pressure exerted by the intermediary of the upper compartment and the substance therein.

3,796,304
CORDSET HANK AND WRAP

Maurice E. Blais, Rumford, R.I., assignor to General Electric Corporation, Providence, R.I.

Filed June 23, 1972, Ser. No. 265,685
Int. Cl. B65d *85/00*
U.S. Cl. 206—328 7 Claims

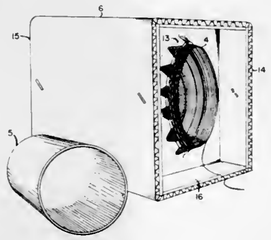


A packaged cordset includes an elongated connector having a tapered end and an electric cord extending from the tapered end. The cord is hanked in elongated loops into an elongated hank and the connector is embraced within the looped cord at one end loop of the elongated hank. The other end loop of the elongated hank is left open. A collar is fastened about the mid-section of the elongated hank and holds the cords at mid-section so that the cord is more closely packed at the mid-section than at the looped ends of the hank.

3,796,305
FIBER GLASS FORMING PACKAGE CARTON

Marion B. Beason, Forest City, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 19, 1972, Ser. No. 245,332
Int. Cl. B65d *85/04*
U.S. Cl. 206—407 3 Claims



A packaging device for shipping fiber glass forming packages is described which utilizes a tube constructed of a light weight, durable shipping material such as corrugated cardboard, plastic and the like. The tube has two inserts one of each being fitted into each of both open ends of the tube and adapted to be fixedly attached to the sidewalls thereof with the inserts being constructed and arranged to receive a fiber glass forming package and maintain the forming package suspended on its end portions and positioned away from any of the sidewalls of the shipping tube to which inserts are attached. The method of assembling a fiber glass forming package inside of the shipping container of the type illustrated is also described.

3,796,306
DISPLAY PACKAGE

Edwin Whitney Swezey, Hackensack, N.J., assignor to Union Camp Corporation, Township of Wayne, N.J.

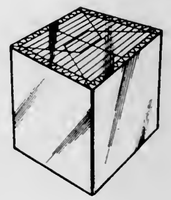
Continuation-in-part of Ser. No. 862,586, Aug. 25, 1969, Pat. No. 3,657,855. This application Apr. 21, 1972, Ser. No. 246,266
Int. Cl. B65d *73/00*
U.S. Cl. 206—462 6 Claims

A display device wherein at least one article is firmly held in place on a sheet of a flexible material in an undersized aperture in the sheet by a loop of a transparent film extending through the aperture and affixed to the backside of the sheet, a process for the preparation of such a display device, and an automatic sequentially cycled apparatus for forming said display device.

3,796,307
CORRUGATE-FILM LAMINATE PACKAGE MATERIAL AND PACKAGE

James C. McKinney, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 71,063, Sept. 10, 1970, Pat. No. 3,694,995. This application June 5, 1972, Ser. No. 260,015
Int. Cl. B65d *65/40, 65/44*; B32b *3/28*
U.S. Cl. 206—521 3 Claims



This invention comprises a corrugated package material wherein the corrugated fluting is attached to one or more sheets of heat shrinkable polymeric film. The heat shrinkable film is preferably on only one side of the corrugated fluting, but may be on both sides of the corrugated fluting. This packaging material is then formed into a carton and this carton filled; or is used to bundle a series of containers, and the final assembly, whether a carton or bundle, heat shrunk, whereby the strength of the corrugate is increased.

3,796,308
BACTERIAL OXIDATION IN UPGRADING SULFIDIC ORES AND COALS

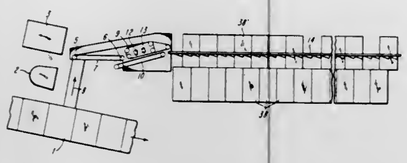
Allan E. McIlhinney; Aurelio Frederick Sirianni; Charles Edward Capes, and Ira E. Puddington, all of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed July 24, 1972, Ser. No. 274,826
Int. Cl. B03b *1/04*
U.S. Cl. 209—9 10 Claims

Finely ground impure metal sulfides or pyritic ores, particularly coals, are upgraded by surface oxidation of the metal sul-

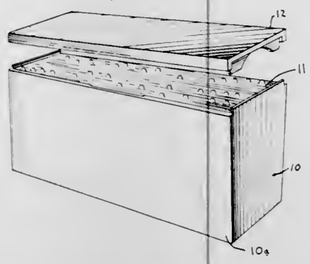
fide or pyritic material by selected bacteria to render the surface hydrophilic, followed by a particle separation step from an aqueous slurry e.g. selective agglomeration or flotation. A suitable bacteria is selected from the *Thiobacillus-Ferrobacillus* group.

3,796,309
APPARATUS FOR SORTING SEED BAGS
Alfons Born, Viersen, Germany, assignor to Dom Samen Fehlemann KG, Kevelaer, Germany
Filed Oct. 25, 1972, Ser. No. 300,666
Claims priority, application Germany, Oct. 30, 1971, P 21 54 207.4
Int. Cl. B07c *3/06*
U.S. Cl. 209—74 R **4 Claims**



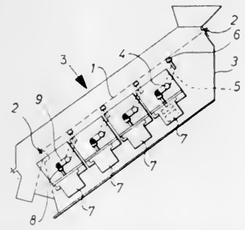
An apparatus for sorting articles, such as seed bags in which the articles are moved along a channel in spaced relation by a conveyor. One side wall of the channel is in the form of a continuous wall while the other side wall has discharge openings formed therein. A gate member is pivoted near one end in each discharge opening and in one position forms a part of the side wall and in another position extends angularly across the channel and deflects articles out the respective discharge opening. To prevent articles from staggering against the free ends of the gate member which is in position to deflect the article, the one side wall has recesses to receive the free ends of the gate members when moved into article deflecting position. Each gate member is preceeded by a deflector disposed at the free end thereof when the gate member is in idle position to prevent articles from staggering against the free end of a gate member which the article is to pass by.

3,796,310
CARTRIDGE FOR FILE CARDS
Isidore Dorman, Whitestone, and Mark O'Connor, Freeport, both of N.Y., assignors to Bell & Howell Company, Chicago, Ill.
Filed Oct. 10, 1972, Ser. No. 296,237
Int. Cl. B07c *5/36*
U.S. Cl. 209—80.5 **10 Claims**



A filing system in which file cards are stored in a series of cartridges, each intended for a designated set of cards. One half of the set is received in a front compartment and the other half in a rear compartment of the cartridge. In order to facilitate purging of cards from a cartridge which are misfiled as to compartment, the base of the cartridge is provided with a lateral ridge extending across the front compartment at a longitudinal position matching a notch in the lower margin of the card, the position of the notch being indicative of a front compartment whereby cards lacking this notch are raised above this ridge for removal. Purging from the rear compartment is effected by another lateral ridge whose longitudinal position matches a notch indicative of the rear compartment. To facilitate purging of cards which are misfiled as to cartridge designation, the base is provided with at least one transverse ridge extending across both compartment at a selected position which matches a file card notch whose selected position is a function of designation, whereby a card lacking this notch is raised above the transverse ridge for removal. A card whose position is reversed will also be raised for removal, even though it is otherwise in the correct compartment and the correct cartridge.

3,796,311
VIBRATORY SIFTING MACHINE WITH STRIKERS
Rudolf Krause, Homburg-Dornholzhausen, Germany, assignor to "Rhewum" Rheinische Wertzeug- und Maschinenfabrik GmbH, Remscheid, Luttringhausen, Germany
Filed Feb. 24, 1971, Ser. No. 118,413
Claims priority, application Germany, Feb. 24, 1970, 7006692
Int. Cl. B07b *1/34*
U.S. Cl. 209—275 **7 Claims**



A sifting machine composed of a sheet of perforate screening material clamped in place only along its front and rear edges relative to the direction of conveyance therealong of material being sifted, and vibration producing means composed of a plurality of strikers arranged to undergo rotary oscillatory movement and to stroke the lower surface of the screening sheet, the strikers being driven by driven shafts, each shaft carrying several strikers, to which are imparted pivotal oscillatory movements under the influence of one or several oscillatory drives.

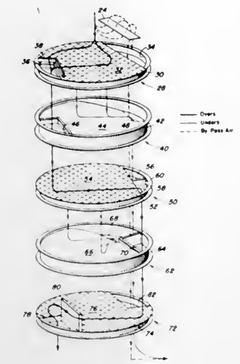
ERRATUM

For Class 210—65 see:
Patents Nos. 3,796,656, 3,796,658 and 3,796,659

3,796,312
AIR BY-PASS PRESSURE SIFTER
Otto C. Krolopp, and John W. Angstadt, both of Williamsville, N.Y., assignors to Blaw-Knox Food and Chemical Equipment, Inc., Buffalo, N.Y.
Filed May 6, 1971, Ser. No. 140,718
Int. Cl. B07b *7/01*
U.S. Cl. 209—312 **12 Claims**

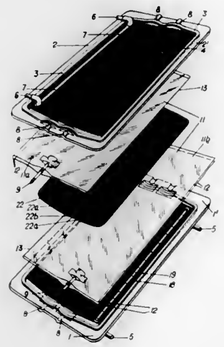
A method and apparatus for increasing the sifting capacity of a pressurized oscillating sifter by directing upwardly a portion of the pressurized air conveying particulate material through a by-pass screen of the same mesh as the sifting screen

and into a by-pass channel. The by-pass air is then utilized to entrain the undersize materials which passed through the screen (also called "under," "thrus" and "fines") and convey it to further processing stations. Bed depth on the top screen



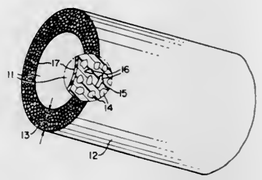
may be increased by providing a weir at the outlet for oversize material (also called "overs" and "tailings"). Carryover of high-velocity fines into the overs is prevented by providing an impact barrier at the overs outlet on the last screen.

3,796,313
DIALYSER APPARATUS
Leonardo Bigt, and Libero Luppi, both of Mirandola, Italy, assignors to Sandoz Ltd., (A.K.A. Sandoz AG), Basle, Switzerland
Filed Dec. 15, 1972, Ser. No. 315,536
Claims priority, application Italy, Dec. 20, 1971, 32657/71
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **23 Claims**



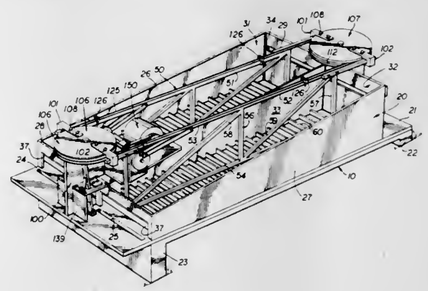
A dialysis unit particularly suited to extra-corporeal haemodialysis having at least two dialysis membrane envelopes in overlapping relationship disposed in an enclosure. The envelopes constitute discrete flow passages for liquid to be dialysed and define with the enclosure a dialysate flow passage of sinuous configuration.

3,796,314
CASTINGS FOR REVERSE OSMOSIS MEMBRANE SUPPORTS
Robert L. Kolek, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 17, 1972, Ser. No. 244,520
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **12 Claims**



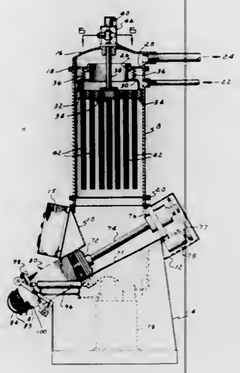
A rigid hollow porous member, having a semi-permeable reverse osmosis membrane supported therein is made from filler coated with a film of resin and organo silane.

3,796,315
TWIN RAKE MECHANICAL CLASSIFIER
William A. Chapman, 3032 Bethwood Ln., Lithonia, Ga., and Nelson Severinghaus, 213 Glenn Cir., Decatur, Ga.
Filed Sept. 9, 1971, Ser. No. 178,950
Int. Cl. B01d *21/18*
U.S. Cl. 210—322 **13 Claims**



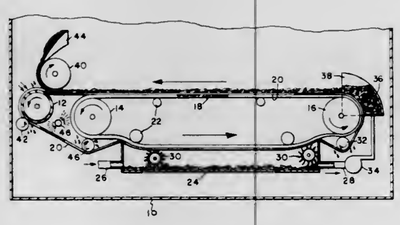
Apparatus for separating settled solids from liquid medium including a pair of juxtapositioned tank means constructed to include an inclined bottom having upright wall means for defining an upwardly open cavity area capable of containing predetermined amounts of liquid suspended solids and operable to permit solids to settle to the inclined bottom. Rake means, including a rake assembly operatively associated with each of the tank means, is provided for raking the settled solids upwardly along the inclined bottom for discharge through an opening defined in the inclined bottom. The rake assemblies are controlled through successive cycles of orbital movement whereby the rake assemblies are advanced along a first predetermined path adjacent the inclined bottom for effecting movement of the settled solids, elevated and advanced in an opposite direction along a predetermined path and thereafter lowered to position adjacent the inclined bottom at the start of a second cycle of operation. The rake assemblies include support means which will support and control movement of the rake assemblies in successive cycles of operation whereby one of the rake assemblies is advanced along said first predetermined path in a discharging direction while said other rake assembly is advanced along said second predetermined path in an opposite direction.

3,796,316
WATER FILTERING APPARATUS
Alexander Matz, 41 Belmont Ave., Feeding Hills, Mass.
Filed July 7, 1972, Ser. No. 269,810
Int. Cl. B01d *35/22*
U.S. Cl. 210—332 **2 Claims**



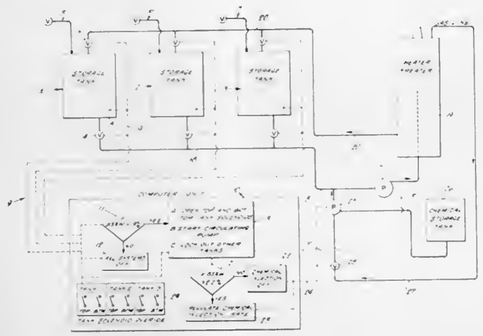
Water filtering apparatus having a plurality of tubular filter elements depending into a tank from a vertically movable plate supported by a mechanism for selectively raising and dropping the plate to impact against a stop means to dislodge sludge and solid waste material from the filter elements and deposit the same into an upwardly opening, collection reservoir underlying and communicating with the tank. A sludge compactor includes a cylinder with porous ram to compact the solid waste material dropped from filter elements into a dense wad or cake. The cylinder also has a porous wall portion and in the compaction of the solid waste includes a discharge trap for removal of the sludge cake.

3,796,317
SYSTEM FOR TREATING DILUTE SLURRIES
Thomas E. Lippert, Monroeville; Charles D. Beristain, Pittsburgh, and Michael Testa, Irwin, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 10, 1972, Ser. No. 305,388
Int. Cl. B01d *33/04*
U.S. Cl. 210—386 **9 Claims**



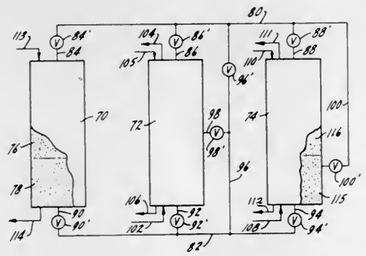
A system for removing water from dilute slurries of the type discharged from waste water treatment plants, including feeding the dilute slurry into a reservoir and passing concentrically mounted endless screen and porous belts through the reservoir for absorbing water from the slurry. The water is squeezed from the belts and the thus thickened slurry is transported from the reservoir to a position for discharge onto the screen belt which moves in intimate contact with the porous belt. Such intimate contact facilitates further removal of water from the slurry by capillary action as the belts move linearly towards the end of the system. The belts then separate from each other. Water is squeezed from the porous belt and the screen belt with its slurry cake then runs through a pair of rollers for further slurry dewatering and compaction to a desired solids concentration. The thus dewatered slurry cake is then transferred to one of the rollers and subsequently removed from the system for ultimate disposal.

3,796,318
AUTOMATIC EMULSION CONTROL
Claud W. Underwood, Dallas, Tex., assignor to Sun Oil Company (Delaware), Dallas, Tex.
Filed Aug. 31, 1972, Ser. No. 285,299
Int. Cl. B01d *21/01*
U.S. Cl. 210—96 **2 Claims**



Apparatus for controlling the basic sediment and water content of an oil field produced fluid by continually controlling the rate of injection of treatment chemical to and the rate of heat treatment of said fluid in response to the BS&W level of said fluid.

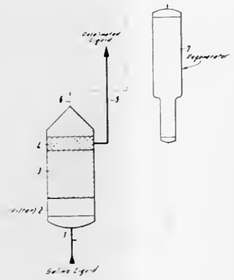
3,796,319
WATER TREATING APPARATUS
Eli Salem, Brooklyn, N.Y., assignor to Union Tank Car Company, Chicago, Ill.
Division of Ser. No. 859,042, Sept. 18, 1969, Pat. No. 3,585,127. This application Feb. 25, 1971, Ser. No. 119,007
Int. Cl. B01d *33/30*
U.S. Cl. 210—189 **1 Claim**



A method and apparatus are provided for the treatment of water by ion exchange while eliminating leakage. In carrying out the method, water is first passed through a service layer of anion and cation exchange resins in a service zone in the conventional manner. Subsequently, the water is passed through a leakage barrier layer of cation exchange resin in the service zone. Periodically, the resins in the service zone are separated in a separation zone. The anion exchange resin is then regenerated in an anion resin regeneration zone, and the cation exchange resin is regenerated in a cation resin regeneration zone, which preferably also serves as the separation zone. A portion of the cation exchange resin is then transferred to the service zone to establish a leakage barrier layer. The remainder of the cation exchange resin is mixed with the anion exchange resin, and the mixed resins are transferred to the service zone to establish a service layer of anion and cation exchange resins.

The invention also provides apparatus for carrying out the method, and requiring only two columns in addition to the service column. These columns include a separation/cation regeneration column and an anion regeneration column. In accordance with the invention, the resin transfer means include leakage barrier resin transfer means for delivering resin from a central portion of the anion regeneration column to the service column to establish a leakage barrier layer of anion exchange resin or of anion plus cation exchange resin.

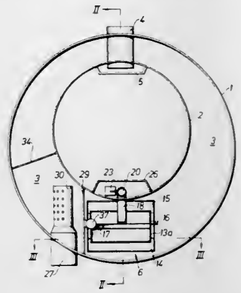
3,796,320
METHOD AND EQUIPMENT FOR DESALINATION OF LIQUIDS
Helmut Schug, Dusseldorf, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Continuation of Ser. No. 828,951, May 29, 1969, abandoned. This application Jan. 17, 1972, Ser. No. 218,400
Claims priority, application Germany, May 30, 1968, 1767623
Int. Cl. B01d *41/02*
U.S. Cl. 210—189 **7 Claims**



Liquids are desalinated in equipment from which filter material is continuously withdrawn, regenerated and mixed with the raw, saline liquid prior to charging the filter. The regenerated filter material may circulate through a post desalinated filter prior to recycling into the principal filter.

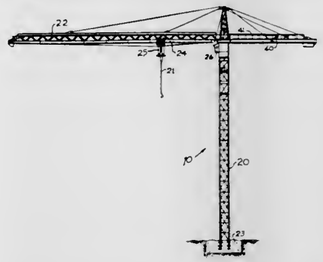
3,796,321
APPARATUS FOR PROCESSING WATER
Pentti Einarl Kosonen, Saltsjo-Boo, Sweden, assignor to AB Gustavsbergs Fabriker
Filed May 15, 1972, Ser. No. 253,267
Claims priority, application Sweden, May 24, 1971, 6659/71
Int. Cl. C02b *1/20;* **C02c** *1/40*
U.S. Cl. 210—202 **2 Claims**

An apparatus for processing water, particularly for treating waste water, consists of two vertical cylindrical containers, one placed inside the other. Water is supplied to the inner container, where coarse particles precipitate on the bottom. The water now flows through the annular gap between the two



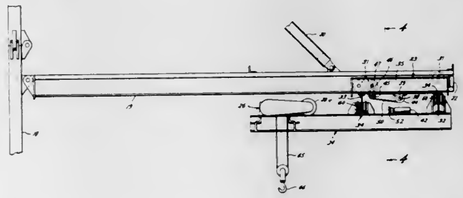
containers, where a precipitating agent is added and the particles thus produced precipitate on the bottom of the annular gap.

3,796,322
CRANE TROLLEY INDICATOR
Eldon F. Cording, Galena, Ill., assignor to Heede International, Inc., Greenwich, Conn.
Filed Nov. 24, 1972, Ser. No. 309,215
Int. Cl. B66c *23/02*
U.S. Cl. 212—63 **1 Claim**



A device for indicating the location of the trolley on the horizontal boom of a tower crane. A monitor on the trolley cable drive drum sends a signal to a meter in the operator's cabin within the mast of the crane.

3,796,323
ARRANGEMENT FOR POSITIONING HEAVY TUBULAR MEMBERS RELATIVE TO A DRILLING MAST
Donald R. Branham, Houston, Tex., assignor to Pyramid Derrick & Equipment Corp., Houston, Tex.
Filed July 17, 1972, Ser. No. 272,339
Int. Cl. E21b *19/04*
U.S. Cl. 214—2.5 **4 Claims**



A pair of spaced members extends laterally from a drilling mast in a generally horizontal plane and is provided with sur-

faces for receiving roller means thereon. A first carriage extends laterally between the members and is suspended from the spaced members by roller means mounted on the first carriage and engaged with the spaced members. Power means are provided for moving the first carriage along the spaced members, toward, and away from the drilling mast. A second carriage is supported on and depends from the first carriage means by roller means and power means are connected with the roller means for rotating the second carriage longitudinally of the first carriage means. The second carriage extends from the first carriage towards the drilling mast and is provided with a hoist for engaging tubular members to move them into the drilling mast or to stack the tubular members in a vertical position adjacent the drilling mast.

3,796,324

APPARATUS FOR SEPARATING ANNULAR WORK PIECES

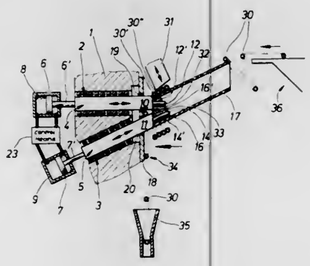
Wilfried Schmitz, Leverkusen, Germany, assignor to Goetzewerke Friedrich Goetze AG, Burscheid, Germany

Filed May 16, 1972, Ser. No. 253,896

Claims priority, application Germany, May 21, 1971, 2125119

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 K **10 Claims**



In a separating apparatus a prong serves as a magazine to receive annular work pieces. This prong is unilaterally held by an arrangement of at least two alternatingly closable connecting elements.

3,796,325

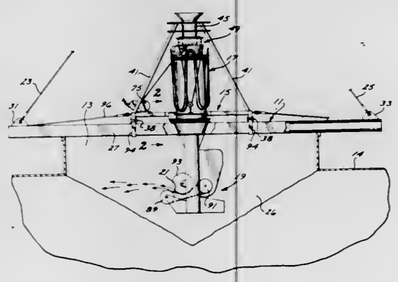
SELF-CONTAINED SHIP LOADING APPARATUS

Allan R. Ide, Cyprus, Calif., assignor to Metropolitan Stevedore Company, Wilmington, Calif.

Filed May 3, 1972, Ser. No. 250,058

Int. Cl. B63b *27/28*

U.S. Cl. 214—15 E **11 Claims**



A self-contained ship loading apparatus for loading granular substances onto a ship and including a portable track for disposition athwartship over the hatchway of a ship to be loaded. A trolley frame is mounted captively on the track and mounts a vertically extending telescopical chute for selective lowering into the hold of such ship. A trimmer is mounted on the lower extremity of the chute and includes conveyor means which may be rotated to direct the discharge therefrom to selected sides of such chute. Hoisting means is connected to the track whereby the boom of a crane may be connected with the track and the track hoisted and swung over the hatchway of such ship and lowered into position. The chute may then be lowered to lower the trimmer into the hold of the ship and the granular substances then fed down the chute and onto the trimmer for discharge to the side of the chute. Concurrently, the trimmer may be rotated about to direct such granular substances at different directions from such chute.

3,796,326

CUPOLA FURNACE HAVING A CLOSURE ARRANGEMENT

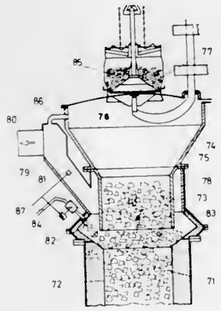
Erwin Buhrer, Vogelingasschen 40, Schaffhausen, Switzerland

Filed Dec. 29, 1971, Ser. No. 213,636

Claims priority, application Switzerland, Dec. 31, 1970, 19379/70; Nov. 11, 1971, 16419/71

Int. Cl. F27b *1/20*

U.S. Cl. 214—35 R **4 Claims**



Apparatus for charging a cupola furnace through an upper opening whereby a charging bucket comprising a bottom closure member is placed upon the charging opening in sealing engagement with the rim thereof. A cupola closure member is situated interiorly of the cupola furnace and operates to seal the charge opening from within the furnace. After the charging bucket is lowered into engagement with the rim of the upper opening, the cupola closing member is withdrawn from the charging opening in a direction interiorly of the furnace, and the bucket bottom closure is opened to effect charging. The size of the charging throat of the cupola furnace is made larger than is customary, and the device is structured to enhance discharge of waste gases therefrom.

3,796,327

MANUFACTURING SYSTEM

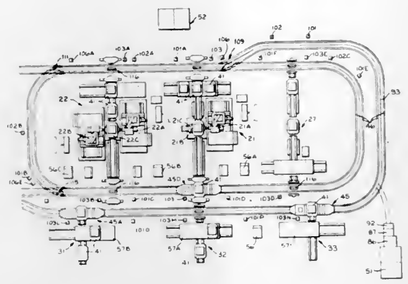
Ronald F. Meyer, 4475 S. 131st St., New Berlin, Wis.; Frank J. Schalk, 4280 N. 163rd St.; Robert K. Sedgwick, 18950 N. Hills, both of Brookfield, Wis., and John E. Schluge, S. 92nd St., Hales Corners, Wis.

Continuation of Ser. No. 32,226, April 27, 1970, abandoned. This application July 14, 1972, Ser. No. 271,918

Int. Cl. B65g *67/02*

U.S. Cl. 214—38 BB **18 Claims**

A manufacturing system having one or more loading and unloading stations and a plurality of spaced apart numerically controlled machine tools, the operation of which is effected by direct computer control. The manufacturing system includes a workpiece supply system comprising a closed loop trackway on which one or more cars are supported for guided movement to the various stations. The car carries a pallet on which a work holding fixture with a workpiece is secured, and transports the pallet to a computer selected machine station. At the selected station the pallet is automatically removed from the car and placed on a multiple positionable table which serves as a workpiece receiving and storage device from which a desired next workpiece to be supplied to the machine tool is automatically selected and transferred thereto by computer control. The computer automatically directs an empty car to the unloading side of the machine tool to receive a pallet with a workpiece that a work operation has been performed on and then by computer direction returns to the unload station where the pallet is removed or the car will be directed to advance the workpiece to a different machine tool.



3,796,328

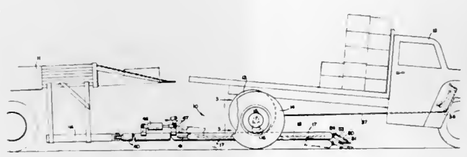
DOLLY FOR THE REAR WHEELS OF A TRUCK BEING LOADED

Rodney B. Kragness, Rt. 2, Box 438, Eugene, Oreg.

Filed July 10, 1972, Ser. No. 270,190

Int. Cl. B65g *67/22*

U.S. Cl. 214—42 R **11 Claims**



A dolly enabling the rearward towing of a truck while the driver is stationed on the truck bed to load same. A dolly tongue is jointed permitting remote positioning of the dolly platform into a tilted, truck on loading (off loading) position. Truck mounting means on the dolly platform cooperates with a truck carried harness for automatic locking of the truck on the dolly while permitting relative swinging movement therebetween. An elevator on the dolly tongue directs hay bales over stakes on the truck bed in a modified form of the invention.

3,796,329

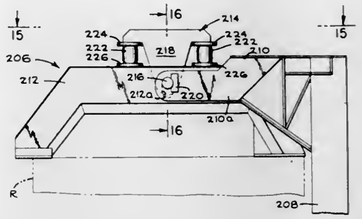
CLAMP MECHANISM FOR ROTARY CAR DUMPER

Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 135,960, April 21, 1971, Pat. No. 3,719,292. This application May 12, 1972, Ser. No. 252,731

Int. Cl. B65g *67/54*

U.S. Cl. 214—55 **4 Claims**



A railroad car is secured for dumping in a rotary car dumping cradle by gravity lowered clamp beams which engage the top of the car and are locked in place by a gravity actuated, infinitely variable locking mechanism that grasps tension members connected to the side of the car dumper.

3,796,330

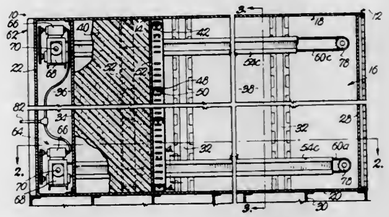
VAN FOR TRANSPORTING COMPRESSIBLE MATERIAL

Charles Vincent Dehner, 6310 Aberdeen, Shawnee Mission, Kans.

Filed Mar. 27, 1972, Ser. No. 238,050

Int. Cl. B60p *1/00*

U.S. Cl. 214—83.3 **11 Claims**



A van for transporting compressible material such as foam rubber or products made therefrom, the van including an enclosure defining a longitudinal interior space that receives the material and a barrier mounted within the enclosure for longitudinal shifting therein to compress the material and permit larger quantities to be loaded within the van. The barrier is configured to permit loading and unloading of the material therethrough, and is also operable to hold a first load of the material in its compressed state while another load of the material is loaded and compressed to the desired state facilitating transport.

3,796,331

APPARATUS FOR MECHANICALLY GATHERING OR COLLECTING VARIOUS COMMODITIES, REFUSE OR THE LIKE

Glenn L. Dutton, Vidor, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

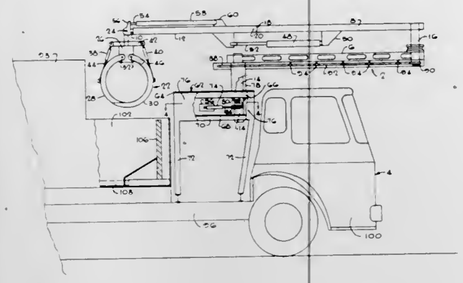
Filed Apr. 6, 1972, Ser. No. 241,533

Int. Cl. B66c *23/84;* **B60p** *1/50*

U.S. Cl. 214—146.5 **6 Claims**

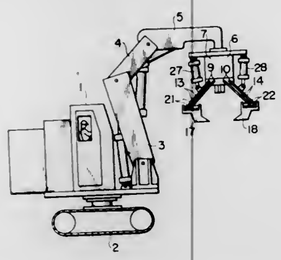
An apparatus for mechanically gathering or collecting various commodities, refuse or the like comprising a scissor-type

boom operably secured to a mobile carrier therefor. The boom comprises a plurality of elements rotatable along a vertical axis and operably interconnected such that the rotation of the first results in a corresponding rotation of the remaining elements. Generally, the boom will comprise an elevation con-



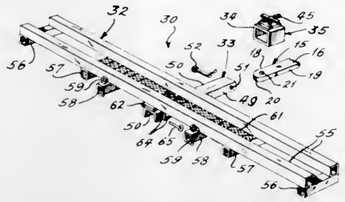
trol member and carry a means suitable for gathering or collecting the commodities, refuse or the like which is sought to be retrieved. Essentially any vehicle may be used as the mobile carrier. A modified, low packer plate body truck is, however, preferred.

3,796,332
CARGO HANDLING EQUIPMENT BY GRIPPING AND SUSPENDING MATERIALS
Takashi Kawamura, 63, 1-chome, Tsuboya-cho, Kita-ku, Osaka-shi, Osaka-fu, Japan
Filed July 14, 1972, Ser. No. 271,850
Claims priority, application Japan, Aug. 23, 1971, 46-75815
Int. Cl. B66c *23/38*
U.S. Cl. 214—147 G **2 Claims**



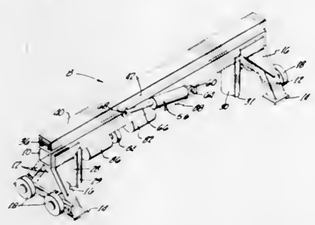
A cargo handling equipment on self-propelling tractors or forklifts provided with extensible arms, holding arms open and closed by a parallelogram link mechanism attached with universal joints to the body, gripping claws at the end of holding arms which are actuated by piston rods extensible by fluid pressure so as to keep said grip claws always horizontally and allow to open and close to each other and further allow said pair of holding arms to move in parallel and to fix the width of grip according to the shape of material whereby effective transportation of cargo can be achieved.

3,796,333
DETACHABLE CARRIER FOR VEHICLES
Kenneth W. Goldstein, 9946 Warshire Dr., Olivette, Mo.
Filed Aug. 13, 1971, Ser. No. 171,478
Int. Cl. B60r *9/00, 9/10*
U.S. Cl. 214—450 **5 Claims**



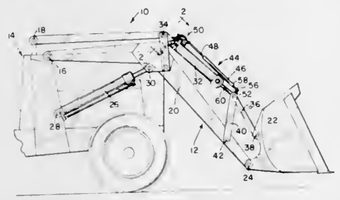
A carrier unit is removably secured on a supporting bar member rigidly attached to a vehicle frame, the carrier unit including a mounting portion engaging and locking upon a mounting adapter carried by the bar member to obviate relative movement therebetween and a carrier deck attached to the mounting portion.

3,796,334
MOBILE HOME POSITIONER
Bert E. Torrey, 4901 Green River Dr., No. 98 Canyon, Corona, Calif.
Filed July 24, 1972, Ser. No. 274,474
Int. Cl. B66f *11/04*
U.S. Cl. 214—730 **4 Claims**



A mobile home positioner for use in the accurate leveling, aligning, and positioning of adjacent units of multiunit mobile homes to facilitate the efficient mating of these adjacent units at the mobile home site.

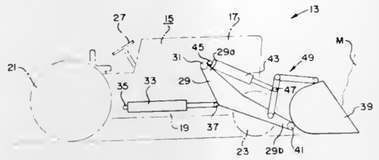
3,796,335
BUCKET POSITION INDICATOR
Spencer E. Smith, Westmont; Donald C. Marek, and Walter F. Klaviter, both of Hickory Hills, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 14, 1972, Ser. No. 217,908
Int. Cl. E02f *3/86*
U.S. Cl. 214—761 **7 Claims**



An implement position indicator having a lost motion cam following extension connected to a pivotally based wedge

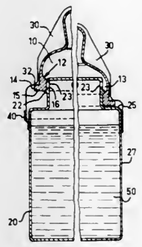
shaped cam. The wedge shaped cam being timed to sweep out a certain arc, in response to horizontal movement by the extension, the amount of sweep being measured on a calibrated gauge, each calibration corresponding to an implement position.

3,796,336
HYDRAULIC SYSTEM FOR A LOADER
Frank W. Ratliff, Rural Rt. 6, Corinth, Miss.
Continuation of Ser. No. 836,283, June 25, 1969, abandoned. This application Aug. 16, 1971, Ser. No. 172,256
Int. Cl. E02f *3/86*
U.S. Cl. 214—762 **15 Claims**



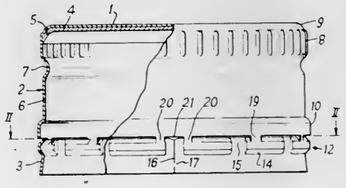
A hydraulic system for a loader having a typical lift arm and a typical bucket pivotally mounted from the lift arm, and which hydraulic system includes in the principal embodiment three pumps, valves and related conduits for directing the hydraulic fluid in such a manner that when the lifting load resistance is above normal during lifting movement of the lift arm, the fluid first automatically causes a roll back motion of the bucket to try to relieve the abnormal resistance and then, if not relieved, the fluid causes the transmission disconnect to function to disconnect the power of the engine from the loader's wheels or tracks to stop the movement of the loader. A shuttle valve is provided in the circuit to prevent "chattering" during the bucket dumping operation. In addition, this system includes a steering control arrangement whereby at low speeds of the engine, the output from two of the pumps will flow to the steering valve and at higher speeds the output from one of these two pumps will be directed to a pilot operated valve where the pressure is utilized in combination with the third pump in the implement circuit. A second embodiment is disclosed which utilizes only two pumps and the steering arrangement is not in combination therewith.

3,796,337
STERILE FEEDING UNIT
Thierry Bernard Seunevel, Pantin, France, assignor to Societe Anonyme Alpha-Bebe Sante, Pantin, France
Filed Aug. 25, 1971, Ser. No. 174,795
Claims priority, application France, Sept. 29, 1970, 70.35079
Int. Cl. A61j *9/08*
U.S. Cl. 215—11 C **13 Claims**



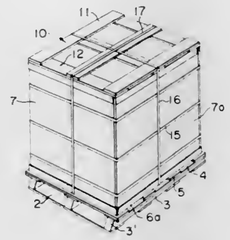
A sterile feeding unit for using once only and especially adapted for feeding infants, said unit comprising three main elements, a teat, a feeding-bottle and a hood for protecting said teat and, when so required, an intermediate member between said teat and said feeding-bottle, said elements and said member being joined together in a sterile and fluid-tight manner so as to form a feeding unit which is inoperative in a first position of said teat, which is ready to operate in a second position of said teat, and which is operative after heating said feeding-bottle and removal of said hood.

3,796,338
CONTAINER CLOSURE HAVING FRANGIBLE SKIRT
Ronald William Wilton, West Bromwich, England, assignor to Metal Closures Limited, West Bromwich, Staffordshire, England
Filed May 9, 1972, Ser. No. 251,758
Claims priority, application Great Britain, May 11, 1971, 14321/71
Int. Cl. B65d *41/20*
U.S. Cl. 215—252 **9 Claims**



A pilferproof closure of the type having a security band attached to the skirt of the closure by a series of spaced bridges in a peripheral slit line characterised in that the security band is split vertically at at least two positions, the portion of the security band between two adjacent vertical splits being joined to the skirt by at least one relatively strong bridge arranged at or near the middle of such portion, a relatively weak bridge in close proximity to the vertical split at each end of said portion and spaced from the strong bridge.

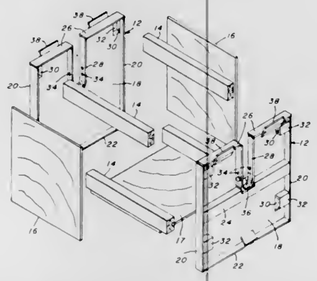
3,796,339
SIMPLIFIED COLLAPSIBLE CONTAINER
Hiromasa Suzuki, Kudamatsu, Japan, assignor to Nippon Zeon Co. Ltd., Tokyo, Japan
Filed July 10, 1972, Ser. No. 270,201
Int. Cl. B64d *19/16*
U.S. Cl. 217—13 **12 Claims**



A simplified container construction including a bottom frame-fixed pallet portion and a container portion mounted thereon, wherein wall boards for the side and end walls of the

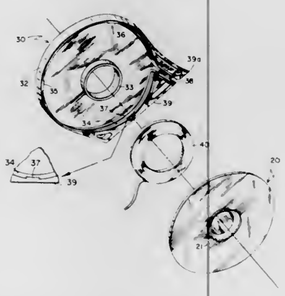
container are demountably erected in edge to edge relation within the bottom frame along the inside thereof in such a manner as to hold them together in position by use of an easily releasable holding means and a bottom board for the bottom of the container is demountably placed on the bottom frame-fixed pallet and within the erected wall boards, whereby the container can easily be assembled for shipping goods and disassembled as a compact size bundle of the component members thereof for being returned to the user for repeated use.

3,796,340
SHIPPING RACK
Dennis S. Piggott, Upper St. Clair Twp., Allegheny County, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Aug. 6, 1971, Ser. No. 169,655
Int. Cl. B65d *9/06*
U.S. Cl. 217—36 **7 Claims**



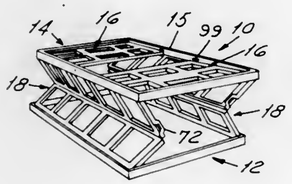
A shipping rack is provided which includes two opposed rectangular rigid wall sections which are spaced by at least four beam members extending between the wall sections with the ends of the beams detachably secured to the corners of the sections. Each of the wall sections has a slot-shaped collar therein extending from one edge to the center of the section for receiving the ends of a coil roll. The rack may be secured by means of metal bands which hold the beam members in place and which can be removed for disassembly of the rack for return shipment and reuse of the wall sections.

3,796,341
TAPE DISPENSER
Harold Berman, Westwood, Mass., assignor to ACS Tapes, Inc., Canton, Mass.
Filed Jan. 10, 1972, Ser. No. 216,573
Int. Cl. B65d *7/00*
U.S. Cl. 220—4 B **3 Claims**



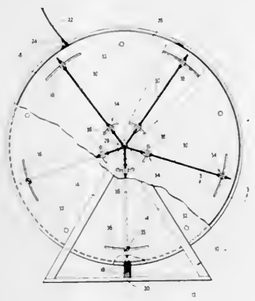
A tape dispenser is described which is easily opened for access to the tape and also readily and securely closed. The dispenser comprises a body with a flat bottom surface, a peripheral side wall and a center orifice with an annular wall projection. The tape seats around the projection. The cover comprises a flat plate having a closed projection seating in said annular orifice. The cover snaps into a recess on the side wall having a plurality of spaced projections.

3,796,342
COLLAPSIBLE CONTAINER
Ellsworth E. Sanders, Sanibel Island, Fla., and Elsmer W. Kreeger, Pontiac, Mich., assignors to Pinckney Molded Plastics, Inc., Pinckney, Mich.
Filed June 5, 1972, Ser. No. 259,844
Int. Cl. B65d *7/24*
U.S. Cl. 220—6 **15 Claims**



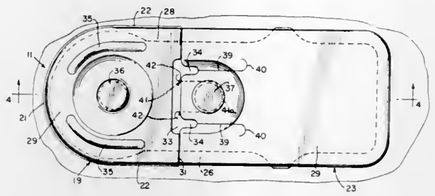
A collapsible container having a base or bottom wall and having an open border frame defining the top. Side walls are hinged to the base and to the border frame, and end walls are hinged to the border frame only. When the container is collapsed, the side walls fold inwardly and the end walls swing up and inward into the plane of the border frame.

3,796,343
LAUNDRY SEPARATOR
Louis Polakoff, 1850 N.E. 186 St., North Miami Beach, Fla.
Filed June 8, 1972, Ser. No. 260,918
Int. Cl. B65d *25/06*
U.S. Cl. 220—22.3 **5 Claims**



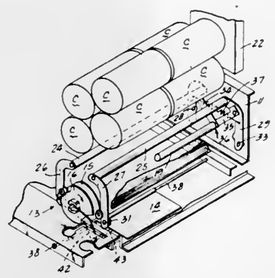
A multi-compartment laundry storage device is of drum-like configuration and has rotatable elements which close the sides of the device and which define the compartments. The rotatable elements may be rotated to selectively expose the compartments individually through a door in the top of a stationary peripheral drum. The multiple compartments are defined by divider panels which may be manipulated to adjust the size of each compartment.

3,796,344
NON-DETACHABLE TEAR STRIP AND PULL TAB STRUCTURE FOR EASY OPENING CONTAINER
James V. De Phillips, Oak Lawn, and Ronald O. Karka, Tinley Park, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed May 18, 1972, Ser. No. 254,585
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **7 Claims**



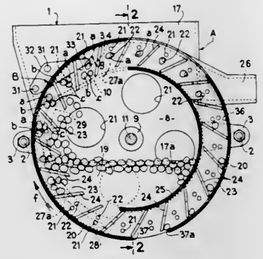
An easy opening container having a panel including a tear strip defined by a weakening line which terminates in spaced ends. A pull tab is attached to the panel for severing the weakening line along the length thereof and bending the tear strip into the container about a line extending between the ends of the weakening line to thereby provide a pour opening. The pull tab is constructed so as to be bendable in overlying relation with the panel after severance of the weakening line without reclosing the pour opening.

3,796,345
DISPENSING MECHANISM FOR ARTICLES IN TWO ABUTTING FRONT TO BACK STACKS
Herman S. Fessler, Coon Rapids, Minn., assignor to Selectivend Inc., Des Moines, Iowa
Filed Jan. 18, 1972, Ser. No. 218,707
Int. Cl. G07f *11/10*
U.S. Cl. 221—67 **1 Claim**



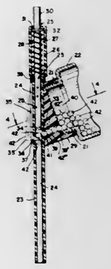
An article vending mechanism includes a frame that supports a front stack of staggered articles, such as beverage cans, and a rear stack of staggered articles in a single vertical column, a pair of horizontal rods being respectively beneath the rows of such stacks and pivotable alternately in an arcuate path under the control of motor-driven cam means, a storage shelf pivoted beneath the front stack under the control of a motor-driven cam means and out of phase with the movement of the horizontal rods, anti-theft means being provided beneath the rear stack of staggered articles and pivotable out of its normal position each time that either of the horizontal rods is pivoted.

3,796,346
DISTRIBUTING DEVICE FOR A SOWING MACHINE
Edmond Ribouleau, Largeasse, France, assignor to Ateliers Ribouleau, Largeasse, France
Filed Apr. 12, 1972, Ser. No. 243,167
Claims priority, application France, Apr. 14, 1971, 71.13135; Feb. 29, 1972, 7206803
Int. Cl. B65h *3/14*
U.S. Cl. 221—211 **15 Claims**



Distributing device for a monoseed sowing machine, the device having a seed distributing wheel which rotates inside a case through a seed container. The wheel has two concentric circles of orifices which define groups of orifices, each group having an orifice on the first of the circles and at least one orifice on the second of the circles. A seed deflecting arm is mounted in a region in which a suction is created to which the orifices are exposed. The arm sweeps across the face of the wheel against which the seeds are retained on the orifices by the effect of the suction. The arm has an edge which extends across the path of the orifices of the second circle and to the path of the orifices of the first circle while leaving at least partly uncovered the orifices of the first circle. The latter orifices are exposed to the suction in a part of said region starting in the vicinity of or in alignment with the deflecting arm whereby a single seed in each group is transferred by the arm to the orifice of the first circle.

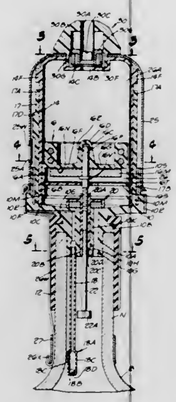
3,796,347
PELLET DISPENSING APPARATUS
William J. Hafner, 309 West Second St., Park Rapids, Minn.
Continuation of Ser. No. 132,642, April 9, 1971, abandoned. This application Nov. 27, 1972, Ser. No. 309,693
Int. Cl. B65g *59/06*
U.S. Cl. 221—276 **2 Claims**



A pellet or shot dispensing invention comprising a dispensing apparatus having a tube with a cap fixed thereto and inclined at an upward angle. The cap and tube have a bore providing communication between the bottle and tube. A plurality of pellets or shot are in the bottle and flow under gravity

from the bottle into the bore and into the tube one at a time. A spring rod is mounted into the passageway below the bore from the bottle to retain a pellet in the tube. A plunger is slidably mounted in the tube above the bore and slidable downward against the pellet in the tube to push the pellet downward against the spring rod forcing the spring rod outward so that the pellet may slip past the rod and out the tube. Spring means are provided to return the plunger to its upward position so that the operation may be replated to dispense pellets or shot one at a time out of the tube from the bottle.

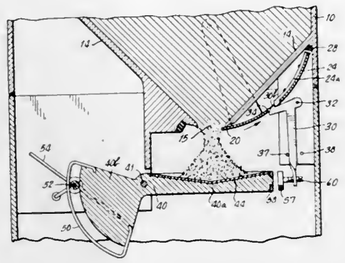
3,796,348
LIQUID METERING AND COUNTING AND DISPENSING MEANS
Walter J. Zipper, 463 Mesa Road, Santa Monica, Calif.
Filed Oct. 18, 1971, Ser. No. 190,006
Int. Cl. G01f *11/06*
U.S. Cl. 222—38 **8 Claims**



A liquid pourer is attached to a bottle for automatically dispensing a predetermined amount of liquor each time the bottle is tilted to pouring position, and the number of such tilts or dispensing operations appear as a count. The count is read from a sleeve which is advanced one count. Such sleeve has saw-toothed type projections at each of its ends cooperating with complementary projections to assure advancement of the sleeve only one count for each dispensing operation. The amount of liquor dispensed is metered using a plunger assembly having apertured portions therethrough which are covered by a valve element movable on the plunger assembly. The position of the plunger assembly is adjustable to adjust the amount of liquor dispensed. To prevent dispensing of liquor unless the bottle is in substantially an upright, inverted position, a so-called antimilking device is associated with the pouring spout, and it involves a spool-shaped valve element carrying a locking ring which is engageable with an abutment on the pouring cap to prevent this valve element from uncovering openings in the pouring spout unless the bottle is in substantially a completely inverted position to thereby assure complete advancement of the counting sleeve prior to dispensing of liquor.

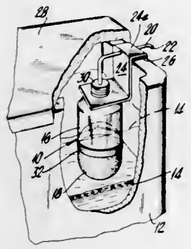
3,796,349
WEIGHING DISPENSER
Robert L. Weber, Box 217, New Canaan, Conn.
Filed May 18, 1972, Ser. No. 254,618
Int. Cl. G01g *13/00*
U.S. Cl. 222—55 **19 Claims**

Apparatus for dispensing measured quantities of granular or other flowable material, including a hopper having a discharge outlet controlled by a valve member biased to outlet closing position, a pivoted latch for holding the valve member in outlet-opening position but biased to release the valve member, and a tiltable pan for receiving material discharged through the hopper outlet. A pair of mutually attracting magnetic elements respectively carried by the latch and by the pan in spaced relation to each other exert a force that both opposes tilting of the pan and holds the latch in engagement with the valve member after the valve member is moved to outlet-



opening position. When the weight of material accumulating on the pan overcomes this force, the pan tips, dispensing the material, and the biased latch is released, allowing the valve member to close the hopper outlet, ending the discharge. A counterweight thereafter returns the pan to its material-receiving position. The weight of material that will tilt the pan may be selected by adjusting the relative spacing of the magnetic elements in a direction perpendicular to the direction in which the element carried by the pan moves when the pan tilts.

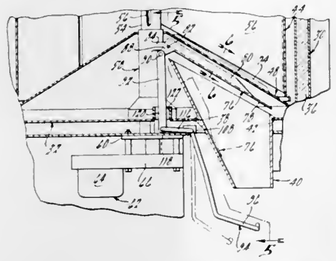
3,796,350
TOILET TANK VAPOR DISPENSER
Albert G. Van Hauter, 317 Williams Ave., Hasbrouck Heights, N.J.
Filed May 25, 1973, Ser. No. 363,809
Int. Cl. A61l *9/00*
U.S. Cl. 222—95 **13 Claims**



A device for dispensing a vapor by the operation of a toilet flushing tank for the purpose of adding an air freshening vapor or similar vapor to the air surrounding the tank includes a container for a vaporizable liquid which is mounted on the tank in a position so that at least a movable wall portion thereof is located below the high water level of the tank. The container includes a vapor discharge nozzle and the change in the water level causes the movement of the movable wall portion to cause a change in the volume of the container to cause expelling of the vapor when the water level changes in one direction and the intake of air for mixing with the vaporizable liquid in the container upon movement of the water in an opposite direction. The movable wall in one embodiment comprises a bladder or balloon which extends downwardly from a

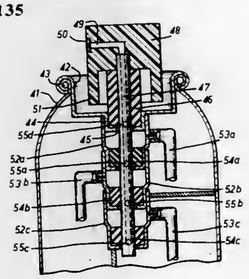
rigid portion of the container and which contains a small quantity of a liquid which is vaporizable at the temperature of operation. When the water rises to a high level it floats the bladder upwardly to decrease the volume in the container and to cause expelling of the vapor. When the water lowers the weight of the liquid or possibly additional weight material, causes the downward movement of the bladder with the receding of the level of the water, and therefore causes the inflow of air through the vapor discharge nozzle into the container. The movable wall portion may also comprise a membrane which extends laterally in respect to the container and which will be forced inwardly by the rising water or even one that extends above the top of the container and moves downwardly to decrease the volume during the dropping level of the water level to cause the expelling of the vapor through the vapor discharge nozzle during this time.

3,796,351
ICE DISPENSING MACHINE
Vance L. Kohl, and Walter Harold Hoenisch, both of Albert Lea, Minn., assignors to King-Seeley Thermos Co., Ann Arbor, Mich.
Filed Dec. 6, 1971, Ser. No. 205,215
Int. Cl. B67d *1/08*
U.S. Cl. 222—108 **4 Claims**



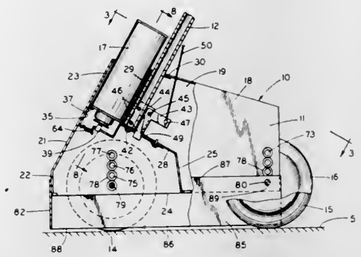
An apparatus for dispensing flaked or particulate ice including a rotatable ice storage bin, means defining a discharge opening below the storage bin and communicable with a discharge spout, a discharge chute selectively movable in response to a receptacle being moved into an ice receiving position below the spout for communicating particulate ice from the discharge opening to the discharge spout and effecting rotation of the storage bin.

3,796,352
VALVE FOR DISPENSING ONE OR MORE PRESSURIZED FLUIDS
Bruno Morane, Paris, France, assignor to L'Oreal, Paris, France
Filed Mar. 8, 1972, Ser. No. 232,752
Claims priority, application France, Apr. 8, 1971, 7112462
Int. Cl. B65d *83/14*
U.S. Cl. 222—135 **7 Claims**



Valve for dispensing a variable number of pressurized fluids comprises a central tube with a lateral orifice for each fluid to be dispensed, and a separate sleeve for each orifice in which said tube is slidable to move said orifices from positions in which they are closed by said sleeves to open positions.

3,796,353
SPRAYER WITH WIND SCREEN AND ADJUSTABLE WHEELS
Thomas J. Smrt, 4N 671 Rt. 59, Bartlett, Ill.
Filed Dec. 29, 1972, Ser. No. 319,780
Int. Cl. B05b *9/04*
U.S. Cl. 222—176 **4 Claims**

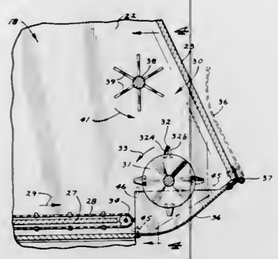


A spraying apparatus which is particularly suitable for spraying a marking stripe on pavement, grass, or other surfaces is provided with adjustable axles so that the distance of the spray can from the surface can be changed to vary the width of the stripe and with a wind screen which remains in the same relative position with respect to the surface as the axles are adjusted to protect the spray pattern from wind. The apparatus includes a somewhat box-like frame, and the sides of the frame are provided with generally vertically extending front and rear rows of openings for the front and rear axles. The frame includes holding means for holding an aerosol spray can filled with marking material, and the holding means are constructed and arranged so that the marking material is sprayed substantially below the front of the frame to permit marking stripes to be sprayed right up to an obstacle in front of the spraying apparatus. The wind screen extends around the outside of the frame, and each side of the wind screen is provided with a front and a rear opening through which the front and rear axles extend. The openings in the wind screen are positioned relative to the bottom edge of the wind screen so that the bottom edge will be positioned just above the surface to be sprayed. As the distance of the frame from the surface is varied by inserting the axles through various openings in the frame, the position of the wind screen relative to the surface remains constant since only one opening for each axle is provided through each side of the wind screen.

3,796,354
SELF-UNLOADING BOX WITH TRANSVERSE DISCHARGE OPENING INCLUDING A CONTINUOUS SPIRAL AUGER WITH CUTTING MEANS
Charles W. Steinke, 413 North Park, Fairfax, Minn.
Division of Ser. No. 829,431, June 2, 1969, Pat. No. 3,612,410.
This application Oct. 4, 1971, Ser. No. 186,064
Int. Cl. A01c *15/00*
U.S. Cl. 222—178 **13 Claims**

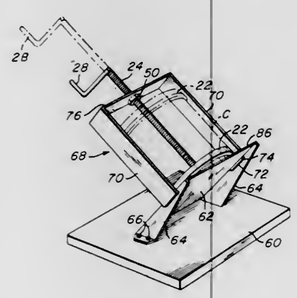
A truck having front drive wheels and dual tandem rear drive wheels carrying a self-unloading box having a rotating spreader for selectively discharging material rearwardly and to either side of the box. The box is mounted on the truck frame so that a major portion of the box is located forwardly of the

transverse load line between the rear dual tandem drive wheels. A rotatable transverse auger having outwardly



directed knives discharges material from the box. A gate located rearwardly of the auger is used to close the material discharge opening.

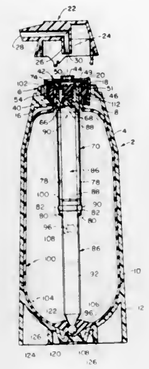
3,796,355
APPARATUS FOR DISPENSING PLASTIC MATERIAL FROM A CONTAINER
Joseph Linder, Cincinnati, Ohio; Gerald D. Sjostrand, Fresno, and Richard L. Carter, Huntington Beach, both of Calif., assignors to Fibre Glass-Evercoat Company, Inc., Cincinnati, Ohio
Filed Nov. 10, 1972, Ser. No. 305,301
Int. Cl. B67d *5/06*
U.S. Cl. 222—185 **12 Claims**



A press is designed to accommodate a shipping container for plastic material of putty consistency; and to apply force to an inwardly displaceable end closure member of the container so as to place the contents thereof under pressure sufficient to extrude the contents through a discharge opening formed in the sidewall of the container immediately prior to initial actuation of the press, the press being portable and adapted to support the container at an inclination favorable to a clean controlled discharge of material onto a pallet or similar receptacle, for thereby eliminating the need for a valving member.

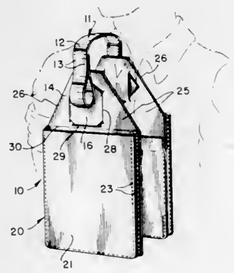
3,796,356
TELESCOPING MANDREL FOR EXPANSIBLE BLADDER CONTAINER
Frank Venus, Jr., Watertown, Conn., assignor to Plant Industries, Inc., Anaheim, Calif.
Filed Apr. 12, 1972, Ser. No. 243,346
Int. Cl. B05b *11/00*
U.S. Cl. 222—212 **9 Claims**

A container of the expansible bladder-type wherein prestressing of the bladder is obtained by means of a telescopic extensible mandrel which imparts pressure to the bladder at the time of filling of same with the product to be stored. By inducing the prestress in the expansible membrance at the last possible moment, it is possible to ease assembly procedures



because non-tensioned members are being assembled and additionally, since it is the filling operation that positions the mandrel into the pretensioning position, the expansible membrance does not take a set to thereby curtail the elastic memory thereof.

3,796,357
COMBINATION ARTICLE CARRIER
Darrell Johnson, 146 Hill St., Thomson, Ga.
Filed Jan. 15, 1973, Ser. No. 323,490
Int. Cl. A45f *3/02*
U.S. Cl. 224—5 R **2 Claims**

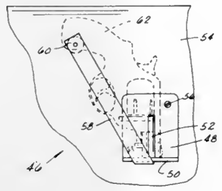


An apparatus for supporting a variety of articles from an individual's shoulder having a flexible shoulder strap provided with multiple integrally connected article supports and a pair of detachable article carrying pouches.

3,796,358
GUN HOLDER
Preston S. Grubb, 1106 West 14th, Wichita, Kans.
Filed May 8, 1972, Ser. No. 251,149
Int. Cl. F41c *33/02*
U.S. Cl. 224—2 C **10 Claims**

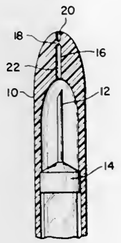
A gun holder bracket adapted to removably mount a gun having a first portion adapted for mounting on a supporting

structure, a second portion extending at an angle from the first portion, and a pin extending from the second portion in the



direction of the plane of the first portion. The gun holder bracket in operation is adapted to have a gun barrel placed therearound the pin.

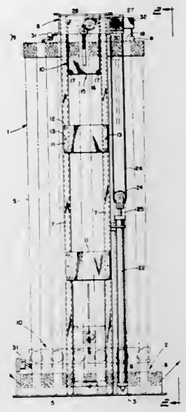
3,796,359
DISPOSABLE HYPODERMIC NEEDLE DESTROYER
Peter Dick, 1206 Gates Ave., Brooklyn, N.Y.
Filed July 7, 1971, Ser. No. 160,324
Int. Cl. B26f *3/00*
U.S. Cl. 225—93 **4 Claims**



A portable hypodermic needle destroyer is provided having an axial opening to receive the needle and allow the user to safely grip the needle and snap it off from the syringe and provide a safe holder for the needle. In one form of the invention the opening is provided in the sheath having a diaphragm to maintain the sterility of the syringe allowing the needle and destroyer to be disposed as a unit. In another form the jaws of the destroyer are adjustable having separate jaw closing fingers and the needle is safely disposed within a container.

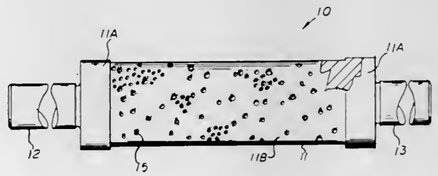
3,796,360
COMBINATION STORAGE FESTOON AND COMPENSATOR
Alexander V. Alexeff, Cleveland, Ohio, assignor to Alexeff-Snyder Enterprises, Inc., Cleveland, Ohio
Filed Sept. 27, 1972, Ser. No. 292,740
Int. Cl. B65h *17/42*
U.S. Cl. 226—119 **7 Claims**

Combination storage festoon and compensator includes a first set of stationary guide rolls and a second set of movable guide rolls carried by a floating frame or carriage for movement toward and away from the stationary rolls. The movable carriage desirably consists of a pair of generally T-shape side members each including a cross member to which the ends of the movable guide rolls are mounted and a vertical center support received between vertical guides to lend greater rigidity and stability to the apparatus. The vertical guides for the carriage may be precisely adjusted to eliminate any tilting or cocking of the carriage, and eccentric cam rollers may also be provided on the carriage to eliminate any undesired clearance between the guide rollers and vertical guides. Hydraulic cylin-



ders control the vertical movements of the carriage, and suitable mechanism may also be provided responsive to the vertical position of the carriage for varying the speed of certain processing operations.

3,796,361
FOLDING ROLLER FOR USE IN A BUCKLE FOLDING MACHINE
Arnold F. Rueckert, 3150 Roberts Ave., Bronx, N.Y.
Filed Dec. 26, 1972, Ser. No. 318,165
Int. Cl. B65h *17/20*
U.S. Cl. 226—193 **2 Claims**

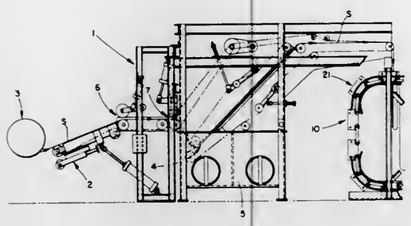


A roller, e.g., a folding roller, having a main body portion with integrally formed end bands adjacent the ends of the body portion, the outside diameter of the bands being greater than the diameter of the body portion disposed between the end bands. The surface of the body portion between end bands is roughened with randomly spaced pot-marks preferably formed by an electrical discharge method.

3,796,362
BATCH-OFF STORAGE FESTOON
Alexander V. Alexeff, 14105 Hazelmere Ave., Cleveland, Ohio
Filed Oct. 2, 1972, Ser. No. 294,348
Int. Cl. B65h
U.S. Cl. 226—104 **16 Claims**

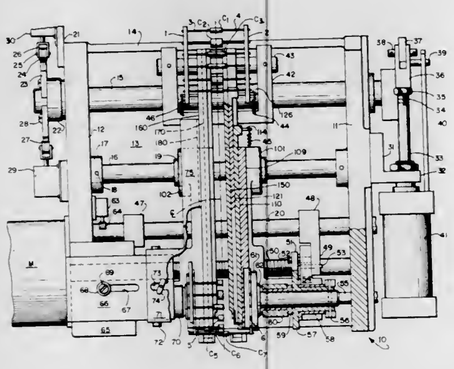
Moving storage festoons consist of multiple storage racks each including two or more storage bars fixed relative to each other, with successive storage racks pivotally connected together permitting movement of the storage racks in a con-

tinuous looped path. The storage racks are supported on guide rails by bearings or wheels and require very little force to move the storage racks, permitting a pusher-type drive system



to be used to push the racks along the guide rails. A pressure roll may also be used to press the rubber material against projections on the storage bars thereby preventing slippage.

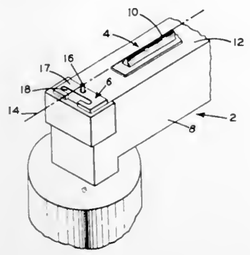
3,796,363
MULTIPLE COMPONENT INSERTION APPARATUS
Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.
Filed Sept. 13, 1972, Ser. No. 288,494
Int. Cl. B27f *7/06*
U.S. Cl. 227—2 **8 Claims**



An insertion apparatus having an insertion head automatically adjustable to simultaneously insert a plurality of axial lead components having body portions of variable diameter and lengths.

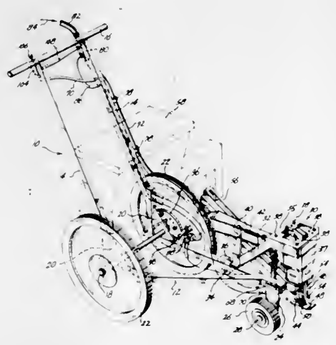
3,796,364
STAPLING GUN GUIDES
Thomas W. Fritz, East Petersburg; Charles F. Gilbo, Lancaster, and Norman A. Johnson, Lititz, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.
Filed Sept. 27, 1971, Ser. No. 183,985
Int. Cl. B25c *5/02*
U.S. Cl. 227—110 **3 Claims**

A guide structure is provided on a stapling gun to insure the proper positioning of staples. A two-part guide structure is used for a stapling gun which drives staples into a board structure having a guide groove. Staples are to be positioned to span the guide groove. Each of the guide structures can be used alone or in conjunction. One guide structure is a retracta-



ble pin on the head of the stapling gun while the other guide structure is an elongated rail on the magazine of the stapling gun.

3,796,365
NAILING GUN CARRIAGE
Hugh N. Downing, 5012-100th St. N.E., Marysville, Wash.
Filed Apr. 5, 1972, Ser. No. 241,124
Int. Cl. B27f *7/02*
U.S. Cl. 227—8 **27 Claims**



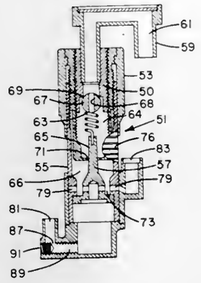
A carriage for a portable nailing gun is supportively mounted on a pair of journaled wheels at the rear thereof and on a single wheel at the front thereof. The rear wheels are of relatively large diameter compared to the front wheel. The carriage includes a frame with a rearwardly and upwardly extending handle. The forward portion of the frame carries a pivotable bracket on which is removably mounted a portable nailing gun. The nailing gun is pneumatically powered and is actuated through an adjustable camming mechanism associated with one of the rear wheels. An independent hand actuating mechanism is located on the handle so that, in addition to the actuation by moving the carriage, nails can be driven independently at desired locations.

3,796,366
ANTI-STATIC PLASTIC ARTICLES
Granville James Hahn, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.
Filed July 26, 1971, Ser. No. 166,270
Int. Cl. B32b *27/00*; **C08d** *13/24*
U.S. Cl. 229—1.5 B **9 Claims**

A method of rendering plastic articles resistant to the accumulation of static electricity, and articles produced thereby, are disclosed. The process comprises contacting a molded plastic article with an aqueous non-ionic emulsion of

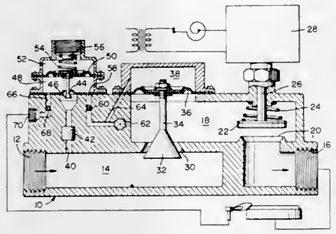
polyethylene, followed by removal of the water by evaporation. Treated articles are thus characterized as bearing on their surface the evaporation residue of such emulsions. The invention is particularly useful for treating nestable cups of foamed thermoplastic material, advantageously of foamed polymers of styrene.

3,796,367
CONTROL VALVE FOR USE IN AN AIR DISTRIBUTION UNIT
Ernest Rifkin, De Witt, N.Y., assignor to Carrier Corporaton, Syracuse, N.Y.
Filed Oct. 2, 1972, Ser. No. 294,430
Int. Cl. F24f *3/02*
U.S. Cl. 236—49 **3 Claims**



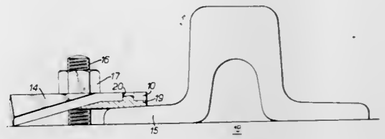
A control valve for use in an air distribution unit for discharging conditioned air into an area to be treated, including a variable volume control chamber for regulating the volume of conditioned air supplied to the area. The control valve regulates the operation of the variable volume control chamber to maintain a substantially constant discharge of conditioned air into the area irrespective of changes in supply air pressure. The control valve includes first and second variable orifices in series with each other. The size of the second orifice is varied so a predetermined ratio between the area of the first orifice and the area of the second orifice is obtained so a desired control pressure may be communicated from the control valve to the variable volume control chamber of the distribution unit.

3,796,368
DIAPHRAGM OPERATED FLOW CONTROL DEVICE
Jay R. Katchka, Cypress, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Sept. 18, 1972, Ser. No. 289,907
Int. Cl. F23n *1/00*; **F16k** *31/14*
U.S. Cl. 236—80 **2 Claims**



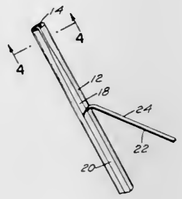
A gas flow control device for main and pilot burner apparatus includes a diaphragm operated valve for pressure regulation of the main gas flow, a pilot pressure regulator for pressure regulation of the pilot gas flow, and an automatically actuated valve controlling the main gas flow in accordance with predetermined temperature conditions. The diaphgram operated valve is pressure loaded by the regulated pressure of the pilot gas flow, which loading pressure is appropriately reduced so that the main and pilot gas flows are delivered at two separate pressure levels.

3,796,369
RAIL FASTENING DEVICES
Warwick Scott Faville, London, England, assignor to Kins Development Limited, Surrey, England
Filed May 19, 1972, Ser. No. 254,856
Int. Cl. E01b *9/30*
U.S. Cl. 238—349 **9 Claims**



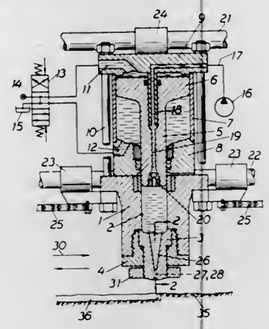
A device for use in securing a rail to a supporting means having a portion overlying and engaging the rail flange and a second portion overlying a supporting surface. The second portion has at least one engagement portion for engaging in the supporting surface and is adapted to be secured to supporting surface whereby rotational movement of the device is resisted.

3,796,370
COMBINATION DRINKING STRAW AND WHEEL SPOKE COVER
Samuel F. Speers, North Attleboro; David F. Stewart, North Reading; Henry J. Leboda, Burlington, and Michael E. Quattrochi, Acton, all of Mass., assignors to Hasbro Industries, Inc., Pawtucket, R.I., by said Speers
Filed Dec. 27, 1972, Ser. No. 318,722
Int. Cl. A47g *21/18*
U.S. Cl. 239—33 **8 Claims**



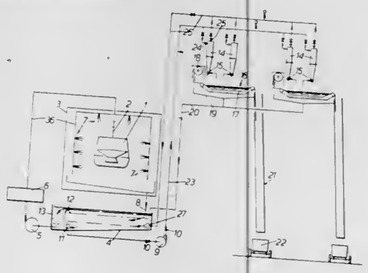
A combination drinking straw and wheel spoke cover comprising an elongated, open-ended tubular body of flexible plastic having an elongated tear strip extending longitudinally from end to end, whereby prior to removal of said tear strip the article may be used as a drinking straw, whereas after removal of the tear strip a longitudinal slit is exposed that permits the body to be snapped over a wheel spoke to provide an ornamental cover for same.

3,796,371
JET PIERCING DEVICE
Nicholas Simon Hall Taylor, Saltsjobaden; Bo Claes Ingmar Lundqvist, Stockholm; Olaf Meyer, Sollentuna, and Carl Anders Noren, Saltsjo-Boo, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed July 7, 1972, Ser. No. 269,834
Claims priority, application Sweden, May 19, 1972, 6555/72
Int. Cl. B05b *1/08*
U.S. Cl. 239—101 **6 Claims**



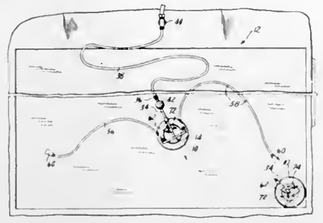
In a jet piercing device incorporating a liquid chamber wherein ultra high pressure is generated, a liquid is forced out through a nozzle having outlet means at the end of a conically contracted passage. The restricted area of flow of the outlet means is distributed and orientated in a direction transverse to the feeding direction of the nozzle so that a wide slot can be cut in the material worked upon with a low consumption of energy. The area of flow of the nozzle may be defined by a single flattened outlet or may be divided into two or more outlets extending in spaced relation longitudinally of the nozzle. The width of the pierced slot is adjusted by turning the nozzle relative to the feeding direction thereof.

3,796,372
APPARATUS FOR REMOVING SLUDGE
Roy Sidney Windall, Seal, England, assignor to Carrier Engineering Company Limited, London, England
Filed May 2, 1972, Ser. No. 249,704
Claims priority, application Great Britain, May 12, 1971, 14,495/71
Int. Cl. B05b *9/00*
U.S. Cl. 239—124 **7 Claims**



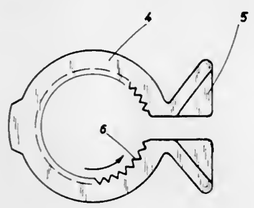
Sludge returned to a tank containing a metal pretreating solution, for example zinc phosphate, is continuously removed from the bottom of the tank by a pump at a rate which is in excess of the capacity of a clarifier device to effect separation of sludge from solution and is delivered to a centrifugal cleaner in which the sludge is concentrated to a flow rate within the capacity of the clarifier device to which the concentrate is delivered from the cleaner.

3,796,373
SWIMMING POOL CLEANING DEVICE
Werton B. Moore, Dallas, Tex., assignor to Marty Ross and Danny Henderson, both of Las Vegas, Nev.
Division of Ser. No. 199,644, Nov. 17, 1971, Pat. No. 3,665,942. This application Mar. 14, 1972, Ser. No. 234,687
Int. Cl. B05b *3/00*
U.S. Cl. 239—229 **1 Claim**



A swimming pool cleaning device having a floating head which is placed upon a pool surface and adapted to be supplied with water from a floating flexible hose, the floating head having cleaner hose attachments and an impeller all receiving a portion of the water supplied to the head, the impeller and a rudder being carried by a hollow swivel through which water is supplied to the impeller and being so constructed and arranged as to propel and guide the head around the pool in a random manner.

3,796,374
PART CIRCLE SPRINKLERS
Jochanan Fridberg, Kibbuz Naan, Israel, assignor to Naan Mechanical Works, Kibbuz Naan, Israel
Filed June 8, 1972, Ser. No. 260,770
Claims priority, application Israel, June 25, 1971, 37151/71
Int. Cl. B05b *3/02*
U.S. Cl. 239—232 **3 Claims**

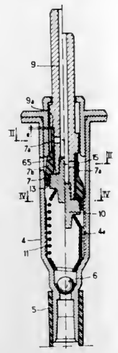


A part circle sprinkler connected to a riser by a connector tube, the tube having in the upper part thereof axially extending grooves. Two omega shaped rings are loosely mounted on the upper part of the connector tube, the legs of the rings having pointed teeth for engaging the grooves. Thus, a desirable angle between the rings can readily be set.

3,796,375
LIQUID SPRAYING DEVICES
Michel Boris, Paris, France, assignor to Societe Technique de Pulverisation, Paris, France
Filed Aug. 10, 1972, Ser. No. 279,372
Claims priority, application France, Aug. 19, 1971, 7130273
Int. Cl. A62c *11/02*
U.S. Cl. 239—333 **7 Claims**

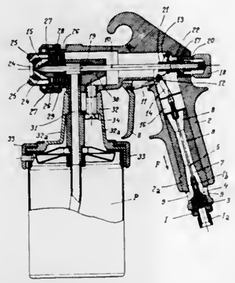
A liquid spraying device of the plunger tube type in which a knob on a plunger tube can be depressed to cause the liquid to

be sprayed through a nozzle. The plunger tube is surrounded by a piston which it entrains and which is movable in a chamber to expel the liquid through the tube. The tube has orifices in its wall which communicate with the interior of the



piston and with the chamber through a valve. The piston has a portion which is elastically and transversely deformable and which in the inoperative condition closes the orifices and also closes the space communicating with the chamber through the valve.

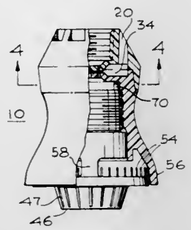
3,796,376
SPRAY GUN
Irmgard O. M. Farnsteiner, Residence Autevil, Blvd du tenao, Monte-Carlo, Monaco
Filed Aug. 7, 1972, Ser. No. 278,224
Int. Cl. B05b *7/30*
U.S. Cl. 239—353 **5 Claims**



A spray gun with a hollow handle has a trigger that opens a valve in the handle to admit compressed air. Lateral openings adjacent the handle feed secondary air by the venturi effect. The trigger also retracts a plunger in the spray head that controls liquid flow, with the valve opening slightly before the plunger. The spray head includes a sleeve with converging orifices for compressed air, and this sleeve is movable axially relative to the plunger to control the spray pattern.

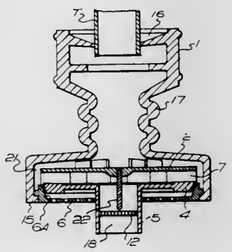
3,796,377
COMBINATION AERATOR AND SHOWER NOZZLE
Harry M. O'Hare, Anaheim, Calif., assignor to Federal Investment Corporation, Kansas City, Mo.
Filed June 1, 1972, Ser. No. 258,835
Int. Cl. E03c *1/084*
U.S. Cl. 239—428.5 **25 Claims**

A device for mixing air with liquid in a faucet or hose outlet device and dispensing the aerated liquid in a series of fine streams or jets. The unit is primarily designed for use in conjunction with apparatus for injected selected liquids such as detergent or bath oil into a water stream for final turbulent mixing and aerating in the device. The nozzle is adjustable to permit control of the size of the stream openings so that the water jets may be varied in size and force. The nozzle device contains a pair of closely spaced perforated plates on opposite sides of a chamber communicating with the exterior of the device through air admitting apertures. The perforations in



the downstream plate are aligned with the perforations in the upstream plate and are larger than those in the upstream plate. As a result, the venturi effect of the water exiting under pressure through the upstream plate perforations and then through the downstream perforations draws air from the air admitting chamber through the perforations in the downstream plate. A mixing chamber is provided just below the downstream plate for developing turbulence and completing the mixing of the air and water before the water reaches the nozzle jet apertures.

3,796,378
ADAPTORS FOR TAPS OR FAUCETS
Anders Harold Flater, 74 Cantley Ln., Doncaster, England
Filed May 24, 1971, Ser. No. 146,224
Int. Cl. B05b *1/16*
U.S. Cl. 239—447 **7 Claims**



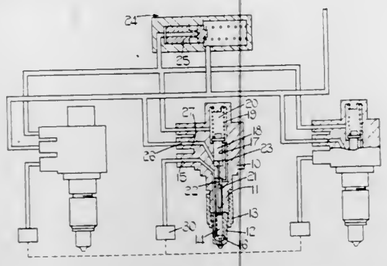
An adaptor for a water tap which is adapted to give both stream flow and spray flow in differing positions of the adaptor providing automatic return to first position when water is shut off thus insuring stream flow when water is turned on. The valve means has a movable valve member which is movable between two differing positions co-operative with the hydraulic force of the water and which causes minimum restriction for low pressure water flow in either valve position, the valve member returning by force of gravity or being assisted by a spring from spray position to stream flow position when the water is shut off. The valve member is operated without external lever and projections with two options of manipulation either by pushing the valve stem upwardly for spray flow or by squeezing the body rim for the same spray flow.

3,796,379

FUEL INJECTION NOZZLE UNITS

Ivor Fenne, Middlesex, England, assignor to C.A.V. Limited, Birmingham, England

Filed Oct. 24, 1972, Ser. No. 300,318
Claims priority, application Great Britain, Oct. 30, 1971, 50534/71
Int. Cl. F02m 47/00
U.S. Cl. 239—533 10 Claims



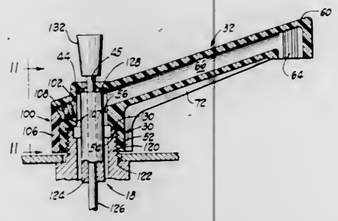
A liquid fuel injection nozzle unit comprises a valve member movable by fuel under pressure to permit fuel flow through an outlet, a spring acting to urge the valve member to prevent flow of fuel and a fluid pressure operable piston connected to the valve member subjected to a pressure of fuel which creates a force acting to assist the closure of the valve member. The fuel under pressure is obtained from the fuel which leaks past the valve member.

3,796,380

MOLDED PLASTIC PLUMBING FIXTURE

Tom W. Johnson, and Joe L. Johnson, both of Burton, Ohio, assignors to Sajar Plastics, Inc., Middlefield, Ohio

Filed Dec. 22, 1972, Ser. No. 317,807
Int. Cl. F16k 21/00
U.S. Cl. 239—590.5 12 Claims



An injection molded plastic plumbing fixture comprised of a support body defining an inlet flow passage and a tubular spout molded to and projecting from the body. A discharge opening is defined at the projecting end of the spout and a flow passageway extends through the spout from the discharge opening to intersect the inlet flow passage. The flow passageway extends completely through the body thus reducing the mass of plastic material required to form the rear side of the body. A molded recess formed in the rear side of the body further reduces the amount of plastic required to form the body.

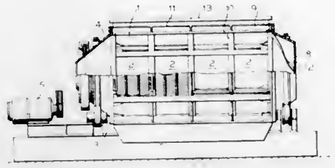
The flow passageway at the rear side of the support body is sealed by a closure which comprises a plug extending into the passageway and a seal between the plug and the passageway. The plug carries a flange or skirt which interfits with the body recess and is ultrasonically welded to the body so that the exterior of the rear side of the fixture is formed in part by the plug and skirt.

3,796,381

METHOD FOR ENRICHING ORES AND THE LIKE

Robert Saunal, Paris, France, assignor to Societe Des Mines D'Anderny-Chevillon, Paris, France

Continuation of Ser. No. 114,765, Feb. 12, 1971, abandoned, which is a division of Ser. No. 752,215, Aug. 13, 1968, abandoned. This application Oct. 4, 1972, Ser. No. 297,034
Claims priority, application France, Aug. 21, 1967, 67.118416
Int. Cl. B02c 23/00
U.S. Cl. 241—30 2 Claims



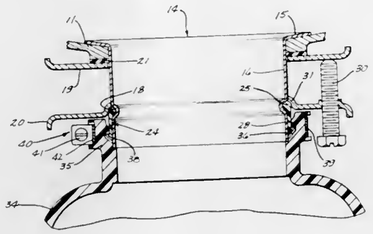
In a method for enriching ores or like materials the components of which have simultaneously different contents and mechanical strength values, the ore is submitted to a controlled crushing causing the softer fraction of the ore to be ground to a predetermined particle size controlled by discharging the softer component as it is reduced to the predetermined particle size. The predetermined particle size is determined experimentally and is dependent on the differential friability of the material to be processed. The self-crushing operation is performed in a drum of which the screening elements consist of detachable, interchangeable quadrants providing the necessary passages for the softer component.

3,796,382

SUPPORT FOR WASTE DISPOSER

Lawrence J. Jordan, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Nov. 17, 1972, Ser. No. 307,575
Int. Cl. B02c 18/42
U.S. Cl. 241—100.5 10 Claims



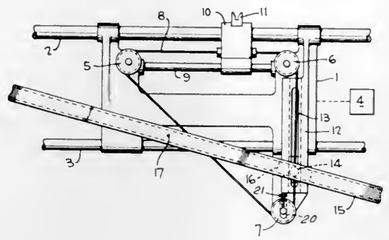
An arrangement for supporting a waste disposer on the depending sleeve portion of a sink flange includes an annular member having an inwardly projecting shoulder engageable with a groove in the sink flange sleeve portion and an outwardly projecting ledge engageable with an internal shoulder on the resilient inlet of a disposer housing. The annular member provides for quick connect and disconnect of the disposer.

3,796,383

RECIPROCATING YARN GUIDE

Rolland Sartori, Riorges, France, assignor to Ateliers Roannais De Constructions, Roanne, France

Filed Sept. 14, 1972, Ser. No. 289,165
Claims priority, application France, Sept. 27, 1971, 71.34970
Int. Cl. B65h 54/30, 54/32
U.S. Cl. 242—43 4 Claims



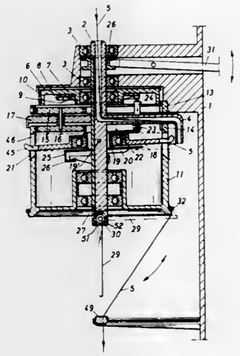
A reciprocating yarn guide having a variable path comprising a carriage which is driven with a reciprocating movement, at least three pulleys mounted on the carriage, at least one belt tensioned around these pulleys, a yarn guide attached to the belt, a position member attached to the belt, and a position adjusting member, the position member being slidably attached to the position adjusting member.

3,796,384

YARN CONTROL DEVICE

Karl I. J. Rosen, Villa Flaga, Ulricehamn, Sweden

Continuation of Ser. No. 734,956, June 6, 1968, abandoned. This application Aug. 16, 1971, Ser. No. 172/072
Claims priority, application Sweden, Oct. 20, 1967, 4374/67
Int. Cl. B65h 51/20
U.S. Cl. 242—47.12 27 Claims



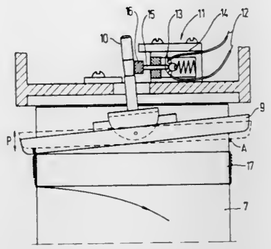
A yarn control holds a reserve of yarn fed at a constant tension. Means control the size of the yarn reserve under the influence of the yarn wound on a spool body with a speed in a defined relation to the machine speed. The reserve yarn is withdrawn from the yarn body either perpendicularly to the central line of the spool body for positive yarn feeding so that the yarn withdrawal will be equal to the winding of yarn onto the spool body or in axial direction in relation to the spool body for intermittent yarn consumption.

3,796,385

THREAD DELIVERY METHOD AND APPARATUS

Kurt Arne Gunnar Jacobsson, Ulricehamn, Sweden, assignor to Karl Isac Joel Rosen, Ulricehamn, Sweden

Filed May 24, 1972, Ser. No. 256,587
Int. Cl. B65h 51/20
U.S. Cl. 242—47.01 11 Claims



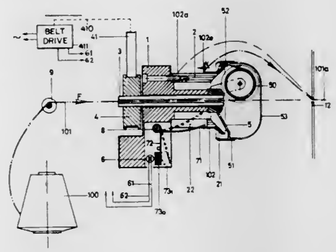
A method and an apparatus for regulating the rotational speed of a storage drum of a thread storage device in a thread processing machine. The storage drum is driven by a winding drive comprising an electromotor and the thread is tangentially wound onto the storage drum to form a thread supply. The electromotor is switched off by a movable and electrically controllable switch device when a maximum thread supply is obtained and switched on by means of a scanning member scanning the actual quantity of thread when a minimum thread supply is obtained. When the thread supply slightly exceeds or falls below a given quantity, the scanning member switches the electromotor on and off with the aid of the switch device with such frequency that the rotational speed of the storage drum adapts itself to the speed of the unwinding thread and the thread supply on the storage drum is kept practically constant.

3,796,386

THREAD FEEDER FOR TEXTILE MACHINES

Karl Tannert, Waldstrass 5, D 833 Eggenfelden, Germany

Continuation-in-part of Ser. No. 42,432, June 1, 1970, abandoned. This application Apr. 11, 1973, Ser. No. 349,957
Int. Cl. B65h 21/20, 51/24
U.S. Cl. 242—47.12 41 Claims



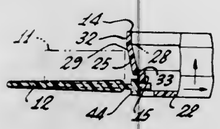
A thread feeder for textile machines having a winding body or storage spool between a thread supply and a textile machine. Means are provided for winding a plurality of coils of thread onto the winding body to form a store of coils of thread, such means comprising generally a rotating winding eye or frame. The winding in all cases proceeds by virtue of an axial shifting of the coils of said store axially along the winding body from the location where they are laid down to the point where they are removed. The winding body is stationary

and various means are provided to effect the axial shifting. The thread passes through the axial center of the winding body, either during the process of laying the coils down in the store or in the process of removing the coils from the store. The speed or activity of the means which wind the coils is controlled by the number of coils in the store which is disposed on the winding body at any time, simple switch means operated by the presence or absence of a certain number of such coils being the medium through which such control is effected.

3,796,387
HUB-PLATFORM ASSEMBLY FOR CONTINUOUS-LOOP TAPES

Darrell W. Zielke, Valencia, Calif., assignor to Superscope, Inc., Sun Valley, Calif.

Filed Apr. 2, 1973, Ser. No. 346,914
Int. Cl. B65h *17/48, 75/24*
U.S. Cl. 242—55.19 A **14 Claims**

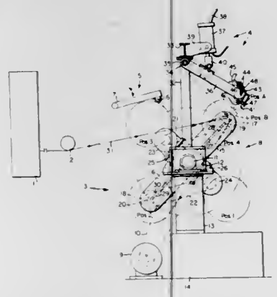


A hub-platform assembly for a continuous loop magnetic tape cartridge in which the hub is rotatably mounted in a center hole in the platform, and the platform includes a set of angularly spaced bayonet pins projecting into the hole to enter a corresponding set of generally T-shaped slots in the hub, the slots having axially sloping walls to impart an axial displacement to the hub in response to a rotational movement relative to the platform. Detent buttons hold the pins releasably in the central portion of the slot, and additional detent buttons hold the pins releasably at either of the slot extremities, so that the hub may be positioned selectively in either a neutral position, a winding position in which a length of tape is wound in a roll about a conical surface of the hub, or a stripping position in which the hub is displaced axially from the winding position and the conical surface presents a smaller diameter to the roll of tape, facilitating stripping of tape from the inside of the roll and joining it to the outside end of the tape to form a continuous loop.

3,796,388
APPARATUS FOR WINDING A RUNNING LENGTH OF THERMOPLASTIC SHEETING INTO A SERIES OF ROLLS

Douglas Steward Davis, Parkersburg, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 23, 1970, Ser. No. 57,678
Int. Cl. B65h *19/26, 19/28*
U.S. Cl. 242—56 A **1 Claim**

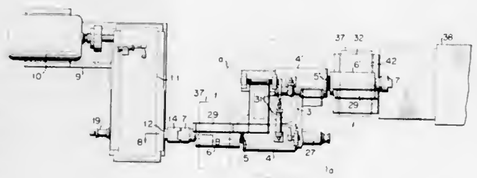


A system and method for automatic handling a running length of thermoplastic sheeting to form a series of individual rolls wherein the method comprises collecting the running length of sheeting, moving a core containing a certain length of sheeting away from the general path of movement of the sheeting, moving an empty core into the general path of movement of the sheeting, severing the sheeting and heat bonding the end of the running length of sheeting to the empty core and winding the running length of sheeting on the empty core; and wherein the system comprises basically an accumulator unit, sheet forwarding means, windup promotion means, windup unit, and severing unit all cooperating through a control means to accomplish the primary objective. Rolls of sheeting made from the system and method.

3,796,389
WINDING APPARATUS FOR THIN BAND PLATES

Kyutaro Nishiyori, and Junichiro Tateishi, both of Fukuoka, Japan, assignors to Kabushiki Kaisha Watanabe Tekkosha, Fukuoka, Japan

Filed July 11, 1972, Ser. No. 270,716
Int. Cl. B65h *17/00;* **B21c** *47/02*
U.S. Cl. 242—67.1 R **2 Claims**



An apparatus for winding at least one strip of thin band plate arranged in the slitting line comprises a support fixed to a floor, a vertical shaft rotatably mounted on the support, winding means including a pair of driven shafts horizontally supported on opposite sides of the vertical shaft in symmetric relation with respect to an rotational axis of the vertical shaft so as to extend in opposite directions, and means for selectively driving one of the paired driven shafts.

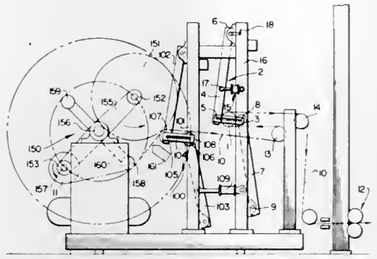
The strips are wound into the form of a coil on one of winding mandrels of the winding means disposed in a winding position in which the driving means is in engagement with one of the paired driven shafts. Upon a 180° turn of the vertical shaft after the completion of one cycle of the winding on one of the winding mandrels, the mandrel carried coils of the band plate strips thereon is turned also by the same angle into a transfer position in which the coils can be released therefrom while at the same time the other of the winding mandrels is moved from the transfer position into the winding position to commence next cycle of the winding operation.

3,796,390
WINDING, UNWINDING AND TENSIONING APPARATUS

James J. Melead, West Chester, Pa., assignor to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 83,730, Oct. 26, 1970, Pat. No. 3,692,251. This application Apr. 14, 1972, Ser. No. 244,300
Int. Cl. B65h *25/04, 25/22*
U.S. Cl. 242—75.5 **10 Claims**

The invention relates to filament tension regulation apparatus useful to regulate the tension in a moving filament such as during the winding or unwinding or a web or threadlike filament. The invention relates further to a web guide roller assembly for assisting in the movement of a web relative to a roll of the web material such as a splicing roll apparatus useful in web unwinding or a lay-on roll apparatus for use in web winding. The invention further relates to web unwinding apparatus, to web winding apparatus, and to web winding and unwinding apparatus involving combinations of the splicing roll apparatus, the lay-on roll apparatus, and web tension regulating apparatus. The filament tension regulation apparatus comprises a roller mounted for rotation in members disposed at the ends of the roller, the members being supported by pivot arms extending upwardly and downwardly of the member. The arms are of equal length and the roller is centrally located on the member between the pivot areas such that the roller is capable of horizontal motion supported by the pivot arms. The moving filament engages the roller in such a way that horizontal force is applied to the roller in a direction in opposition to a desired pre-determined horizontal force. Changes in filament tension relative to the pre-determined horizontal force cause horizontal motion of the roller

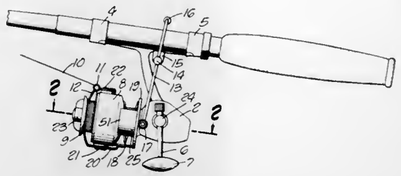


and this motion is utilized to adjust tension to a desired value such as by changing filament speed. The web guiding roll apparatus comprises a pair of rollers mounted for rotation and pivotally supported by pivot arms as in the case of the filament tension regulating device. The rollers, however, are located at points symmetrical about a point midway between the pivot arms and thus will undergo pivoting motion. The arms are of equal length and the rollers are preferably of equal mass whereby the device is easily moved into and out of engagement with a web roll for splicing during unwinding or for forming a nip during winding.

3,796,391
SPINNING REEL WITH AUTOMATIC CHANGEOVER OF OPERATION MODE

Robert L. McMickle, Redondo Beach, Calif., assignor to Berkley & Company, Inc., Spirit Lake, Iowa

Continuation-in-part of Ser. No. 833,561, June 16, 1969, abandoned. This application June 7, 1971, Ser. No. 150,630
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.21 A **13 Claims**

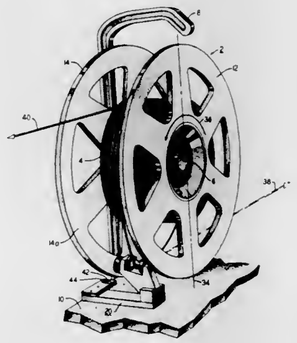


An open-face spinning reel including means for automatically changing the operational mode from a casting mode to a line retrieval mode. The reel structure includes a frame means along with a centrally disposed spindle having means thereon for retaining a line spool mount. A line spool is normally received and disposed on the line spool mounting means and means are provided for actuating the reel to retrieve the line onto the line spool. A normally retracted control lever is coupled to the frame means, with the control lever being operable by the user from the hand other than that which operates the line retrieval crank. The control lever is adapted to advance a slidable housing sleeve or winding hub assembly outwardly to correspondingly advance the line receiving spool outwardly along the spindle. In one embodiment, a resilient ring is provided along the outer periphery of the housing sleeve, with the resilient ring being adapted to contact the pay-out lip of the line receiving spool to controlably arrest the rate of pay-out of line. Means are also provided for retaining the line spool mounting means along with the line spool in its most forward advanced position whenever the control lever has been fully actuated. In the changeover of operation mode from line retrieval to casting, the bail is rocked from a stable closed line retrieval position into a stable open line casting position, with the bail being automatically returned to the closed line retrieval position following initial rotation of the crank and with the line spool in its most forward advanced position.

3,796,392
BRAKE FOR A WIRE REEL

Jeremia Patrick Starace, Denville, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Nov. 6, 1972, Ser. No. 304,336
Int. Cl. B65h *59/04*
U.S. Cl. 242—156 **1 Claim**



A brake for a wire reel comprises a brake arm including a wire guide and a brake shoe pivotably mounted to a base. The brake shoe establishes initial contact with the reel in its normal position and applies a negligible brake force thereto. Wire from the reel is fed under the wire guide. A removal force or tension applied to this wire moves the brake shoe away from contact with the reel to allow free rotation thereof. Release of the tension causes the brake shoe to return to the initial contact position whereupon subsequent rotation of the reel wedges the shoe into a braking contact position to stop the rotation. The brake applies a braking force in only one direction of rotation and will operate when the reel is mounted for rotation about either a horizontal or vertical axis.

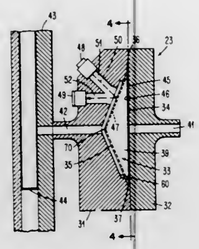
3,796,393
PNEUMATIC-PHOTOELECTRIC TRANSDUCER IN A MAGNETIC TAPE UNIT

Rex G. Beistle, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,352
Int. Cl. G11b *15/58;* **G01d** *5/34*
U.S. Cl. 242—184 **9 Claims**

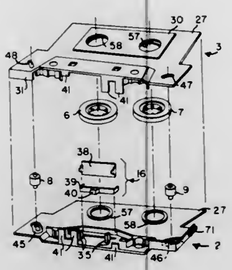
A pneumatically actuated, binary output photoelectric transducer selectively communicates with atmospheric pressure or subatmospheric pressure, in accordance with the position of the tape loop in the pneumatic buffer of a magnetic tape unit. The transducer includes a flat, reflective, air-imper-

vious, lightweight, movable member which responds to subatmospheric pressure and is forced into a flexed position thereby. A light beam reflects off the member onto a photocell



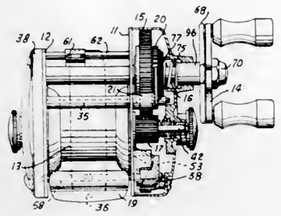
only when the member is in this flexed position. The resulting active output of the photocell indicates that the position of the tape loop is such that the transducer is subjected to subatmospheric pressure.

3,796,394
CASSETTE
Augustine A. Souza, San Jose, Calif., assignor to Polygon Concepts, Inc., Los Altos, Calif.
Filed Apr. 22, 1971, Ser. No. 136,365
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—199 **13 Claims**



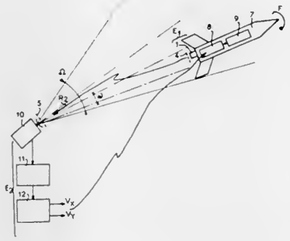
A cassette comprising a pair of identical sleeves in mating relationship enclose a tape reel and hub assembly, a tape guiding and tensioning member assembly and a tape back-up pressure assembly. The sleeves are inserted within a body member and removably held therein mechanically. This construction eliminates the need for sonic welding and liquid bonding. The elimination of undercuts in the design and the above method of assembly permits the use of low cost materials and manufacturing techniques. For tape control during tape run-up, running, and changing of the direction of tape movement there is provided tape guiding and tensioning members in the form of a plurality of self-adjusting idler rollers which absorb tape shock and slacks for reducing whipping, looping, spilling and other tape jamming events. A plurality of cantilever mounted resilient spring-like members are further provided for applying a variable degree of retarding force through friction to the tape reel hubs to further reduce tape jamming. To permit removal of the sleeves and various assemblies enclosed therein, the sleeves are provided with means for manually releasing the sleeves from the body member.

3,796,395
BAIT CASTING FISHING REEL
Marvin L. Rankin, Jr., 3909 Wedgeway Dr., Fort Worth, Tex.
Continuation of Ser. No. 73,748, Sept. 21, 1970, abandoned.
This application Dec. 13, 1972, Ser. No. 314,692
Int. Cl. A01k *89/02*
U.S. Cl. 242—212 **9 Claims**



A spool-type fishing reel is provided with a positive drive mechanism between the spool and the crank handle including a positive acting clutch which selectively disengages the spool from the drive mechanism for free spooling and is disengaged by a lever positioned to be engaged by the thumb of the angler during casting, and upon release conditions the clutch to be engaged upon line payout. An adjustable drag mechanism acts on the direct drive mechanism to retard spool rotation on line payout, when the clutch is engaged.

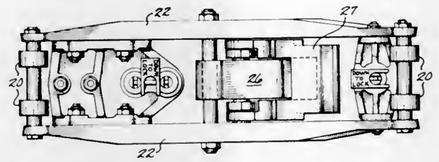
3,796,396
METHOD AND APPARATUS FOR MODULATING A PYROTECHNIC TRACER
Christian Crovella, 9, rue de la Mediterranee, Antony, France
Filed Oct. 30, 1972, Ser. No. 301,761
Claims priority, application France, Oct. 29, 1971, 71.39125; Dec. 22, 1971, 71.46235
Int. Cl. F41g *7/14, 7/00*
U.S. Cl. 244—3.14 **16 Claims**



A system for modulating the radiation emitted by a pyrotechnic source of the tracer type emitting neither gases nor particles and mounted on a spinning missile guided along an optical path by means of a ground-based receiver device, in order to improve the transmitted-signal/background noise ratio, in which said radiation emitter source is placed at the rear of the missile so that said radiation be emitted substantially along the spin axis of the missile as the same follows its trajectory and be filtered by means of a polarizing filter rotating with the missile; and in which a second polarizing filter is placed in the optical path of said ground-based receiver device, the effect of which is to pick up the circularly polarized radiation emitted by said first filter and cause it to be sinusoidally modulated at a frequency dependent on the resultant relative rotation speed between the two filters; It

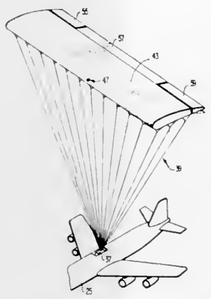
results that the ratio of the modulated signal emitted by the emitter source to the unmodulated said background noise is considerably increased and permits ready processing of the transmitted signal to allow optical command guidance of the missile.

3,796,397
CARGO CONTAINER LATCH
John Alberti, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed July 21, 1972, Ser. No. 274,128
Int. Cl. B64c *1/20*
U.S. Cl. 244—118 R **2 Claims**



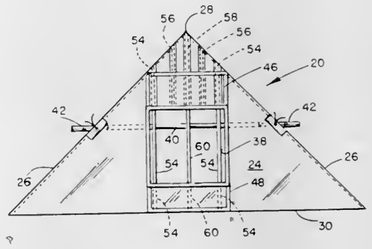
A retractable cargo container latch assembly for securing cargo containers or pallets to the seat-tracks in the floor of an aircraft compartment wherein the latch mechanism comprises a pair of rotatable latch arms, each having a vertical restraint lip integral therewith in combination with a spring-loaded pawl for securing the latch-head assembly in the upright extended cargo engaging position.

3,796,398
IN-FLIGHT AIRCRAFT RECOVERY SYSTEM
Warren H. Eilertson, 3931 L'Enfant Dr., Fort Washington, Md.
Filed May 14, 1973, Ser. No. 359,744
Int. Cl. B64d *17/00*
U.S. Cl. 244—139 **14 Claims**



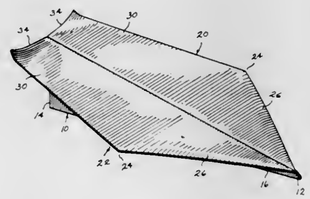
An in-flight aircraft recovery system utilizing an inflatable wing of generally rectangular planform configuration stowed in a normally collapsed condition in a compartment located on the upper portion of the fuselage in the vicinity of the plane's center of gravity. Upon deployment, the compartment's cover is ejected and a first parawing type pilot chute lifts a container including the inflatable wing from the compartment and above the tail section of the aircraft. The first pilot chute is jettisoned along with the container after the suspension lines are fully extracted and a second pilot chute of a similar parawing configuration attached to the wing is deployed which positions the inflatable wing above the aircraft with the wing then being inflated by means of a turbine driven compressor mounted on the airfoil surface. The inflatable wing when inflated comprises a rectangular wing including control surfaces in the form of controlled flaps at the wing trailing edge. The wing is connected to the airplane by means of a plurality of suspension lines which are attached to respective rotatable reels. The reels are further controlled for providing selective unreeling and braking of the lines during wing deployment and for subsequently altering not only the angle of attack of the inflated wing, but also the flaps so that the inflated wing flys the aircraft to a predetermined destination either by means of remote pilot control or beacon ground control.

3,796,399
KITE
Harold R. Wechsler, 2 Buena Vista Rd., Suffern, N.Y.
Filed May 16, 1972, Ser. No. 253,843
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R **8 Claims**



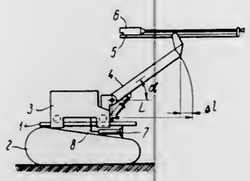
A kite of generally triangular configuration having leading and trailing edges between which are disposed a pair of open cells to which a bridle and tethering lines are attached. The frontal portion adjacent the apex of the kite body is partially flexible and coacts with the frontal cell to define an open mouth which partially closes in response to changes in air current for stabilizing the kite in flight.

3,796,400
AIRPLANE KITE
Bernard R. Barrett, 308 W. Graham, Lombard, Ill.
Filed Dec. 1, 1972, Ser. No. 311,255
Int. Cl. B64c *31/06*
U.S. Cl. 244—154 **10 Claims**



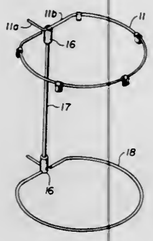
A kite having a fuselage carrying left and right wings. The wings have a maximum span intermediate the ends of the fuselage and converge in fore and aft directions from such place of maximum span. That section of each wing which extends from the place of maximum span to the front end of the fuselage is concave, with the outer edge of such wing section being rolled.

3,796,401
SELF-PROPELLED DRILLING RINGS FOR BORING BLASTHOLES AND SMALL-DIAMETER WELLS
Artem Mikhailovich Tkachenko, kv. 20 II, linia, 198; Karl Batyrbekovich Mustafin, 54, kv. 46, and Marat Udetovich Kadyrov, 22 ulitsa Khaliulina, all of Alma-Ata, U.S.S.R.
Filed Oct. 12, 1972, Ser. No. 296,819
Int. Cl. E21c *5/11, 9/00, 11/00*
U.S. Cl. 248—2 **3 Claims**



A self-propelled drilling rig for boring blastholes and small-diameter wells is disclosed, said rig comprising a carriage mounted on the frame of an undercarriage and provided with a manipulator carrying a boring tool. The drilling rig is provided with a servomechanism having a hydraulic drive with a reduction gear, which is operatively connected to a longitudinally movable slide valve, and a plate attached to the slide valve and co-operating with a pusher rigidly secured to the jib manipulator.

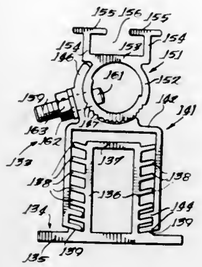
3,796,402
SUPPORT ASSEMBLY FOR COLLAPSIBLE BAGS
Edward Trotta, 130 Hobson Ave., St. James, N.Y.
Filed Apr. 19, 1972, Ser. No. 245,478
Int. Cl. B65b *67/12*
U.S. Cl. 248—97 **6 Claims**



A support assembly is disclosed for holding collapsible bags in either horizontal or vertical attitudes in which a clamping assembly in the form of a ring and a complementary clamping means has attached thereto a foot stake coplanar with the ring and adapted to be pressed into the ground to hold a bag open on a horizontal axis and in which the foot stake can be inserted into a support to hold the bag open on a vertical axis.

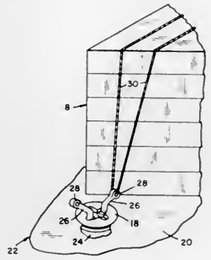
3,796,403
ADJUSTABLE ROAD BAR ASSEMBLY
Robert M. Jelinek, Western Springs, Ill., assignor to The Ceco Corporation, Chicago, Ill.
Division of Ser. No. 150,953, June 8, 1971, Pat. No. 3,744,647. This application May 4, 1973, Ser. No. 357,327
Int. Cl. E04g *25/06*; **F16m** *13/00*
U.S. Cl. 248—119 R **7 Claims**

Load bar structure for use in storage and/or shipping racks for sheet metal or similar articles, such as automobile fenders, hoods, doors or other parts, where the parts must be immobile for the extent of shipping. A shipping rack includes a top and bottom frame joined by vertical corner members, and horizontal end bars which extend between the corner members at suitable heights. An elongated three part load bar is provided



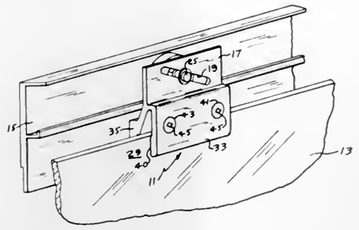
in the top and bottom frames to adjustably position and hold the stored articles at the top and bottom edges thereof. The bar includes a slot to receive various dunnage materials used to hold the wares in place.

3,796,404
APPARATUS FOR ALTERNATIVELY SECURING IRREGULAR CARGO AND STANDARD SHIPPING CONTAINERS
Charles J. Shields, Oakland, Calif., assignor to States Steamship Company, San Francisco, Calif.
Filed Apr. 20, 1972, Ser. No. 246,015
Int. Cl. B65j *1/22*
U.S. Cl. 248—361 R **12 Claims**



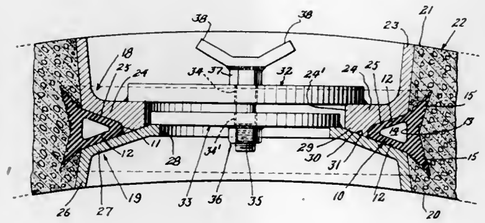
Irregularly shaped and dimensioned cargo and standardized shipping containers are tied down to the deck of a vessel or the like by installing on deck a tie-down plate which has a first, cross-shaped cutout defined by opposing pairs of communicating cutout arms and a superimposed, substantially rectangular second cutout aligned with the first cutout. Irregular cargo is secured by placing a bulb hook in one of the cutout arms. The bulb hook has a cylindrical base of greater diameter than the width of the cutout arms, an integral shaft extending through the cutout arms and an angularly inclined arm that terminates in an eyelet to which tie-down rope, cable, chain, etc. is secured. For securing standard shipping containers a corner cone is inserted into the superimposed rectangular opening in the plate. An upwardly protruding portion of the cone engages a mating aperture in a corner fitting of the container. The corner cone can be locked to prevent vertical withdrawal of the cone while engaged with a container.

3,796,405
ROLLER BRACKET
Arnold O. Rystad, Lakeport, Calif., assignor to Work Right Products Inc., Hayward, Calif.
Filed Oct. 16, 1972, Ser. No. 297,925
Int. Cl. A47g *1/16*
U.S. Cl. 248—489 **3 Claims**



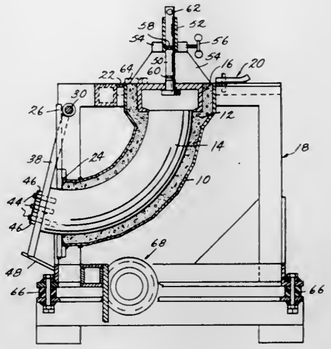
A bracket for suspending a sliding glass door comprising a unitary body defining a panel-receiving channel in which facing side walls of the channel are serrated to securely engage a glass panel inserted therebetween. Portions of the channel walls above the serrated facing side portions define an opening formed in the shape of a right triangle, whereby, the side wall portions of the channel may be deflected toward each other by the tightening of screws passing through the channel side walls to securely engage said glass panel therebetween. Roller means are also provided for slidably mounting the door.

3,796,406
GASKET SEAL BETWEEN, SEWER PIPE AND MANHOLE OPENING
John Ditcher, 701 Old Lincoln Hwy., Langhorne, Pa., assignor to A-LOK Corporation, Trenton, N.J.
Filed Mar. 24, 1971, Ser. No. 127,520
Int. Cl. E01g *5/08*
U.S. Cl. 249—11 **6 Claims**



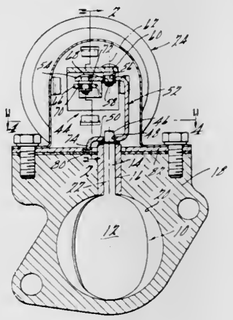
Providing a leakproof seal between the surface of an opening through the wall of a manhole and the outer surface of a pipe which passes through that opening. An extruded gasket strip, of elastomeric material and of A section, is rooted, by the splayed legs of the A, in the concrete of the manhole wall around said opening. The upper portion of the A yieldingly spans the distance between the surface of the opening and the surface of the pipe. A shaping element is provided to define the shape and character of the surface of the opening and to securely hold the gasket strip while the concrete is being poured to form the manhole wall, and until it has set.

3,796,407
APPARATUS FOR MOLDING CURVED PIPE
Howard P. Brown, 104 S. Nash St., Starkville, Miss.
Filed Aug. 19, 1970, Ser. No. 65,090
Int. Cl. B29c *11/00*
U.S. Cl. 249—63 **2 Claims**



A machine for molding a pipe bend from concrete or the like includes a mold having an arcuate tubular mold cavity defining the outer contours of the pipe bend, an arcuate core mounted for swinging movement into and out of one end of the mold cavity along the axis of the latter to define therewith an annular space and a rotatable bell form for shaping the inner surface of one end of the molded pipe bend.

3,796,408
EXHAUST CONTROL VALVE
William L. Sheppard, Romulus, Mich., assignor to AVM Corporation, Jamestown, N.Y.
Filed Jan. 15, 1973, Ser. No. 323,947
Int. Cl. F16k *13/165*
U.S. Cl. 251—58 **11 Claims**

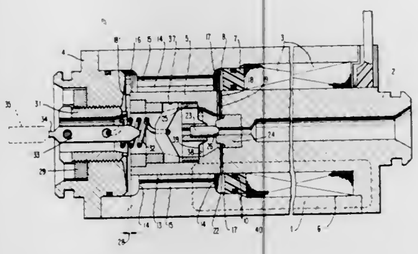


An exhaust control valve system for controlling the flow of engine exhaust gases and arranged to inhibit heat transfer from the exhaust to linkage portions of the system to permit lower cost and more effective friction reducing features, and in which a mechanism is provided to prevent rattling at either limit position of the valve and to insure accurate operation.

3,796,409
RAPIDLY SHIFTING LEAKAGE-PROOF ELECTROMAGNETICALLY ACTUATED VALVE

Manfred H. Burckhardt, Waiblingen, and Paul Schwerdt, Esslingen-Hegensberg, both of Germany, assignors to Daimler-Bentz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Aug. 13, 1971, Ser. No. 171,611
Claims priority, application Germany, Aug. 13, 1970, 2040199
Int. Cl. F16k 31/06
U.S. Cl. 251—139 30 Claims

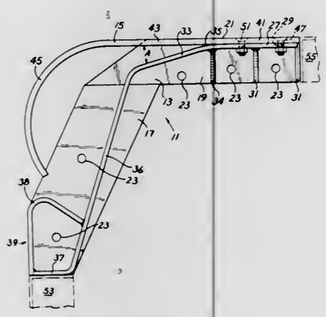


A rapidly shifting leak-proof electromagnetically actuated valve for liquids or gases with direct hydraulic control of the medium to be shifted and with an adjustable piston armature in which the stroke of the piston armature, which is readily slidable and liftable, as also the gap between the piston armature and the pole element can be held within predetermined limits; the pole element forms directly the support of a coil wound in a small space with a large number of turns whereby a short, closed magnetic circuit is obtained by the appropriate construction of the valve.

3,796,410
GUIDERAIL FOR STORAGE RACKS

Anthony N. Konstant, Mount Prospect, Ill., assignor to Speedrack Inc., Skokie, Ill.

Filed June 22, 1972, Ser. No. 265,229
Int. Cl. B61f 9/00; E01f 9/00
U.S. Cl. 256—1 10 Claims

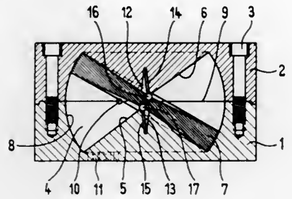


A deflectable guiderail adapted for positioning at the end of a rack aisle to restrain handling equipment from damaging a rack upon such equipment entering or exiting the aisle.

3,796,411
NUTATING DISC VIBRATOR

Franz Gartner, Friedrichstrasse 21, 7501 Bruchhausen, Germany

Filed Sept. 11, 1972, Ser. No. 288,291
Claims priority, application Germany, July 20, 1972, 2235585
Int. Cl. B01f 11/00
U.S. Cl. 259—1 R 19 Claims

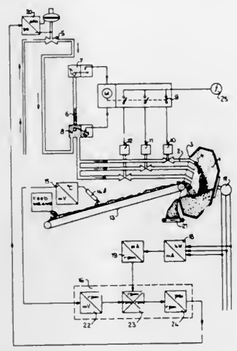


A nutating disc vibrator includes a nutating disc mounted within a cavity in a casing and guided by cooperating surfaces of the cavity. An inlet for a working fluid directs the working fluid along a path substantially in the plane of symmetry of the nutating movement and the working fluid itself is conducted only through stationary parts of the casing.

3,796,412
APPARATUS AND METHOD FOR CONTROLLING MOISTURE CONTENT OF GRANULAR MATERIALS

Emil Maurer, Schaffhausen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Continuation-in-part of Ser. No. 861,874, Sept. 29, 1969, abandoned. This application Oct. 3, 1972, Ser. No. 294,607
Claims priority, application Switzerland, Oct. 7, 1968, 14931/68
Int. Cl. B28c 7/04
U.S. Cl. 259—149 16 Claims

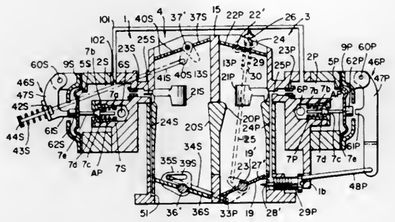


Granular material is fed to a mixing drum, and a plurality of controllable nozzles are aligned with the interior of the mixing drum for selectively introducing water into the mixing drum. A control circuit is responsive to at least one of the power input and the driving torque of the drive means for the mixing drum, to control a main control valve which controls the total quantity of water per unit time delivered into the interior of the mixing drum. The control circuit may also be responsive to the temperature of the granular material fed to the mixing drum for further control of the main control valve. A pressure control device is provided between the main control valve and the nozzles to maintain the water pressure between predetermined boundary values so that water is delivered to said drum with an approximately constant droplet size.

3,796,413
AIR VALVE PRESSURE DIAPHRAGM CARBURETOR

Stephen Woods, 311 Mason, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 175,539, Aug. 27, 1971, abandoned, which is a continuation-in-part of Ser. No. 846,563, July 31, 1969, Pat. No. 3,618,904, which is a continuation-in-part of Ser. No. 822,828, April 9, 1969, Pat. No. 3,556,067, which is a continuation-in-part of Ser. No. 629,488, April 10, 1967, abandoned. This application Feb. 26, 1973, Ser. No. 335,550
Int. Cl. F02m 7/16
U.S. Cl. 261—23 A 17 Claims

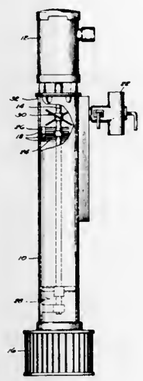


A carburetor having throttle and air intake valves and a booster venturi in both the primary and secondary air intake passages.

3,796,414
AERATOR

Benjamin A. Winton, Adell, Wis., assignor to Fresh-Flo Corporation, Adell, Wis.

Continuation of Ser. No. 178,347, Sept. 7, 1971, abandoned. This application July 19, 1973, Ser. No. 380,565
Int. Cl. B01f 3/04
U.S. Cl. 261—29 2 Claims

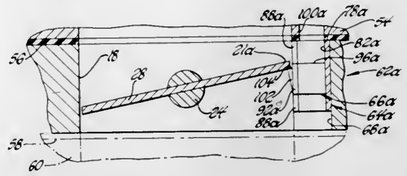


An aerator which has a housing with a lower propeller means to draw in liquid and force it upward in the housing. There may be an upper propeller in the housing which draws air in and forces it downwardly to meet the upward flow of liquid. Another propeller having blades for producing radial flow causes the liquid or the liquid and air mixture to be thrown outwardly through an opening in the wall of such housing.

3,796,415
CARBURETOR FUEL TRANSFER DISCHARGE PORT

James H. Dreher, Durham, N.H., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,444
Int. Cl. F02m 3/08
U.S. Cl. 261—41 D 9 Claims

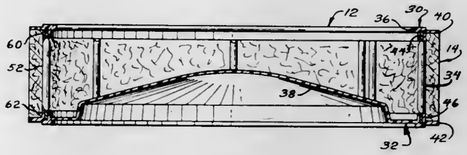


A carburetor having an induction passage with a variably positionable throttle valve situated therein has an idle fuel discharge port situated downstream of the throttle valve, when the throttle valve is in its curb idle position, and a transfer port or slot for discharging fuel into the induction passage as the throttle valve is moved from its curb idle position toward a more fully opened position; the transfer port or slot is formed of a generally hollow body-like member inserted in the structure defining the carburetor so as to have a slot which is formed in the body-like member in communication with the induction passage and the interior space of the hollow body-like member; a plug is inserted within the interior space of the body-like member and the slot and located as to thereby define a terminal portion of the slot in a location precisely as required with respect to the throttle valve when the throttle valve is in its curb idle position.

3,796,416
HUMIDIFIER DRUM CONSTRUCTION

Robert F. Knudson, Concord, Mich., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Sept. 7, 1972, Ser. No. 287,056
Int. Cl. B01f 3/04
U.S. Cl. 261—92 8 Claims



A humidifier drum construction having two spaced rigid circular end pieces and at least one unitary circumferentially disposed connecting piece therebetween, each connecting piece having an elongated flexible rail element and a plurality of rigid spaced rung elements thereon, whereby during drum fabrication the rail element can be flexed from the flat to a curvature smaller than the circular end pieces and the rung elements can be fitted transversely to and secured between the end pieces.

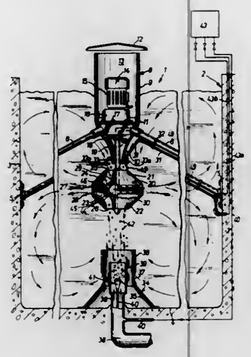
3,796,417
AERATION APPARATUS FOR LIQUIDS

Joseph Richard Kaelin, Villa Seeburg, Buochs, Switzerland

Filed Feb. 24, 1972, Ser. No. 228,839
Claims priority, application Switzerland, Mar. 1, 1971, 2938/71
Int. Cl. B01f 3/04
U.S. Cl. 261—93 11 Claims

An aeration apparatus for liquids comprises a driven aeration impeller with axial intake and radial discharge and having

a substantially vertically disposed axis. The aeration impeller comprises two suction sides arranged above one another and working in opposed directions. Guide channel means connect each suction side with the discharge sides of the aeration impeller, and there is provided conduit means for at least one of



the guide channel means for the infeed of an aeration medium.

The operation of the above aeration apparatus comprises the steps of arranging the aeration impeller in an aeration tank having a subsequently arranged settling tank of a sewage purification plant, and delivering activated sludge from the settling tank to one suction side of the aeration impeller.

3,796,418

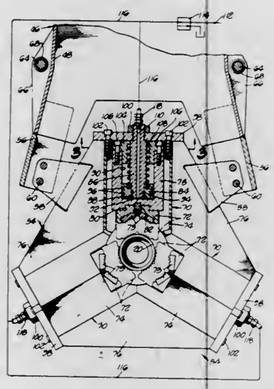
HYDRAULIC PIPE TONG APPARATUS

Charles E. Carlberg, Houston, Tex., assignor to Byron Jackson, Inc., Long Beach, Calif.

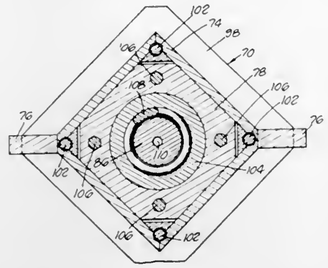
Filed Feb. 17, 1972, Ser. No. 227,522

Int. Cl. B23q *3/08*

U.S. Cl. 269—26 **6 Claims**



Pipe gripping apparatus carried by a support frame including a hydraulic piston radially supported in fixed relation within the frame through a piston rod. A movable combination blind cylinder and pipe jaw is fitted around the piston for radial movement toward and away from gripping relation with pipe. The piston and cylinder defines a fluid pressure chamber connected to pressuring means for introducing fluid under



pressure into the chamber to move the cylinder and pipe jaw into gripping engagement with pipe. A retraction arrangement is provided to move the cylinder and pipe jaw away from the pipe.

3,796,419

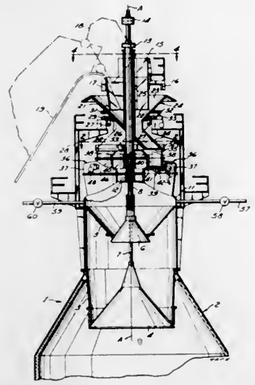
CHARGING APPARATUS FOR SHAFT FURNACES

Tage Werner, Rockey River, and Karl W. Roenick, Fairview Park, both of Ohio, assignors to Arthur G. McKee & Company, Cleveland, Ohio

Filed Apr. 15, 1971, Ser. No. 134,203

Int. Cl. F27b *11/12*

U.S. Cl. 266—27 **32 Claims**



An apparatus for charging material into a shaft furnace, such as a blast furnace, having a generally vertical axis. Several port means are spaced around the axis and mounted on the upper portion of the furnace portion above two furnace bells in superposed stationary hoppers. Each of the port means has an upwardly open mouth, and individual valve means for closing the port means gas tight and for opening the port means independently of other port means so it can provide an unimpeded flow of material into the furnace. An externally supported and driven chute is mounted above all port means for rotation about the axis. The chute has a lower discharge opening positionable over the mouth of selected port means to discharge material into the mouth so that material will pass from the chute into the furnace when the port means is open, and the chute has an upper opening adapted to receive charge material deposited in the chute. A stationary hopper is mounted above the chute to receive charge material from a suitable material supply means such as a skip car or conveyor. The externally supported and driven chute is not enclosed in any hopper.

3,796,420

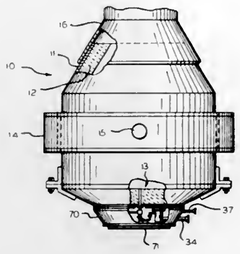
STEEL CONVERSION APPARATUS

Jai K. Pearce, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1972, Ser. No. 239,666

Int. Cl. C21c *5/34*

U.S. Cl. 266—35 **7 Claims**



A vessel for converting molten ferrous metal to steel is pivotable about a horizontal axis and has bottom tuyeres which permit the blowing of oxygen and other gases upwardly through the molten metal. The tuyeres are arranged on a first metal plate attached to the vessel's bottom refractory and the gas distribution system for coupling the tuyeres to a source of gas is coupled to a second plate for rapid attachment and detachment from the first plate.

3,796,421

PROCESS FOR PRODUCING CHROME STEELS AND A CONVERTER FOR CARRYING OUT THE PROCESS

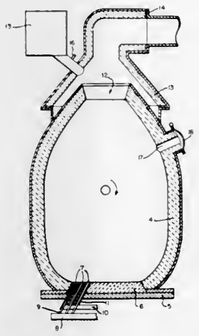
Helmut Knuppel; Karl Brotzmann, both of Sulzbach-Rosenberg Hutte, and Hans Georg Fassbinder, Sulzbach-Rosenberg, all of Germany, assignors to Eisenwerk-Gesellschaft Maximitianshutte m.b.H., Sulzback-Rosenberg Hutte, Germany

Division of Ser. No. 116,447, Feb. 18, 1971. This application Nov. 2, 1972, Ser. No. 303,161

Claims priority, application Germany, Feb. 18, 1970, 2007373

Int. Cl. C21c *7/10*

U.S. Cl. 266—35 **5 Claims**



Process of producing chrome steels of a chromium content of about between 16 to 30 percent and low carbon and nitrogen contents. According to the process, a pig iron charge having a high chromium content and a carbon content of from 2 to 7 percent is refined by blowing with very pure oxygen under reduced pressure conditions, the oxygen being introduced into the melt below the level of the melt. The process is applicable to both ferritic and austenitic chrome steel production.

The application also discloses a novel bottom-blown converter construction for carrying out the refining procedure.

ERRATUM

For Class 269—26 see:
Patent No. 3,796,418

3,796,422

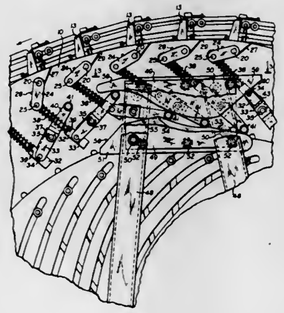
ROTARY COLLATOR WITH SHEET CLAMPING MEANS

Frank C. Blowsky, Flushing, N.Y., assignor to Luis Mestre Development Corp., New York, N.Y.

Filed Aug. 9, 1972, Ser. No. 278,931

Int. Cl. B65h *39/02*

U.S. Cl. 270—58 **11 Claims**



A rotary collator is disclosed having a rotary drum with a plurality of radially extending partitions forming radially extending pockets against which partitions the sheets to be collated are held by clamping means. The clamping means for each pocket has operating means which opens or releases the sheet clamp prior to the position of the pocket where a sheet is to be ejected from the pocket. The clamp operating means closes the clamping means after the pocket has passed sheet ejecting position. The operating means uses a toggle structure and a relatively heavy compression spring to hold the sheets in the pile against the partition when in clamping position. This spring is operating mostly under relatively light tension so that its flexing is reduced considerably thereby and the likelihood of breaking is much reduced. Also breaking of a compression spring is much less likely because pressure is applied by flat ends of the spring abutting the parts engaged.

3,796,423

BUCKLE FOLDER FOLD ROLLER

George S. Shuster, Chicago, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

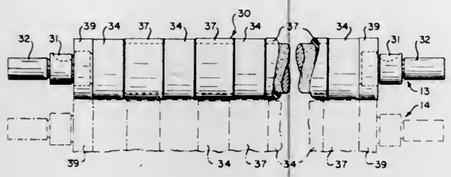
Filed Sept. 5, 1972, Ser. No. 285,997

Int. Cl. B65h *45/14*

U.S. Cl. 270—68 A **2 Claims**

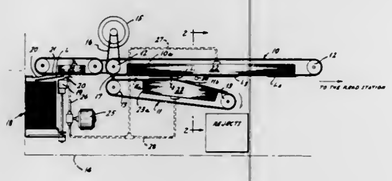
An improved buckle folder fold roller comprises a roller body having a series of axially spaced metal bands and alternating resilient collars of greater width than the metal bands. The resilient collars are secured to the roller body in a prescribed manner to have a controllably larger diameter than

the metal bands so that they engage the sheet material to be folded prior to the metal bands and thereafter maintain



precise control of the sheets as they proceed through a nip comprised of coacting fold rollers arranged in a prescribed manner.

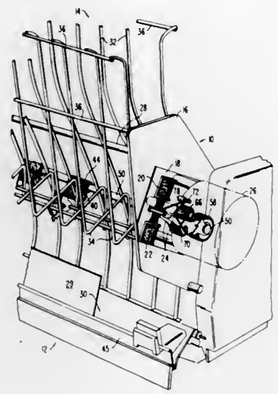
3,796,424
DOCUMENT HANDLING APPARATUS
Ralph W. Fox, Blue Bell, Pa., assignor to Philco-Ford Corporation, Blue Bell, Pa.
Filed Apr. 9, 1973, Ser. No. 349,410
Int. Cl. R65h *5/00*
U.S. Cl. 271—1 **9 Claims**



Document transporting apparatus for use in post office mail scanning equipment, including vacuum-operated means for separating doubled documents and a light source and cooperative photo-responsive means for sensing the presence of folded documents, to prevent interference with functioning of the transporting equipment or damage to the documents. The light source and photo-responsive means define an optical axis so disposed that a document, having folded portions which are not secured in face-to-face relation and which might interfere with proper functioning, interrupts the light and energizes means for preventing interference or damage.

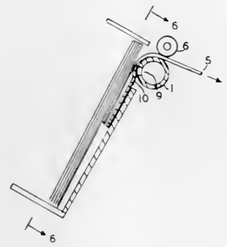
3,796,425
LEDGER HANDLING DEVICE
Harold M. Frederick, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed Mar. 10, 1972, Ser. No. 233,562
Int. Cl. B65h *29/20;* **F16h** *15/00*
U.S. Cl. 271—3 **8 Claims**

Provided is a stacking, parking and feeding device associated with a ledger or sheet stacking retainer, the combination feeder and stacker being utilizable in association with the ledger transport apparatus of an accounting machine. Mounted to the front of the accounting machine transport apparatus, the combination device provides feeder means for receiving ledger-type records ejected from the accounting machine and for advanceable feeding such records into the stacking retainer from which they may be manually removed or returned by the feeder means to the transport apparatus for reentry into the accounting machine. The stacking retainer is provided with a stacking position and a park position, the stacking position being accessible for the manual removal of processed records, and the park position representing an intermediate position from which records may selectively be returned by the feeder means to the transport mechanism for continued processing. The feeder means utilized provides a



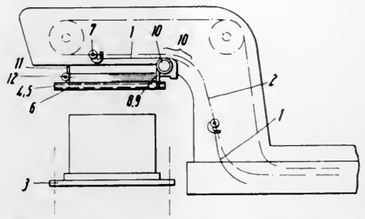
plurality of pressure rollers fixed in opposed relationship to a pair of rotatable parallel shafts, one of the shafts being bidirectionally rotatable by reversible drive means to thereby advance a received record into either the stacking position or the park position of the stacking retainer, or to return a record from the park position to the transport apparatus of the accounting machine.

3,796,426
DOCUMENT FEEDER
Frank J. Schilpf, North Merrick, N.Y., assignor to Halm Instrument Co., Inc., Glen Head, N.Y.
Filed Dec. 8, 1972, Ser. No. 313,400
Int. Cl. B65h *3/10*
U.S. Cl. 271—100 **2 Claims**



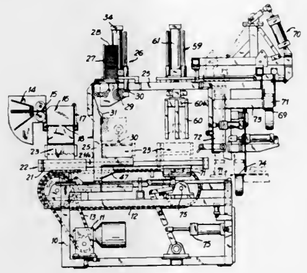
Apparatus for feeding documents having an adhesive area thereon. An oscillatably mounted vacuum sucker has a curved surface and a slot. A rack holds a stack of documents in operative contact with the sucker. The sucker is oscillated to separate the closest document from said stack. Take-away roller means are connected to remove said document from said sucker. A mask is mounted on the bottom of said rack to cover said slot in one position of said slot whereby said adhesive areas do not come in contact with said slots in said sucker as the document is pulled across the sucker.

3,796,427
SHEET STACKING DEVICES FOR PRINTING MACHINES
Hans Reutter, Dortmund-Korne; Fritz Sendlinger, Dortmund, and Hans Alix, Offenbach am Main, all of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach am Main, Germany
Filed Sept. 23, 1971, Ser. No. 183,129
Claims priority, application Germany, Sept. 29, 1970, 2047808
Int. Cl. B65h *31/00*
U.S. Cl. 271—189 **5 Claims**



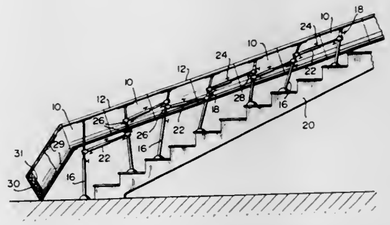
The invention is concerned with sheet stacking devices for printing machines in which an auxiliary stack table is slid into position above a main stack table, and serves to solve the problem which arises when small format sheets are stacked and rear abutments are brought forward so that they foul the edge of the auxiliary table and prevent its being slid home. In the invention the rear abutments are linked so that they can be rocked clear of the auxuliary table under control of a first abutment. The first abutment is pivotally mounted so that it can be moved clear of the table during the table movement. In one embodiment the first abutment pivot is arranged parallel with the advancing edge of the table and is moved clear of the table path by contact with that edge. In another embodiment the first abutment is linked to a lever carrying a roller which engages a cam on the table. In a third embodiment the first abutment is movable by an electromagnet which is energised by a microswitch actuatable by a cam on the table.

3,796,428
PACKAGING MACHINE
Ronald J. O'Shea, Somerville; Bernd W. Haase, Berkeley Hts., and Albert W. Hawkins, Princeton, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.
Division of Ser. No. 30,069, April 20, 1970, Pat. No. 3,656,271. This application Apr. 17, 1972, Ser. No. 244,776
Int. Cl. B65h *31/34*
U.S. Cl. 271—210 **3 Claims**



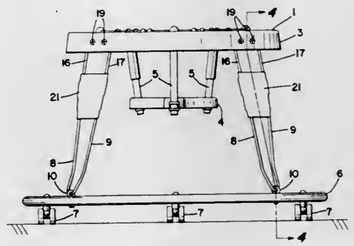
Apparatus and method are provided for automatically loading a desired quantity of flat, flexible bags into dispensing cartons which comprises, in combination, a stacker mounted adjacent to and aligned with a completed bag dispenser, said stacker having vibration means for automatically collecting a desired number of completed bags in an aligned stack, means for conveying said aligned stack of bags to a carton loading station, means for depositing a stiffening member over a predetermined portion of said aligned stack of bags, means for folding said stack of bags, means for conveying an empty carton from a continuous conveyor of empty cartons to said carton loading station, and means for automatically folding and stuffing said stack of bags into an empty carton at said carton loading station.

3,796,429
PLAYGROUND SLIDE
Edwin T. Johnston, 41 Cochran Pl., Valley Stream, N.Y.
Filed Nov. 29, 1972, Ser. No. 310,439
Int. Cl. A63g *21/00*
U.S. Cl. 272—56.5 R **1 Claim**



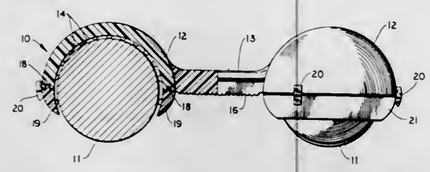
An adjustable and portable playground slide adapted for placement on, for example, a conventional staircase. The slide is composed of detachable section channels, with telescoping legs for determining the angle of incline, which are uniquely braced together by means of extensible members to insure the safety of the user without impairing the detachability of the sections which serve to facilitate assembly and portage.

3,796,430
COLLAPSIBLE BABY WALKER WITH PROTECTIVE COVERS FOR LEG JOINTS THEREOF
Kunio Sudo, Tokyo, Japan, assignor to Century Products, Inc., Cleveland, Ohio
Filed Nov. 15, 1972, Ser. No. 306,738
Int. Cl. A47d *13/04*
U.S. Cl. 272—70.3 **1 Claim**



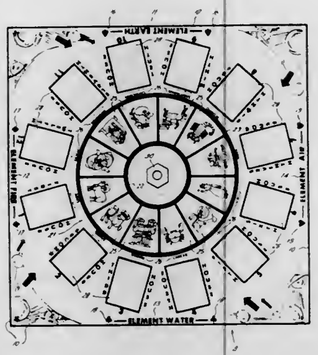
A baby walker is disclosed having foldable legs, whereby the walker may be collapsed into a substantially flat form for shipping or transportation in a small carton for convenience in handling or storage. The foldable legs have a hinged joint, which is self-locking when the walker is in operative position, but can be easily unlocked when the legs are to be folded. A soft plastic covering is provided for covering the leg joints to prevent injury to the infant or damage to furniture, this covering being movable downwardly along the legs to expose the joints when the legs are to be folded.

3,796,431
EXERCISING DEVICE CONTAINING ROTATABLE WEIGHTS
James R. Sinyard, Rt. 2, Villa Rica, Ga.
Filed Apr. 26, 1973, Ser. No. 354,656
Int. Cl. A63b *11/04*
U.S. Cl. 272—84 **5 Claims**



An exercising device is described which contains spherically-shaped weights which are rotatable, allowing the device to be used by rolling the device along a surface such as a floor or wall in addition to lifting in the conventional manner.

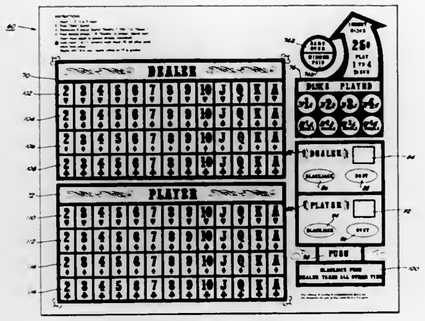
3,796,432
ASTROLOGICAL AND ZODIAC APPARATUS
Ronald J. Beakley, 2408 Elmen, Houston, Tex.
Filed May 22, 1972, Ser. No. 255,347
Int. Cl. A63f *9/00*
U.S. Cl. 273—134 C **4 Claims**



The present invention provides a game board for playing an educational and entertaining game of astrology and the zodiac. Plural side edges of the surface of the game board are each allocated to one of the elements: fire, air, earth, water. A circular segment formed in a center portion of the game board has plural zodiac segments formed thereon, each segment corresponding to one of the twelve signs of the zodiac. Planet house segments are formed on the gameboard aligned with the zodiac segments in accordance with the astrological relation between the zodiac signs and the planet houses. A spinner is mounted with the game board for rotational movement with respect to the game board to randomly indicate different ones of said plural zodiac elements and control movement of playing pieces allocated to each player of the game.

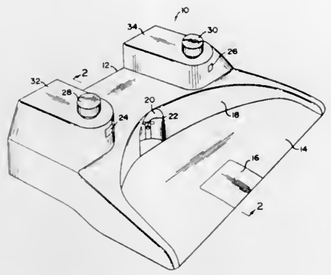
3,796,433
ELECTRONIC GAMING DEVICE SIMULATING THE GAME OF BLACKJACK
Walter C. Fraley, Kensington, Calif; James T. Hendrix, Reno, Nev., and Charles A. Bell, Anaheim, Calif., assignors to Hydro-Search, Inc., Buena Park, Calif.
Filed June 14, 1971, Ser. No. 152,533
Int. Cl. A63f *1/00*
U.S. Cl. 273—138 A **14 Claims**

A disk-operated electronic gaming device for playing a simulated game of blackjack is disclosed. The device includes operating controls for a player to control his play of the game; a display panel to show the progress of the game and its result; disk-handling equipment for receiving metallic disks and returning an appropriate number of disks to the player based on the results of the play; a solid state, fixed logic, digital com-



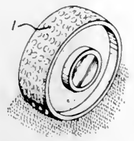
puter to automatically determine the play of the game and to compute the results of this play; and a power supply to provide power necessary for operation of the computer, the display panel and the disk-handling equipment. The apparatus is housed in a compact, attractive, utilitarian cabinet.

3,796,434
GOLF PUTTING PRACTICE DEVICE
Jack J. Moss, 640 Ardleight Dr., Akron, Ohio, and Archie F. Hunt, 129 Kent Ct., Akron, Ohio
Filed Apr. 30, 1973, Ser. No. 355,736
Int. Cl. A63b *57/00, 69/36*
U.S. Cl. 273—179 A **10 Claims**



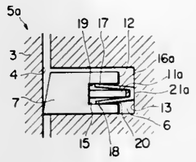
Disclosed is a unique game device whereby a golfer may improve his putting skill. Fundamentally, the device comprises an arcuate shaped surface partially enclosed by a vertical wall, the wall having therein a ball receptacle. The arcuate surface has thereon a tongue which, when a ball passes thereover, energizes a solenoid actuated ratchet counter indicating that a hole has been made. The ball receptacle has contained therein a second switch which, when actuated by the balls passing across the arcuate surface, energizes a second solenoid actuated ratchet counter indicating that a stroke has been taken. The switch within the ball receptacle further actuates a plunger which kicks the ball out of the receptacle and back to the golfer. The two ratchet counters provide a means whereby a golfer may readily determine his putting accuracy on the basis of the ratio of holes made to strokes taken.

3,796,435
GOLF PUTTING PRACTICE DEVICE
James Thomas Dale, 71-973 San Jacinto Dr., Rancho Mirage, Calif.
Filed Sept. 7, 1972, Ser. No. 287,055
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 C **2 Claims**



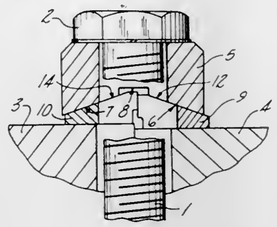
A wheel-shaped device having a dimpled peripheral surface, and a diameter and weight corresponding to that of a U.S.G.A. approved golf ball. About 75 percent of the weight is concentrated in a heavy metal cylinder having approximately a one-half inch diameter and axially distributed near the central portion of the device. The object is to provide an exaggerated off-target directional motion of the device when it is struck by a golf putter club at an improper angle. Lightweight spherical dimpled elements may be attached to opposite sides of the device to produce the appearance of a golf ball in the shape of a sphere.

3,796,436
OIL SEAL DEVICE FOR ROTARY PISTON INTERNAL COMBUSTION ENGINE
Noriyuki Kurio, Hiroshima, and Hiroshi Minegishi, Kawaguchi, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima and Nippon Piston Ring, Co., Ltd., Tokyo, both of, Japan
Filed Oct. 6, 1972, Ser. No. 295,782
Claims priority, application Japan, Oct. 8, 1971, 46-78636
Int. Cl. F16j *15/34*
U.S. Cl. 277—81 P **16 Claims**



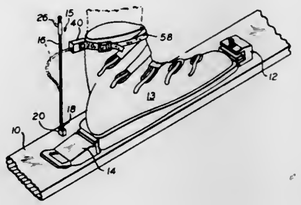
In a rotary piston internal combustion engine comprising a center housing having a trochoidal inner peripheral surface, side housings provided at both sides of said center housing, a three apexed rotary piston is provided through an eccentric shaft within a casing formed by said center and side housings. An oil seal device is disposed in an annular groove formed on a thrust surface of the rotary piston including an oil seal ring having an annular recess or an annular step on the rear portion thereof. A U-shaped elastic seal ring is disposed in said annular recess or step and has two lips slidably and sealingly contacting at least one radially facing surface of said annular recess, said annular step or said annular groove, and a spring is disposed between said oil seal ring and said U-shaped elastic seal ring for pressing said oil seal ring and said U-shaped elastic sealing in opposite axial directions.

3,796,437
BOLTING ASSEMBLY
Jean Nickly, Lyon, France, assignor to Automobiles M. Berliet, Lyon, France
Filed Mar. 9, 1972, Ser. No. 233,159
Int. Cl. F16j *9/06;* **B65d** *53/00*
U.S. Cl. 277—166 **4 Claims**



A bolting assembly adapted to bear tightly against two adjacent components irrespective of a difference in level therebetween and includes a washer, having a substantially V-shaped recess extending across its face and remote from the head of a bolt. Two wedge-shaped packing pieces are positioned between the washer and the two components. The packing pieces each have an inclined face to bear against associated inclined faces of the washer.

3,796,438
RUNAWAY BINDING ASSEMBLY FOR SKIS
Arthur L. Zimmet, 73-12 35th Ave., Jackson Heights, N.Y.
Filed Feb. 16, 1972, Ser. No. 226,735
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 N **2 Claims**

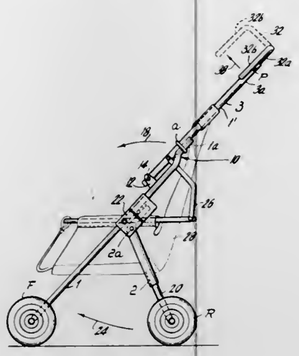


A runaway binding assembly for skis comprising an elongated member, having opposing ends and means for connecting one end of said elongated member to a ski with the member in a desired normal position, said member being resiliently deformable in a plurality of directions from said normal position; and a locking member for releasably locking the other end of the elongated member therein. The locking member is securable to a skier such as, for example, by being directly attached to a ski boot or by being bound about such boot or the skier's leg.

3,796,439
FOLDING BABY CARRIAGE WHICH CAN BE CARRIED ON THE ARM
Giuseppe Perego, Via De Gasperi, 50, Arcore, Italy
Filed July 12, 1972, Ser. No. 271,111
Claims priority, application Italy, Feb. 26, 1972, 21048/72
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 R **6 Claims**

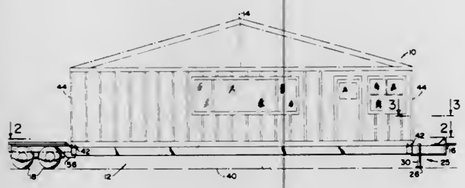
A baby carriage comprises a front frame having a lower end with a front wheel set and one or more rear wheels which are

supported on a bracket of the front frame so that they may be shifted rearwardly to an operating position or folded into a collapsed position. The rear wheels are also carried on rods which may be pivoted in order to shift the rear wheels out of axial alignment with the running direction. The front frame also provides a pivotal support for a handle which comprises two U-shaped members which have first leg portions which



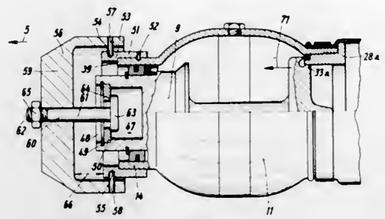
are pivotal to a central upward extension of the front frame and mounted so that they may be shifted between an outwardly extending position in which they extend in opposite relative directions to provide a pushing handle and to a folded position in which they are overlapped and provide a carrying handle which may be carried by the operator's arm.

3,796,440
TRAILER
Maurice F. Shave, 5319 Barton Rd., North Ridgeville, Ohio
Filed July 17, 1972, Ser. No. 272,189
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 T **2 Claims**



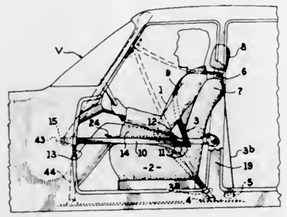
A trailer for transporting a prefabricated section of a building, which section includes a roof bridging at least two sidewalls, one mounted near the rear of the trailer and the other near the front of the trailer. The trailer includes front, middle and rear frame portions. A towing connection is mounted on the front frame portion, the building section is supported on the middle portion and the trailer wheels are attached below the rear portion. Each sidewall of the building section is supported in the cavity of a channel beam which is welded to the upper surface of a crossbeam; the two crossbeams bridge across and are attached to one or more longitudinal beams which extend the full length of the trailer between the two sidewalls of the building. The joined longitudinal beams and crossbeams form a support section which comprises the middle frame portion. A vertical offset between the middle and rear frame portions allows the top of the generally rectangular midddle section to be below the top of the wheels mounted to its rear. According to one embodiment, the longitudinal beam or beams are formed in readily separable sections so that the overall length of the trailer can be varied.

3,796,441
SAFETY DEVICE FOR THE PROTECTION OF VEHICLE AND AIRPLANE PASSENGERS
Artur Fohl, Schelmenwasenstrasse 68, 7061 Haubersbronn, Germany
Filed Sept. 28, 1971, Ser. No. 184,496
Claims priority, application Germany, Sept. 29, 1970, 2047759
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **38 Claims**



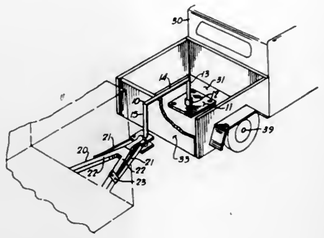
An inflatable bag safety device for vehicle passengers in which a compressed air container is connected to the bag and has therein a valve member in the form of a piston moveable upon impact of the vehicle, as in a collision, to inflate the bag. An inertia member pivoted to the container and connected to the piston is sensitive to lateral acceleration of the vehicle for urging the piston toward open position.

3,796,442
SAFETY BELT DEVICE FOR A VEHICLE
Gerard Mauron, Versailles, and Georges Cognard, Colombes, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of, France
Filed Nov. 22, 1971, Ser. No. 200,813
Claims priority, application France, Nov. 27, 1970, 70.42686; Mar. 11, 1971, 71.08522; Oct. 25, 1971, 71.38253
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 SB **16 Claims**



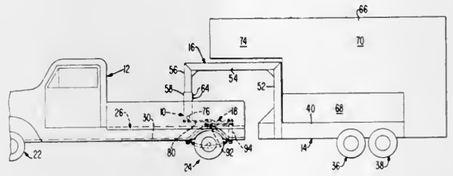
A safety device for a seat in a vehicle body, comprising a safety belt and an arm pivotable between a first position and a second position. The belt is connected to the arm and is held in position of utilization in front of the occupant of the seat when the arm is in the second position. When the arm is in the first position the belt is in the inoperative position and the arm and/or the belt hinders the occupant. This encourages the occupant to use the safety device at all times.

3,796,443
TRACTOR RIG AND TRAILER HITCH
J. Warren Crutchfield, Palms, Calif., assignor to The Raymond Lee Organization Inc., New York, N.Y., a part interest
Filed Dec. 30, 1971, Ser. No. 213,896
Int. Cl. B62d *53/04*
U.S. Cl. 280—406 A **3 Claims**



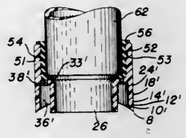
An improved trailer towing hitch device in which the towing bar is fastened to the tractor directly above the tractor rear axle, with combined lift and anti-sway bars which are attached to the conventional "A" frame trailer hitch unit, said anti-sway bars being readily disconnected from the tractor towing mechanism, independently of the ball and socket connection of the trailer hitch to the towing bar.

3,796,444
TRUCK-TRAILER COMBINATION WITH IMPROVED HITCH
William K. Hixon, 3494 Granite Creek Rd., Scotts Valley, Calif.
Filed Sept. 5, 1972, Ser. No. 286,370
Int. Cl. B62d *59/00*
U.S. Cl. 280—483 **11 Claims**



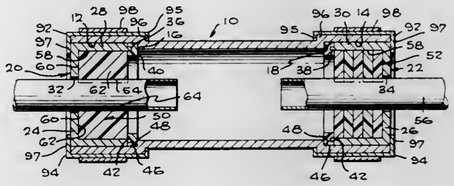
An improved hitch assembly for a truck-trailer combination of the type using a pick-up truck wherein the hitch assembly includes a beam secured to a pair of spaced rigid, transverse members connected to the frame of the pick-up truck in a manner such that a hitch ball can be adjustably secured to the front end of the beam and forwardly of both of the rigid members. The hitch ball can then be connected to a vertical segment of a gooseneck tongue on the trailer. The ratio of the distance between the hitch ball and one of the transverse members and the distance between the two transverse members can be selected to assure proper load distribution between the front and rear wheels of the truck and to provide control of the forward movement of the truck when side loads are exerted on the trailer. An improved sleeper unit for attachment to the truck bed forwardly of the hitch is also disclosed.

3,796,445
PIPE SADDLE
Fred R. Strott, Arvada, Colo., assignor to Rimrock Enterprises Inc., Colorado City, Colo.
Filed Dec. 29, 1971, Ser. No. 213,394
Int. Cl. F16l *5/00*
U.S. Cl. 285—4 **2 Claims**



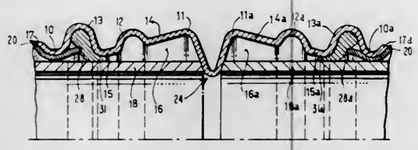
A saddle component for use when making connections at intermediate points on installed or uninterrupted main lines. The saddle provides an inner stub for extension through a cut hole in the main line and a flange receptacle thereabove for reception of a branch line pipe. A downwardly extending skirt provides with said stub a recess for seal materials. The skirt is marked to facilitate fabrication of efficient transition shapes adapting the saddle for use on various size main lines. A diaphragm section separates the flange from said stub and skirt and provides a flat shoulder for mating contact with the end of the branch line pipe. Openings through the diaphragm section provide access to said seal recess to facilitate placement of seal materials in the recess.

3,796,446
CONNECTOR
Harold Shire, Los Angeles, and Fred Greenwald, Southgate, both of Calif., assignors to General Connectors Corporation, Burbank, Calif.
Division of Ser. No. 42,244, June 1, 1970. This application Dec. 10, 1971, Ser. No. 206,964
Int. Cl. F16l *17/02*
U.S. Cl. 285—110 **6 Claims**



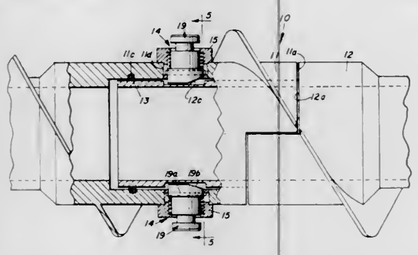
The connecter comprises an open ended tube. Cup shaped closures are removably attached to the ends of the tube, a seal is mounted in each cup shaped closure. Both the seal and the cup shaped closure have aligned pipe receiving openings. These openings are designed to snugly receive the pipes to be connected. With this arrangement when pipes are inserted in the opening in a cup shaped closure and the associated seal, the outer surface of the pipe is in sealing engagement with the surface of the opening in the seal. Consequently the seals inside the cup shaped closures are isolated from the effects of temperature, moisture, and corrosive gasses outside the tube. Means may be provided for compressing the ends of the tube and the walls of the cup shaped closure so that the seal may be squeezed to sealingly engage the pipes should leakage occur.

3,796,447
PIPE CONNECTING PIECE AND PIPE CONNECTION OBTAINED BY MEANS THEREOF
Warner Jan de Putter, Hardenberg, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwolle, Netherlands
Filed Oct. 21, 1971, Ser. No. 191,400
Int. Cl. F16l *21/04*
U.S. Cl. 285—235 **1 Claim**



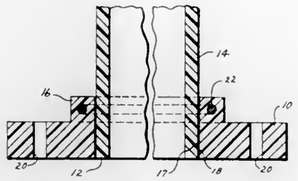
A pipe connection comprising a corrugated pipe connection piece of thermoplastic material, and two male pipe parts, the pipe connection piece being provided with four crests and a narrowing smaller than the inner diameter of the connection piece being situated symmetrically with respect to the crests. A rubber sealing ring is maintained in a crest by means of a maintaining ring cooperating clampingly with a wave valley of the connection piece.

3,796,448
QUICK ACTING CONNECTOR FOR TELESCOPICALLY JOINED PIPE ENDS AND THE LIKE
Joseph D. Ringkamp, Clarks Summit, Pa., assignor to Acker Drill Company, Inc., Clarks Summit, Pa.
Filed Sept. 15, 1972, Ser. No. 289,721
Int. Cl. F16l *39/00*
U.S. Cl. 285—317 **7 Claims**



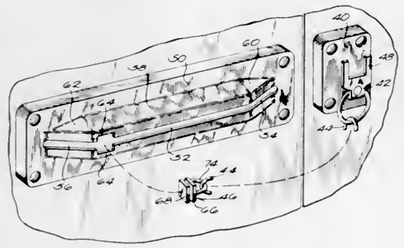
A quick connect and release locking device for telescopically joined together tubular sections or telescopically joined together tubular auger socket and tubular auger shank ends is provided. Spring pressed pins mounted in the wall of the socket extend into recesses in the tubular wall of the auger shank. Cam surfaces on the inner ends of the spring pressed pins moved by the end of the shank cause the pins to move outwardly thereby allowing the telescoping together of the socket and shank until the recesses in the shank wall receive the inner ends of the pins. The outer ends of the spring pressed pins have a reduced neck portion. The pins may be moved out by prying with a screw driver or a claw hammer. A special tool is also provided that has arms with bifurcated ends that fit over the reduced neck portions of the pins to move the pins radially outward against their springs. The operating tool has a main body with a circular-like recess at its center and oppositely disposed radially extending bores that receive plungers attached to the arms that are held together by a spring. A circular-like plate is received in the recess and it has cam surfaces that move the pins out and likewise permit them to move in. An axial shaft mounts the circular plate to the main body and an operating handle is attached to the axial shaft. Suitable slots are provided in the main body that receive and guide pins extending transversely through the plungers that hold the plungers in their bores.

3,796,449
REINFORCED FLANGE FOR PLASTIC PIPE
Hugh T. McLaughlin, Santa Ana, and Harlan H. Kline, Diamond Bar, both of Calif., assignors to Ameron, Inc., Monterey Park, Calif.
Filed Apr. 28, 1972, Ser. No. 248,737
Int. Cl. F16l *9/12*
U.S. Cl. 285—405 **12 Claims**



An improved flange for plastic pipe includes a reinforcing ring preferably embedded in a hub of the flange. The reinforcing ring is made of a material having greater strength than that of pipe or flange. The reinforced plastic flange improves resistance to hoop expansion of the plastic pipe, and increases the rupture strength of the flange.

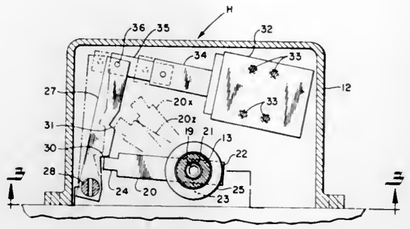
3,796,450
SECURITY CHAIN
Donald A. Schulz, 2402 N. 118th St., Milwaukee, Wis.
Filed Dec. 4, 1972, Ser. No. 312,020
Int. Cl. E05c *17/36*
U.S. Cl. 292—264 **6 Claims**



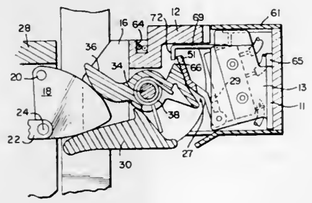
A door safety chain in which the slide track does not terminate at the end away from the edge of the door but re-enters the base, the slide track being notched to permit removal of the slide carrying the safety chain in a direction toward the door edge and at an angle to the track.

3,796,451
DOOR HOLDER WITH ELECTRICAL CONTROL
Jerald Schultz, Woodmere, N.Y., assignor to Eaton Corporation, Cleveland, Ohio
Filed Apr. 26, 1972, Ser. No. 247,534
Int. Cl. E05c *17/58*
U.S. Cl. 292—263 **10 Claims**

A door holder which is mounted on the top portion of a door frame has a controlled shaft adapted to be integrally secured to an arm of a door closer on the door, replacing the usual simple pivot on the frame. A holder lever having a considerable length rotates with the shaft and may be engaged by detent cam surfaces on a pivoted latch lever for holding the door when an electromagnet applies pressure to the latch lever. The latch lever is somewhat longer than the holder lever, and a preferred angle of the detent cam surfaces is 3° relatively to the holder lever, enabling the electromagnet to act with moderate pressure to hold the door but yielding to permit manual closing of the door. Particularly, the detent surfaces of the latch lever have reversed shapes for holding the holder lever against movement in each direction, being effective to hold the door in two positions selectively when the holder shaft is connected to a type of door closer having an arm that reverses its motion during a single closing movement of the door.



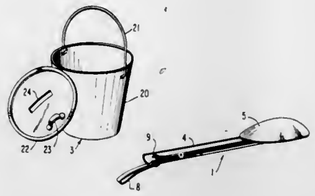
3,796,452
SWITCH ASSEMBLY FOR ELECTRIC STRIKE
John R. Foster, and Larry R. Hunt, both of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.
Filed May 22, 1972, Ser. No. 255,526
Int. Cl. E05c *3/12*
U.S. Cl. 292—341.16 **16 Claims**



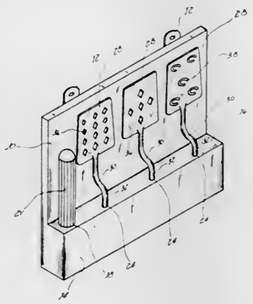
An improvement upon the disclosure of U. S. Pat. No. 3,640,560 which includes the provision of a switch assembly which may be integrated and wired in the open and may then be readily slipped into a compartment in a frame which supports the parts of the electrically-controlled strike mechanism of that patent to provide automatic control of signals or other electrically-actuated devices related to the operation of the patented strike mechanism.

3,796,453
DOGGIE MAID
Lillian P. Grimes, 600 3rd St. S.W., Washington, D.C.
Filed Sept. 26, 1972, Ser. No. 292,467
Int. Cl. A47l *13/52*
U.S. Cl. 294—1 R **1 Claim**

An apparatus which enables pet owners to remove pet excrement from unwanted areas and to deposit it in more acceptable locations, for instance at the gutter side of the curb. The apparatus comprises a shovel having a handle member and a collection member capable of being locked in one of two positions, a rake having a handle member and curved prongs at one end thereof, and a pail comprised of a container and a top having an opening therein. The excrement may be moved with the use of the rake onto the collection member of the shovel and then deposited at a more acceptable location. The rake is stored in the concave handle member of the shovel and the shovel is inserted through the opening in the container top for storage.



3,796,454
PANCAKE TURNERS
Allen O. Williamson, and George Spector, both of c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y.
Filed Aug. 9, 1972, Ser. No. 278,948
Int. Cl. A47j *43/28*
U.S. Cl. 294—7 **1 Claim**

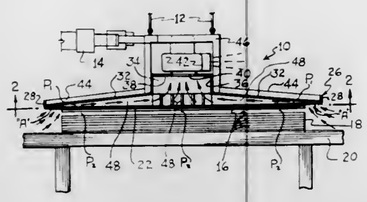


Apparatus used in cooking pancakes comprising: a flat vertical plate having an enlarged bottom section with a horizontally elongated flat top lip, the section having four vertical bores extending downward from the lip. These pancake turning tools each have an elongated member with means at a free end adapted to detachably engage one end of an elongated handle. The handle is disposed detachably in one bore. The members, means pointing downward, are disposed in other corresponding bores.

3,796,455
AIR FLOW ACTUATED OVERHEAD PICKUP DEVICE FOR LIMP SHEET MATERIALS
Torsten H. Linkbom, Brookfield, Conn., assignor to Unimation, Inc., Bethel, Conn.
Filed Sept. 5, 1972, Ser. No. 286,286
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 B **15 Claims**

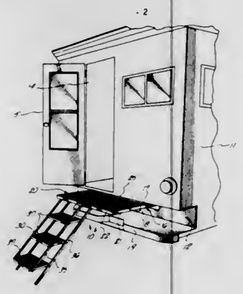
An air flow actuated overhead pickup device for discrete pieces of limp sheet material comprises a perforated support

member for contact with the upper surface of the pieces of material to be picked up, said support member being dimensioned to define an outer marginal edge portion extending outwardly of the peripheral outer edge of the piece of sheet material being handled; means defining a plurality of inwardly convergent, high velocity, air flow channels extending from segments of said outer edge portion inwardly toward a common plenum chamber centrally positioned above the support



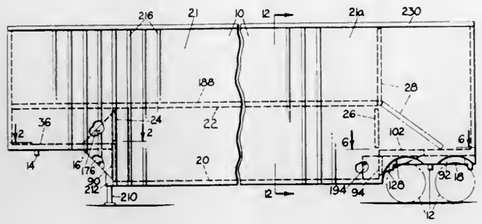
member, said air flow channels including an increasing flow cross section toward the inner ends adjacent the plenum chamber thereby reducing the air flow velocity below that adjacent the outer edge portion; and fan means connected to the plenum chamber for maintaining a high velocity air flow inwardly through the channels, said fan means having an operating characteristic of essentially constant pressure over a broad volume range.

3,796,456
LADDER AND PLATFORM ASSEMBLY
Lyle L. Bergeson, 152 W. Magna Vista, Arcadia, Calif., and Larry K. Arnot, 517 Melcanyon Rd., Duarte, Calif.
Filed Mar. 30, 1972, Ser. No. 239,592
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 R **10 Claims**



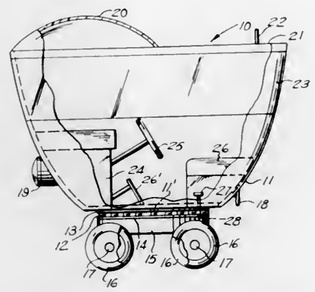
A ladder and platform assembly is disclosed for utilization with conventional rear-access campers. The assembly comprises a fixed rectangular frame having two opposed side channels forming a track for a movable rectangular frame. The movable frame includes two opposed side rails slidably mounted within the side channels of the fixed frame. The movable frame also includes a pair of parallel lateral beams located at the rearward end thereof for supporting a platform section. Upon installation, the movable frame is adapted to slide along the side channels to enable the platform section to extend out of the rearward end of the camper, directly below the entryway. The movable frame also includes a center rail extending longitudinally along the movable frame. The ladder comprises a rectangular carriage having two sides that are adapted to slide within the frame side rails and the center rail. The ladder further includes a first pair of side rails pivotally connected to the forward end of the carriage and a second pair of side rails pivotally connected to the rearward end of the carriage. A plurality of rectangular step sections are pivotally connected at their corners to the two pairs of ladder side rails. During retraction, the ladder carriage is moved forwardly and the ladder side rails and steps are pivoted upwardly to lie flush within the movable frame. During extension, after the movable frame is extended rearwardly to expose the platform section, the ladder carriage is moved rearwardly and the ladder side rails and steps are pivoted downwardly until the bottom extremities of the ladder contacts the ground.

3,796,457
TRAILER CONSTRUCTION
Richard W. Hinchliff, Vancouver, Wash., assignor to Merritt Equipment Co., Portland, Oreg.
Filed Apr. 12, 1972, Ser. No. 243,275
Int. Cl. B62d *33/04*
U.S. Cl. 296—28 M **6 Claims**



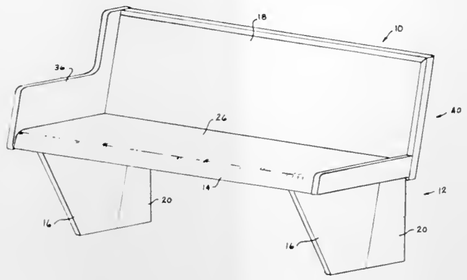
A trailer which although of extremely light weight is rugged in construction for hauling a maximum load with relation to the weight of the trailer. The trailer employs front and rear frame sub-assemblies formed of lightweight frame components. The front and rear frame sub-assemblies are spaced longitudinally from each other and are interconnected by longitudinal rails. Vertical and longitudinal reinforcement is accomplished by sheet metal side walls and upright channel-shaped posts. Each of the front and rear frame sub-assemblies has vertically elongated, side gusset plates secured integrally thereto as well as to the longitudinal rails, the sheet metal side walls, and some of the upright posts. The vehicle has decking secured to frame members for supporting the load, such decking being secured in place to add reinforcement to the trailer.

3,796,458
BOWL-SHAPED AUTOMOBILE
Katherine Minini, 445 S. 3rd St.-11, San Jose, Calif.
Filed Jan. 18, 1973, Ser. No. 324,759
Int. Cl. B60j *7/00*
U.S. Cl. 296—35 R **1 Claim**



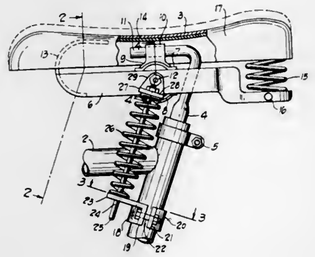
A bowl shaped toy automobile consisting primarily of a rotatable body structure supported upon ballbearings, the base of the device being supported upon wheels.

3,796,459
FOLDING CHURCH PEW
Jay B. Weber, New Holland, Pa., assignor to New Holland Planing Mill, Inc., New Holland, Pa.
Filed Dec. 4, 1972, Ser. No. 311,650
Int. Cl. A47c *4/00*
U.S. Cl. 297—60 **3 Claims**



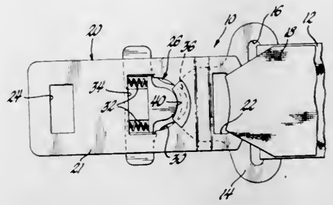
A folding pew having a rigid frame portion which includes a back support and a fixed leg, a movable pew set portion rotatably connected to the rigid frame and having movable legs rotatably connected to the underside of the bench whereby the pew may be folded into a compact unit for easy storage.

3,796,460
BICYCLE SADDLE MOUNT
Peter F. Potchen, 9654 Idlewood Dr., Brooklyn, Ohio
Filed Mar. 29, 1971, Ser. No. 128,936
Int. Cl. B62j *1/02*
U.S. Cl. 297—211 **7 Claims**



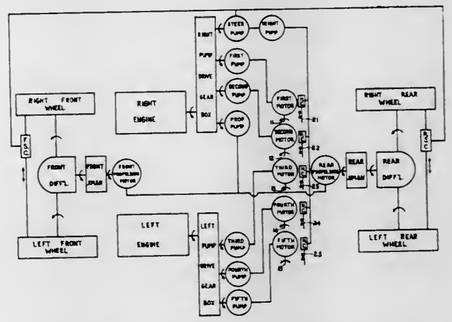
A saddle mount for bicycles and the like in which the frame and saddle post have close sliding engagement with each other and reciprocate relative to each other when the saddle is in use, spring seats are provided on the frame and saddle with the former being adjustable, a U-bolt extends through the spring seats on the frame and is secured to the saddle spring seats and a spring is disposed about each side of the U-bolt and co-acts between a spring seat on the frame and the corresponding spring seat on the saddle.

3,796,461
QUICK DISCONNECT SEAT BELT TONGUE
John S. Cucheran, Pleasant Ridge, and William L. Pringle, Grosse Pointe, both of Mich., assignors to Jim Robbins Seat Belt Company, Mt. Clemens, Mich.
Continuation-in-part of Ser. No. 865,265, Oct. 10, 1969, abandoned. This application Sept. 29, 1971, Ser. No. 184,915
Int. Cl. A62b *35/60;* **A44b** *17/00*
U.S. Cl. 297—389 **5 Claims**



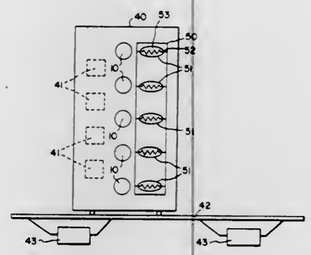
A seat belt assembly including an elongated tongue plate connected to a seat belt at one end and adapted for insertion into a buckle at the other end. The tongue plate has an opening with an arcuate extremity. A latch member is movably mounted on the tongue plate and has an arcuate extension which is biased toward the arcuate extremity of the opening. A shoulder strap connecting plate member has an arcuate hook portion adjacent one end which matingly engages the arcuate extremity opening and is maintained or biased into mechanical interlocking engagement with the tongue plate by the latch member.

3,796,462
MACHINERY FOR MULTIPLE GROOVING OF PAVEMENT
Donald C. Staab, Warrington, Pa., assignor to Cardinal Industries Incorporated, Conshohocken, Pa.
Continuation-in-part of Ser. No. 212,253, Dec. 27, 1971, Continuation-in-part of Ser. No. 212,475, Dec. 27, 1971. This application Sept. 15, 1972, Ser. No. 289,687
Int. Cl. E01c *23/09*
U.S. Cl. 299—39 **14 Claims**



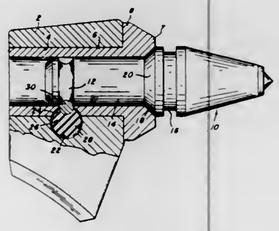
An hydraulic system is provided to perform the functions of vehicle propulsion and steering and of cutter rotation and height control in multiple grooving of pavement. Multiple cutter heads are controllable individually for use individually or in gangs. The load is distributed over a plurality of engines, each of which drives pumps for hydraulic motors adapted to rotate individual cutter heads separately or in unison.

3,796,463
PROCESS AND APPARATUS FOR MINING BY HYDROELECTRIC PULSED LIQUID JETS
Theodore T. Naydan, and Walter W. Aker, both of Schenectady, N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.
Division of Ser. No. 82,319, Oct. 20, 1970, Pat. No. 3,700,169. This application Apr. 20, 1972, Ser. No. 246,078
Int. Cl. E21c *25/60*
U.S. Cl. 299—14 **12 Claims**



Process and apparatus for mining by high energy pulsed liquid jets produced by the discharge of electrical energy through a relatively incompressible liquid in an essentially closed chamber having a shaped outlet nozzle.

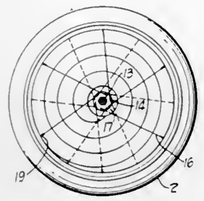
3,796,464
RESILIENT CONNECTION FOR MINING PICK AND BUSHING
Lloyd B. Hansen, and Charles S. Davis, both of Bridgeport, W. Va., assignors to Carmet Company, Pittsburgh, Pa.
Filed Sept. 27, 1972, Ser. No. 294,032
Int. Cl. E21c *25/46*
U.S. Cl. 299—86 **11 Claims**



A mining bit with a cylindrical shank has a support block with a longitudinal bore therethrough for receiving a bushing of hard material. The shank is rotatably received in the bushing. The bit is held from axial movement and the bushing from axial and rotational movement by means of a single keeper. The keeper has a body portion which is received in a transverse bore in the block and a matching opening in the bushing. The keeper also has a protuberance which extends into a circumferential groove in the bit shank. The protuberance is depressible to move it out of the groove.

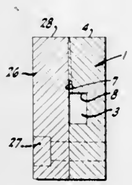
3,796,465
WHEEL GUARD
Robert P. Cordiak, 15701 Greendale Ave., Maple Heights, Ohio
Filed Mar. 17, 1972, Ser. No. 235,630
Int. Cl. B60b *7/02*
U.S. Cl. 301—37 SA **8 Claims**

A decorative and protective wheel guard for bicycles, tricycles, and other vehicles, and the like, comprising an elongated spiral member adapted to be weaved under and over the spokes of the vehicle wheel until fully seated and positioned



within the rim to protect against the driver or passenger putting a foot into the spokes and to provide a decorative and pleasing effect for the driver and observers.

3,796,466
GROOVED FLUID BEARING BAR
Cecil A. Lasch, Jr., Los Altos, Calif., assignor to Industrial Modular Systems Corporation, Santa Clara, Calif.
Division of Ser. No. 852,216, Aug. 22, 1969, Pat. No. 3,631,758. This application June 10, 1971, Ser. No. 151,935
Int. Cl. B65g *53/04*
U.S. Cl. 302—29 **9 Claims**

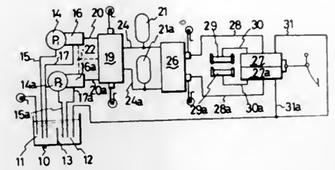


Process for forming a series of spaced, generally uniform, curved grooves of tapered configuration in a surface of a bar intended for use in a fluid bearing track structure or the like, and the grooved bar which results from utilizing such process. Material is cut or ground from the bar surface by a rotary cutter or cylindrical grinder, the axis of rotation of which is set at compound angles and is inclined in the direction of movement of the bar and also in a direction transverse to such direction of movement. Each of the curved grooves progressively decreases in depth and width from one end thereof towards its other end to define a nozzle configuration. In the preferred embodiment illustrated, the bar being grooved is moved continuously beneath a continuously rotating cutter.

3,796,467
HYDRAULIC POWER BRAKE SYSTEM
Masahiro Kito, Nagoya, and Atsumi Ueda, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Nov. 30, 1972, Ser. No. 310,853
Claims priority, application Japan, Dec. 4, 1971, 46-98019
Int. Cl. B60t *13/14*
U.S. Cl. 303—13 **5 Claims**

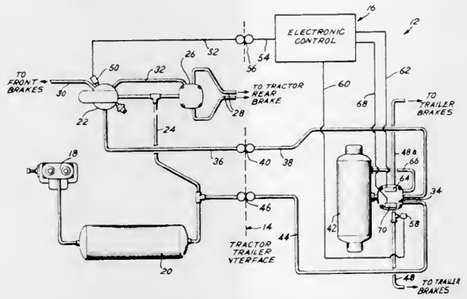
The invention relates to a hydraulic power brake system, comprising, a reservoir having two tanks, the two tanks being fluidically communicated or separated from each other in accordance with a predetermined liquid level thereof, a first power source connected with one of the two tanks and being

normally in the operating state, a second power source connected with the other tank and being normally in the non-operating state, a valve means actuating the second power



source when the first power source is damaged, and a fluid actuating means being operated by either of both power sources and connected with the other tank.

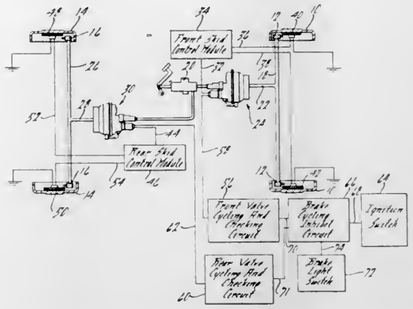
3,796,468
ELECTRO-PNEUMATIC CONTROL SYSTEM
Robert J. Morse; Robert D. Krieder, and Brian C. Deem, all of Elyria, Ohio, assignors to Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio
Filed Apr. 16, 1971, Ser. No. 134,572
Int. Cl. B60t *13/68*
U.S. Cl. 303—15 **18 Claims**



An electro-pneumatic braking system is disclosed for use on an air-braked vehicle. A conventional operator-operated brake control valve controls a relay valve which controls at least some of the brake actuators carried by the vehicle. An electronic control device compares the fluid pressure level at the delivery port of the brake control valve and at the brake actuators controlled by the relay valve. If the fluid pressure level at the delivery port of the brake control valve exceeds the pressure level at the brake actuators by more than a predetermined amount, a first error signal is generated which actuates a solenoid valve that causes the relay valve to initiate a brake application. If the pressure level at the brake actuators exceeds the pressure level at the delivery port of the brake control valve by more than a predetermined amount, a second error signal is generated which actuates a second solenoid valve that releases the relay valve, thereby also releasing the brakes of the vehicle.

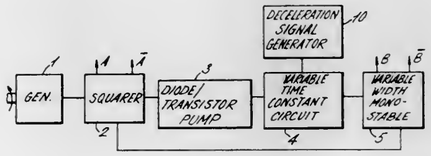
3,796,469
SKID CONTROL SYSTEM INCLUDING CYCLING AND CHECKING CIRCUIT FOR PLURAL MODULATING VALVE
William T. Birge, Plymouth, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Mar. 1, 1972, Ser. No. 230,853
Int. Cl. B60t *8/00*
U.S. Cl. 303—21 AF **26 Claims**

A skid control system including a first brake pressure modulating valve for the front wheels, a second brake pressure modulating valve for the rear wheels and an apparatus for automatically cycling and checking the valves independently of the skid control function in order to prevent deterioration of



the valve from inaction. A cycling inhibit unit is provided so that cycling of at least one of the valves is inhibited when the brakes are applied by the vehicle operator whereby the braking pressure to all of the brakes will not be relieved.

3,796,470
IMPROVEMENTS IN OR RELATING TO BRAKE CONTROL APPARATUS
Alan P. Goss, Carterton; Brian Shepherd, and David A. Williams, both of Witney, all of England, assignors to Smiths Industries Limited, London, England
Continuation of Ser. No. 845,319, July 28, 1969, abandoned. This application June 18, 1971, Ser. No. 154,639
Claims priority, application Great Britain, July 29, 1968, 36096/68
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 CG **14 Claims**

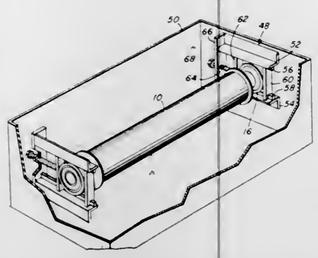


A brake control system in which electrical signals proportional to the speed of a braked wheel are compared with output signals derived from the electrical signals. The output signals are arranged to be in one phase relationship for normal braking and in another phase relationship whenever the braked wheel is about to lock. The phase relationship is changed by adjustment of the output signals, independently of the electrical signals, if the rate of change of the electrical signal exceeds a predetermined rate. The change of pulse relationship is sensed to initiate a brake release signal for preventing wheel-lock during braking.

3,796,471
CORROSION RESISTANT ROLL & BEARING ASSEMBLY
William J. Holm, Springfield, Vt., assignor to Riggs & Lombard, Inc., Lowell, Mass.
Filed Dec. 3, 1971, Ser. No. 204,551
Int. Cl. F16c *35/06*
U.S. Cl. 308—59 **1 Claim**

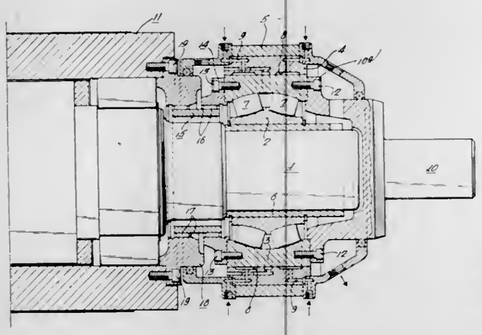
A corrosion resistant roll and bearing assembly are provided for use in equipment subject to contact with corrosive liquids

and gases. The bearing assembly is of the roller type and is fabricated from stainless steel components in a self-centering



configuration. The roll ends are mounted to brackets providing position adjustment means to permit alignment of the roll with respect to other rolls or the like.

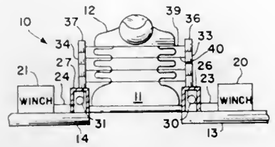
3,796,472
TRIPLE RING BEARINGS
Lars Martin Ingemar Fernlund, Hindas, Sweden, assignor to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands
Filed Oct. 13, 1972, Ser. No. 297,387
Claims priority, application Sweden, Dec. 2, 1971, 15429/71
Int. Cl. F16c *21/00*
U.S. Cl. 308—35 **3 Claims**



A bearing with three concentric bearing rings situated in the same plane which are rotatable in relation to each other and where the intermediate ring is intended to transmit a torque from one side of the bearing to the other, characterized by that the inner surface of the outer ring comprises hydrostatic bearing pockets to which a pressure fluid can be supplied, and that the inner surface of the intermediate ring constitutes one or more raceways for a rolling bearing, preferably a spherical roller bearing.

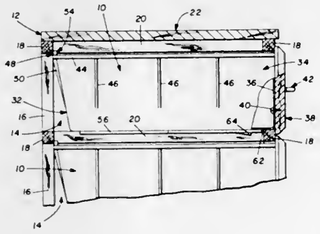
3,796,473
REEFING SYSTEM
Harry V. Fuller, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Division of Ser. No. 99,201, Dec. 17, 1970, Pat. No. 3,729,068. This application Dec. 29, 1972, Ser. No. 319,410
Int. Cl. A61g *11/00*
U.S. Cl. 312—1 **2 Claims**

A device for receiving a cable therethrough and permitting substantially free movement of the cable in a first direction but resisting cable movement in an opposite direction until the forces exerted thereon exceed a predetermined minimum and



thereafter permitting free cable movement in said opposite direction.

3,796,474
MOLDED PLASTIC DRAWER
Thomas S. Noneman; Thomas R. Smith, and John B. Stokes, all of Bryan, Ohio, assignors to Tomco Plastic Inc., Bryan, Ohio
Filed May 12, 1972, Ser. No. 252,847
Int. Cl. A47b *88/00*
U.S. Cl. 312—333 **20 Claims**

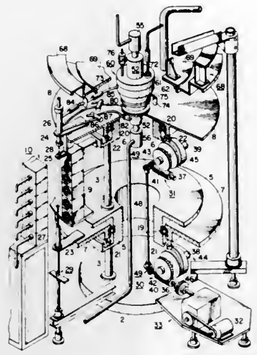


A molded plastic drawer for use in cabinets having central guide rails comprises a normally horizontally disposed bottom wall and front, side, and back walls extending upwardly from the bottom wall. The bottom wall is provided with reinforcing ribs including guiding portions which engage the lower guide rail of the cabinet to guide the drawer during movement between opened and closed conditions. The reinforcing ribs also include retaining portions which engage structure of the cabinet to normally retain the drawer in the closed condition. The side and back walls of the cabinet extend to horizontal lips and are provided with ribs which reinforce the walls and the lips. The horizontal lip of the back wall is positioned above the lips of the side wall and extends across the full width of the drawer to define an elongate shoulder positioned for engagement with structure of the cabinet when the drawer is in the opened condition to prevent the drawer from falling out of the cabinet. The upper portion of the back wall further comprises a groove which receives the upper guide rail of the cabinet and thereby cooperates with guiding portions of the reinforcing ribs on the bottom wall to guide the drawer during inward and outward movement relative to the cabinet.

3,796,475
APPARATUS FOR MANUFACTURING DISCHARGE LAMPS
Yasuhiko Yamamoto, Kusatou; Sugao Shiemada, Otsu, and Suguru Matsumo, Kusatsu, all of Japan, assignors to New Nippon Electric Company, Ltd., Osaka, Japan
Division of Ser. No. 178,749, Sept. 8, 1971, Pat. No. 3,749,468. This application Apr. 9, 1973, Ser. No. 349,636
Int. Cl. H01j *9/46*
U.S. Cl. 316—27 **5 Claims**

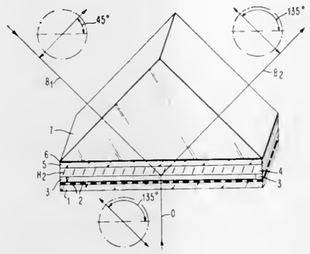
A discharge lamp manufacturing apparatus, especially for the manufacture of discharge lamps, is provided with a rotat-

ing central valve comprising an annular rotatable plate and an annular stationary plate. The valve is mounted so that the stationary plate is arranged above the rotatable plate. A cooling water tank is arranged in the space centrally of said valve. A driving system for the rotational parts employs reduction mechanisms in which the revolution of a driving device, which



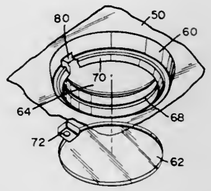
drives two turntables in synchronism, is transferred through a pair of cam means to each of said turntables through successively engageable pin rollers mounted on said turntables, said turntables carrying a plurality of spaced chucks for holding glass tube blanks. Each cam means is engaged with its curved surface by one of said pin rollers at a time whereby the turntables move intermittently and in synchronism.

3,796,476
METHOD OF MAKING TOTALLY INTERNALLY REFLECTED HOLOGRAMS
Albert Frosch; Walter Jaerisch; Arno Schmackpfeffer, all of Boeblingen, and Joerg Ziller, Ehningen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 27, 1972, Ser. No. 275,591
Claims priority, application Germany, Aug. 12, 1971, 2140408
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **2 Claims**



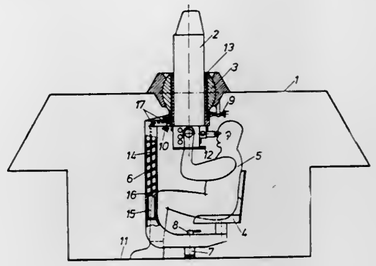
A method is described for making holograms by means of linearly polarized object and reference beams, the reference beam being reflected inside the photosensitive emulsion. The plane of polarization of a linearly polarized reference beam includes an angle of 45° with its plane of incidence. The beam is reflected under the critical angle of total internal reflection at the lower face of a photographic emulsion. The reflected beam is linearly polarized, too, its plane of polarization being turned by 90°, so that no interference between these two beams is possible. An object beam passes a mask and is linearly polarized vertically either to the reference beam or to the reflected beam so that only one hologram can be formed and no undesired interaction between two holograms is possible when the mask is reproduced for exposure of a photoresist-covered semiconductor wafer.

3,796,477
LENS HOUSING AND LENS COVER FOR OBJECTIVE LENS RING OF AN OPERATING MICROSCOPE
James Leonard Geraci, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Sept. 25, 1972, Ser. No. 292,148
Int. Cl. G02b *23/16*
U.S. Cl. 350—65 **5 Claims**



A flexible, resilient, distortable lens housing adapted to snugly receive the objective lens ring of the objective lens of an operating microscope is provided with a removable lens cover. The lens cover includes an easily accessible manipulative handle.

3,796,478
OPTICAL DEVICE AND SUPPORT IN A VEHICLE
Hermann Dierkes, Vellmar, Germany, assignor to Rheinstall Henschel Aktiengesellschaft, Kassel, Germany
Filed July 2, 1971, Ser. No. 159,127
Claims priority, application Germany, July 7, 1970, 2033589; Aug. 13, 1970, 2040284; Aug. 21, 1970, 2041603; Aug. 25, 1970, 2042089
Int. Cl. G02b *23/08, 23/16*
U.S. Cl. 350—85 **8 Claims**



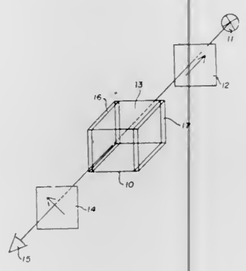
An arrangement for supporting an optical and/or electronic observation and measuring device in the top wall of a vehicle so that the upper objective end is above the top wall of the vehicle while the observer's end is below the top and inside the vehicle. The device is suspended from the top wall of the vehicle so as to be swingable like a pendulum in all directions. The arrangement includes a lock to hold the device against swinging when the vehicle is in motion and also includes fine leveling devices to adjust the axis of the device to a vertical position when the vehicle is stationary and further includes a device for adjusting the device angularly about its own axis. The device includes an observer's seat which is nontiltably connected to the optical device so as to swing therewith.

3,796,479

ELECTRO-OPTICAL LIGHT-MODULATION CELL UTILIZING A NEMATOGENIC MATERIAL WHICH EXHIBITS THE KERR EFFECT AT ISOTROPIC TEMPERATURES

Wolfgang Helfrich, Therwil; Martin Schadt, Arlesheim, and Hanspeter Scherrer, Therwil, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed July 11, 1972, Ser. No. 270,779
Int. Cl. G02f 1/16
U.S. Cl. 350—150 12 Claims



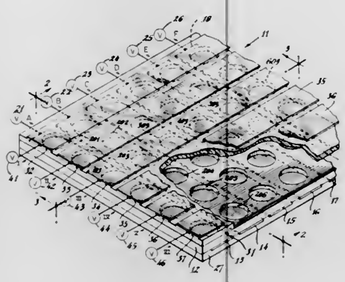
An electro-optical light-modulation cell having a dielectric disposed between electrodes and being comprised of a nematogenic fluid in the isotropic state, is described. Said dielectric, upon application of a voltage to the electrodes, becomes doubly refracting.

3,796,480

MEMBRANE LIGHT MODULATOR

Kendall Preston, Jr., New Haven; Julian Wasserman, Norwalk, and Edward T. Siebert, Danbury, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Dec. 26, 1968, Ser. No. 786,926
Int. Cl. G02f 1/28
U.S. Cl. 350—161 5 Claims



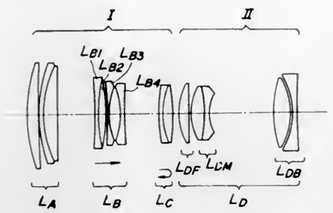
A collodion membrane coated with a plurality of spaced apart, reflective and conductive strips is stretched across a glass plate having an array of holes. The holes are arranged in rows and columns. Each strip is located over one row of holes. A separate electrode is located underneath each column of holes. Electric signals applied to the strips and electrodes produce electrostatic deflections in the portions of the membrane above the holes; the deflection over any one hole being dependent on the signal applied to the strip above the hole and the signal applied to the electrode below the hole. In use a beam of light striking the strips on the membrane is reflected and at the same time phase modulated.

3,796,481

VARIFOCAL LENS SYSTEMS

Toru Fujii, Tokyo, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Apr. 28, 1972, Ser. No. 248,537
Claims priority, application Japan, May 1, 1971, 46-29159; Jan. 14, 1972, 47-6465
Int. Cl. G02b 15/16
U.S. Cl. 350—184 4 Claims



This varifocal lens system or so-called zoom lens system has four groups of lenses of which the second group of lenses is constructed as 3 components and 4 lenses and defined by the following six conditions, i.e.

$$r_{B1} < 0 \quad \text{... (1)}$$

$$2.0\, f_B < r_{B1} < \infty \quad \text{... (2)}$$

$$0 \leqq (1/r_{B3}) - (1/r_{B4}) < 0.4/f_B \quad \text{... (3)}$$

$$0.5\, f_B < (r_{B5} + r_{B6}/2) < 2.0\, f_B \quad \text{... (4)}$$

$$0.02 < n_{B2} - n_{B1} \quad \text{... (5)}$$

$$20 < \nu_{B1} - \nu_{B2} \quad \text{... (6)}$$

where r_{Bi} (i=1, 2, ...) are radii of curvatures of the surfaces of the successive lenses from the front face of the first lens and inclusive of the surface in contact between the first and second lenses of the second group of lenses, n_{Bi} (i=1, 2, ...) are axial center thicknesses of or air spaces between the successive lenses of the second group of lenses, ν_{Bi} (i=1, 2, ...) are Abbe's numbers of the successive lenses of the second group of lenses and f_B is a composite focal length of the second group of lenses.

This second group of lenses defined as above described is combined with the fourth group of lenses which is constructed as three groups of lenses and defined by the following six conditions, i.e.

$$(f_{DF}/f_D) < 0.7 \quad \text{... (1)}$$

$$0.1 < n_{M2} - n_{M1} < 0.3 \quad \text{... (2)}$$

$$0.2 f_D < -r_{DB} < 0.4 f_D \quad \text{... (3)}$$

$$(1/f_{DB1} + 1/f_{DB2}/1/f_D) < 0.8 \quad \text{... (4)}$$

$$0 < t_{DB} < 0.3 f_D \quad \text{... (5)}$$

$$0.4 < \Sigma P_D < 1.0 \quad \text{... (6)}$$

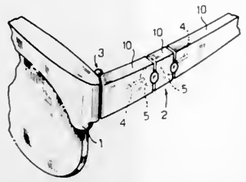
where f_D is a composite focal length of the fourth group of lenses L_D, f_{DF} is a focal length of the front group of lenses L_{DF}, n_{M1} and n_{M2} are refractive indexes of the front positive lens and back negative lens of the middle group of lenses L_{DM}, respectively, f_{DB1} and f_{DB2} are focal lengths of the front positive lens and back negative lens of the back group of lenses L_{DB}, respectively, t_{DB} is an air space between the front positive lens and the back negative lens of the back group of lenses L_{DB}, r_{DB} is a radius of curvature of the surface facing the air space of the front positive lens of the back group of lenses L_{DB}, and P_D is a Petzval sum of the fourth group of lenses as a whole.

3,796,482

FLEXIBLE ROD FOR SPECTACLE FRAMES

Oreste Blumenthal, Turin, Italy, assignor to S.p.A. Giuseppe Ratti Industria Ottica, Turin, Italy

Filed Feb. 24, 1972, Ser. No. 229,037
Claims priority, application Italy, Apr. 24, 1971, 68365/71
Int. Cl. G02c 5/16, 5/18
U.S. Cl. 351—114 3 Claims



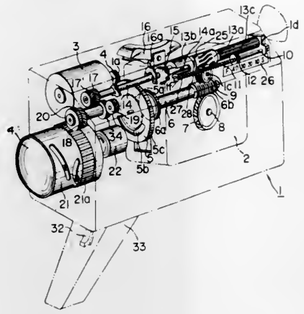
This invention provides an improvement in a spectacle frame of relatively rigid material comprising a front part and side pieces hinged thereto and having at least one flexible portion formed by a chain having elements mutually articulated and held together by a flexible inner core passing through said chain, said elements comprising alternating small members provided with two opposite portions of spherical surface, one portion of spherical surface of each member facing a corresponding portion of spherical surface of an adjacent member and said two facing surfaces of two adjacent members being one a convex spherical surface and the other a concave spherical surface.

3,796,483

FILM FOOTAGE INDICATOR DEVICE

Keiichi Sakaguchi, and Noritsugu Hirata, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1973, Ser. No. 334,899
Claims priority, application Japan, Feb. 28, 1972, 47-24260
Int. Cl. G03b 1/60
U.S. Cl. 352—172 11 Claims



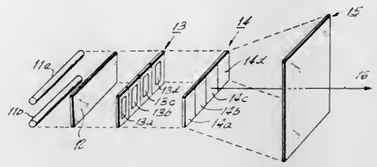
A film footage indicator device for cinecameras capable of indicating consumption of as little as 10 or 20 frames includes first power transmission means decelerately driven from a drive source, second power transmission means engageable with said first transmission means and movable axially thereof, a guide member formed with a helical groove and coupled integrally to said second transmission means, resilient means normally biasing the guide member and the second transmission means toward their start position for axial movement, and an engaging member engageable with the guide member upon insertion of a film cassette into the camera and disengageable therefrom upon removal of the cassette from the camera, thereby indicating an amount of film consumption in accordance with the axial and rotary movements of the second transmission means.

3,796,484

OPTICAL COMMUNICATION SYSTEM PROVIDING SELECTIVE IMAGE PRESENTATIONS

Harry D. Forster, Jr., Miami, Fla., assignor to Holograph Corporation, Watertown, Mass.

Continuation-in-part of Ser. No. 850,021, Aug. 14, 1969, abandoned. This application Aug. 20, 1971, Ser. No. 173,368
Int. Cl. G03b 21/26; G09f 19/14; G02b 27/00
U.S. Cl. 353—25 3 Claims



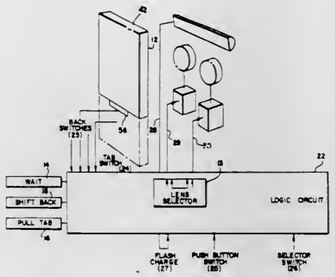
Arrangement of optical sources in an independent and/or interlocking manner enables presentment of visual information to enhance signing, advertising techniques and other visual display systems. The arrangement may be such as to enable different image elements to have different effective apertures, and to enable projected images to occupy the same position in space but to be independently discernible according to viewer position.

3,796,485

TWIN LENS CAMERA SYSTEM HAVING SEQUENTIAL OR SIMULTANEOUS LENS OPERATION

Myron A. Seiden, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 214,633, Jan. 3, 1972, Pat. No. 3,760,702. This application Sept. 15, 1972, Ser. No. 289,443
Int. Cl. G03b 35/08
U.S. Cl. 354—88 11 Claims



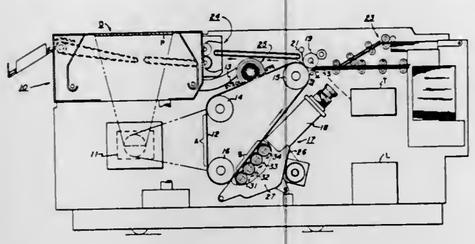
A twin lens camera system for producing multiple photographs from a single film sheet. The system includes a sliding back arrangement for movement of the film sheet so as to present different areas thereof to the twin lenses, and a logic circuit and indicator elements for denoting a suitable operational program of the system. A selector switch provides simultaneous or sequential operation of the twin lens system, and the logic circuit is responsive to either operational mode so as to indicate movement of the film sheet following operation of both lens systems.

3,796,486

PROGRAMMING CONTROL SYSTEM FOR PRINTING MACHINE

James M. Donohue, Rochester, and Daniel L. Mueller, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 97,745, Dec. 14, 1970, abandoned. This application Apr. 17, 1972, Ser. No. 244,734
Int. Cl. G03g *15/00*
U.S. Cl. 355—16 9 Claims



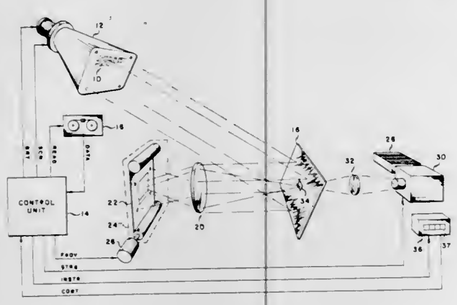
A programming control system for controlling the processing steps of an electrostatic printing machine of the type employing an endless photoreceptor belt. A photoreceptor speed sensitive element in the form of a transfer roller is utilized for resetting on complete machine timing cycle of processing operation. This cycle, called pitch is applied to the belt and comprises a predetermined number of electrical pulses some of which control machine events.

3,796,487

METHOD FOR PRODUCTION OF ILLUSTRATED TEXTS

Charles H. Voorhees, Burbank, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 12, 1973, Ser. No. 323,324
Int. Cl. G03b
U.S. Cl. 355—77 10 Claims



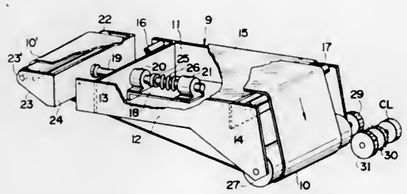
A method for the high speed production of illustrated texts, particularly customized aircraft parts catalogs, wherein textual material is photographically combined with designated illustrative material and the text is prepared from the composite photographic record. Data including the textual material and illustration identifying indicia is stored in a data bank and is periodically duplicated to provide a master data record. The master data record, preferably a magnetic tape, is then utilized to generate an illustrated text containing all textual and illustrative data applicable to a particular customer. To generate the customized illustrated text, the stored textual material is selectively electronically displayed to expose a photographic film. Illustration identifying indicia associated with displayed textual material is utilized to select a slide containing the desired illustrative material and an image of the illustrative material from the slide is projected onto the film to form a composite photographic record. The illustrated text may then be formed from the composite photographic record. A method for generating indices and a table of contents for the customized catalog as well as forms and labels for various types of catalog tables and illustrations is also disclosed.

3,796,488

ELECTROPHOTOGRAPHIC DUPLICATOR

Susumu Tanaka; Yuji Enoguchi, and Masaya Ogawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed Sept. 24, 1971, Ser. No. 183,416
Claims priority, application Japan, Sept. 28, 1970, 45-85471
Int. Cl. G03g *15/00*
U.S. Cl. 355—16 11 Claims



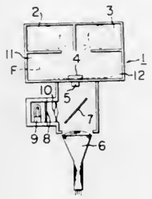
An electrophotographic copying machine utilizes an endless belt having a conductive film and carrying a photosensitive surface thereon. The photosensitive surface comprises a thin evaporated film of a non-crystalloid selenium formed on at least a portion of the film and an organic semiconductor film deposited on the evaporated film. The endless belt also includes means for indicating exposure frames and the endless belt is positioned so that the photosensitive surface receives the image by a detector mechanism which senses the exposure frames. The apparatus also includes a movable frame which is detachably mounted to the copying machine for tensioning, aligning, and maintaining the belt flat.

3,796,489

MICROFICHE CAMERA

Yoshiharu Sone; Takao Toda, and Kazuo Kashiwagi, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1972, Ser. No. 256,958
Claims priority, application Japan, May 28, 1971, 46-36791; May 29, 1971, 46-37132
Int. Cl. G03b *27/46*
U.S. Cl. 355—54 6 Claims



A microfiche camera has a film positioning system in which a film carrier is arranged to be driven in the transverse dimension of the film. Accurate reference exposure position is assured by a light source and a photo-electric cell, one of which is on the carrier while the other has a fixed position in the camera. The registry of these elements that stops the shifting

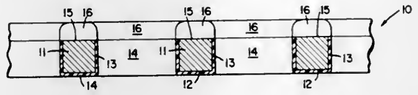
device is made precise by the use of a slit. For successive exposures lengthwise of the film, the film is pulled through the carrier by a roller drive, the load of which is kept light by maintainence of a loop on both ends of the exposure area. The loop maintainence arrangement in one form has only one photocell and light source pair for each loop chamber.

3,796,490

ELECTROSTATIC MODULATOR FOR CONTROLLING FLOW OF CHARGED PARTICLES

Gerald L. Pressman, San Jose, Calif., assignor to Electroprint, Inc., Palo Alto, Calif.

Division of Ser. No. 85,070, Oct. 29, 1970, Pat. No. 3,694,200. This application May 15, 1972, Ser. No. 283,782
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 11 Claims



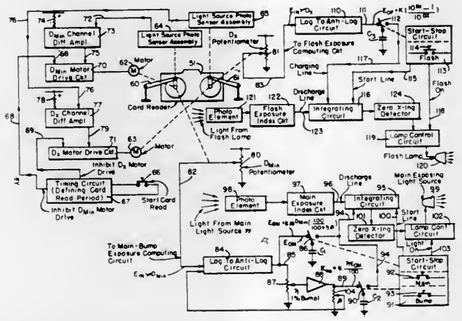
A system for controlling the flow of charged particles and for modulated aperture electrostatic printing. An apertured screen having substantially the entire surfaces formed of a dielectric material is charged with like charges over substantially all its surfaces to develop fringing fields in the apertures. The charge distributed across one side of the screen is selectively dissipated in accordance with a pattern to be reproduced thereby establishing a bipolar electrostatic latent image as a modification of the fringing fields for density control of a flow of charged particles directed through the screen. The screen may be formed with dielectric thicker on one face than the other to initially carry a higher potential and provide a uniform charge inequality or potential difference through the screen apertures, oriented to enhance the flow of charged particles through the screen. Full modulation control of particle flow is therefore possible with a single selective charge dissipation. For electrostatic reproduction a print-receiving medium is interposed in the modulated particle flow passing through the screen.

3,796,491

COPY DENSITY READING AND EXPOSURE CONTROL SYSTEM

Walter L. McIntosh, Woodbridge, and Dale M. Schmidt, Annandale, both of Va., assignors to LogEtronics Inc., Springfield, Va.

Division of Ser. No. 179,080, Sept. 9, 1971, Pat. No. 3,734,630. This application Jan. 22, 1973, Ser. No. 325,787
Int. Cl. G03b *27/76*
U.S. Cl. 355—69 10 Claims



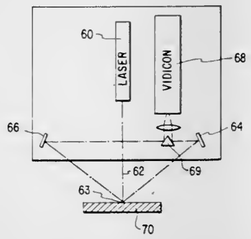
An automatic exposure control system for a Graphic Arts camera comprises a copy reading unit and a separate camera control unit. The copy reading unit includes a densitometer head adapted to be moved to various different selected portions of copy to produce signals representative of the reflectivity or light transmission of those selected portions; and these signals are converted into potentials representative of density. The levels of the density-representing signals are compared with a pre-set threshold potential to automatically segregate signals representative of minimum copy density (D'_{min}) from those representatives of maximum copy density (D'_{max}); and the two different types of signals are then automatically routed to two different peak-reading channels in the copy reading unit operative to retain the lowest D_{min} encountered, and also operative to compute and retain, from D_{min}, D_{max}, and screen range, the highest excess density (D_X) encountered. The D_{min} and D_X parameters can be represented by potentials on potentiometers forming portions of null-seeking servomechanisms, and can also be recorded on a control card. The control card can be transferred, along with an associated piece of copy, to a camera control unit responsive to the recorded information and operative to re-establish the potentials D_X and D_{min}; and these re-established potentials are then used to compute and control the main, bump (or no-screen), and flash exposures.

3,796,492

LASER DIMENSION COMPARATOR

Donald L. Cullen, and Teddy L. Moore, both of Columbus, Ohio, assignors to Autech Corporation, Columbus, Ohio

Filed June 1, 1971, Ser. No. 148,466
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 5 Claims



A nondestructive dimension measuring and comparing system wherein a coherent light beam is impinged on a workpiece surface to produce at least one and preferably two spots of light. Backscattered light from the spots is directed onto a vidicon screen to provide at least two light spot image points which are spaced in proportion to a dimension of the workpiece. The vidicon is scanned to provide output pulses which are time spaced in proportion to the image spot spacing. A scaling oscillator provides scaling pulses which are gated to an up-down counter by the electronically processed, time-spaced pulses. Logic circuitry counts and displays the gated scaling pulses to indicate the dimension, or alternatively, compares the count to a reference and displays the deviation.

3,796,493

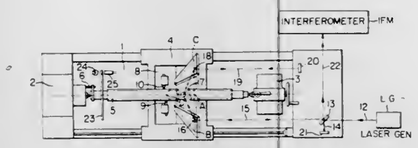
APPARATUS FOR MEASURING PITCH OF PRECISION LEAD-SCREW BY LIGHT-WAVE INTERFERENCE

Akira Yamamoto; Isamu Yoshimoto, and Yoshihisa Tanimura, all of Tokyo, Japan, assignors to Tokyo Institute of Technology, Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,719
Claims priority, application Japan, Dec. 23, 1970, 45-117146
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 7 Claims

A pair of feelers are brought into contact with the same thread flank of a screw to be measured at two points whose

phase differs from each other by 180°. The pair of feelers are mounted on a slide movable in any direction without rotation on a carriage in a plane parallel to a plane in which the carriage travels in the axial direction of the screw to be measured. The feed of the carriage per revolution of a screw to be measured is so adjusted as to be approximately equal to the pitch of the screw. The midpoint between the spherical ends of the



pair of feelers in contact with the same thread flank is located at the corner point or vertex of a corner cube reflector which is formed upon the slide. The light beam from the corner cube reflector is reflected by a reflector. The pitch of the screw is measured by the light-wave interference between the light beams separated by a half-mirror, one of which is reflected at the corner cube reflector and the said reflector. The measured value is compared with a reference pitch.

3,796,494

APPARATUS FOR INTERFEROMETRIC MEASUREMENT OF DISPLACEMENTS

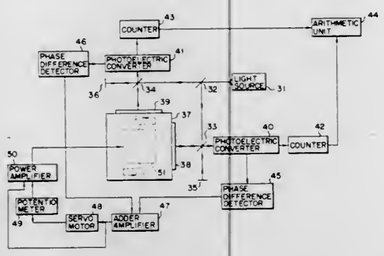
Hitoshi Takabayashi, Saitama, Japan, assignor to Anritsu Electric Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1971, Ser. No. 202,768

Claims priority, application Japan, Nov. 30, 1970, 45-105013; July 14, 1971, 46-51750; July 15, 1971, 46-61622[U]

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 R **8 Claims**



An apparatus for interferometric measurement of displacements wherein two interferometers each with a movable mirror which are mounted on a carriage in perpendicularly intersecting relationship indicate the displacements of the carriage along the X and Y axes in the number of interference fringes passing a certain point in an interference field of view; the number of interference fringes appearing in the interference field of view of the interferometer is counted by a counter and converted to the value of displacements by an arithmetic calculator; the yawing displacements of the carriage are determined by detecting phase differece between electrcal signals obtained by photoelectrical conversion from different points in the interference field of view; and the signals thus produced actuate a servo mechanism to correct the determined yawing displacements.

3,796,495

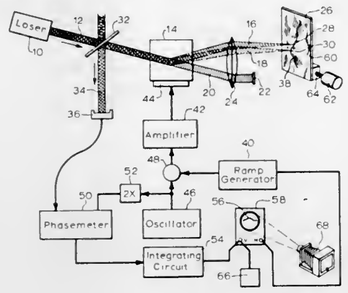
APPARATUS AND METHODS FOR SCANNING PHASE PROFILOMETRY

Leonard Laub, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 30, 1972, Ser. No. 257,721

Int. Cl. G01b *9/02*

U.S. Cl. 356—109 **6 Claims**



This disclosure depicts methods and apparatus for detecting minute phase variations on reflective or transmissive specimens. A scanning phase profilometer is depicted which includes means for producing from a coherent input light beam a set, here shown as a pair, of distinguishably coded interrogating beams which are focused and scanned across a specimen as a pair of slightly displaced light spots. The interrogating beams are recombined after interaction with the specimen. Phase demodulating means are provided including a light responsive means in the path of the recombined interrogating means for detecting phase variations between the interrogating beams caused by optical path length variations as the beams are scanned across the specimen. Means are provided for producing an electrical phase differential signal characterizing the detected phase variations and electrical integrating means for integrating the phase differential signal to produce a signal characterizing the phase profile of the scansion across the specimen. Methods and apparatus for producing a two-dimensional display of the phase profile of a specimen are also disclosed.

3,796,496

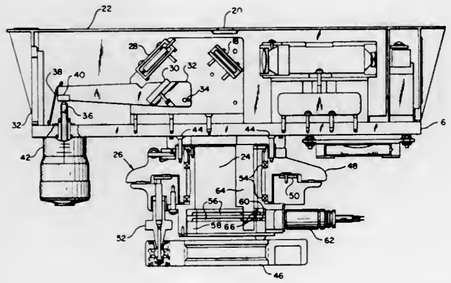
LASER PLUMMET LEVEL

Robert L. Appler, Sand Hill Rd., Elliott City, Md., and Hubert H. Hoehn, 6906 Bradford Ct., Laurel, Md.

Continuation-in-part of Ser. No. 871,922, Oct. 28, 1969, Pat. No. 3,667,849. This application Aug. 3, 1971, Ser. No. 168,601

Int. Cl. G01b *11/26*; **G01c** *1/00*

U.S. Cl. 356—138 **3 Claims**



There is provided herein a laser level surveying instrument including means for projecting a laser beam at a desired eleva-

tion and means for interrupting the flow of current to the plasma tube in response to undue physical disturbance of the instrument which might disturb the direction of the directed beam.

3,796,497

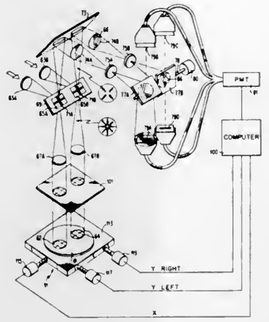
OPTICAL ALIGNMENT METHOD AND APPARATUS

Einar S. Mathisen; Robert L. Moore, both of Poughkeepsie, and Leonard S. Sheiner, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,736

Int. Cl. G01b *11/26*

U.S. Cl. 356—152 **10 Claims**



An electro-optical mask and wafer alignment system employs alignment patterns on the mask and wafer whose images can be selectively passed through a spatial filter. Each pattern comprises at least two nonparallel lines. The alignment pattern configuration permits the X, Y coordinate locations of at least two corresponding points on the mask and wafer to be sensed by scanning the filtered images of the alignment patterns past a sensing device in a single direction. The mask and/or wafer are then positioned such that the signals generated from the alignment patterns indicate that the corresponding points on the mask and wafer are aligned.

3,796,498

POSITION MEASURING THROUGH THE USE OF MOIRE FRINGE MULTIPLICATION

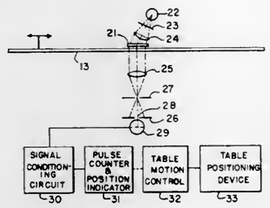
Daniel Post, Box 408, Averill Park, N.Y.

Filed May 14, 1971, Ser. No. 143,561

Claims priority, application Great Britain, Oct. 19, 1970, 49,478/70

Int. Cl. G01b *11/04*

U.S. Cl. 356—169 **16 Claims**



A system for linear and angular measurements utilizing a form of moire fringe multiplication particularly in position measuring apparatus. The position of a table is determined by moire fringe multiplication with a coarse scale grating, an index member in juxtaposition with said scale grating, illumination, optical filtering, and observing means and means to indicate relative position of the table from changes of the said moire fringes.

3,796,499

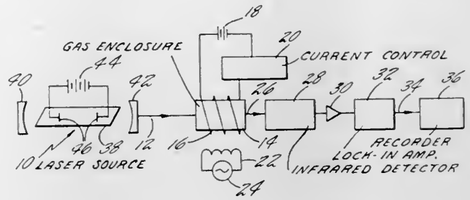
METHOD AND APPARATUS FOR DETERMINING THE CONCENTRATION OF PARAMAGNETIC MATERIAL IN A GAS MIXTURE

Paul A. Bonczyk, Manchester, and Casper J. Ultee, Glastonbury, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 22, 1973, Ser. No. 343,751

Int. Cl. G01n *21/06*; **G01j** *3/30*

U.S. Cl. 356—201 **8 Claims**



A method and system for detecting the presence of a paramagnetic material in a gaseous mixture are disclosed. A sample of the mixture is subjected to modest strength magnetic fields and a source of stable frequency laser radiation. The magnetic field modifies an energy level spacing in the paramagnetic material due to the Zeeman effect to produce a resonant match with the laser radiation. Standard detection procedures are used to quantitatively correlate the variation in the intensity of the laser radiation passing through the mixture as a function of the magnetic field strength. In the case of nitric oxide, the method is sufficiently sensitive to detect concentrations considerably less than one part per million.

3,796,500

METHOD AND ARRANGEMENT FOR ADJUSTING OPTICAL DEVICES

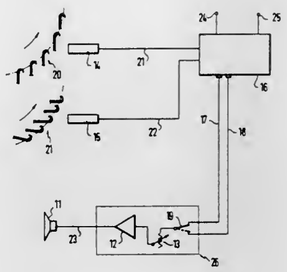
Werner G. Obser, Geretsried, Germany, assignor to Erwin Sick, Waldkirch, An der Alle, Germany

Filed Sept. 15, 1972, Ser. No. 289,351

Claims priority, application Germany, Sept. 15, 1971, P 21 46 139.2

Int. Cl. G01n *21/16*; **G02b** *27/32*

U.S. Cl. 356—237 **10 Claims**

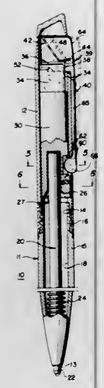


Method of adjusting optical devices which with the aid of a light beam sense an object periodically reflecting light varyingly and which monitor the reflected light in respect of variations of a predetermined sequence of intensity fluctuations, which comprises converting the intensity fluctuations into an acoustically audible signal and then varying the alignment of the optical device in relation to said object until the acoustically audible signal attains a maximum value.

3,796,501
WRITING INSTRUMENT WITH TRANSVERSELY MOVABLE CLIP

Nathan A. Zepell, 1359 Santa Teresita Dr., Santa Barbara, Calif.

Filed Apr. 5, 1972, Ser. No. 241,196
Int. Cl. B43k *24/02*
U.S. Cl. 401—106 9 Claims

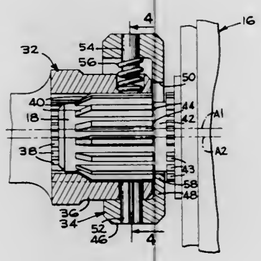


A pen or pencil has a clip that slides transversely to the axis of the writing instrument for extending or retracting the writing tip. The attachment end of the clip engages a reciprocable writing cartridge with a cam action to effect this extension or retraction. Outward movement of the attachment end of the clip is obtained by pressing the clip ball against a body aperture to retract the tip, and manually pressing in the attachment end of the clip effects extension of the tip. A flange and hook connection between clip and cartridge holds the assembly together.

3,796,502
QUICK LATCH COUPLING

Joseph A. Federspiel, Port Washington, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Sept. 14, 1970, Ser. No. 71,784
Int. Cl. F16b *7/00*
U.S. Cl. 403—106 6 Claims

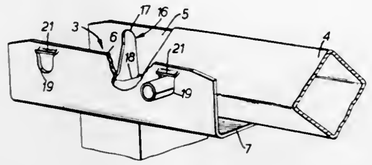


A hand operated coupling especially useful in connecting the driveshafts of various implements to the power takeoff shaft of a garden tractor, and capable of being incorporated with a positive drive connection and a universal joint for positive power transmission between misaligned or relatively movable driving and driven shafts.

3,796,503
BELT CONVEYORS

Gordon Bertram Dawson, Worcester, England, assignor to Dowty Meco, Limited, Worcester, England

Filed July 19, 1971, Ser. No. 163,874
Claims priority, application Great Britain, July 30, 1970, 36899/70
Int. Cl. F16b *1/00*
U.S. Cl. 403—353 12 Claims

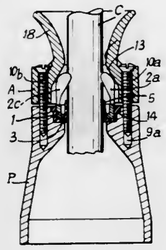


A belt conveyor having a pair of parallel elongate members carried by a number of support members, known as "stools", disposed at spaced intervals along the length of the elongate members and roller assemblies supported at spaced intervals between the elongate members to carry the movable belt, wherein each elongate member comprises a plurality of stringers in end to end arrangement and each stool includes means to support a stringer or stringers comprising a channel section member having two parallel sides and a base to receive the stringer between the parallel sides, pins and hole means operative in a loosely fitting manner between the stringer and the channel section member such that the stringer may enter the channel section member between the sides thereof to cause engagement of the pin and hole engagement means to locate the stringer in the endwise sense in the channel section member and locking means engageable between the stringer and the channel section member at least partly by angular movement of the stringer about a longitudinal axis relatively to the channel section member.

3,796,504
DEVICE FOR FASTENING A CABLE TO A CONNECTOR HANDLE

Gilles Adrien Georges Marechal, 36 Quai De Bethune, Paris, France

Filed Mar. 6, 1972, Ser. No. 232,138
Claims priority, application France, Mar. 16, 1971, 71.09118
Int. Cl. F16b *2/10*
U.S. Cl. 403—288 4 Claims

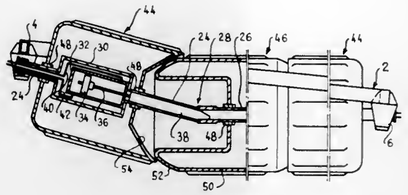


The device comprises a clamping member formed by an annular collar of plastic material which is intended to rest on a bearing surface of the handle with interposition of a shouldered tubular seal in intimate contact with the cable. Jaws integral with the collar and extending vertically upwards therefrom in radial planes cooperate with an internal frustoconical bearing surface of the connector cap. When the cap is screwed-down onto the handle, the jaws produce a powerful clamping action on the cable.

3,796,505
DRAG ROLLER

Manfred Buhler, Pfaffikon, Switzerland, assignor to Ratrac AG, Wallisellen, Switzerland

Filed Jan. 2, 1973, Ser. No. 320,652
Claims priority, application Switzerland, Jan. 10, 1972, 289/72
Int. Cl. E01h *4/00*
U.S. Cl. 404—132 8 Claims

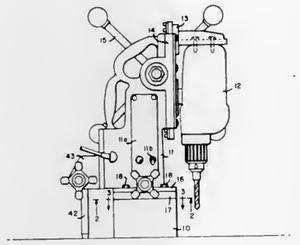


A drag roller, especially for grading or levelling ski pistes, with a roller body rotatably supported upon an axle. The axle is composed of a number of partial axle components which are coupled with one another by joints having 1° of freedom of movement, the pivot axes of which extend approximately parallel to the direction of travel. At least a number of the partial axle components each carry a respective roller body. The end face of one of two neighboring roller bodies is formed by a substantially ball or spherical head which merges with the outer surface of such roller body, and this ball head engages with the neighboring roller body which is constructed at its neighboring end face in the manner of a ball socket.

3,796,506
ADJUSTABLE ELECTROMAGNETIC DRILL MOUNT

Eugene W. Buck, 110 Lansberry Ct., Los Gatos, Calif.

Filed Dec. 16, 1971, Ser. No. 208,579
Int. Cl. B23b *39/14*
U.S. Cl. 408—76 6 Claims

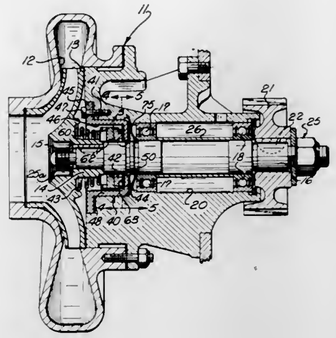


An adjustable electromagnetic drill mount provided with a base that magnetically grips the work surface. The drill or similar tool is mounted for rotatable movement up to 700° and also limited lateral movement with respect to its supporting magnetic base to locate the drill bit over the desired work point. The drill mount is provided with a clamping arrangement whereby the mount is firmly clamped to the magnetic base after the drill bit or other tool is located precisely over the work surface.

3,796,507
WATER PUMP

Robert C. Smykal, and Leonard D. Koryta, both of Cleveland, Ohio, assignors to Durox Equipment Company, Strongsville, Ohio

Filed June 29, 1972, Ser. No. 267,584
Int. Cl. F01d *11/00*
U.S. Cl. 415—111 9 Claims

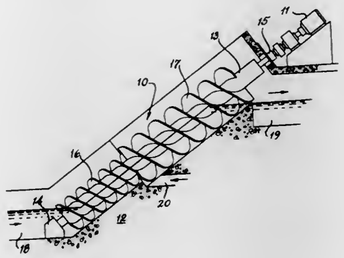


A water pump includes a pump drivingly connected with a shaft. The shaft extends through a seal construction which includes a cup-shaped bushing. The seal construction also includes a spring which biases a sealing ring into engagement with the base of the cup-shaped bushing. A stainless steel wear plate is bonded by a suitable bonding material to the base of the cup-shaped bushing and the sealing ring runs in engagement therewith.

3,796,508
SCREWPUMPS

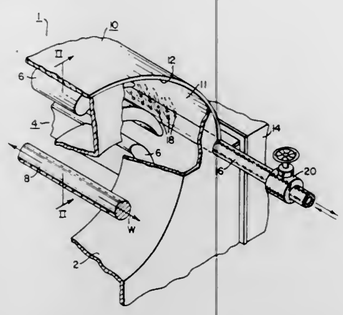
Robert Rowley, Congleton, England, assignor to Simon-Hartley Limited, Stoke-on-Trent, Staffordshire, England

Filed May 5, 1972, Ser. No. 250,500
Claims priority, application Great Britain, May 14, 1971, 15,060/71; Sept. 2, 1971, 40,946/71
Int. Cl. F01d *5/00*
U.S. Cl. 415—72 6 Claims



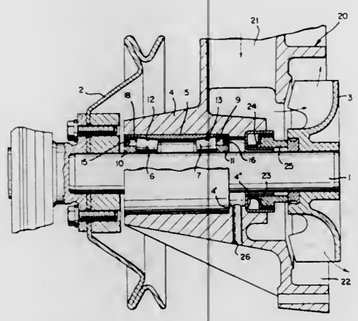
A screw pump of the kind comprising a screw of the archimedean type which is adapted to be rotated in an inclined trough to pump a liquid up the trough characterised in that the screw is comprised by at least two separate co-axial screw portions each having helical flights and mounted on a common central shaft, the screw portions being disposed in an inclined trough having a plurality of separate portions of complementary cross-section, there being an inlet for liquid to be pumped at the lower end of each said trough portion, and an outlet for pumped liquid at the upper end of at least the uppermost portion.

3,796,509
SCROLL WASHER FOR CENTRIFUGAL FANS
Carl O. Wood, Needham Heights, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 10, 1972, Ser. No. 251,995
Int. Cl. F04d *31/00*
U.S. Cl. 415—116 **4 Claims**



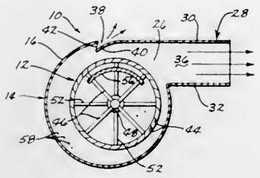
This invention relates to a centrifugal fan having a rotating fan wheel and means for removing centrifuged particulate matter from the interior wall of the fan scroll. A conduit, capable of carrying a fluid under pressure, is provided with a plurality of perforations so that jets of water may be applied to the inside surface of the scroll to dislodge and maintain the particulate matter in a fluidized state to enable the matter to be removed from the scroll by a suitable drain. The conduit is disposed adjacent the inner surface of the scroll and aligned substantially transversely with respect to the direction of rotation of the fan wheel.

3,796,510
SHAFT MOUNTING FOR WATER PUMPS AND THE LIKE
Heinz Korrenn, and Gunter Markfelder, both of Schweinfurt, Germany, assignors to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany
Filed June 28, 1972, Ser. No. 266,974
Claims priority, application Germany, July 31, 1971, P 21 38 434.9
Int. Cl. F04d *29/08, 7/02;* **F16c** *32/00*
U.S. Cl. 415—170 A **8 Claims**



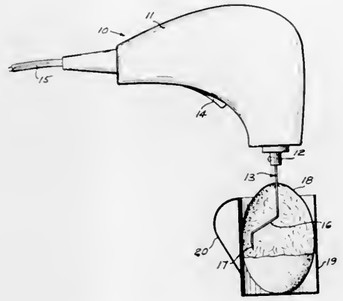
The shaft of a pump, carrying an impeller, is supported in a bearing cylinder of a housing by a generally cylindrical bushing, press-fitted into that cylinder, whose inner peripheral surface diverges frustoconically outwardly at both ends. Two sets of frustoconical bearing rollers, with their wider bases facing outwardly, are wedged in between the shaft surface and the tapering bushing extremities and are held in place by two annular abutments, at least one of which is a ring fitted onto the shaft while the other one may be a shoulder integral therewith; flexible sealing rings at the ends of the bushing sweep the surfaces of these abutments.

3,796,511
BLOWER
Russell D. Hansen, Fontanelle, Iowa, assignor to Frigidraulic, Inc., Anita, Iowa
Filed June 15, 1972, Ser. No. 263,270
Int. Cl. F04d *17/18;* **B01d** *17/00*
U.S. Cl. 415—144 **9 Claims**



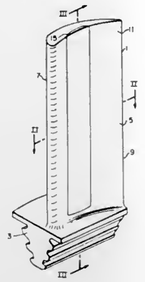
A blower is comprised of a substantially cylindrical housing having end walls and an arcuate wall forming a substantially cylindrical chamber. A discharge opening is formed in the arcuate wall and an intake opening is formed in at least one of the end walls. A cylindrical fan rotor is rotatably mounted within the chamber for drawing air into the chamber through the intake opening and for propelling it around the interior of the chamber and outwardly through the discharge opening. There is a slot in the arcuate wall adjacent the discharge opening, and a skinning member protrudes radially inwardly adjacent the slot for directing a thin layer of air adjacent the arcuate wall of the chamber outwardly through the slot so as to remove dust particles adjacent the outer peripheral edge of the housing wall.

3,796,512
EGG BEATER
Carl Djuvik, 10305 Cameo Dr., Sun City, Ariz.
Filed June 28, 1972, Ser. No. 267,246
Int. Cl. A47j *43/10*
U.S. Cl. 416—202 **1 Claim**



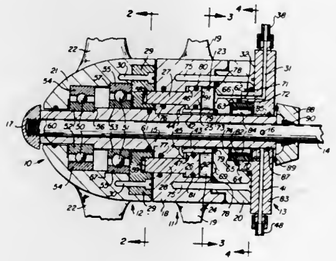
A motor held kitchen aid in the form of a pointed, bent wire is inserted into an egg and rotated. The beaten contents are then delivered directly from shell to cooking or baking mix.

3,796,513
HIGH DAMPING BLADES
Otakar Jonas, Claymont, Del., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 19, 1972, Ser. No. 264,102
Int. Cl. F01d *5/16*
U.S. Cl. 416—224 **5 Claims**



A rotating turbine blade having an elongated depression disposed lengthwise along a concave surface forming an airfoil shaped portion of the blade and a high damping material disposed in the depression to produce a high strength blade with good damping characteristics.

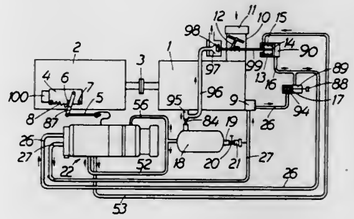
3,796,514
POWER TRANSMITTING MECHANISM
Clement O. DuFrene, Cottage Grove, Minn., assignor to Gordon Rosenmeier, Little Falls, Minn., a part interest
Filed Mar. 9, 1972, Ser. No. 233,058
Int. Cl. B64c *11/48*
U.S. Cl. 416—124 **11 Claims**



Disclosed is a power transmitting mechanism having three main parts: a base annular structure rotatable about its axis, a rotatable secondary structure contiguous to the base structure, and a non-rotating stationary housing contiguous to at least one of the base and secondary structures. The secondary structure is optionally rotatable in common with the base structure.

One of the structures is identified as a master structure; and this structure includes hydraulic chamber means, hydraulically-responsive means having a wall in communication with that chamber means, and coupling means actuated by the hydraulically-responsive means. The coupling means is actuatable during continuous rotation of the base structure to interlock the secondary structure to the base structure for common rotation with the base structure. It is actuatable during continuous rotation of the base structure to disengage the secondary structure from the aforesaid interlocked condition. The stationary housing includes hydraulic conduit means extending therethrough with one end of the conduit in sealed communication with the hydraulic chamber of the master structure to permit transfer of hydraulic fluid through the conduit to or from the chamber of the master structure during rotation of the rotatable parts. The mechanism includes a hydraulic control switch means for moving hydraulic fluid through the conduit of the stationary housing to or from the chamber of the master structure. A flexible hydraulic conduit connection is provided between the control switch means and the conduit of said stationary housing. Equipped with propeller fins, the device is useful for fitting to the power shaft of water craft motors for propulsion.

3,796,515
PLANTS COMPRISING A COMBUSTION ENGINE AND A COMPRESSOR DRIVEN BY SAID ENGINE
Bo Rudolf Lindqvist, Alta, and Jan Edvard Persson, Ektorp, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Continuation of Ser. No. 85,213, Oct. 29, 1970, which is a continuation of Ser. No. 740,203, June 26, 1969, abandoned. This application June 1, 1972, Ser. No. 258,845
Int. Cl. F04b *49/02*
U.S. Cl. 417—23 **11 Claims**

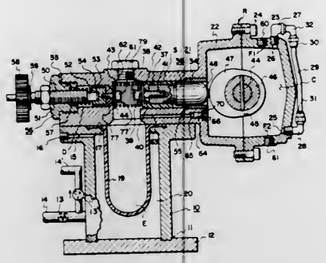


A governor for combustion engine driven compressors includes two piston members. The first piston member is actuated by oil pressure and a second piston member is actuated in an opposite direction by the compressor discharge fluid pressure. The governor is responsive to the differential between a pre-determined low working pressure and the compressor discharge fluid pressure. A governor spring member acts to move a fuel control member for the engine between an idle position and full speed position. The governor spring member is subjected to power bias by the two piston members under various operating conditions. The governor includes an unloading control valve which is movable to unloading and loading positions when the fuel control member is adjacent the idle position. A compressor inlet valve and compressor vent valve are provided for loading and unloading the compressor. The second piston member controls the fuel supply in response to compressor delivery of compressed fluid when the plant is operating between an intermediate and full capacity.

3,796,516
BELLOWS PUMP
Alan G. McCormick, 645 Aloha, Salt Lake City, Utah
Filed Aug. 8, 1972, Ser. No. 278,717
Int. Cl. F04b *9/08, 35/02, 43/06*
U.S. Cl. 417—63 **11 Claims**

A bellows pump usable for fuel injection, for example, wherein such pump is designed to avoid necessity of close machining tolerances. Bypass valve means is incorporated

between the interior of the bellows of the pump and the interior of the casing incorporating the piston drive. Such leakage as occurs from the bellows interior to such casing via the reciprocating piston structure utilized is returned from the casing back to the bellows interior during predetermined portions of the operating cycle. For such manner of operation the piston drive casing and the bellows interior are completely



pre-filled with operating hydraulic fluid such as oil. Piston design includes a plastic jacket, such as Nylon, by way of example, so that any particulate matter in the oil used may embed itself therein instead of causing piston failure. An optional feature is to provide a free-floating auxiliary piston, to vary volume flow, itself incorporating a valve return flow passageway.

3,796,517

DEVICE FOR FEEDING PRESSURIZED FLUID

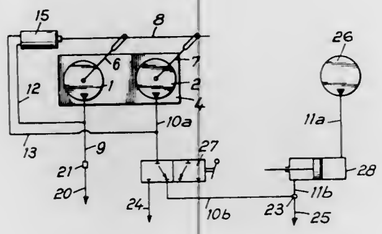
Pierre A. Praddaude, Crepy-en-Valois, France, assignor to Societe Anonyme: Poclain, Oise, France

Filed Aug. 3, 1972, Ser. No. 277,534

Claims priority, application France, Aug. 6, 1971, 7128969

Int. Cl. F04b *23/04*

U.S. Cl. 417—216 **3 Claims**



This invention relates to a device for feeding pressurized fluid to at least two supply circuits by two groups of pumps, the first group of pumps, of the variable discharge type, comprising two distinct delivery conduits and a power regulator of the pressure summation type coupled with the member for controlling the discharges of said first group of pumps, while the second group of pumps is of the constant discharge type, the second group of pumps comprises a single delivery conduit and the first delivery conduit of the first group of pumps and single delivery conduit of the second group of pumps are connected to the first supply circuit, while the second delivery conduit of the first group of pumps is connected to the second supply circuit.

3,796,518

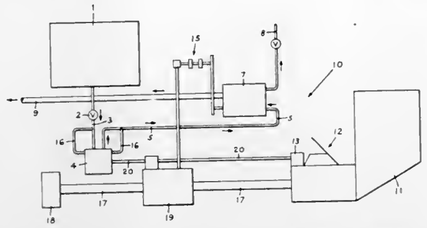
LPG HIGH PRESSURE MOBILE PUMPING UNIT

Clarence W. Weaver, Houston, Tex., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 845,017, July 25, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,511

Int. Cl. F04b *17/00*

U.S. Cl. 417—244 **3 Claims**



A system for pumping liquid solvent with a plurality of pumps separately powered by a variable vehicle engine power supply.

3,796,519

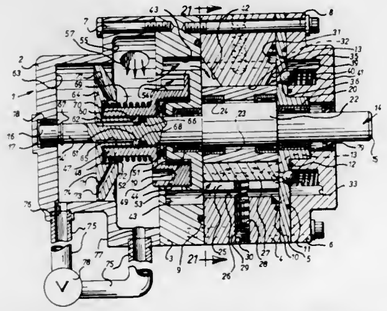
ROTARY FLUID HANDLING DEVICE

Rene Marceau, Honfleur, Quebec, Canada, assignor to Robert Marcoux, St. Marie, Quebec, Canada

Filed June 14, 1972, Ser. No. 262,650

Int. Cl. F04b *49/02*; **F01c** *21/12*; **F04c** *15/02*

U.S. Cl. 417—294 **11 Claims**



A rotary fluid handling device, such as a hydraulic pump, comprising a housing defining a cylindrical chamber, a shaft journalled in the housing and coaxial with the chamber, a cylindrical cam eccentrically mounted on said shaft within the chamber, a cylindrical sleeve rotatably surrounding said cam, the chamber space around said sleeve being divided into a plurality of similar compartments by radial blades or partition members slidable in slots of the housing and urged against the sleeve. Rotation of the cam produces cyclic decrease and increase of the volume of the compartments in succession to provide for the pumping effect in the case of a pump. Each compartment has its own inlet and outlet port. Each outlet port has a check valve. The inlet ports are arranged along a circle coaxial with the shaft. A valve member is keyed on the shaft and provides an inlet port closing surface extending through half a circle to therefore close half the inlet ports at the same time and to successively open the inlet ports with rotation of the shaft. The pump can be easily converted into a hydraulic motor. Means are provided to angularly shift the valve member for the inlet ports with respect to the top dead center position of the cam, in order to retard or advance the admission of fluid into the compartments, resulting in a variable flow pump or motor. A new centrifugal type governor system, in the form of a pump acting as a turbine, produces in-

crease of the fluid pressure in a cylinder which acts on the piston to move the same axially of the shaft, to thereby produce angular shifting of the valve member with respect to the shaft. The hydraulic type governor system can be applied to other uses.

3,796,520

COMBINED PUMP AND OIL TANK UNIT, ESPECIALLY FOR SERVO-STEERING SYSTEMS

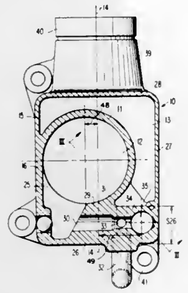
Peter Eisen, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Continuation of Ser. No. 137,775, April 27, 1971, abandoned. This application Apr. 13, 1973, Ser. No. 351,000

Claims priority, application Germany, Apr. 28, 1970, P 20 20 675.1

Int. Cl. F04b *49/00*

U.S. Cl. 417—310 **12 Claims**



A pump aggregate consisting of pressure oil pump and of an oil supply tank, particularly for servo-steering systems, which is constituted by a common housing casting with a partition wall separating the pump space from the supply space whereby the partition wall is formed integrally with the casting of the housing.

3,796,521

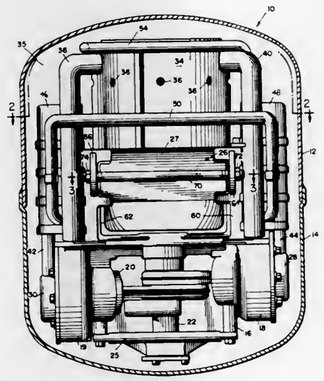
COMPRESSOR WITH MOTOR AIR GAP ADJUSTMENT

Charles B. Ellis, Forth Worth, and Richard E. Cawley, Hurst, both of Tex., assignors to Lennox Industries Inc., Marshalltown, Iowa

Filed Sept. 3, 1971, Ser. No. 177,677

Int. Cl. F04b *35/04*

U.S. Cl. 417—415 **5 Claims**



A refrigerant compressor incorporating an electric motor for rotating a drive shaft journalled within a compressor block of the compressor, the electric motor including a stator secured to the compressor block and a rotor secured to the drive shaft and inductively coupled to the stator. The stator is adjustably connected to the compressor block so as to permit relative adjustment of the stator and rotor to effect desired adjustment of the air gap between the stator and the rotor.

3,796,522

COMPRESSOR

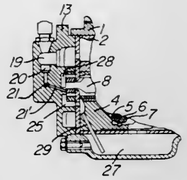
Ryoichiro Oshima; Seigo Miyamoto, and Kenichi Kawashima, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,390

Claims priority, application Japan, June 29, 1970, 45/56040

Int. Cl. F01c *21/04*; **B01d** *45/00*; **F04c** *29/02*

U.S. Cl. 418—15 **4 Claims**



A compressor for use in a compression type refrigeration cycle, in which the direction of a refrigerant flow passage is sharply changed at the refrigerant suction port, whereby lubricating oil mixed in the refrigerant in the refrigeration cycle is effectively separated and thereafter collected rapidly by making use of the dynamic pressure of said refrigerant and a pump.

3,796,523

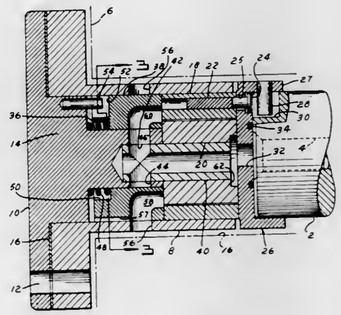
REVERSIBLE GEAR PUMP

Clifford C. Albrecht, Leicester, and Howard G. Brown, Worcester, both of Mass., assignors to Novelty Tool Company, Inc., Spencer, Mass.

Filed Dec. 13, 1972, Ser. No. 314,855

Int. Cl. F04c *29/08*

U.S. Cl. 418—32 **9 Claims**



A sleeve-encased cartridge-type, unidirectional-flow, gear pump for compressors and the like having circumferentially aligned inlet openings in a stationary sleeve wall adjacent a covered end portion of the cavity thereof, and within said end portion an indexible flow connector block rotatably supported for turning to opposite limits of movement on a fixed concentric support. The block is resiliently urged against the end faces of an internal spur gear pump housed in the opposite end portion of the sleeve cavity, the inner gear of said pump being

mounted on a pinion having a stationary axis offset from the sleeve axis and projecting from the end of said concentric block support, and the outer ring gear being rotatably supported by the sleeve wall. A drive connector plate engageable on the end of a compressor input shaft has a driving engagement to rotate the outer ring gear. The connector also has sealed passage means for joining an axial lubrication bore of an input shaft with a pump outlet bore in the offset pinion and the block support. One of a pair of radially directed passages in the support is connected to said outlet bore and the pump outlet side by an angled outlet passage of the indexible block at opposite limits of movement. An angled inlet passage in the block correspondingly connects the low pressure inlet side of the pump with an opening of the stationary sleeve wall.

3,796,524

ROTOR AND ROTOR GEAR ASSEMBLY FOR A ROTARY INTERNAL COMBUSTION ENGINE

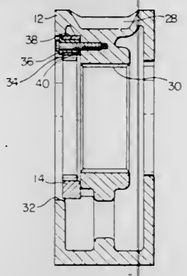
Yoshikazu Ishikawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed June 30, 1972, Ser. No. 268,168

Claims priority, application Japan, July 16, 1971, 46-52867

Int. Cl. F04b *21/00*

U.S. Cl. 418—61 **2 Claims**



A rotor and rotor gear assembly for use in a rotary internal combustion engine of the trochoidal type adapted to absorb deflections of a rotor and a rotor gear due to their different thermal expansions for thereby preventing a connecting pin from being subjected to excessive mechanical stresses. The rotor and rotor gear assembly includes at least three cylindrical bushings which are tightly but rotatably inserted into bore means formed in the rotor gear. Each of the cylindrical bushings is provided with an axially extending eccentric hole into which the connecting pin is disposed to connect the rotor gear to the rotor. The cylindrical bushings are located in the associated bore means formed in the rotor gear in such a manner that the center of each eccentric hole of the cylindrical bushings is angularly displaced with respect to the center line which connects the center of the rotor and the center of the bushing so as to cause the connecting pin to rotate the associated cylindrical bushing when the rotor and rotor gear are subjected to different thermal expansions respectively.

3,796,525

ENERGY TRANSLATION DEVICES

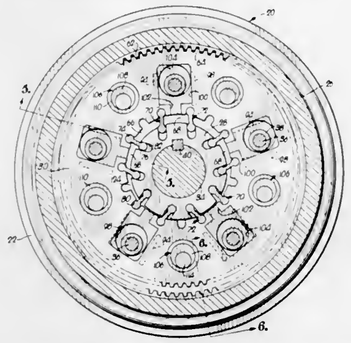
John B. Kilmer, 900 S. 8th St., Lamar, Colo.

Filed July 28, 1971, Ser. No. 166,672

Int. Cl. F01c *1/02*; **F03c** *3/00*; **F04c** *1/02*

U.S. Cl. 418—61 R **15 Claims**

Improved fluid-mechanical and mechanical-fluid energy translation devices, such as fluid motors, pumps and certain actuators, meters, couplers and the like of the type having an orbital member disposed between a rotor element and a stator element and coupled with one of the elements by fluid displacement means and with the other element by gear means, are provided by employing therein a plurality of eccentric means for positively but shiftably mounting the member upon the element to which it is coupled by fluid displacement means in manner restricting relative motion between the member and the last-mentioned element to relative orbital motion. The element upon which the member is thus mounted may be either a rotor or a stator element and may be either the inner or the outer of the elements in various embodiments of devices incorporating the invention. The eccentric means, which are essentially cranks or shafts with offset axes, significantly are alone sufficient to accomplish the positive, shiftable mounting of the member and the restriction of same to relative orbital motion and to do so quite independently of any other fluid and mechanical couplings that may exist between



the member and the elements in various particular forms of devices. The preferred embodiment also provides a further improvement in devices of this type employing vanes to define fluid displacement chambers by arranging the parts to maintain the pair of vanes bounding each chamber parallel to each other throughout the operating cycle, thereby maintaining the chordal transverse cross-sectional area of each chamber substantially constant throughout such cycle. The devices embodying the invention are characterized by increased efficiency and reliability, reduced wear on certain primary parts, and greater economy of manufacture by virtue of reduced strength and looser tolerance requirements in connection with certain primary parts.

3,796,526

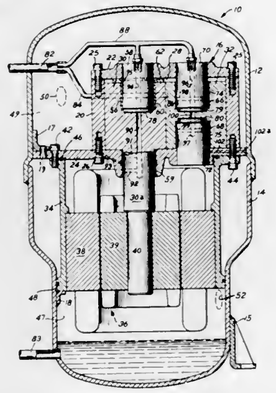
SCREW COMPRESSOR

Richard E. Cawley, Hurst, Tex., assignor to Lennox Industries Inc., Marshalltown, Iowa

Filed Feb. 22, 1972, Ser. No. 227,764

Int. Cl. F01c *21/04*

U.S. Cl. 418—97 **9 Claims**



An improved hermetic screw compressor incorporating hydraulic means for balancing the axial thrust of the screw rotors. The cooperating screw rotors are disposed in a working space in a compressor housing supported in a sealed outer casing. The screw rotors are journalled at least in part by support members secured to the compressor housing and extending into longitudinal openings or recesses in the screw rotors. The rotor support members are relatively close together and consequently the problem of rotor support shaft deflection as occurred when the rotor shafts extended from the rotors is minimized. The effective screw length is reduced and thus the overall screw compressor can be more compact than heretofore.

3,796,527

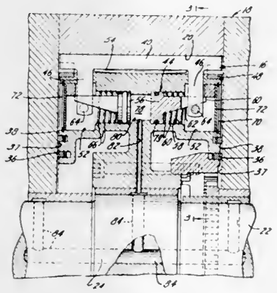
SEALING DEVICE FOR ROTARY MECHANISMS

George H. Woodier, Ringwood, and Winthrop B. Pratt, North Haledon, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Mar. 30, 1973, Ser. No. 346,638

Int. Cl. F01c *19/02*; **F04c** *15/00, 27/00*

U.S. Cl. 418—115 **16 Claims**



In a rotary mechanism of the Wankel type, a sealing device for each of the apex portions of the rotor which sealing device comprises a seal blade disposed for reciprocation toward and away from the trochoidal surface of the mechanism housing and a pressurized fluid actuating means responsive to the angular velocity of the rotor and coacting with the seal blade to hold the latter out of engagement with the trochoidal surface at a predetermined rotor angular velocity.

3,796,528

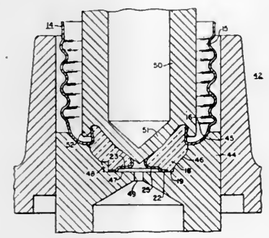
APPARATUS FOR MANUFACTURING AN ELECTRIC LAMP BASE THAT HAS A SNAG-PROOF TERMINAL

Chrisman O. Smith, Paris, Tex., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 47,294, June 18, 1970, which is a division of Ser. No. 742,417, July 3, 1968. This application Apr. 28, 1972, Ser. No. 248,481

Int. Cl. B29c *27/14*

U.S. Cl. 425—123 **5 Claims**



The peripheral edge of the metal eyelet that is embedded in the molded insulator of an electric lamp base is recessed behind the peripheral portion of the insulator, thus preventing the eyelet from being accidentally snagged and "lifted" or otherwise deformed during subsequent bulk processing and shipment of the bases. The protective peripheral portion of the insulator is formed during the molding operation by making the contactor portion of the eyelet smaller than the corresponding part of the die cavity and centrally positioning the eyelet within the cavity so that the molten glass (or other insulating material) is forced into the space between the peripheral edge of the contactor portion of the eyelet and the side walls of the molding die.

Positioning and retention of the eyelet in the proper location within the die is automatically achieved by three spaced radially extending lugs (or axially extending pins) that are located at the bottom of the die cavity and form a pocket which receives eyelets that are fed into the die. A single centrally located pin in the die that engages the apertured portion of the eyelet can also be used for this purpose

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3,796,529

DEVICE FOR THE MANUFACTURE OF FIBERBOARDS FROM BINDER-INTERSPERSED, CHIP-LIKE AND/OR FIBROUS PARTICLES

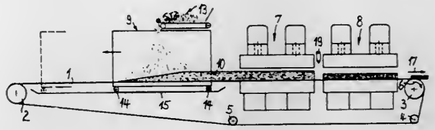
Berndt Greten, Ernst-Busse Strasse 8, 3257 Springe/Deister, Germany

Filed Mar. 21, 1972, Ser. No. 236,688

Claims priority, application Germany, Oct. 25, 1971, P 21 53 095.0

Int. Cl. B29j *5/04*

U.S. Cl. 425—224 **7 Claims**



A device for the manufacture of fiberboards from binder-interspersed, chip-like and/or fibrous particles wherein a preparatory press is disposed along the conveyor carrying the chip fleece ahead of the hot press to perform a preliminary compression thereby permitting the operating stroke of the hot press to be reduced with the result that the operations performed by the elements can be carried out more quickly and without loss of quality.

3,796,530

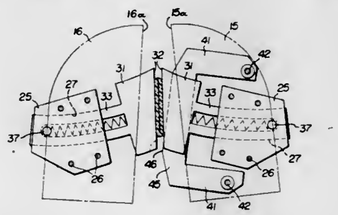
PARISON ENGAGING, SEVERING AND STRIPPING MECHANISM

Robert F. Kontz, Toledo, Ohio, and Richard A. Morrette, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 26, 1972, Ser. No. 220,857

Int. Cl. B29d *23/03*

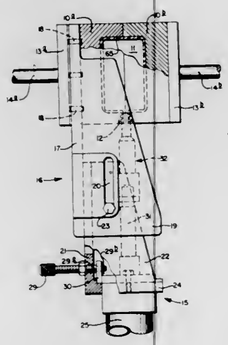
U.S. Cl. 425—305 B **4 Claims**



The present invention provides an apparatus and method for engaging a freely extruded tubular parison prior to closure

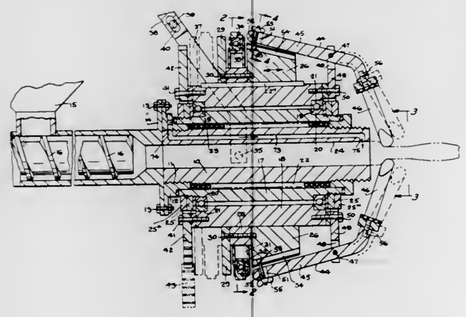
of a separable blow mold to position the parison for a subsequent blow molding operation, to sever the parison prior to closure of the blow mold and to insure proper stripping of the blown parison from the blow mold as the mold is opened following blowing.

3,796,531
APPARATUS FOR BLOW MOLDING CONTAINERS
Kenneth E. Bowers, Prairie Village, Kans., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Dec. 17, 1971, Ser. No. 209,167
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 B **5 Claims**



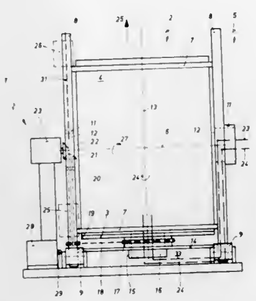
A method and apparatus for blow molding hollow plastic containers which include a split mold having two mold halves. A blow pin support assembly is attached to one of the mold halves and extends therebelow. The blow pin assembly is mounted on the support means and is adjustable thereon to provide centering of the blow pin with the neck opening provided in one end of the blow mold. The support structure includes means for vertically and horizontally positioning the blow pin assembly to provide exact centering of the blow pin assembly with the neck opening in the mold.

3,796,532
APPARATUS FOR CONTOUR MOLDING OF EXTRUDED MATERIAL
Mark Needleman, 3666 Salina Rd., Philadelphia, Pa.
Filed July 26, 1972, Ser. No. 275,214
Int. Cl. B29c *24/00*
U.S. Cl. 425—325 **12 Claims**



An extruding head for progressively contouring to shape the external surface of a continuously moving column of extruded plasticized material within the limit of its initial diameter. To this end the head includes one or more rapidly rotating shaping elements which fly about and engage the extrusion as it exits from an extrusion chamber and operate to smoothly shape the extrusion to its desired contour. Means are provided to variably adjust the spacing between the extrusion-engaging tip of each shaping element and its axis of rotation so that as the extrusion progresses past said element the diameter of the extrusion may be progressively reduced, increased or held to any diameter determined by said spacing. The extrusion head also provides for the use of a single extrusion-engaging element which spins about the continuously discharging extrusion to helically thread or groove its surface. Also provided are means for heating or cooling the extrusion as it moves through the extrusion chamber and for applying a coloring medium to the extrusion to be worked into and about the surface thereof by the aforesaid shaping element.

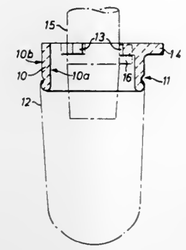
3,796,533
ROTARY MOLDING MACHINE
Anton J. Vox, Strada Cantonale, CH-6816 Bissone, Tessin, Switzerland
Filed Jan. 4, 1972, Ser. No. 215,331
Claims priority, application Germany, Jan. 15, 1971, P 21 01 675.1
Int. Cl. B29c *5/04*
U.S. Cl. 425—429 **23 Claims**



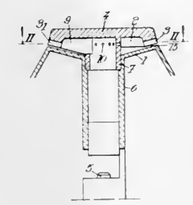
A rotary molding machine for producing articles of plastic which comprises at least one rotary frame of a shape similar to that of a so-called gyrowheel or Rhonwheel which is driven about a horizontal main axis and is supported on rollers and in which a table or the like is rotatably mounted on which a mold is to be supported and which together with the mold is driven about an axis extending transversely to the main axis. By employing such a rotary frame, it is possible to mount molds on the rotary frame which far exceed the dimensions of the molds which could previously be employed in rotary molding machines for producing plastic articles.

3,796,534
GAS MANTLE RINGS
John William Andrews, Stourport on Severn, England, assignor to Steatite and Porcelain Products Limited, Stourport-on-Severn, England
Filed Nov. 6, 1972, Ser. No. 304,056
Int. Cl. F21v *19/06*
U.S. Cl. 431—112 **4 Claims**

A gas mantle ring is made suitable for automatic manufacturing processes by being a fully cylindrical bush with a gas mantle groove at one end and co-planar mounting and handling features projecting from the inner and outer bush surfaces at the opposite end.



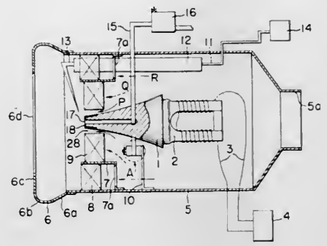
3,796,535
GAS BURNERS, ESPECIALLY FOR DOMESTIC APPLIANCES
Jean-Bernard De Gouville, Montbazon, France, assignor to Ets Sourdillon Matricage Et Robinetterie De Precision, Montbazon, France
Filed Apr. 25, 1972, Ser. No. 247,275
Claims priority, application France, Apr. 28, 1971, 7115178
Int. Cl. F23d *13/36*
U.S. Cl. 431—349 **12 Claims**



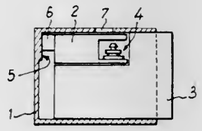
The gaseous mixture is distributed inside the head of the burner at a certain number of outlet orifices arranged for example in a crown. Means are provided in the head to enable the mixture for a slow burning rate to be distributed preferentially to a selected section of one or several of the orifices thus constituting the slow burner. The means may comprise a diffusing tube bringing the mixture into the head of the burner and distributing it through passages arranged so that the one or more corresponding to the selected section have lower pressure drops than those co-operating with the other flame outlet orifices.

3,796,536
LIQUID FUEL BURNER
Makoto Hori, Nara; Nerumitsu Rokudo, and Toshiyuki Ishiguro, both of Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma-shi, Osaka-fu, Japan
Filed Apr. 24, 1972, Ser. No. 246,848
Claims priority, application Japan, Nov. 12, 1971, 46-90821; Apr. 26, 1971, 46-33470; July 3, 1971, 46-58225
Int. Cl. F23c *3/02*
U.S. Cl. 431—1 **10 Claims**

A liquid fuel burner is provided which has a fuel atomizing surface or portion formed at the free end of an exponential horn whose base is securely fixed to a vibrator coupled to an ultrasonic wave generator and which is so mounted that its vibrations may not be transmitted to an outer duct or housing enclosing the horn. An inner mixing vane assembly is disposed coaxially and outwardly of the fuel atomizing surface of the horn in spaced apart relation therewith, and an outer mixing vane assembly is also disposed coaxially and outwardly of the inner mixing vane assembly. At the discharge end of the outer duct or housing is formed an end member comprising a diverging wall portion, an arcuate wall portion and a radially inwardly extending flange portion in order to control the flow of atomized fuel particles.



3,796,537
GAS FUELLED LIGHTER
Gilles Lauri, Livry-Gargan, France, assignor to Societe anonyme dite: Societe Franco-Hispano-Americaine (Francispam), Saint-Gratien, France
Filed Mar. 13, 1972, Ser. No. 234,086
Claims priority, application France, Oct. 29, 1971, 71.38917
Int. Cl. F23q *2/08*
U.S. Cl. 431—131 **2 Claims**

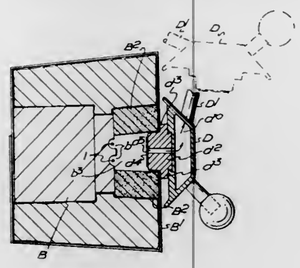


A gas fuelled cigarette lighter comprises a casing and a combination fuel reservoir and ignition mechanism unit slidably mounted in the casing. The unit carries actuating means movably mounted thereon which actuates the ignition mechanism when the unit is pressed into the casing against the resistance of a spring.

3,796,538
FUME EXTRACTORS FOR THE HEATERS OF TEXTILE PROCESSING MACHINES
Frederick Hugh Howorth, Chorley, England, assignor to Howorth Air Conditioning Limited, Bolton, England
Filed June 25, 1973, Ser. No. 373,416
Claims priority, application Great Britain, July 11, 1972, 32279/72
Int. Cl. F27b *9/28*; **F23j** *13/06*
U.S. Cl. 432—59 **2 Claims**

A fume extractor for the inclined heaters of textile processing machines comprising a heater container surround-

ing the heaters and from which fumes are exhausted through ducts in a door in the front of the container, the door being formed with a cavity from which the hot fumes are drawn to



prevent condensation on the walls of the chamber to a main exhaust duct extending parallel to the heaters, the chamber and door being lined with heat insulating material to prevent loss of heat from the fumes during extraction.

3,796,539

APPARATUS FOR MANUFACTURING CERAMICALLY BONDED SHAPED BODIES FROM GRANULATES OF INFLATABLE MINERAL MATERIAL

Erich Sundermann, Braunschweig, Germany, assignor to Firma Zytan Thermochemische Verfahrenstechnik, Braunschweig, Germany

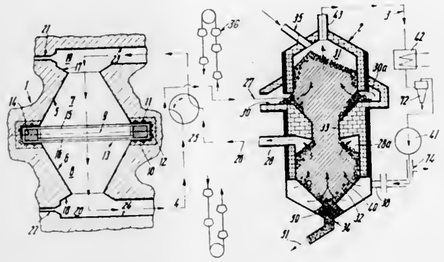
Filed Nov. 9, 1972, Ser. No. 305,149

Claims priority, application Germany, Nov. 10, 1971, 2155933

Int. Cl. F27b *1/00, 1/12*

U.S. Cl. 432—96 **13 Claims**

An apparatus for manufacturing ceramically bonded shaped bodies from granulates of inflatable mineral materials, particularly clay, which comprises a combustion chamber including two combustion chamber regions tapered down in opposite directions. A fire box is provided which has a bottom grate and is adapted to be filled with granulates of inflatable material. A mount is arranged for the fire box in substantially the plane of the joint largest cross-section of the combustion chamber and movable through the latter. A conduit system is connected to both ends of the burning chamber for guiding fuel — and reaction — gases in a circuit. At least one burner device is disposed in the circuit. A reversing device for



reversing the flow of the gases through the combustion chamber is provided. The mount comprises a pocket-shaped enlargement open to the axis of the chamber for reception of the fire box in the combustion chamber. The fire box engages the enlargement with an annular outer holding - and guide - frame, the latter being covered in the pocket-shaped enlargement against the effect of the heat - and reaction - gases and being connected with a divided heat-shield device limiting laterally the filling space of the fire box by arms limiting the heat flow.

3,796,540

PROCESS FOR WHITENING DURABLE-PRESS CELLULOSIC FABRICS WITH BASIC OPTICAL BRIGHTENERS

Robert J. Harper, Jr.; Gloria A. Gautreaux, both of Metairie; Joseph S. Bruno, Chalmette, all of La., and Matthews J. Donoghue, Knoxville, Tenn., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 28, 1972, Ser. No. 238,948

Int. Cl. D06p *5/00*

U.S. Cl. 8—18 **13 Claims**

Durable-press cellulosic fabrics with increased response to basic optical brighteners have been produced by a novel process wherein ordinary chemical crosslinking formulations are modified by substituting an alpha-hydroxy carboxylic acid for the usual strong inorganic acid to provide a chemically modified cellulose with pendant carboxylic groups. The second phase of the process consists of submitting the chemically modified fabric to a relatively mild treatment with a basic optical brightener.

3,796,541

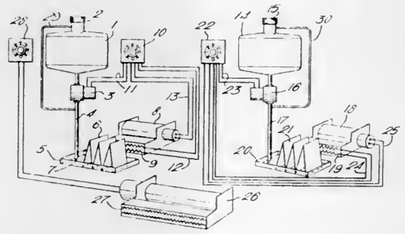
DISINFECTING APPARATUS

Albert F. Gentil, 19 Rue De La Varenne, Saint-Maur, France

Filed Oct. 20, 1971, Ser. No. 190,704

Int. Cl. A61l *9/02*

U.S. Cl. 21—110 **11 Claims**



Apparatus for sequentially evaporating a liquid disinfectant and a neutralizing agent at constant flow rates and feed level. The apparatus includes sealed containers for the liquids to be evaporated; the containers communicating with open evaporating vessels via conduits which are provided with bevel-cuts at the ends immersed in the evaporating vessels, valves positioned to control the flow through the conduits, absorbent pads extending above the level of liquid in the vessels, and a blower for directing a flow of heated gas across the absorbent pads.

3,796,542

USE OF MULTI-PURPOSE CENTRIFUGE TUBE IN BIOLOGICAL ANALYSIS

William M. Kline, Gloversville, N.Y., assignor to Medical Evaluation Devices & Instruments Corp., Gloversville, N.Y.

Continuation-in-part of Ser. No. 60,354, Aug. 3, 1970, Pat. No. 3,712,295. This application Dec. 13, 1971, Ser. No. 207,447

Int. Cl. G01n *33/16, 9/30*

U.S. Cl. 23—230 B **1 Claim**

A multipurpose molded centrifuge tube formed from that type of plastic that is transparent upon completion of molding and includes a body shaped as a bellows-folded helix having a closed bottom and a syringe tip at its top. The tube is used to collect, centrifuge and dispense liquid specimens as incidents to laboratory test procedures; and the transparency of the

tube additionally enables its use when exposed to heat for the visual qualitative determination of the presence of certain theretofore undisclosed compounds in the liquid specimen, such as albumin in urinanalysis.

3,796,543

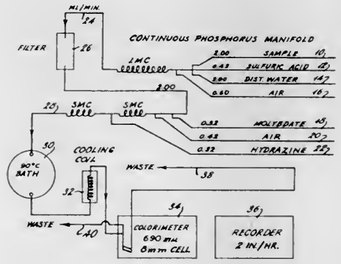
AUTOMATIC ANALYSIS FOR PHOSPHOROUS CONTENT

Lawrence J. Kamphake, Cincinnati, Ohio, assignor to The United States of America as represented by the Administrator of the Environmental Protection Agency, Washington, D.C.

Filed Feb. 7, 1972, Ser. No. 224,016

Int. Cl. G01n *21/28*

U.S. Cl. 23—230 R **4 Claims**

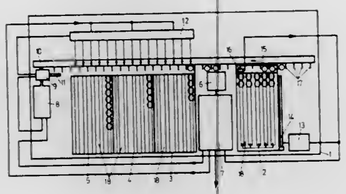


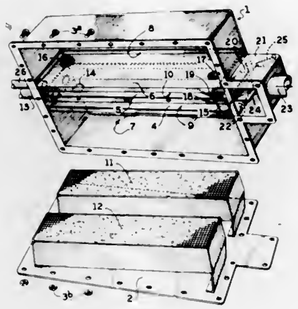
A continuous automatic analytical system for measuring the phosphate content in aqueous fluids. First the phosphate containing sample is acidified, then reacted in an acid medium with molybdate to form molybdiphosphoric acid. Thereafter the molybdenum in the heterpoly acid is selectively reduced by hydrazine to a blue heteropoly complex. The quantity of blue color is directly proportional to the ortho-phosphate concentration in the sampling and a colorimeter reading thereof a measure of the phosphate content in the sample.

3,796,544
DEVICE FOR COLLECTING, TRANSPORTING AND DIVIDING TEST CARRYING CONTAINERS

Karl-Heinz Zauft; Manfred Bogl; Klaus-Steffen Isensee, and Helmut Rohlfs, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Nov. 17, 1971, Ser. No. 199,494
Claims priority, application Germany, Dec. 3, 1970, 2059501
Int. Cl. B65b *43/42*; **G01n** *33/00, 33/16*
U.S. Cl. 23—259 **5 Claims**



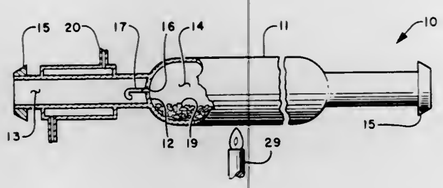


A device for collecting, transporting and dividing test carrying containers has a transporting band provided with suitable holding means which receive individually so-called entire test containers supplied from a store tank and having coded information for identification and treatment of the container contents. They are transported to a reading device and from there further into a decanting position of a test divider. There actuating electronic means influenced by the reading device operate a dosing and characterizing device to divide the entire contents of the container or a part thereof into so-called individually examined containers and to provide their codes. The invention is particularly characterized in that transporting band is moved from the decanting position to several storage tanks. A push-out device operated by the electronic means is located at the receiving side of the storage tanks and is used to move the individual entire testing containers corresponding to information produced by the reading device for the transporting band into a collecting tank corresponding to the required further treatment.

3,796,545
DEVICE FOR PREPARING ELEMENTAL CARBON ENRICHED IN CARBON-13

Jerome C. Liner, 1430 Beaverton, Cincinnati, Ohio

Filed Feb. 23, 1972, Ser. No. 228,615
Int. Cl. C10b *57/00*
U.S. Cl. 23—259.5 **3 Claims**

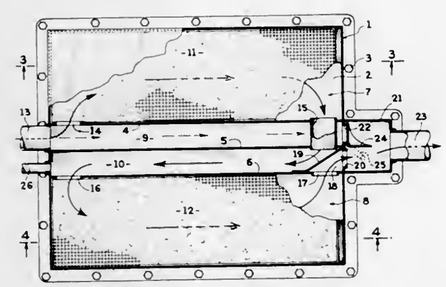


Apparatus for use in preparing elemental carbon comprising a tubular member having an apertured wall portion separating the member into first and second chambers with means disposed on said apertured wall portion to facilitate passage of a fluid released from first chamber into second chamber and impede return of the fluid to the first chamber.

3,796,546
EXHAUST GAS PURIFYING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Bernard Poullot, Rueil, France, assignor to Automobiles Peugeot, Paris, France and Regie Nationale Des Usines Renault, Billancourt, France

Filed June 28, 1971, Ser. No. 157,149
Claims priority, application France, July 16, 1970, 70.26138
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 F **2 Claims**



A single enclosure in which partition walls define two chambers and a by-pass passage interposed between the chambers. Each chamber contains an exhaust gas catalytic cleaning unit. A passage puts the outlet of the first chamber in communication with the inlet of the second chamber so that the exhaust gas enters the first chamber and issues from the second chamber. A single valve member is employed to either close the outlet of the by-pass passage and open the outlet passage of the second chamber or open the outlet of the by-pass passage and close the outlet passage of the second chamber.

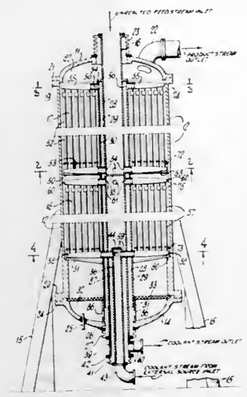
3,796,547
HEAT EXCHANGE APPARATUS FOR CATALYTIC SYSTEM

James R. Muenger, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 880,255, Nov. 26, 1969. This application Dec. 17, 1971, Ser. No. 209,267The portion of the term of this patent subsequent to May 30, 1989, has been disclaimed.
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 L **3 Claims**

A heat exchange apparatus for an exothermic catalytic system comprising a closed cylindrical vessel containing a removable axial spine which extends through the top and bottom heads of said vessel. Two separate heat exchangers are embedded in catalyst within said vessel and are supported by

said axial spine as a removable unit and are in communication therewith. The axial spine contains passageways for separately introducing and removing two separate coolant streams into said heat exchangers. The first coolant stream consists of unreacted fresh feedstream which is thereby preheated before it is introduced into the catalyst surrounding each heat

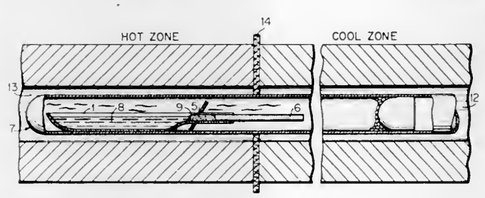


exchanger. The second coolant stream is water or an organic liquid from an external source. Both coolant streams pass in noncontact concurrent heat exchange with the feedstream undergoing exothermic chemical reaction as it passes up through the catalyst surrounding each heat exchanger. The product stream leaves from the top of the catalyst and is discharged through an exit port in the top head of the vessel.

3,796,548
BOAT STRUCTURE IN AN APPARATUS FOR MAKING SEMICONDUCTOR COMPOUND SINGLE CRYSTALS

David W. Boss, Beacon; Edward M. Hull, La Grangeville, and Salvatore J. Scilla, Marlboro, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 13, 1971, Ser. No. 180,041
Int. Cl. B01j *17/06*
U.S. Cl. 23—273 SP **3 Claims**



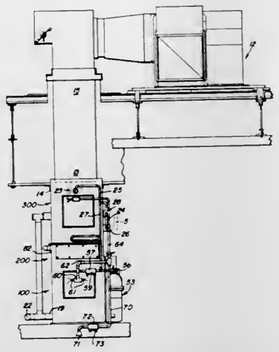
An apparatus useful for growing single crystal semiconductor material comprising a liquid melt section coaxially integrated with a seed cavity and having an annularly disposed integral thermal reflector means and a radiant heat dissipating member horizontally disposed and in a post linear direction from the seed cavity.

3,796,549
AIR SCRUBBER APPARATUS

Trenton O. Hall, 6500 N.E. 2nd Ave., Miami, Fla.

Continuation-in-part of Ser. No. 92,822, Nov. 25, 1970, abandoned, and a continuation-in-part of Ser. No. 195,170, Nov. 3, 1971. This application Mar. 22, 1972, Ser. No. 237,073
Int. Cl. F23g *7/06*
U.S. Cl. 23—277 C **10 Claims**

An improved air scrubber apparatus with fire extinguishing means comprising a primary scrubber assembly, a burner assembly adapted to be connected to said primary scrubber assembly and a secondary scrubber assembly adapted to be connected to said burner assembly. The primary scrubber assembly comprises a housing having spray means mounted therein, the spray means being connected to a source of fluid

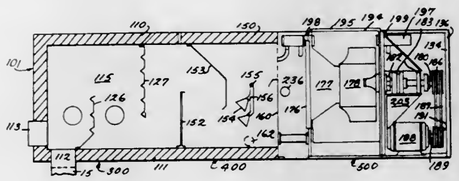


and adapted to discharge the fluid in spray form to clean and cool gases passing through the scrubber housing. The burner assembly comprising a housing adapted to be mounted on the primary scrubber assembly and has heat producing means mounted thereto. The secondary scrubber assembly comprising a housing having spray means connected and mounted therein.

3,796,550
AIR SCRUBBER APPARATUS WITH INCINERATOR

Trenton O. Hall, 6500 N.E. 2nd Ave., Miami, Fla.

Filed Apr. 20, 1972, Ser. No. 245,749
Int. Cl. F23g *7/06*; **B01j** *1/00*
U.S. Cl. 23—277 C **16 Claims**



An air scrubber apparatus comprising a housing containing a burner compartment having burner apparatus therein adapted to incinerate gases entering into the housing, a scrubber compartment positioned adjacent the burner compartment and a gas discharge compartment connected to the scrubber compartment. A nozzle is mounted in the scrubber compartment to cool the heated gases coming from the burner compartment before the gases are discharged into the atmosphere.

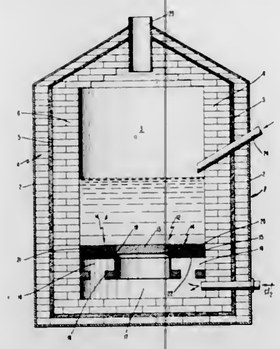
3,796,551
REACTION CHAMBER CONSTRUCTION FOR THE CHLORINATION OF ALUMINA

Roy M. Pope, Maryville, Tenn., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 14, 1971, Ser. No. 180,373
Int. Cl. B01j *9/18, 9/24*
U.S. Cl. 23—284 **2 Claims**

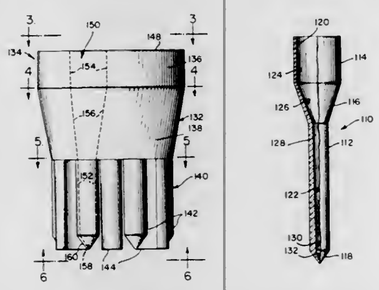
Construction for a fluidized bed reaction chamber for the chlorination of alumina bearing material including means for

effecting the introduction of a central reactant gas stream through a centrally disposed porous gas distribution body and a perimetrically confining reactant gas stream through



perimetrically disposed direct flow nozzle system serving as a flowing boundary curtain adjacent a carbon wall backed by compacted high density alumina to minimize undesired flow of reactant chlorine gas through the reaction chamber walls.

3,796,552
CRUCIBLE
Morton Robinson, Granada Hills, and Donald M. Cripe, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Division of Ser. No. 627,355, March 31, 1967, Pat. No. 3,649,552. This application Jan. 3, 1972, Ser. No. 215,229
Int. Cl. B01 *3/04*
U.S. Cl. 23—292 **7 Claims**



The crucible is formed of compacted graphite or vitreous carbon and has an interior tapered toward its nucleation point. Single and multiport types are described for growing one or more crystals similtaneously. The crucible is useful for growing laser quality crystals of alkaline earth and rare earth fluorides, including mixed rare earth fluorides and mixed rare earth-alkaline earth fluorides which are free from oxides and oxyfluorides.

3,796,553
HIGH FIELD COMPOSITE SUPERCONDUCTIVE MATERIAL
John G. Daunt, Hoboken, N.J., assignor to Research Corporation, New York, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,359
Int. Cl. B23p *3/00*
U.S. Cl. 29—191.2 **15 Claims**

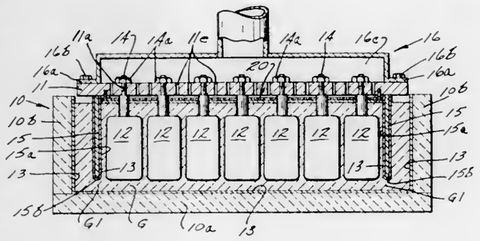
Ductile composite materials which are superconductive and which exhibit high-field properties, and methods of making such composite materials. The composite materials are ductile at room temperature, can be easily fabricated into coils, and can carry supercurrents at high current densities and in high fields. The composite materials are thermally and electrically stabilized and are in the form of a sponge-like matrix of a first metal characterized by ductility and good thermal conductivity. The continuous network of voids in the matrix is infiltrated with a continuous network of multiply connected filaments of a ductile superconductor. The average thickness of the super-

conducting filaments is of the order of magnitude of 100 Angstrom units or less. The composite materials are made by preparing a porous matrix of the ductile and thermally conductive metal, then infiltrating the voids in the matrix with a ductile superconductor, then reducing the infiltrated matrix, as by drawing, until the average thickness of the superconductor filaments is within the desired range. Certain properties of the composite materials are improved by precipitation hardening of the superconductor and by twisting.

3,796,554
WELDING GAS
Helmut Meinass, Winibaldstr.,, 819 Wolfratshausen, Germany
Filed Apr. 19, 1972, Ser. No. 245,488
Claims priority, application Germany, Apr. 20, 1971, 2119152
Int. Cl. C10l *3/02*
U.S. Cl. 48—197 FM **8 Claims**

A welding gas composition having primary gas components which remain at a substantially uniformly high concentration as the gas is withdrawn from the cylinder and which also remain below the explosive limit, contains 1–35 molar percent of acetylene; 23–90 molar percent of propane, and/or propylene and/or cyclopropane, 8–75 molar percent of methylacetylene and/or propadiene, and 1–20 molar percent of paraffinic and/or olefinic C_4—hydrocarbons.

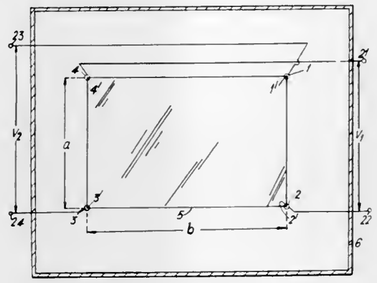
3,796,555
METHOD AND APPARATUS FOR PRODUCING HOLLOW GLASS ARTICLES BY MODULE IMMERSION TECHNIQUE
George E. Keefer, Toledo, and Paul J. Qualls, Sylvania, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Continuation of Ser. No. 622,347, March 10, 1967, abandoned. This application May 6, 1970, Ser. No. 37,370The portion of the term of this patent subsequent to July 22, 1986, has been disclaimed.
Int. Cl. C03b *39/00;* **C03c** *29/00*
U.S. Cl. 65—25 A **13 Claims**



The disclosure relates to improvements in the apparatus and method for practicing the module immersion technique for

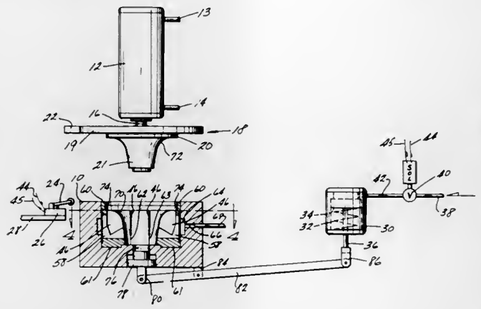
forming hollow glass articles and more particularly involves provisions for controlling the heat flow from the molten glass to the cavity forming immersed module, while concurrently applying fluid pressure forces on the molten glass to cause it to accurately conform to the configuration of the immersed module without producing undesirable stresses in these portions of the molten glass which is immediately rigidified due to its contact with the immersed module.

3,796,556
MANUFACTURE OF WELDED GLAZING UNITS
Gerald Shepherd, St. Helens, and James Berry Higham, Eccleston Park, both of England, assignors to Pilkington Brothers Limited, Liverpool, England
Filed May 25, 1972, Ser. No. 256,861
Claims priority, application Great Britain, May 28, 1971, 17976/71
Int. Cl. C03b *23/20*
U.S. Cl. 65—40 **6 Claims**



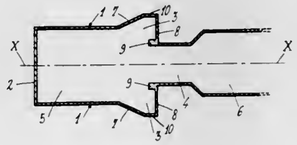
In the manufacture of multiple glazing units, such as double glazing units, edge regions of at least one glass sheet are heated by passage of alternating electric current to weld the edge regions of adjacent sheets together. The current is passed continuously along two separate conducting paths through the glass, the currents in the two paths having an angular phase displacement relative to each other. The voltage used may be fixed and the phase displacement variable. Alternatively the phase displacement may be fixed and the voltage variable.

3,796,557
PRECISION GLASS PRESSING MOLD AND METHOD OF MOLDING GLASS
Harold P. Sponseller, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 6, 1972, Ser. No. 231,990
Int. Cl. C03b *11/16*
U.S. Cl. 65—77 **14 Claims**



Apparatus and method for precision molding of glass articles. A glass mold for the pressing of precision glass articles is made with a short stroke piston built into the bottom of the mold in an area where material will be trimmed away later. In addition, the mold cavity configuration is defined by a series of mold inserts which, when assembled, have between them small vacuum slots connecting with a vacuum channel formed within the mold. During the initial forming cycle, excess glass in the mold charge is displaced into the cylinder of the short stroke piston in the bottom of the mold. Then, the short stroke piston is pressed upward forcing glass into and thereby filling all of the recesses within the mold to an exact degree. Any excess material will remain in the cylinder of the short stroke piston and is later trimmed away. In this manner, precision parts may be molded from glass with a degree of accuracy and with a complexity of external detail previously unobtainable.

3,796,558
TANK FURNACE FOR GLASS-MAKING
Thuan Ton That, Maubeuge, France, assignor to Boussois Souchon Neuvesel, Paris, France
Filed July 3, 1972, Ser. No. 268,904
Claims priority, application France, July 29, 1971, 71.27876
Int. Cl. C03b *5/20*
U.S. Cl. 65—206 **4 Claims**



This invention relates to a tank furnace for glass-making. The tank has lateral walls disposed on each side of the longitudinal axis of the furnace and each defining a recess which serves as a deslagging or skimming pocket, that recess being provided with at least one upstream wall and at least one downstream wall. At least one portion of the upstream wall of the recess is oriented at an oblique angle with respect to the longitudinal axis of the tank furnace, and the downstream wall is substantially at right angles to this axis.

3,796,559
PROCESSES FOR INTRODUCING ZINC MICRONUTRIENTS INTO LIQUID FERTILIZERS
Richard J. Windgassen, East Chicago, Ind., assignor to Standard Oil Company, Chicago, Ill.
Continuation of Ser. No. 129,109, March 29, 1971, abandoned, which is a continuation-in-part of Ser. No. 867,905, Oct. 20, 1969, abandoned. This application Jan. 8, 1973, Ser. No. 321,924
Int. Cl. C05d *9/02*
U.S. Cl. 71—1 **2 Claims**

Zinc particulate compositions precoated with alkyl amine, alkyl phosphine, salts of such amines and phosphines or mixtures thereof, when added to conventional liquid fertilizers, avoid lumping and caking which otherwise occurs when uncoated zinc compositions are added to liquid fertilizers.

3,796,560

N-ISOPROPYL-PHOSPHORO-AMIDO-THIOATES

Gerhard Schrader, Wuppertal-Cronenberg; Ludwig Eue, Cologne-Stammheim; Helmuth Hack, Cologne-Buchheim, all of Germany; Seiichi Hirane; Masahiro Aya; Shigeo Kishino, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 867,875, Oct. 20, 1969, Pat. No. 3,705,929. This application May 17, 1972, Ser. No. 254,144
Claims priority, application Japan, Oct. 28, 1968, 43/78424
Int. Cl. A01n *9/36*

U.S. Cl. 71—87 **14 Claims**

N-isopropyl-phosphoro-amido-thioates, i.e., 0-(2-nitro-4-alkoxy-phenyl)-0-alkyl-N-isopropyl-phosphoro-amido-thioates or 0-(2-nitro-4-alkoxy-phenyl)-0-alkyl-N-isopropyl-amido-thionophosphates, which possess herbicidal properties and which may be produced by conventional methods.

3,796,561

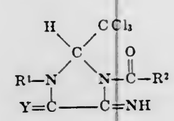
1,3-DISUBSTITUTED-2-TRICHLOROMETHYL-5-IMINO-1,3-IMIDAZOLIDINONES AS HERBICIDES

Malcolm Scott Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 69,466, Sept. 3, 1970, Pat. No. 3,721,679. This application Aug. 21, 1972, Ser. No. 282,514
Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **8 Claims**

Compound of the formula



wherein Y is oxygen or sulfur, R^1 is alkyl of 1 to 8 carbon atoms substituted with 0 to 3 halogen atoms or aryl of 6 to 10 carbon atoms substituted with 0 to 3 halogen atoms, R^2 is hydrogen, R^1, an alkoxy of 1 to 8 carbon atoms or phenoxymethyl substituted with 0 to 3 halogen atoms in the benzene nucleus. The compounds are pesticides and/or herbicides.

3,796,562

PROCESS OF MANUFACTURING A PESTICIDAL ACTIVE WETTABLE POWDER AND PRODUCTS

John Lamont, Concord, and Ralston Curtis, Ross, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jan. 25, 1971, Ser. No. 109,548
Int. Cl. A01n *9/22*

U.S. Cl. 71—93 **9 Claims**

A wettable powder pesticide formulation composition and the process of manufacturing the same is described herein. The composition is a combination of a liquid N,N-alkylthiocarbamate herbicide and a solid s-triazine herbicide on a solid carrier that do not readily separate when mixed with water.

3,796,563

METHOD OF MANUFACTURING METAL SHEET AND FOIL

George E. Wieland, Jr., and Eugene M. Rudzki, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 24, 1972, Ser. No. 256,276
Int. Cl. B22f *1/00, 3/18, 3/24, 3/00*

U.S. Cl. 75—200 **5 Claims**

An aqueous slurry of superconcentrated iron ore powder and a binder is continuously deposited on a supporting carrier, dried, and the resultant coating heated in a reducing atmosphere to about 1,500° to 2,100° F. for several minutes to partially reduce the oxygen content of the ore. The coating is then stripped from the carrier and rolled to provide a strip of increased density. The strip is open coiled and heat treated to completely reduce the oxygen content of the ore, as well as to sinter the strip, and rolled to final gauge. The strip is then annealed, which both softens and further sinters the strip, and finish rolled.

3,796,564

DENSE CARBIDE COMPOSITE BODIES AND METHOD OF MAKING SAME

Kenneth M. Taylor, Niagara Falls, and Richard J. Palicka, Youngstown, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 640,327, May 22, 1967. This application June 19, 1969, Ser. No. 848,131
Int. Cl. C22c *1/04*

U.S. Cl. 75—203 **9 Claims**

Hard, dense, composite ceramic bodies of boron carbide, silicon carbide and silicon, particularly useful as ceramic armor, are produced by forming a mixture of granular boron carbide and a temporary binder into a desired shape and setting the binder to obtain a coherent green body which is siliconized by heating it, in an inert atmosphere and in contact with a controlled amount of silicon, to a temperature above the melting point of silicon and in the range of about 1500-2200°C, whereupon the molten silicon infiltrates the body and reacts with some of the boron carbide thereof.

3,796,565

PRODUCTION OF POROUS NICKEL PLATES

Herbert Arthur Hancock, Dartmouth, Nova Scotia, and David John Ivor Evans, North Edmonton, Alberta, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Mar. 16, 1973, Ser. No. 341,865
Int. Cl. B22f *5/00, 3/10*

U.S. Cl. 75—211 **10 Claims**

The process involves providing starting material composed of nickel powder smaller than 270 mesh standard Tyler screen. The nickel oxide content of the starting powder is adjusted to 0.7 to 1.4 percent by weight and the powder is slurried in a volatile liquid, optionally containing an organic binder. The slurry is heated to a temperature below that at which sintering occurs to evaporate the volatile liquid then the slurry is heated at sintering temperature in a reducing atmosphere.

3,796,566

PREVENTION OF BONDING OF ALUMINUM POWDER METALLURGY PARTS DURING SINTERING BY SEPARATING THE PARTS WITH OXIDIZED PARTICULATE ALUMINUM

Kenneth J. Brondyke, Oakmont, and Joseph H. Dudas, Pittsburgh, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed June 26, 1972, Ser. No. 266,293
Int. Cl. B22f *3/16*

U.S. Cl. 75—223 **7 Claims**

Use of particles of aluminum having an oxide coating obtained by active oxidation thereof to prevent sticking together of aluminum powder metallurgy parts stacked or piled during sintering.

3,796,567

PROCESS FOR PRODUCING AUSTENITIC STEELS WELDABLE WITHOUT DROPLET FORMATION

Gerhard Kohlert and Wolfgang Stawicky, Altena, Germany, assignors to Vereinigte Deutsche Metallwerke AG, Frankfurt am Main, Germany

No Drawing. Filed July 28, 1972, Ser. No. 276,150
Int. Cl. C21c *5/52, 7/10;* **C22c** *39/20*

U.S. Cl. 75—12 **7 Claims**

A process for producing austenitic steels (especially steel rich in nickel and chromium) which can be welded without the formation of droplets using arc-welding techniques in the presence of the magnetic fields produced thereby. The process comprises melting a steel charge containing 16 to 25% by weight chromium and 8 to 25% by weight nickel and desulfurizing the charge in an electric arc furnace. The carbon content of the melt is reduced to low values by oxygen blowing and a vacuum treatment (e.g. to bring the carbon content to a maximum of 0.02% by weight). The melt is then deoxidized by the addition of conventional deoxidizing agents and adjusted to the desired final composition, e.g. by the addition of alloying elements. Thereupon, the steel melt is treated with metallic calcium in an amount of at least 0.1 gm. of metallic calcium per kilogram of the melt.

3,796,568

FLAME SMELTING AND REFINING OF COPPER

Andrew Geza Szekely, Yorktown Heights, and Peter Wrampe, Pomona, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 211,896
Int. Cl. C22b *15/00*

U.S. Cl. 75—74 **7 Claims**

A free-flowing slurry of copper precipitate in a liquid hydrocarbon fuel is fed together with an oxygen containing gas into the internal combustion zone of a slurry burner under preselected conditions of flame temperature and oxygen to fuel ratio such that the impurities in the copper precipitate are oxidized and/or vaporized in the flame, while the copper is melted. The molten copper is collected in a fluid slag covered pool and the remaining impurities which are oxides insoluble in the copper are separated by being retained in the slag layer.

3,796,569

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

Eiichi Kondo and Kikuo Kinjo, Tokyo, and Teruo Yamanouchi, Fujisawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 11, 1971, Ser. No. 197,754
Claims priority, application Japan, Nov. 17, 1970, 45/101,621
Int. Cl. G03g *5/06*

U.S. Cl. 96—1.6 **7 Claims**

An electrophotographic photosensitive material which comprises poly-9-vinylcarbazole or derivative thereof and a dialkylaminostyryl dye.

3,796,570

ELECTROPHOTOGRAPHIC, CONTACT-PRINTING PROCESS EMPLOYING A DIELECTRIC LIQUID LAYER

Robert L. Comeau, South Hadley, Mass., assignor to Scott Paper Company

No Drawing. Filed Feb. 11, 1972, Ser. No. 225,607
Int. Cl. G03g *13/00*

U.S. Cl. 96—1 R **3 Claims**

A method for contact printing an electrophotographic recording element is disclosed which comprises interposing a layer of a dielectric liquid between the charged photoconductive layer of an electrophotographic material and the partially opaque original to be duplicated during the imagewise exposure of the material to a suitable light source.

3,796,571

PROCESS FOR THE PREPARATION OF POLYETHYLENE TRANSPARENCIES FOR USE IN PHOTOREPRODUCTION

Frank Lerman, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 63,950, Aug. 14, 1970. This application Dec. 1, 1972, Ser. No. 311,173
Int. Cl. G03g *13/14*

U.S. Cl. 96—1.4 **6 Claims**

A process for preparing polyethylene transparencies useful for further photoreproduction, e.g., in photogravure, lithographic, or offset techniques. The transparencies are prepared by transfer of fixed polyethylene images formed xerographically, for example, to polyethylene film layers juxtaposed therewith. The transfer is effected by subjecting the juxtaposed layers to heat and/or pressure.

3,796,572

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Mitsuru Hashimoto, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 7, 1972, Ser. No. 312,942
Claims priority, application Japan, Dec. 27, 1971, 47/105,237
Int. Cl. E01c *1/00*

U.S. Cl. 96—1.5 **5 Claims**

An electrophotographic light-sensitive material having a photoconductive layer formed on an electroconductive support, the photoconductive layer comprising an organic photoconductive polymer sensitized with a 2-aza-9-fluorenone derivative.

3,796,573

SENSITIZERS FOR N-TYPE ORGANIC PHOTOCONDUCTORS

Jean Elmore Jones, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 5, 1972, Ser. No. 259,706
Int. Cl. G03g *51/06*

U.S. Cl. 96—1.6 **9 Claims**

Photoconductive compositions are prepared from n-type photoconductors, electron donating sensitizing dyes and polymeric binders. The electron donating sensitizing dyes (1) have a cathodic polarographic half-wave potential more negative than —1.0 volt; (2) have an anodic polarographic half-wave potential and a cathodic half-wave polarographic potential which added together, give a sum more negative than 0.00 volt; and (3) do not desensitize negative silver bromoiodide emulsions, containing 99.35 mole percent bromide, more than 0.4 log *E* at radiation of 365 nm. when incorporated therein at a concentration of 0.2 millimole of dye per mole of silver halide. The photoconductive compositions exhibit excellent spectral response and high speed characteristics.

3,796,574

PHOTOGRAPHIC COMPOSITIONS AND PROCESSES FOR THE FORMATION OF INTEGRAL COLOR MASKS

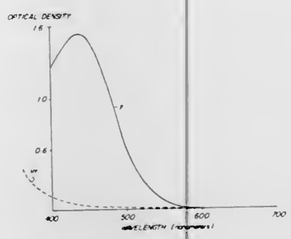
John Figueras, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1972, Ser. No. 249,952
Int. Cl. G03c *5/30, 7/00, 7/04*

U.S. Cl. 96—9 **9 Claims**

Compositions and processes are disclosed for the preparation of photographic integral colored masks in negative

color elements by treating the element, after initial exposure, conventional color development and overall reexposure, with a second color developing solution which contains a p-sulfonamidoaniline color developing agent.



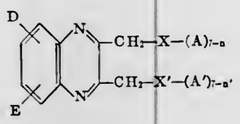
Treatment with the second color developing solution results in a positive mask that corrects unwanted absorptions of the dye image formed by the conventional color development step.

3,796,575
COLOR-PHOTOGRAPHIC PROOFING PROCESS
Hans-Rudolf Kirsch, Zofingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed July 14, 1971, Ser. No. 162,674
Claims priority, application Switzerland, July 24, 1970, 11,291/70
Int. Cl. G03c *5/50, 7/16;* **G03f** *5/24*
U.S. Cl. 96—14 **4 Claims**

A process for the manufacture of screened colored positive direct-viewing images, which in the printing industry permit the rapid detection of the matching of the component print positives which the final printed product will show is disclosed.

3,796,576
PHOTOGRAPHIC MATERIAL COMPRISING A QUINOXALINE AS DYE BLEACHING CATALYST
Hans-Peter Schlunke, Marly-le-Petit, and Christian Egli, Magden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,749
Claims priority, application Switzerland, Sept. 4, 1970, 13,253/70
Int. Cl. G03c *7/00, 7/16, 1/76*
U.S. Cl. 96—53 **20 Claims**

A photographic, light-sensitive material for the silver dye bleach process, which comprises on a carrier, in at least one layer as dye bleaching catalyst a quinoxaline of the formula



(1)

wherein D is oxygen, halogen,

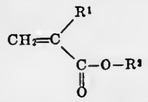
or —O—R_3, E hydrogen, nitro, —O—R_4 or —COO—R_4, R_1 and R_2 each representing hydrogen, acyl or lower alkyl and R_3 and R_4 each representing hydrogen or lower alkyl, or wherein D and E in vicinal position form together a residue of formula —O—$(CH_2)_m$—O—, wherein *m* is 1 or 2, X and X' each represent one atom of an element of the 4th to 7th main group of the periodic system, A and A' each represent hydrogen or an organic residue, and *n* and *n'* each represent the group number of the atom X or X', so that in so far as *n* or *n'* is 4 or 5 the individual residues A or A' are the same or different as well as new quinoxalines of Formula 1 wherein in case X is oxygen or halogen, one of D and E is different from hydrogen are disclosed.

3,796,577
DIRECT POSITIVE PROCESS INVOLVING UNIFORM EXPOSURE OF AN IMAGEWISE EXPOSED INTERNALLY SENSITIVE SILVER HALIDE EMULSION TO HIGH INTENSITY RADIATION
Susan S. Collier, Le Roy, and Paul B. Gilman, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Feb. 3, 1972, Ser. No. 223,376
Int. Cl. G03c *5/24*
U.S. Cl. 96—64 **5 Claims**

Positive images can be produced in a silver halide photographic element by (1) imagewise exposing a photographic element containing a silver halide emulsion which contains internal image silver halide grains (a) which are internally sensitized and (b) have a hole trapping agent which is a spectral sensitizing dye adsorbed to the surface of the silver halide grains and which has a polarographic oxidation potential of less than plus 0.90 v., (2) exposing the photographic element to a high intensity overall flash of light, and (3) developing a positive image in the photographic element with a surface, silver halide developer. Silver halide photographic emulsions for producing such positive image which are internally fogged but have little or no surface fog are also disclosed.

3,796,578
PHOTOPOLYMERIZABLE COMPOSITIONS AND ELEMENTS CONTAINING ADDITION POLYMERIZABLE POLYMERIC COMPOUNDS
Keizo Hosoi, Tokyo, Hiroshi Sagami, Shiki, and Isao Imai, Niiza, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Dec. 16, 1971, Ser. No. 208,690
Claims priority, application Japan, Dec. 26, 1970, 45/128,473; Mar. 6, 1971, 46/11,702, 46/11,703; Mar. 17, 1971, 46/14,385
Int. Cl. G03c *1/68, 1/70*
U.S. Cl. 96—67 **20 Claims**

Addition polymerizable polymeric compounds produced by esterification reaction or addition reaction of a copolymer having pendent carboxyl groups and about 0.03 to 1.0 equivalent, based upon the carboxyl groups of said copolymer, of an ethylenically unsaturated compound having one oxirane ring, said copolymer being obtained by copolymerizing (1) about 10 to 95 percent by weight of at least one member selected from the group consisting of styrene and the methyl-substituted styrene derivatives (2) about 5 to 70 percent by weight of at least one ethylenically unsaturated mono- or di-carboxylic acid, its anhydride or its monoalkyl of 1 to 4 carbon atoms ester, (3) up to about 30 percent weight of at least one member selected from the group consisting of acrylonitrile and methacrylonitrile, (4) up to about 85 percent by weight of at least one compound of the formula



wherein R^1 represents a hydrogen atom or methyl group; and R^2 represents an alkyl group having 1 to 12 carbon

atoms, and (5) up to about 50 percent by weight, based upon the total weight of said compound (3) and/or (4), of at least one vinyl ester of a saturated aliphatic monocarboxylic acid having 2 to 10 carbon atoms, the photopolymerizable compositions comprising (A) about 100 parts by weight of the above-described addition polymerizable polymeric compound, (B) about 5 to 70 parts by weight of at least one ethylenically unsaturated compound and (C) about 0.0001 to 10 parts by weight of a photopolymerization initiator.

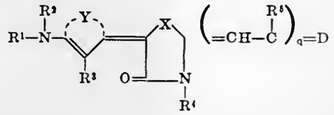
The compositions give photopolymerizable elements which are useful for various pattern or image yielding purposes and especially useful in making reliefs, particularly lithographic plates having an excellent printing durability.

3,796,579
MULTIPLE-SPEED PHOTOGRAPHIC EMULSION CONTAINING AN ORGANIC COMPOUND OXIDIZABLE TO A SPECTRAL-SENSITIZING DYE
Leslie G. S. Brooker, deceased, late of Rochester, N.Y., by Lincoln Rochester Trust Company, executor, and Paul B. Gilman, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Apr. 10, 1972, Ser. No. 242,737
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 R **16 Claims**

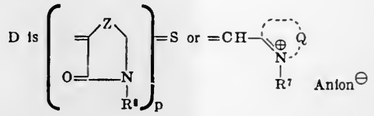
A multiple-speed photographic emulsion is provided by incorporating a colorless dye precursor in a photographic silver halide emulsion. After exposure, the emulsion is developed and a normal photographic image is obtained. During the course of development, the dye precursor is converted into an active spectral sensitizing dye in the areas of exposure. If higher photographic speed is desired, the element is then uniformly reexposed to radiation corresponding to the sensitivity of the spectral sensitizing dye and development is continued to obtain an amplified image corresponding to a relatively higher speed.

3,796,580
SPECTRALLY SENSITIZED LIGHT SENSITIVE SILVER HALIDE MATERIAL
Hans Ohlschlager, Cologne, and Oskar Riester, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 30, 1971, Ser. No. 129,580
Claims priority, application Germany, Apr. 10, 1970, P 20 17 206.9
Int. Cl. G03c *1/10*
U.S. Cl. 96—127 **1 Claim**

Excellent spectral sensitization of silver halide photographic materials with improved stability to elevated temperature and moisture is effected by trimethine hemioxonoles if the three carbon atoms of the trimethine chain form part of a 5- or 6-membered isocyclic ring. The sensitizing dyes have the formula:



wherein



and the other symbols have the meaning given in the description.

3,796,581
MARGARINE FAT CONTAINING INTERESTERIFIED CONSTITUENTS
Karl Frommhold, Berlin, Germany, assignor to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 218,618, Jan. 17, 1972, which is a continuation-in-part of application Ser. No. 802,221, Feb. 25, 1969, both now abandoned. This application May 23, 1972, Ser. No. 256,136
Claims priority, application Germany, Feb. 28, 1968, P 16 92 539.6
Int. Cl. A23d *3/00*
U.S. Cl. 99—122 MO **6 Claims**

The margarine fat formulation comprises:
(A) A liquid fat containing at least 40% polyunsaturated fatty acids;
(B) A fat of a melting point of 41–45° C. containing or consisting of hydrogenated soya fat;
(C) A fat of a melting point of 25–40° C., at least part of at least the constituents (A) and (B) being interesterified.

3,796,582
Zn-RICH COATINGS
Martin Joseph Leahey, Cheltenham, New South Wales, and John James Hartley, Hornsby, New South Wales, Australia, assignors to Berger, Jenson & Nicholson Limited, London, England
No Drawing. Filed Apr. 6, 1972, Ser. No. 241,795
Claims priority, application Great Britain, Apr. 6, 1971, 8,857/71
Int. Cl. C09d *5/10*
U.S. Cl. 106—1 **7 Claims**

Paints based on organic titanate polymer binders and containing electrically conductive pigments, e.g., zinc, for the protection of steel work, are improved by the incorporation of an organic aliphatic titanate monomer such as butyl hexylene glycol titanate. The paints can be applied in relatively thick films having good adherence and resistance to cracking.

3,796,583
PROCESS FOR MAKING FOUNDRY MOLDS
Janis A. Bungs, Willoughby, and Neil W. Stillman, Madison, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Continuation-in-part of application Ser. No. 665,742, Sept. 6, 1967. This application Sept. 17, 1970, Ser. No. 73,075
Int. Cl. B28b *7/28*
U.S. Cl. 106—38.8 **8 Claims**

Molds for use in metal casting are provided by mixing a major portion of a particulate refractory material with a minor amount of a binder which consists essentially of coal tar, a polyisocyanate and a catalyst, such as an amine. Such a mixture of refractory material and binder will air-set at ambient temperatures to give a satisfactory mold or core. Furthermore, if there is added to the binder composition a deep-set promoting agent, such as an epoxide or polyol, the mold will set even more uniformly and rapidly throughout its cross-section.

3,796,584
COLORED RUTILE BOULES AND METHOD OF MAKING THE SAME
John Donald Chase, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of abandoned application Ser. No. 118,748, Feb. 25, 1971. This application Aug. 14, 1972, Ser. No. 280,695
Int. Cl. C04b *35/00, 35/46*
U.S. Cl. 106—42 **2 Claims**

Single crystal rutile boules modified with both tungsten and nickel are produced which vary in color from yellow to reddish amber. The boules are produced by mixing equimolar quantities of nickel and tungsten oxides .006–

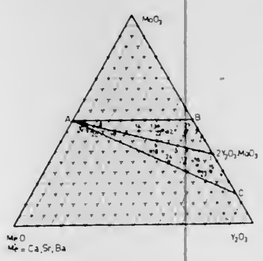
0.3% NiO and 0.02–0.8% WO_3 by weight of TiO_2, with rutile feed powder and fusing said mixture with a plasma or flame heat source to form a single crystal boule. The boules produced have potential utility as a gem material or in microwave maser applications.

3,796,585

METHOD OF MANUFACTURING A PIGMENT

Willem Lambertus Wanmaker and Johannes Gerardus Verriet, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,134
Claims priority, application Netherlands, Dec. 4, 1970, 7017715
Int. Cl. C09c *1/02;* **C09k** *1/10;* **H01j** *1/63*
U.S. Cl. 106—288 B **6 Claims**



A pigment manufactured by heating a mixture comprising Y_2O_3 and MoO_3 in which the molar ratio between Y_2O_3 and MoO_3 has a value of between 6 and 1. Up to 75 mol percent of Y_2O_3 may be replaced by one or more of the rare earth oxides and up to 75 mol percent of MoO_3 may be replaced by WO_3. The pigment comprises a compound defined by the formula

$$2(Y_{1-x}Ln_x)_2O_3 \cdot (Mo_{1-y}W_y)O_3$$

The starting mixture may furthermore comprise per mol of Y_2O_3 and MoO_3 up to 8 moles of CaO and/or SrO and/or BaO combined with one mol of MoO_3 per mol of alkaline earth oxide. The starting mixture may alternatively comprise up to 10 moles of ZnO and/or MgO and/or CdO per mol of Y_2O_3 and MoO_3.

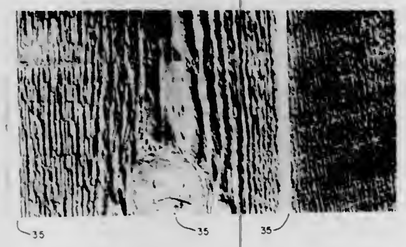
Paramount use: blue absorbing layer in fluorescent lamps having a satisfactory color rendition.

3,796,586

DEEP EMBOSSED, SHINGLE LAP SIDING

Charles M. Hanlo, Addison, and Allan J. Luck, Marengo, Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Sept. 8, 1971, Ser. No. 178,556
Int. Cl. B44d *1/26*
U.S. Cl. 117—8 **5 Claims**



A deep embossed, shingle lap siding for building wall and roof structures formed of compressed wood fibers having an uneven, deep embossed surface on one side comprising high and low portions and resembling wood shingles. A first coating of coloring or tinting agent is applied only on selected portions of said uneven surface and thereafter a second coating of coloring or tinting agent is applied over substantially the entire uneven surface, thereby providing an appearance of stained wood shingles.

3,796,587

CARBON FIBER REINFORCED NICKEL MATRIX COMPOSITE HAVING AN INTERMEDIATE LAYER OF METAL CARBIDE

Raymond Vincent Sara, North Olmsted, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 10, 1972, Ser. No. 270,209
Int. Cl. C23c *1/04, 1/10*
U.S. Cl. 117—71 R **40 Claims**

Composite articles having a nickel base metal matrix reinforced with a plurality of high strength, high modulus carbon fibers having a thin, intermediate layer of a metal carbide disposed on the fiber surfaces. Such composites are characterized by improved thermal cycling characteristics and are produced by immersing a plurality of high strength, high modulus carbon fibers in a molten metal bath containing an alloy consisting essentially of at least one metal capable of reacting with carbon to form a metal carbide and at least one acid-soluble metal which does not react with carbon to form a metal carbide and which acts as a vehicle or carrier for the carbide-forming metal; soaking the fibers in said molten metal bath for a time sufficient to effect reaction between the fibers and the carbide-forming metal to produce a metal carbide coating on the surface of the fibers; removing unreacted metal from the metal carbide coated fibers so-produced; and incorporating the fibers into a nickel base metal matrix.

3,796,588

PROCESS FOR RENDERING A STEEL PIECE SUPERFICIALLY HARD AND CORROSION RESISTIVE, PIECE OBTAINED BY THE CARRYING OUT OF THIS PROCESS AND USE OF THE LATTER

Hans E. Hintermann, Anet, and Werner Hanni, Neuchatel, Switzerland, assignors to Laboratoire Suisse de Recherches Horlogeres, Neuchatel, and Ciba-Geigy A.G., Basel, Switzerland

No Drawing. Filed Sept. 28, 1971, Ser. No. 184,628
Claims priority, application Switzerland, Oct. 2, 1970, 14,668/70
Int. Cl. C23c *11/04*
U.S. Cl. 117—71 M **4 Claims**

A process for rendering a steel piece superficially hard and corrosion resistant and the product of said process. An intermediate layer of at least one passive metal such as chromium is applied to the steel piece as by reduction of a chromium halide deposited on the piece, said passive metal layer diffusing at least partially into the base metal, and a hardening layer consisting of a refractory metal carbide, nitride or silicide such as titanium carbide for example, is thereafter applied chemically in the gas phase, as by treatment of the coated piece with a gaseous dispersion of titanium chloride in hydrocarbons such as methane, in the presence of hydrogen gas.

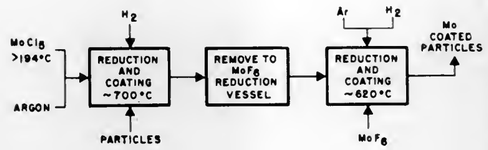
3,796,589

METHOD OF VAPOR SEAL COATING PLUTONIUM OXIDE PARTICLES WITH MOLYBDENUM

Anthony F. Ciramella and Ralph R. Jaeger, Dayton, and Ronald R. Rogers, Centerville, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed July 28, 1972, Ser. No. 276,212
Int. Cl. C23c *11/02*
U.S. Cl. 117—71 R **5 Claims**

A method for applying a molybdenum (Mo) coating for actinide ceramic materials comprising reducing molybdenum pentachloride ($MoCl_5$) in the presence of the ceramic material so as to deposit a first part of the Mo coating and then reducing molybdenum hexafluoride (MoF_6) in the presence of the coated ceramic material to deposit a second part of the Mo coating.



3,796,590

ELECTROSTATIC SPRAYING OF THERMOSETTING ACRYLIC SOLUTION COATING COMPOSITIONS MODIFIED TO INCLUDE THIXOTROPIC AGENT

Lester L. Spiller, 3939 W. 56th St., Indianapolis, Ind. 46208

No Drawing. Continuation of abandoned application Ser. No. 697,650, Jan. 15, 1968. This application Oct. 6, 1971, Ser. No. 187,152
Int. Cl. B05b *5/02;* **B44d** *1/08*
U.S. Cl. 117—93.4 R **11 Claims**

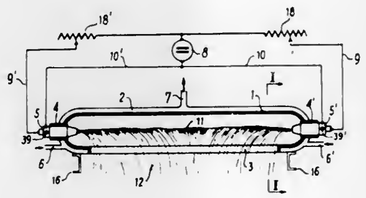
Thermosetting acrylic solution coating compositions exhibiting Newtonian flow characteristics are modified to include thixotropic agents to impart non-Newtonian flow characteristics to the coating solution so that the solution will perform better when electrostatically sprayed. In this way, and when employing electrostatic spray equipment in which the solution is pumped to the atomizing head through a narrow orifice in order that surging will be minimized when the atomizing head is reciprocated, the sprayed coating does not bubble and crater.

3,796,591

METHOD OF GENERATING AND COATING WITH AN ELONGATED PLASMA CURTAIN

Henry R. P. J. Schoumaker, Brussels, Belgium, assignor to La Soudure Electrique Autogene, Procedes Arcos, Anderlecht, Belgium

Original application Feb. 16, 1972, Ser. No. 226,842. Divided and this application May 29, 1973, Ser. No. 364,882
Claims priority, application Belgium, Mar. 3, 1971, 100,431
Int. Cl. B05b *7/22*
U.S. Cl. 117—93.1 PF **3 Claims**



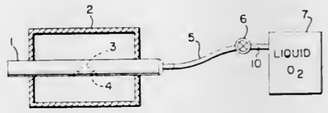
A process for producing two or more plasmas which comprises projecting opposed plasmas into a closed space to meet in the space and form a common arc, and expelling the combined plasmas from the closed space sideways with respect to their original direction under the pressure of plasmagenic gas through at least one nozzle elongated in the sideways direction and thus producing a flame projecting outward through the elongated nozzle as at least one blade of a continuous plasma jet. In one of the forms two or more blades are projected through elongated nozzles which may be parallel to one another, divergent from one another, or convergent to one another. The curtain of plasma may deposit material on the inside or the outside or both of a tube. The chamber from which the plasma curtain issues may be supported on a roller carriage. The single chamber may also be rotated around an axis. In one embodiment the chambers are held by links on the outside of a roller or the like.

3,796,592

METHOD AND APPARATUS FOR STABLE SILICON DIOXIDE LAYERS ON SILICON GROWN IN SILICON NITRIDE AMBIENT

Ronald A. Cohen, South Acton, and Roy K. Wheeler, Littleton, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Sept. 9, 1969, Ser. No. 856,253
Int. Cl. B05b *13/06;* **C23c** *11/00*
U.S. Cl. 117—95 **2 Claims**



A method and apparatus for thermally growing stable silicon dioxide layers on silicon is disclosed. A previously etched and baked silicon nitride tube placed in a furnace is used to grow the silicon dioxide. First, pure oxygen is allowed to flow through the tube to initially coat the inside surface of the tube with a thin layer of silicon dioxide. After the tube is coated with the thin layer of silicon dioxide, the silicon is oxidized thermally in a normal fashion. If the tube becomes contaminated, the silicon dioxide is etched off thereby exposing clean silicon nitride and then the inside of the tube is recoated with silicon dioxide. As is disclosed, the silicon nitride tube can also be used as the ambient for the pyrolytic decomposition of silane and ammonia to form thin layers of clean silicon nitride.

3,796,593

POLYURETHANE COMPOSITION AND ITS USE TO FORM POLYSTYRENE LAMINATES

Anthony F. Finelli, Akron, and Richard L. Wert, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 28, 1971, Ser. No. 157,700
Int. Cl. B44d *5/00*
U.S. Cl. 117—104 **4 Claims**

This invention relates to polyurethane compositions and to a method of applying polyurethane coatings to polystyrene to produce laminates. The polyurethane compositions are the reaction product of a reactive hydrogen containing material of 400 to about 12,000 molecular weight, an organic polyisocyanate and a curative which has been dispersed in a solvent to render the mixture sprayable and the mixture is applied against a surface of polystyrene as a spray with or without a gaseous spray medium at a pressure preferably of at least 60 pounds per square inch.

3,796,594
STAIN COATED SLIDES FOR DIFFERENTIALLY STAINING BLOOD
Frederick W. Thomae, Jr., King of Prussia, and John A. Geating, Abington, Pa., assignors to General Electric Company
No Drawing. Continuation-in-part of abandoned application Ser. No. 85,817, Oct. 30, 1970. This application Feb. 1, 1972, Ser. No. 222,654
Int. Cl. C03c *17/00;* **G01n** *1/30, 33/16*
U.S. Cl. 117—124 D **2 Claims**

Slides are prestained with a homogeneous mixture of methylene blue NN and cresyl violet acetate in a dry transparent film. A drop of blood smeared on the slide with a cover glass shows reticulocytes, platelets, and white blood cells (neutrophils, eosinophils, basophils, lymphocytes, monocytes) separately identifiable after approximately five minutes staining at room temperature.

3,796,595
SUBSTITUTED AROMATIC COMPOUNDS
Joseph David, Keith Thomas, and Nand Kishore, Welwyn Garden City, England, assignors to Catomance Limited, Welwyn Garden City, England
No Drawing. Filed Jan. 12, 1971, Ser. No. 105,972
Claims priority, application Great Britain, Jan. 16, 1970, 2,274/70
Int. Cl. D06m *13/00*
U.S. Cl. 117—138.5 **2 Claims**

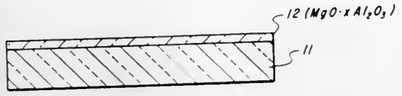
A method of preserving wet articles from biodegradation which comprises maintaining contact between the wet articles and an aqueous solution or colloidal dispersion of a water soluble salt of an ester of sulfuric, orthophosphoric, or pyrophosphoric and phosphorous acids wherein at least one hydroxyl group is esterified by an aryloxy isopropanol group.

3,796,596
FINISHING PROCESS INCORPORATING IMPROVED CATALYST SYSTEMS TO PRODUCE DURABLE FLAMEPROOFED CELLULOSIC TEXTILE PRODUCTS WITH AN EXCELLENT HAND
Donald J. Daigle, New Orleans, and Armand B. Pepperman, Jr., Wilson A. Reeves, and George L. Drake, Jr., Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed May 5, 1972, Ser. No. 250,705
Int. Cl. C09d *5/18;* **C09k** *3/28*
U.S. Cl. 117—137 **1 Claim**

Improved catalyst systems have been found that can be used in place of the catalyst systems previously required to cure flame-retardant finishes for cellulose textiles. These improved catalyst systems consist of a mixture of aluminum chlorhydroxide and an acid selected from the group phosphoric acid, citric acid, oxalic acid, lactic acid or a mixture selected from the following: zinc chloride-glycolic acid, magnesium chloride-citric acid, and magnesium chloride-glycolic acid. Unlike cellulosic fabrics treated with the THP-amide or THPOH-amide finishes with or without other catalyst systems, fabrics similarly processed with the improved catalyst system, that is, the ones containing aluminum chlorhydroxide have lower stiffness value and a much better hand.

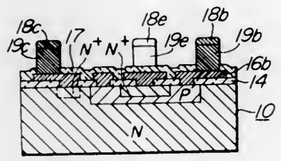
3,796,597
METHOD OF PRODUCING SEMICONDUCTING MONOCRYSTALLINE SILICON ON SPINEL SUBSTRATES
Vernon R. Porter and Lawrence Dean Dyer, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 2, 1970, Ser. No. 86,205
Int. Cl. B44d *1/18*
U.S. Cl. 117—213 **3 Claims**

There is disclosed an improved method of producing monocrystalline semiconductor material on a substrate of dielectric material. The method comprises heat treating of the substrate, specifically $MgO \cdot Al_2O_3$ spinel to modify the composition of its surface and then growing



a monocrystalline semiconductor material, silicon, thereon. Resultant semiconductor devices have demonstrated improved switching speed.

3,796,598
METHOD FOR GROWING LEAD CONDUCTORS ON PLANAR TRANSISTORS
Tetuo Gejyo, Tadashi Saito, and Shigekazu Minagawa, Tokyo, Keikichi Moriwaki, Hachioji, and Kanji Otsuka and Katsuro Sugawara, Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Original application Oct. 23, 1968, Ser. No. 769,799, now abandoned. Divided and this application Aug. 9, 1971, Ser. No. 170,251
Claims priority, application Japan, Oct. 25, 1967, 42/68,272; Dec. 18, 1967, 42/80,612
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 **10 Claims**



A planar transistor is formed by providing a plurality of electrodes connected to the surface portions of the transistor, said electrodes having whisker lead conductors projecting upwardly thereon which are formed by a vapor-liquid-solid crystal growth method.

3,796,599
METHOD OF TREATING CLOTHES IN A CLOTHES DRYER WITH A FOAM CONTAINING AN ADJUVANT MATERIAL
James Hugh McLaughlin, Ridgefield, N.J., assignor to Center for New Product Development, Inc.
No Drawing. Filed July 21, 1971, Ser. No. 164,917
Int. Cl. C08j *1/44*
U.S. Cl. 117—139.5 CQ **7 Claims**

A method of treating clothing articles with an adjuvant material in a clothes dryer is disclosed, which comprises contacting the clothing articles with a foam containing said adjuvant material. Also, adjuvant-containing compositions are disclosed which provide a stable, substantially form-sustaining, easily distributable foam when dispensed from an aerosol container, said compositions comprising by weight of the total composition (a) from about 1.0 to 30.0 percent of an adjuvant material, (b) from about 50.0 to 94.0 percent of a solubilizer, (c) from about 5.0 to 25.0 percent of a propellant and (d) from 0 to 30.0 of a foaming agent.

3,796,600
METHOD OF CONDITIONING HIGH ALUMINUM CONTENT ZINC ALLOYS TO RECEIVE ADHERENT ELECTROPLATED METAL COATINGS
Kermit Erwin Geary, Walnut Port, Pa., assignor to The New Jersey Zinc Company, Bethlehem, Pa.
No Drawing. Filed Sept. 14, 1972, Ser. No. 289,206
Int. Cl. C11d *7/16;* **C23g** *1/00*
U.S. Cl. 134—2 **18 Claims**

An alkaline soaking method is provided for conditioning the surface of high aluminum content zinc alloys, particularly superplastic zinc alloys containing about 20 to about 22 percent aluminum, so that adherent electroplated coatings can be applied. The method avoids prior art processing steps typically applied to zinc base alloys which have been found, in accordance with the invention, to be detrimental to the subject alloys.

3,796,601
PRE-CORONIZING TREATMENT FOR DESIZING GLASS FABRIC
Robert R. Kindron, Pennington, and Robert E. Yelin, Willingboro, N.J., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed May 3, 1972, Ser. No. 249,957
Int. Cl. C03c *25/00*
U.S. Cl. 134—2 **5 Claims**

A wet desizing treatment for glass fabric prior to coronization of the fabric employing a solution containing peroxydisulfate or a peroxydiphosphate in combination with a nonionic wetting agent. A surprisingly stronger glass fabric is obtained after coronization when the fabric is desized according to the process provided.

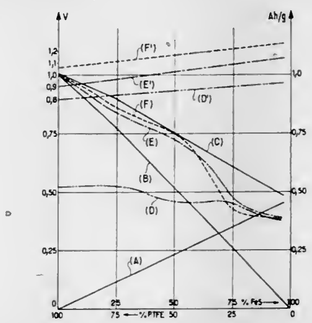
3,796,602
PROCESS FOR STRIPPING POLYMER MASKS FROM CIRCUIT BOARDS
Gary Clark Briney, Red Bank, and John Lester William Jones, New Shrewsbury, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Feb. 7, 1972, Ser. No. 224,302
Int. Cl. B08b *3/08;* **C11d** *3/20*
U.S. Cl. 134—38 **10 Claims**

Photohardened resist masks are stripped from substrate surfaces, particularly metal surfaces of printed circuit boards, using an aqueous stripping liquid heated to near its phase transition temperature, the composition containing from 1 to 50% of a partially miscible organic solvent. The concentration and temperature are adjusted so that the liquid is at or near its phase transition from a single solution to two conjugate solutions. By this process resist masks normally stripped with organic solvents can be rapidly stripped with more economical and less hazardous aqueous liquids.

3,796,603
METHOD OF REMOVING INSOLUBILIZED LIGHT SENSITIZED POLY(VINYL ALCOHOL) FROM A SURFACE UTILIZING PERIODATE IONS
John Ernest Cox, Robert Charles Crafts, John Brendan Houlihan, and Leslie Edward Lawson, Orpington, England, assignors to Howson-Algraphy Limited, Kent, England
No Drawing. Filed Jan. 24, 1972, Ser. No. 220,459
Claims priority, application Great Britain, Jan. 25, 1971, 3,122/71
Int. Cl. B08b *7/00*
U.S. Cl. 134—42 **10 Claims**

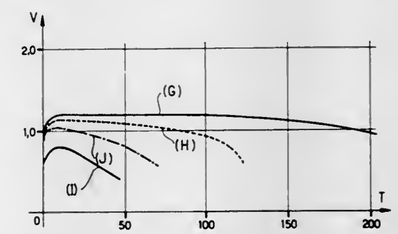
A layer of insolubilized light-sensitized poly(vinyl alcohol)-containing material on a surface such as a printing plate substrate or a silk-screen is treated with an aqueous solution containing periodate ions to facilitate removal of the material from the surface. The surface may be simultaneously or subsequently treated with a bleaching agent. For use in the former case, a pack is provided comprising the aqueous solution containing periodate ions and a separate liquid comprising bleaching agent for mixing together and application to the surface. The surface may be simultaneously or subsequently treated with a lithographic desensitizing material when the surface is a lithographic printing plate substrate. For use in the former case there is provided a liquid comprising the aqueous solution containing periodate ions and a lithographic desensitizing material.

3,796,604
LITHIUM BASE ELECTROCHEMICAL GENERATOR
Jean-Paul Gabano and Yves Jumel, Poitiers, France, assignors to SAFT-Societe des Accumulateurs Fixes et de Traction, Romainville, France
Filed Mar. 6, 1972, Ser. No. 231,830
Claims priority, application France, Mar. 5, 1971, 7107721
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 LN **14 Claims**



An electrochemical generator with a non-aqueous electrolyte and a negative electrode, which mainly contains lithium. The positive active material comprises at least a fluorinated hydrocarbon polymer and a compound which can be reduced to the metallic state when discharge occurs and preferably having a value in the discharged state in the vicinity of that of the fluorinated polymer. The solvent of the electrolyte is a mixture of tetrahydrofuran-dimethoxyethane or tetrahydrofuran-dimethylether of diethylene glycol, or dioxolane.

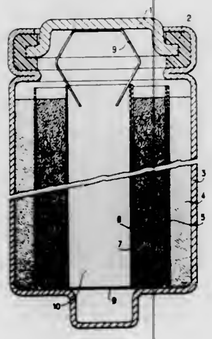
3,796,605
LITHIUM ELECTROCHEMICAL GENERATOR
Victor Dechenaux, Iteuil, and Françoise Drouet, Poitiers, France, assignors to SAFT-Societe des Accumulateurs Fixes et de Traction, Romainville, France
Filed Mar. 6, 1972, Ser. No. 231,832
Claims priority, application France, Mar. 5, 1971, 7107720
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 LN **7 Claims**



An electrochemical generator with a non-aqueous electrolyte and a negative electrode which mainly contains lithium. The positive active material comprises at least

one fluorinated hydrocarbon polymer. The solvent of the electrolyte is a mixture of tetrahydrofuran-dimethoxyethane or tetrahydrofuran-dimethylether of diethylene glycol or dioxolane.

3,796,606
CYLINDRICAL ELECTROCHEMICAL CELL
Gerard Lehmann, Liguge, and Joseph Delhommois, Poitiers, France, assignors to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France
Filed May 11, 1972, Ser. No. 252,454
Claims priority, application France, Nov. 26, 1971, 7142494
Int. Cl. H01m *35/16*
U.S. Cl. 136—13 **19 Claims**



A cylindrical electrochemical cell whose positive electrode is in contact with the outer casing of the cell and separated by a porous separator from a negative electrode constituted by a sheet of metal having a very negative standard oxidation potential (European Scale) e.g. lithium, sodium or calcium, surrounding an elastically deformable current collector having overall generally cylindrical shape whose directrix is a substantially circular curve with two distinct ends. The elasticity of this collector enables it to maintain biased contact with the negative electrode at all times notwithstanding alternation in electrode volumes during discharge of the cell and thus to maintain the reacting surfaces of the electrodes at optimum distance by continuously biasing the negative electrode against the porous separator.

3,796,607
PROCESS FOR MAKING ELECTRODE HAVING AN INTERNAL ELECTRODEPOSITED METAL MATRIX
Glenn R. Schaer and Elmer F. Stephan, Columbus, Ohio, assignors to The Gates Rubber Company, Denver, Colo.
No Drawing. Filed July 19, 1971, Ser. No. 164,025
Int. Cl. H01m *35/00*
U.S. Cl. 136—19 **16 Claims**

An electrode mixture comprising active material and finely divided conductive material is firmly compacted upon a conductive support and then suspended in an electrolyte medium whose constituents dissolve a minor proportion of the available active material of the electrode. The final electrode is then formed by an in situ electrodepositing step in which a portion of the dissolved active material is deposited as a metal throughout the electrode shape to produce a conducting metal matrix enclosing the active material.

The electrode has excellent mechanical strength, conductivity and requires a relatively short processing time. Electrodes of nickel, manganese dioxide, silver, mercury and copper, for instance, may be made according to the invention.

3,796,608
SURFACE TREATMENT
Martin B. Pearlman, New York, N.Y. (78—05 141st St., Flushing, N.Y. 11367)
No Drawing. Continuation-in-part of application Ser. No. 630,187, Apr. 12, 1967, now Patent No. 3,578,508. This application May 10, 1971, Ser. No. 141,929
Int. Cl. B23b *15/04*
U.S. Cl. 148—6.14 **6 Claims**

Treatment of metals, and other surfaces, with dilute colloidal slightly acidic dispersion of silica. The metals become resistant to chemical attack.

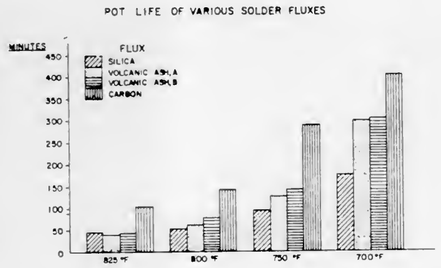
3,796,609
ARC WELDING FLUX
John Gonzales and Ronald F. Young, Willoughby, Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio
No Drawing. Filed Nov. 1, 1971, Ser. No. 194,568
Int. Cl. B23k *35/34;* **C22b** *9/10*
U.S. Cl. 148—24 **3 Claims**

A welding flux which combines the advantage of excellent slag removal in multiple pass deep groove welding and is "neutral" in that the weld metal analysis is relatively unaffected by changes in arc voltage.

3,796,610
GLYCEROL SOLDERING FLUXES
Frank H. Sarnacki, Johnson City, and Robert V. Steenstrup, Binghamton, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Sept. 28, 1972, Ser. No. 293,199
Int. Cl. B23k *35/36*
U.S. Cl. 148—25 **7 Claims**

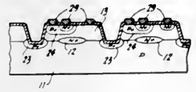
A water soluble fluxing bath composition having particular value in immersion soldering of metallic surfaces and electrical connections and that is characterized by good thermal and chemical stability and easy removal of flux residues without corrosion or insulation resistance hazards, comprising from about 0.2 to 0.5% by weight of hydrochloric acid, from about 2.0 to 4.0% by weight of tartaric acid, from about 80 to 98% by weight of glycerin solvent. An alkyl alcohol diluent for the acid additions may be added in an amount of from 0 to 15% by weight. Isopropyl alcohol is preferred.

3,796,611
SOLDER FLUX
John J. O'Brien, 66 Emerson Road, Watertown, Mass. 02172
Filed May 26, 1971, Ser. No. 146,871
Int. Cl. B23k *35/36*
U.S. Cl. 148—23 **5 Claims**



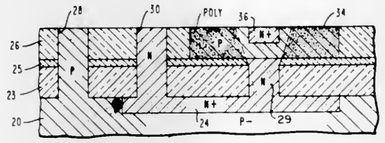
Zinc ammonium chloride type fluxes can be made that have longer life and reduced smoke characteristics by incorporating 1.5 to 5% carbon into conventional fluxes for use on metal container side seam soldering baths.

3,796,612
SEMICONDUCTOR ISOLATION METHOD UTILIZING ANISOTROPIC ETCHING AND DIFFERENTIAL THERMAL OXIDATION
David F. Allison, Los Altos, Calif., assignor to Scientific Micro Systems, Inc.
Filed Aug. 5, 1971, Ser. No. 169,294
Int. Cl. H01l *7/00, 7/64, 15/00*
U.S. Cl. 148—175 **6 Claims**



A semiconductor body in which a plurality of semiconductor devices are formed. Adjacent semiconductor devices are isolated one from the other by isolation moats formed by anisotropic etching of the semiconductor body. The isolation moats are oxidized with oxide growing on the (111) faces of the moats at a faster rate than on the (100) bottoms of the moats. The oxide is then removed with a dilute etch with the etch being applied just long enough to remove the oxide from the bottom of the isolation moats while still leaving some oxide on the sloping sides in the (111) plane. An isolation diffusion is then made at the bottoms of the moats with the oxide on the sides of the moat masking against diffusion through the sides. At the same time the isolation diffusion is made diffusions requiring the same conductivity type for the semiconductor devices are made. Subsequently the semiconductor devices are completed.

3,796,613
METHOD OF FORMING DIELECTRIC ISOLATION FOR HIGH DENSITY PEDESTAL SEMICONDUCTOR DEVICES
Ingrid E. Magdo and Steven Magdo, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 18, 1971, Ser. No. 154,455
Int. Cl. H01l *7/36, 11/00, 19/00*
U.S. Cl. 148—175 **10 Claims**

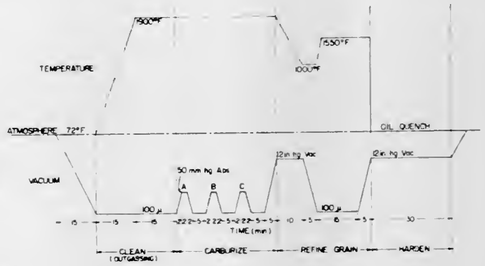


A dielectrically isolated semiconductor device can be manufactured. The structure is useable for integrated circuits, including field effect and/or bipolar transistors, wherein a significant savings in surface area and reduction in capacitances can be obtained over prior techniques. The method involves forming a layer of dielectric material upon a semi-conductor body, having a diffused region where a bipolar device is to be formed, and then forming an opening in the layer to expose a part of the surface of the diffused region of the semiconductor body. An epitaxial layer of silicon is deposited on top. Single crystal silicon will grow over the exposed silicon area and if a diffused region is present in the substrate a pedestal will outdiffuse through the same area from the buried diffused region. Polycrystalline silicon will grow on top of the dielectric material. The pedestal is formed in a single crystal epitaxial layer of another impurity type. Two other active elements of a bipolar transistor, such as the emitter and intrinsic base regions, are then formed in the same single crystal epitaxial layer while the inactive area, such as the extrinsic base, is formed in polycrystalline silicon. A reach through is made through the dielectric layer to the third element of the transistor, that is collector region.

3,796,614
METHOD FOR CONTROLLING INTERMETALLIC SEMICONDUCTOR DIFFUSIONS
Jagtar S. Basi, Wappingers Falls, and Vincent J. Lyons, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Dec. 2, 1971, Ser. No. 204,323
Int. Cl. H01l *7/44*
U.S. Cl. 148—189 **5 Claims**

The method disclosed describes a procedure for controlling junction depth and surface concentration in diffusion of zinc in gallium arsenide comprising utilizing an alloy of silicon and arsenic wherein the total arsenic present is between about two and fifty atomic percent and utilizing a diffusion temperature between 800 and 1000° C.

3,796,615
METHOD OF VACUUM CARBURIZING
Herbert W. Westeren, Barrington, Donald A. Taft and Vincent Scotto, Warwick, and Ernest C. Gronquist, Jr., Providence, R.I., assignors to C. I. Hayes Inc., Cranston, R.I.
Filed June 23, 1971, Ser. No. 155,950
Int. Cl. C23c *11/10, 11/12*
U.S. Cl. 148—16.5 **4 Claims**



A method and apparatus of vacuum carburizing by changing the surface chemistry of a metal article through absorption and thermal diffusion of carbon, wherein oxidizing gases and other impurities are initially removed from the chamber in which the metal article is treated by evacuation and the temperature in the chamber is maintained at a level above normal carburizing temperatures, but at a point that is compatible with the physical characteristics of the chamber and the article; whereafter a source of carbon is introduced into the evacuated chamber in accordance with a preselected cycle and at a concentration that is controlled by the absolute pressure of the carbon in the chamber, so that the carbon is absorbed and diffused into the metal article at a controlled rate.

3,796,616
POROUS SUBSTRATE FOR FIBROUS GRAPHITE STRUCTURE PRODUCED BY ADDITION OF DEGRADABLE MATERIAL
Clarence E. Northway, Lake View Terrace, Calif., assignor to Haveg Industries, Inc., Wilmington, Del.
No Drawing. Filed May 23, 1972, Ser. No. 256,064
Int. Cl. B29c *25/00*
U.S. Cl. 156—60 **12 Claims**

A fibrous graphite unit is made by taking plies of B-stage resin impregnated cloth of at least 80% carbon

assay (carbon or graphite cloth) and stacking one on another to form a substrate unit. Degradable fibrous material is interposed between the plies. The resin is cured (C-stage) and the fibrous material is disintegrated thereafter at higher temperatures than the curing temperature leaving voids in its place in the unit and thus providing a porous substrate. The substrate, after at least being pyrolyzed, is infiltrated with pyrolytic carbon which is then converted to pyrolytic graphite.

3,796,617

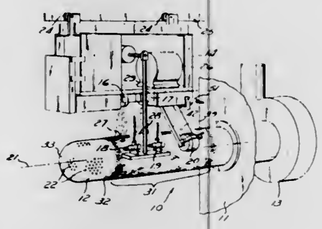
METHOD FOR MAKING FIBROUS PREFORM

Arthur J. Wiltshire, Cleveland, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio

Original application June 5, 1970, Ser. No. 43,736, now Patent No. 3,674,599. Divided and this application Apr. 6, 1972, Ser. No. 241,758

Int. Cl. B32b *5/16*

U.S. Cl. 156—62.2 **3 Claims**



A method and apparatus for manufacturing an improved fiber preform which may be used in the subsequent bag molding of fiber reinforced plastic articles such as tanks or the like. The method comprises the steps of randomly depositing short reinforcing fibers on a form, binding the fibers together with a settable resin binder, and rolling the resin coated fibers on the form into a dimensionally uniform porous mat. The apparatus includes a rotatable lay-up form, means for randomly deposting the reinforcing fibers in a porous layer on the form, means to coat the fibers with a settable resin binder, and means to progressively press the fibers along the length of the form into a uniform wall thickness.

3,796,618

METHOD OF DECORATING CERAMIC WALL AND FLOOR TILES

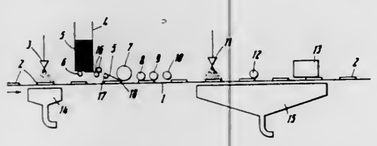
Günter Lehming and Gerhard Küppers, both of 19 Breslauerstr, 6601 Schafbruecke, Germany

Filed Apr. 22, 1971, Ser. No. 136,383

Claims priority, application Germany, Apr. 23, 1970, P 20 19 748.2

Int. Cl. C04b *33/34*

U.S. Cl. 156—89 **6 Claims**



In decorating ceramic elements, such as wall and floor tiles, a solvent is sprayed on a raw-glazed tile as it travels on a conveyor member. Next a pattern of ceramic dyes printed on a carrier element, and with a lacquer coat on the surface opposite the carrier element, is placed on the tile with the lacquer coat in contact with the tile. The solvent previously applied to the tile dissolves the lacquer coating. Then, in turn, the pattern is pressed against the tile and the carrier element is removed before the tile is baked.

3,796,619

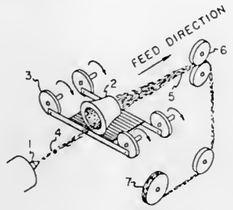
METHOD OF SPRAY-SPINNING CONTINUOUS TUBULAR STRUCTURES

Ernest Joseph Rich, Glen Gardner, N.J., assignor to Celanese Corporation, New York, N.Y.

Original application Apr. 12, 1971, Ser. No. 133,443, which is a division of abandoned application Ser. No. 743,863, July 10, 1968. Divided and this application Aug. 18, 1971, Ser. No. 172,698

Int. Cl. D01f *7/00;* **D04h** *3/08, 3/16*

U.S. Cl. 156—167 **5 Claims**



A spray-spun nonwoven tubular structure is produced by spray spinning a fiber-forming polymer onto the inner surface of a circular forming base and withdrawing the tube continuously as it is formed.

3,796,620

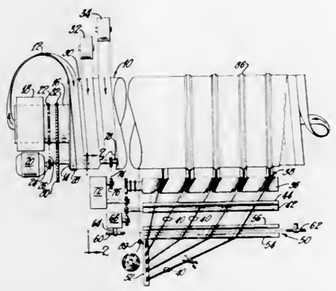
METHOD AND APPARATUS FOR GUIDING FEED STOCK TO A LONGITUDINALLY MOVING COLLECTION SURFACE

John William Dunn, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation

Filed Feb. 3, 1972, Ser. No. 223,164

Int. Cl. B65h *81/08*

U.S. Cl. 156—171 **13 Claims**



Method and apparatus for guiding strands coated with resin and other materials onto a revolving mandrel to form locally built-up areas or ribs on the mandrel.

3,796,621

METHOD OF FABRICATING A LAMINATE AND PRODUCT THEREOF

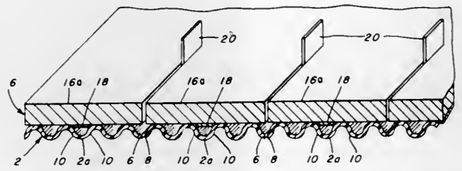
Louis M. Butcher, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Original application Sept. 10, 1971, Ser. No. 179,288, now Patent No. 3,727,163. Divided and this application Apr. 21, 1972, Ser. No. 246,488

Int. Cl. B31c *13/00;* **H01g** *13/00*

U.S. Cl. 156—192 **5 Claims**

A method of manufacturing an electrical coil comprising providing an electrically conductive strip which is superposed and adhesively secured to a dielectric web having nonplanar portions intermediate the adhesive and the transverse edges of the dielectric web. Effecting transverse expansion of the dielectric web to a width greater than the conductive strip by compressing the laminated strip. An alternate laminate structure wherein some or all of the nonplanar dielectric web portions are loosely bonded to the conductive strip in such a fashion as to permit transverse expansion of the dielectric web responsive to application of a compressive force. In one form of the invention, the laminated conductive strip is wound into coil form under sufficient winding tension to cause sequential application of compressive force to successive wraps of said coil in order to transversely expand the dielectric web. The dielectric web serves to insulate edges of adjacent conductive wraps of the coil. Establishing a multiple width laminate of the conductive strip and subsequently longitudinally slitting the multiple width laminate into a number of individual laminated strips.



An electrical conductor-dielectric laminate having an elongated electrically conductive strip and a dielectric web adhesively secured to the conductive strip. The adhesive securing the conductive strip to the dielectric is spaced inwardly from the transverse edges of the dielectric web. The dielectric web has nonplanar portions between the adhesive and the transverse edges to provide a restricted width. The dielectric web has a restricted width generally equal to the width of the conductive strip and an expanded width greater than the width of the conductive strip.

An electrical coil wound from the electrical conductor-dielectric laminate having the expanded width dielectric web serving as an electrical insulator between adjacent conductive wraps of the coil.

3,796,622

COLORED PLASTIC ARTICLE AND METHOD OF PRODUCTION

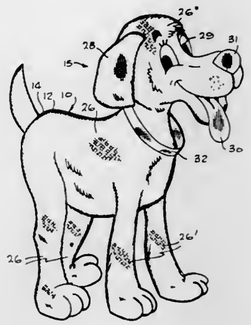
Norman M. Brody, 1402 N. Vista, Los Angeles, Calif. 90046

Original application July 10, 1970, Ser. No. 53,918, now Patent No. 3,695,982. Divided and this application Mar. 31, 1972, Ser. No. 239,936

Int. Cl. B32c *9/00*

U.S. Cl. 156—245 **8 Claims**

Three dimensional plastic colored article, e.g. reproduction of a cartoon character and the like, useful for decorative purposes such as wall plaques, comprising a clear transparent polyester cast resin body having a colored fiber glass paper inlay embedded in the resin, such inlay preferably being a silk screened multicolored configuration or characterization, the cast resin body having an external shape corresponding to the external shape of the colored inlay, forming a three dimensional plastic duplicate of the colored inlay having the corresponding coloration and outlines of the colored fiber glass paper inlay, and creating a three dimensional effect to the eye of an observer. Process for making such article wherein a clear polyester liquid resin is poured into a mold having the outlines of the colored inlay to be reproduced, such as a cartoon character, the colored, e.g. multicolored silk screened, fiber glass paper inlay is then embedded in the wet resin in the mold, and the resin is allowed to set therein.



3,796,623

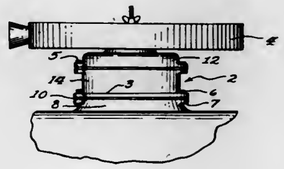
METHOD OF MAKING INSULATOR GASKETS

Robert G. Farnam, New Lisbon, and Michael T. Passarella, Wisconsin Rapids, Wis., assignor to F. D. Farnam Co.

Continuation-in-part of application Ser. No. 76,459, Sept. 29, 1970, now Patent No. 3,655,210, dated Apr. 11, 1972, which is a continuation-in-part of abandoned application Ser. No. 66,958, Aug. 26, 1970. This application Mar. 3, 1971, Ser. No. 120,526

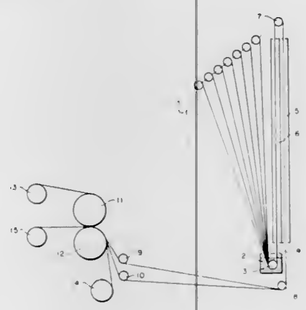
Int. Cl. B29c *19/00;* **B32b** *31/00*

U.S. Cl. 156—252 **11 Claims**



Methods for forming heat-insulative gasket structures permitting the selective variance of components thereof whereby high torque retention, heat-insulative and fluid-tight sealing characteristics are obtained in an internal combustion engine between the intake manifold and the carburetor throttle body or between the carburetor throttle body and bowl. The method provides for densified and non-compressible bolt hole portions to be achieved by mechanical compression, provision for suitable insert members, or a combination of the two. Such portions provide desirable characteristics to control spring action and torque retention of the structures. The method also provides for formation of fluid-tight compressible sealing beads from the gasket material on one or both sides of the insulator member.

3,796,624
APPARATUS FOR MAKING TAPES FROM FIBER TOWS
Victor Arthur Avis and Albert John Matthews, Cambridge, England, assignors to Ciba-Geigy AG, Basel, Switzerland
Original application Nov. 25, 1970, Ser. No. 92,786, now Patent No. 3,737,352. Divided and this application Jan. 26, 1972, Ser. No. 221,078
Claims priority, application Great Britain, Nov. 28, 1969, 58,434/69
Int. Cl. D04h *3/12*
U.S. Cl. 156—436 **9 Claims**



The invention relates to process for producing a resin-impregnated tape from a plurality of tows of fibres which comprises

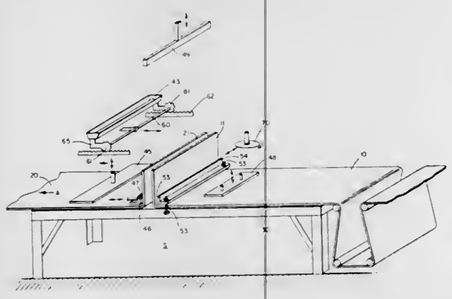
impregnating the said tows with a solution of a first resin in a volatile solvent,

shaping each tow ito the form of a ribbon of substantially constant width,

removing substantially all the solvent from each ribbon, aligning the impregnated ribbons in an abutting edge-to-edge relationship, and

contacting the upper and lower surfaces of the aligned ribbons with a second resin under conditions such that the said second resin flows about the ribbons to form a coherent resin-impregnated tape therefrom.

3,796,625
BUTT SPLICING THERMOPLASTIC SHEETING
James C. Rutledge, Calhoun, Ga., assignor to Collins & Aikman Corporation, New York, N.Y.
Filed Feb. 11, 1972, Ser. No. 225,431
Int. Cl. B65h *19/00*
U.S. Cl. 156—502 **6 Claims**

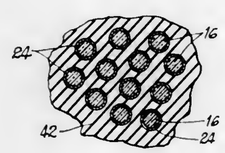


The trailing terminal end of a roll of compressible thermoplastic web material is joined to the leading end of a following roll by turning the trailing and leading end portions upwardly adjacent to each other, clamping them tightly together, trimming off the clamped edges above the clamp, directing radiant heat downwardly upon the upturned trimmed edges to melt and partially fuse the edges, removing the heat and simultaneously releasing the clamp and pulling the trailing end of the lead roll downstream a preselected distance to allow the partially fused ends to merge downwardly without placing the seam under tension, and immediately applying an unheated press bare to flatten the still-hot partially fused seam to shape and set the seam.

3,796,626
FRAME FOR FABRICATION OF FLORAL SIMULATIONS
Lynne A. Tucker, La Crescenta, Calif. (744½ N. Glendale Ave., Glendale, Calif. 91206)
Filed Sept. 11, 1972, Ser. No. 288,137
Int. Cl. A41g *1/02*
U.S. Cl. 161—31 **4 Claims**

For the fabrication of imaginative floral simulations in macramé or the like there is provided an open-sided calyx-shaped frame of wire or plastic including a top ring connected by inwardly curving brackets to a tubular bottom member which is adapted to anchor a stem wire. The brackets are provided with holes disposed diametrically opposite each other for receiving a bead-orienting wire.

3,796,627
RESORCINOL-ALDEHYDE RESIN AND ELASTOMER-GLASS FIBER STRUCTURES AND METHOD FOR PREPARATION
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation
Filed Jan. 26, 1972, Ser. No. 220,900
Int. Cl. C03c *25/02;* **B44d** *1/12*
U.S. Cl. 161—143 **18 Claims**



This invention is addressed to the improvement in the bonding relationship between glass fibers and elastomeric material in the manufacture of glass fiber-elastomeric products wherein glass fibers are first treated to form a metal oxide coating and then are further processed to form the glass fibers into bundles which are impregnated with a composition formulated to contain a resorcinol-aldehyde resin component and an elastomer component.

3,796,628
METHOD FOR REDUCING SULFIDE ODORS FROM KRAFT MILL LIME KILN STACKS
Biswanath Sen, Quesnel, British Columbia, Canada, assignor to Cariboo Pulp and Paper Company, Quesnel, British Columbia, Canada
No Drawing. Filed Sept. 12, 1972, Ser. No. 288,465
Int. Cl. D21c *11/08*
U.S. Cl. 162—51 **11 Claims**

A process for the reduction of malodors emitted from Kraft mill lime kiln stacks in the manufacture of pulp by the "Kraft" or sulphate cellulose process. The cooking of wood chips with white liquor is followed by the steps of separating the black liquor from the pulp, evaporating excess water from the liquor, burning the evaporated liquor to form green liquor and then treating the green liquor with lime to form white liquor and a lime mud slurry. The white liquor is recycled for the cooking of further chips, and the lime mud slurry is calcined in a kiln to produce lime and carbon dioxide. The slurry is intimately mixed with an oxidizing agent to reduce the sulfide content of the slurry before the slurry is burned in the lime kiln. The oxidizing agent may be a gas such as air, chlorine or chlorine dioxide. The gaseous oxidizing agent may suitably be intimately mixed with the slurry by the use of an oxidation tube or any suitable contact apparatus.

3,796,629
SELF-BONDING RAYON
James E. McMaster, Secane, Pa., assignor to FMC Corporation, Philadelphia, Pa.
No Drawing. Filed Oct. 15, 1970, Ser. No. 81,178
Int. Cl. D21h *1/30*
U.S. Cl. 162—157 C **6 Claims**

A non-woven web is prepared from viscose comprising 1 to about 6.5% cellulose, from about 0.6 to about 5% sodium hydroxide based on the weight of viscose, and from about 27–40% carbon disulfide based on the weight of cellulose. The said viscose is extruded into an aqueous bath containing 9 to about 25% sulfuric acid, from 0 to about 0.15% zinc sulfate and from about 0.3 to about 23% sodium sulfate to form filaments. The said filaments are stretched from 0 to 30% of their spun length, cut into staple fibers while in the wet gel state and formed into a non-woven web.

3,796,630
MICROBIAL PRODUCTION OF DICARBOXYLIC ACIDS
Eugene H. Wegner, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Continuation-in-part of abandoned application Ser. No. 132,594, Apr. 8, 1971. This application Oct. 4, 1971, Ser. No. 186,472
Int. Cl. C12d *1/02*
U.S. Cl. 195—28 R **11 Claims**

Dicarboxylic acids are produced from C_6–C_{22} n-paraffins by microbial oxidation in cultures containing a mutant of the yeast *Torulopsis bombicola.*

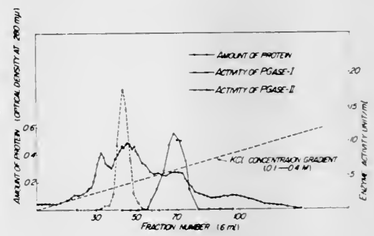
3,796,631
PROCESSES FOR PREPARING POLYNUCLEOTIDES
Jean Choay and Mireille Sakouhi, Paris, France, assignors to Choay S.A., Paris, France
No Drawing. Filed Nov. 9, 1971, Ser. No. 197,118
Claims priority, application France, Nov. 9, 1970, 7040268; Germany, Dec. 5, 1970, P 20 59 937.5
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **11 Claims**

The corresponding nucleotides are polymerized in the presence of a phosphorylase polynucleotide enzyme which is added to the medium in successive fractions at intervals of time each corresponding substantially to the time necessary for the complete development of the phase of the reaction which follows the addition of the preceding enzyme fraction. It applies particularly to the preparation of "Poly I" and "Poly C."

3,796,632
PROCESS FOR RACEMIZING α-AMINO-ε-CAPROLACTAM
Takashi Fukumura, Kamakura, Japan, assignor to Toray Industries, Inc., Tokyo, Japan
No Drawing. Filed Dec. 10, 1971, Ser. No. 206,866
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **6 Claims**

α-amino-ε-caprolactam is racemized by a microbiological means.

3,796,633
PEPTIDOGLUTAMINASE
Mamoru Kikuchi, Nagareyama, Kenji Sakaguchi, Kashiwa, and Eiichi Nakano, Noda, Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Noda-shi, and Noda Institute for Scientific Research, Noda, Noda-shi, Japan
Continuation-in-part of application Ser. No. 71,129, Sept. 10, 1970. This application May 10, 1971, Ser. No. 141,704
Int. Cl. C07g *7/02*
U.S. Cl. 195—62 **8 Claims**



A novel enzyme, peptidoglutaminase, which is obtained from a newly isolated strain of microorganism belonging to *Bacillus circulans,* has an activity to react with glutaminyl-peptides where glutamine is located at C-, N-terminals and the internal positions of peptides without splitting these peptide bonds, has an ability to deamidate γ-amide group of such glutamine to glutamyl-peptides. The enzyme, when added to a protein containing raw material for production of beverages and foods, may markedly enhance the resulting beverages and foods in palatability.

3,796,634
INSOLUBILIZED BIOLOGICALLY ACTIVE ENZYMES
Royce Haynes and Kenneth A. Walsh, Seattle, Wash., assignors to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare
Filed Mar. 19, 1970, Ser. No. 20,613
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 **22 Claims**

Described herein are methods, and products thereof, for the insolubilization of biologically active proteins such as enzymes, antibodies, and antigens with substantial retention of activity. Products of the invention assume the configuration of a monolayer of protein molecules enveloping a colloidal core of specific gravity greater than that of the protein itself. The monolayer is "stapled" against desorption and denaturation by reaction of molecules adsorbed on the denser colloidal cores with multifunctional crosslinking agents which form covalent linkages or bridges between adjacent protein molecules. The

preferred colloidal cores are silica particles per se or surface-coated with a polyamine such as polyethyleneimine. Water soluble dialdehydes are preferred crosslinking agents for most proteins. The products of the invention are readily dispersed in their media of employment, yet can be quantitatively recovered by centrifugation. They are susceptible to diverse employments in food, pharmaceutical, detergent, and other industries.

3,796,635
PROCESS FOR THE PREPARATION OF HEAT RESISTANT NEUTRAL PROTEASE ENZYME
Jacques J. Delente, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of abandoned application Ser. No. 102,153, Dec. 28, 1970. This application Dec. 26, 1972, Ser. No. 318,127
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 **6 Claims**

The production of neutral protease enzyme in high yields is accomplished by cultivating a strain of *Bacillus stearothermophilus* (strain I–8100) in an aqueous nutrient fermentation medium. Such culturing produces neutral protease which has optimum enzymatic activity at 70–80° C.

3,796,636
PROCESS FOR PREPARING HIGH ACTIVITY PEPSIN
John B. Gallagher, Darien, and Laverne W. Van Ness, Homewood, Ill., assignors to Wilson Pharmaceutical & Chemical Corporation
No Drawing. Filed July 14, 1972, Ser. No. 271,973
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R **6 Claims**

Pepsin is extracted from animal stomach linings by digestion of a mixture having an aqueous solution containing acetic acid. After digestion, the undissolved residue is separated from the digestion solution and the digestion solution cooled to a temperature in the range of 30° F. to 45° F. Ammonium sulfate is added to the cooled digestion solution in quantities of 170 grams per liter-saturation to precipitate a mixture consisting of pepsin and ammonium sulfate. Precipitated solids are dissolved in water and the acidity of the resultant mixture is adjusted to a pH in the range of 4.0 to 4.5. Ammonium sulfate component of the resultant solution are removed by diffusion through a semi-permeable membrane. The pepsin recovered from the ammonium sulfate free-resultant solution can have a proteolytic activity strength as high as 1:45,000 when converted to a dry powder.

3,796,637
COMPOSITIONS FOR THE REMOVAL OF HYDROCARBON AND INDUSTRIAL WASTE BY BIOLOGICAL DEGRADATION
Pierre Fusey, Paris, France, assignor to Banque pour L'Expansion Industrielle "Banexi," Paris, France
No Drawing. Filed Feb. 7, 1972, Ser. No. 224,283
Claims priority, application France, Feb. 19, 1971, 7105772
Int. Cl. C12k *1/10*
U.S. Cl. 195—100 **8 Claims**

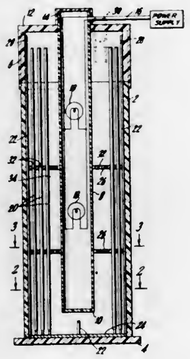
The invention relates to compositions for the removal of pollutant industrial wastes, in particular hydrocarbon wastes.

In order to promote the biological degradation of waste materials, whilst avoiding foulsmelling anaerobic fermentation, the compositions used contain from 10 to 40% by weight of an oxygenating compound such as a metal oxide or an alkali metal peroxide. The "support," for example calcium carbonate, silica or talc, is chosen depending on the pH of the waste material to be treated. Others materials may be added to the compositions so obtained, namely nutrient substances promoting the gorwth of microorganisms, nitrogenous substances and/or oleophilic substances in the case of compositions for the treatment of hydrocarbons.

3,796,638
DEVICE FOR INOCULATION OF A CULTURE MEDIUM
Jean Guigan, 9 Rue Jean-Mermoz, Paris 8e, France
Filed Dec. 1, 1970, Ser. No. 94,042
Int. Cl. C12k *1/00*
U.S. Cl. 195—127 **7 Claims**

A method and test tube for inoculation of a nutrient medium layer on a Petri dish or the like. A liquid bacteria containing sample is centrifuged in the test tube, which contains at its bottom a small ferromagnetic ball. After centrifugation first the liquid supernatant is discharged while the ball is retained in the interior of the tube, and then the ball is placed on the nutrient medium. For inoculation along a desired track it is moved over the nutrient medium layer by respective movements of a magnet positioned under the dish.

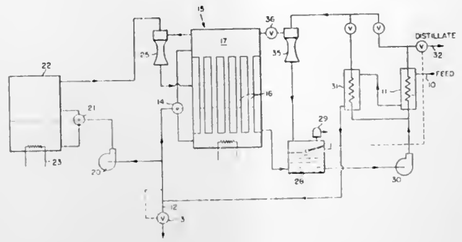
3,796,639
BIOLOGICAL INCUBATOR
Joseph G. Ruzzo, Schenectady, N.Y., assignor to General Electric Company
Filed Sept. 7, 1971, Ser. No. 178,023
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 **11 Claims**



Portable incubators for biological testing devices, such as culture pipettes, comprise a casing and a removable top and a central heating core. The testing devices are incubated in an annulus defined by the center core and the inside surface of the casing, preferably positioned in a holder comprising a base, two or more horizontal tiers above and parallel to the base and supports or legs

holding the tiers in alignment. Also provided are novel portable holders for transporting and storing bacteriological culture pipettes.

3,796,640
VAPOR COMPRESSION DISTILLATION
Roger C. Boomer, Hingham, Mass., assignor to Sybron Corporation, Rochester, N.Y.
Filed Feb. 20, 1973, Ser. No. 334,119
Int. Cl. B01d *3/10;* **C02b** *1/06*
U.S. Cl. 203—11 **10 Claims**



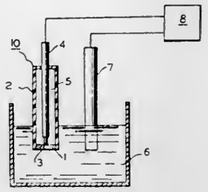
The vapors evolved in a vapor compression distillation system are evacuated from the evaporator by a vapor driven ejector and by an ejector driven by a stream of purified liquid. The effluent from the vapor driven ejector is placed in indirect heat exchange relationship with the liquid being evaporated, whereby additional liquid is vaporized and substantially all of the ejector effluent is condensed. Substantially all of the vapor evacuated by the liquid driven ejector is condensed in the discharge stream from this ejector. Preferably, the condensed effluents from both ejectors are mixed; and part of this collected effluent, or distillate, is recirculated to drive the liquid driven ejector.

3,796,641
VINYL CHLORIDE RECOVERY WITH DICHLOROETHANE SOLVENT
Herbert Riegel, Maplewood, and Morgan C. Sze, Upper Montclair, N.J., Harold Unger, Bronx, N.Y., and L. M. Shipman, Westfield, N.J., assignors to The Lummus Company, Bloomfield, N.J.
Filed July 19, 1972, Ser. No. 273,047
Int. Cl. B01d *3/40*
U.S. Cl. 203—67 **9 Claims**

Vinyl chloride is separated from a vinyl chloride feed which contains n-butane and/or butene-1 by extractive distillation in the presence of 1,2-dichloroethane. Monomer grade vinyl chloride in the order of 99.99% may be produced.

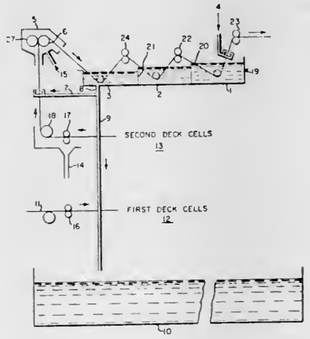
3,796,642
METHOD AND DEVICE FOR MEASURING THE ACTIVITY OF NICKEL IONS
Kenji Higashiyama and Hiroshi Hirata, Katano, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 28, 1972, Ser. No. 229,961
Claims priority, application Japan, Mar. 2, 1971, 46/11,124, 46/11,125; Mar. 3, 1971, 46/11,408, 46/11,409
Int. Cl. G01n *27/26, 27/30, 27/46*
U.S. Cl. 204—1 T **12 Claims**

A device for measuring an activity of nickel ions comprises a selective electrode and a reference electrode immersed in a solution containing nickel ions, said selective electrode including a disc in a batch composition which comprises a combination of nickel chalcogenide and at least one member selected from the group consisting of silver telluride and silver selenide or a combination of



silver sulfide and at least one member selected from the group consisting of nickel telluride and nickel selenide.

3,796,643
HALOGEN TIN ELECTROPLATING
Donald Arthur Swalheim, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 3, 1972, Ser. No. 249,822
Int. Cl. C23b *5/14, 5/48, 5/68*
U.S. Cl. 204—28 **2 Claims**



An improvement in the halogen tin electroplating process is provided in which drag-out is largely reduced and in which buildup of salt from the electrolyte on the deflector rolls positioned prior to the water rinse system is prevented or minimized. This is accomplished by using a countercurrent recovery rinse system in which the deflector rolls prior to the rinse system are maintained in a steam atmosphere.

3,796,644
ELECTROLYTIC FORMATION PROCESS FOR ALUMINUM CAPACITOR ELECTRODES
Walter J. Bernard, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.
No Drawing. Filed May 3, 1972, Ser. No. 249,808
Int. Cl. C23b *9/02*
U.S. Cl. 204—58 **4 Claims**

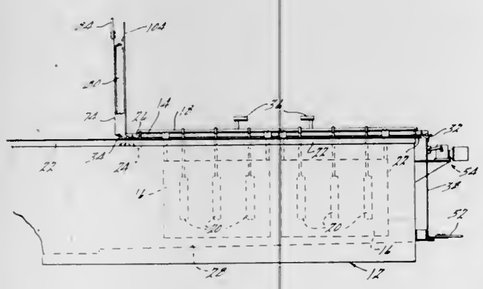
An aluminum capacitor electrode has a partially crystalline anodic oxide structure formed thereon that is hydration-resistant, and possesses a stable capacitance value, dissipation factor and leakage current even under

high humidity conditions. This hydration-resistant oxide structure is advantageously formed when an aluminum electrode is treated in a formation electrolyte at a temperature in excess of 150° C. The electrolyte may be any suitable solvent/solute system wherein the solvent is a high boiling organic material containing a small percentage of water and the solute is a salt having a concentration that imparts a conductivity of 10,000 ohm-cm. or less to the electrolyte.

3,796,645
ELECTROLYTIC RUST AND SCALE REMOVAL IN ALKALINE SOLUTION
Shigeru Fujita, Omiya, and Shinshichi Tamura, Tokyo-to, Japan, assignors to Japan Metal Finishing Company Limited, Tokyo-to, Japan
No Drawing. Filed Sept. 18, 1970, Ser. No. 73,588
Claims priority, application Japan, Sept. 30, 1969, 44/77,891
Int. Cl. C23b *1/00, 1/04, 1/06*
U.S. Cl. 204—141.5 **7 Claims**

Rust and scale on ferrous metal articles are electrolytically removed in an alkaline solution containing, as an additive, at least one substance selected from among sulfur and sulfur compounds capable of dissociating in an alkaline solution to produce sulfur containing ions, the electrolytic process being carried out by the periodic reverse electrolytic method in which the anode and cathode are alternately and periodically changed over.

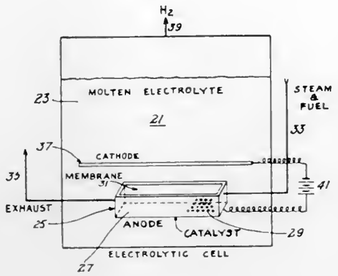
3,796,646
WORK RACK AGITATION DEVICE
Giacomo R. Zambon, Warren, Mich., assignor to The Udylite Corporation
Filed Apr. 27, 1971, Ser. No. 137,809
Int. Cl. B01k *3/00*
U.S. Cl. 204—222 **9 Claims**



An agitation mechanism for supporting workpieces in a liquid treating solution and for effecting reciprocating movement thereof relative to the solution to enhance treating efficiency.

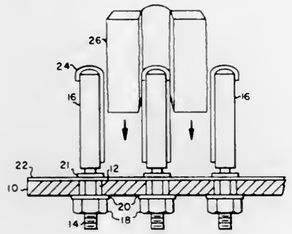
3,796,647
APPARATUS FOR HYDROGEN PRODUCTION
Harold Shalit, Drexel Hill, Pa., assignor to Atlantic Richfield Company, Philadelphia, Pa.
Original application Mar. 17, 1969, Ser. No. 807,864, now Patent No. 3,580,823. Divided and this application Jan. 11, 1971, Ser. No. 105,617
Int. Cl. B01k *3/04;* **C22d** *3/02*
U.S. Cl. 204—246 **5 Claims**

An improved process and apparatus for the production of hydrogen of high purity whereby a carbonaceous fuel is reformed to produce hydrogen and said hydrogen is recovered economically from said reforming operation through the use of an electrolytic process using chemical



energy of the reforming process to reduce electrical energy needed and in a molten electrolyte environment.

3,796,648
ELECTROLYTIC CELL HAVING SELF-ALIGNING ANODES
Frank E. Conner, Jr., Charleston, Terry Fontalbert, Marmet, John W. McFarland, Charleston, and Don W. Lewis, Nitro, W. Va., assignors to FMC Corporation, New York, N.Y.
Filed Dec. 22, 1971, Ser. No. 210,991
Int. Cl. C23b *5/68*
U.S. Cl. 204—286 **2 Claims**

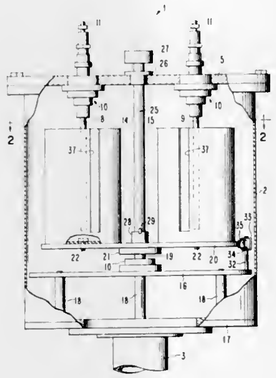


This invention provides an improvement in electrolytic cells of the type having a porous diaphragm separating the anode and cathode of each unit cell and having a space between the anode and the porous diaphragm. Such electrolytic cells are used for the manufacture of hypochlorite or the production of chlorine and caustic alkali. Particularly, the improvement relates to minimizing the distance between the anode and cathode required for assembling the cell while maintaining a uniform gap between the anode and the diaphragm. The anode mounting assembly includes threaded studs which have a smaller diameter than the holes in the base plate through which the studs project, such that when the anodes are loosely held on the base plate, they can be self-aligned horizontally when a cathode is inserted between each pair of anodes.

3,796,649
COAXIAL SPUTTERING APPARATUS
Lawrence T. Lamont, Jr., and Robert F. Dort, Palo Alto, Calif., assignors to Varian Associates, Palo Alto, Calif.
Filed Dec. 13, 1971, Ser. No. 207,184
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **15 Claims**

This invention provides sequential sputter-coating of materials from different targets onto a desired number of

substrates during a single pump-down cycle of the sputtering apparatus. The substrates are detachably affixed to the inside surface of a hollow cylinder. The cylinder is mounted upon a rotatable table so that the axis of the cylinder is parallel to the axis of rotation of the table. A plurality of target electrodes extending downward toward the rotatable table are mounted above the table at locations concentric around the axis of rotation of the table and spaced from the axis of rotation by a distance equal to the distance from the axis of rotation of the table to the axis of the cylinder. Vertical slits are provided in the hollow cylinder from the top edge of the cylinder downward toward the rotatable table. The dimensions of the slits are such that as the table is rotated the substrate-containing cylinder does not come into contact with any of the target electrodes, yet at selected positions in the course of the table's rotation the cylinder envelops in

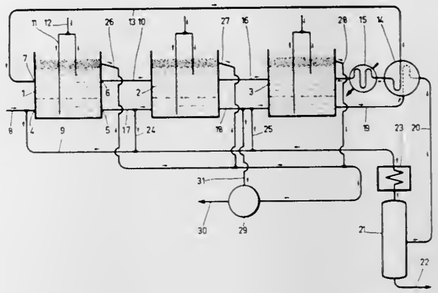


sequence within its volume each one of the target electrodes. Sputtering occurs only when a target electrode is enveloped by the substrate-containing cylinder, and this sputtering takes place in the region within the cylinder. After coating from a particular target has been completed, the table is rotated to bring the cylinder to a new position where it will envelop a different target. Sputtering is then allowed to occur at this new position to produce a lamina of this different coating material. The process may be repeated for a number of target electrodes. It is also possible to provide a plurality of substrate-containing cylinders mounted concentrically on the table about its axis of rotation. Because sputtering takes place within the substrate-containing cylinder and occurs only when a sputter target is enveloped by the cylinder, the likelihood of contamination of the coating laminae by material sputtered from other parts of the sputtering apparatus is minimized.

3,796,650
COAL LIQUEFACTION PROCESS
Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed July 24, 1972, Ser. No. 274,145
Int. Cl. C10g *1/00, 1/06*
U.S. Cl. 208—10 **5 Claims**

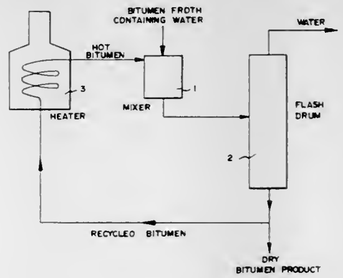
A process is disclosed for de-ashing and liquefying coal which comprises contacting comminuted coal with water, at least a portion of which is in the liquid phase, a reducing gas and a compound selected from ammonia and carbonates and hydroxides of alkali metals, at liquefaction conditions, including a temperature of 200–370° C. to provide a hydrocarbonaceous product.

3,796,651
DEWAXING PROCESS
Alexandre Rojey, Vanves, France, assignor to Institut Francois du Petrole des Carburants et Lubrifiants
Filed May 16, 1972, Ser. No. 253,848
Claims priority, application France, May 19, 1971, 18,341
Int. Cl. C10g *43/00, 43/04*
U.S. Cl. 208—24 **15 Claims**



Process for separating a crystallizable paraffin from a charge containing it, comprising diluting said charge with a suitable solvent, dispersing it into an aqueous phase, liquid at the dewaxing temperature, together with an inert gas for raising up the formed crystals, and separating said crystals from the solution.

3,796,652
THERMAL DEHYDRATION OF BITUMEN FROTH
Silver Lupul, Sherwood Park, Alberta, Canada, assignor to Canada-Cities Service, Ltd., Imperial Oil Limited, Atlantic Richfield Canada, Ltd., and Gulf Oil Canada Limited, fractional part interest to each
Filed Jan. 15, 1973, Ser. No. 323,454
Int. Cl. C10c *3/00*
U.S. Cl. 208—39 **5 Claims**



Bitumen froth containing water is contacted with hot dry bitumen in a mixer to vaporize all the water. The mixture is flashed to remove the water vapor and produce dry bitumen. Part of this latter product is heated and recycled to the mixer.

3,796,653
SOLVENT DEASPHALTING AND NON-CATALYTIC HYDROGENATION
John G. Gatsis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed July 3, 1972, Ser. No. 268,277
Int. Cl. C10g *31/14*
U.S. Cl. 208—95 **7 Claims**

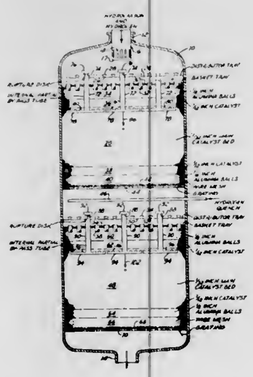
An asphaltene-containing hydrocarbonaceous charge stock is pretreated via a combination process to prepare

a suitable hydrodesulfurization feed stock. The combination process involves the integration of (1) non-catalytic hydrogenative conversion (hydrocracking) at conditions which minimize coke-forming thermal cracking reactions and (2) solvent extraction of the resulting product effluent with recovery of a substantially asphaltene-free feed stock.

3,796,654
HYDROCARBON CONVERSION WITH A MULTICOMPONENT CATALYST
Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Original application Mar. 2, 1970, Ser. No. 15,960, now abandoned. Divided and this application Apr. 5, 1972, Ser. No. 241,417
Int. Cl. C10g *35/06*
U.S. Cl. 208—139 **25 Claims**

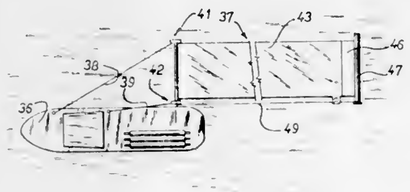
Hydrocarbons are converted by contacting them, at hydrocarbon conversion conditions, with a catalytic composite, comprising a combination of catalytically effective amounts of a platinum group component, a nickel component, and a Group IV-A metallic component with a porous carrier material. A specific example of the disclosed hydrocarbon conversion processes is a process for the catalytic reforming of a gasoline fraction which comprises contacting the gasoline fraction and hydrogen, at reforming conditions, with a catalytic composite comprising a combination of catalytically effective amounts of a platinum component, a nickel component, a germanium component, and a halogen component with an alumina carrier material.

3,796,655
METHOD FOR DIMINISHING PRESSURE DROP WITHIN A CATALYST BED
John M. Armistead, Bethel Park, Pa., and Joseph K. Kosiba, Port Arthur, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
Original application Mar. 18, 1970, Ser. No. 20,744, now Patent No. 3,702,238. Divided and this application May 22, 1972, Ser. No. 255,729
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **17 Claims**



The hydrodesulfurization of a crude oil or a reduced crude containing the asphaltene fraction proceeds at unexpectedly low temperatures when utilizing a catalyst comprising a Group VI and Group VIII metal on alumina wherein the catalyst particles are very small and have a diameter between about 1/20 and 1/40 inch, and the feed is passed in downflow operation over a fixed bed of the catalyst. The low temperature advantage depends upon high hydrogen pressure and the process is pressure drop limited rather than catalyst activity limited. An abrupt pressure drop increase is primarily due to a formation of crust at the top of the catalyst bed. When the pressure drop across this upper layer of the bed increases to a predetermined value the force of the pressure drop itself is utilized to provide a sudden surge of reactant fluid directly to the underside of the crust to dislodge the particles constituting the crust and lower the pressure drop across the top of the bed. This invention can be applied to other fixed bed processes wherein fouling at the top of the bed represents a process limitation.

3,796,656
OIL SLICK REMOVAL METHOD, SYSTEM AND BAG THEREFOR
Reginald L. Avey, 39 Sunny Acres, Baie d'Urfe, Quebec, Canada
Filed Dec. 29, 1971, Ser. No. 213,668
Int. Cl. B01d *37/00;* **E02b** *15/04*
U.S. Cl. 210—65 **9 Claims**



A method for removing an oil slick or other flotage which consists in dragging the open mouth of an initially empty collecting bag in partly immersed position along the surface of a body of water which is covered for instance by an oil slick, to cause the latter to enter into the bag, and to weight and release the open mouth of the bag to allow the same to sink and become suspended from the remainder of the bag. A system adapted to be attached to one or two boats to so drag the mouth of the bag and having releasing and supporting elements adapted to release and allow sinking the mouth of the bag. An oil collecting bag adapted to float while holding collected oil and having a skin constructed of either open mesh material, fabric or film plastic such as to collect oil, with or without being water pervious.

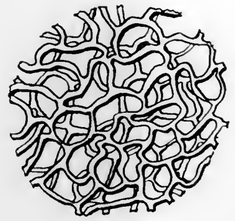
ERRATUM

For Class 210—21 see:
Patent No. 3,796,660

3,796,657
APPARATUS FOR DISTRIBUTION SEPARATION PROCESSES, THEIR MANUFACTURE AND USE
Victor Pretorius and Hans Helmut Hahn, both of 38 Marais St., Bailey's Muckleneuk, Pretoria, Transvaal, Republic of South Africa
Continuation of abandoned application Ser. No. 598,365, Dec. 1, 1966, which is a continuation-in-part of application Ser. No. 548,900, May 10, 1966, now Patent No. 3,493,497. This application Nov. 3, 1970, Ser. No. 86,621
Claims priority, application Republic of South Africa, May 11, 1965, 65/2,502; Dc. 8, 1965, 65/6,633
Int. Cl. B01d *15/08, 53/14*
U.S. Cl. 210—31 C **32 Claims**

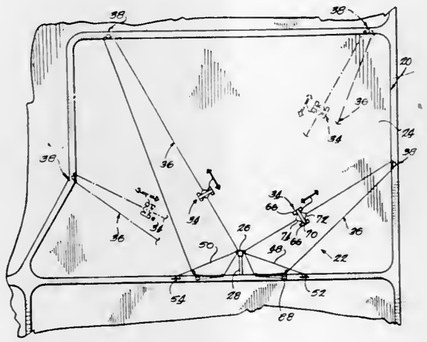
The invention relates to distribution separation processes such as chromatography and distillation of the type in which a fluid phase flows relative to a second phase in intimate contact and the separation takes place by material distribution between the phases. Contact between

the phases takes place on the surfaces of pores of the porous medium having the structure of an open-pore foam produced by foaming in the ordinary sense or by casting around packed spheres which are subsequently removed. The one phase which is a gas or liquid phase, flows through the interleading pores whilst the other which is a liquid or solid phase is confined to the surface of the



pores. Improved results are attained if the gas or liquid phase flows under turbulent conditions, these being enchanced by the foam structure. Wall effects are substantially eliminated, permitting a departure from conventional circular column cross-sections. A statistically uniform pore structure across the entire column cross-section is aimed at.

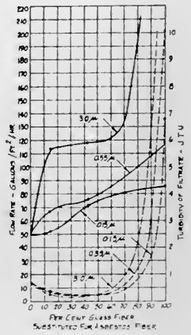
3,796,658
SLUDGE RECLAMATION SYSTEM AND METHOD
John F. Meissner, Sr., Hinsdale, Ill., assignor to Bauer Engineering Inc., Chicago, Ill.
Filed Nov. 26, 1971, Ser. No. 202,493
Int. Cl. B01d *21/18, 37/00*
U.S. Cl. 210—65 **25 Claims**



An apparatus and method for reclaiming viscous sewage sludge from large storage lagoons comprising cable-operated floatable skimmers which move the gelatinous sludge toward submersible pumps at a fixed pumping site whereby the sludge is pumped from the lagoon for transport.

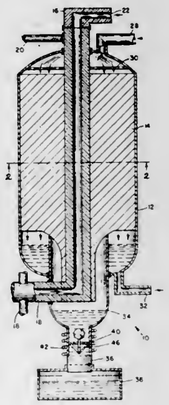
3,796,659
FILTER PAD AND FILTRATION PROCESS
Robert Kenneth Jones, New City, N.Y., and Roger Warner Hess, Kendall Park, N.J., assignors to Johns-Manville Corporation, New York, N.Y.
Filed July 29, 1971, Ser. No. 167,397
Int. Cl. B01d *27/02, 37/00*
U.S. Cl. 210—65 **4 Claims**

Fibrous filter pads comprising cellulosic, asbestos and glass fibers. The pads are characterized by improved uniformity of permeability and are capable of filtering liquids at increased flow rates without a decrease in filtrate clarity as compared with conventional cellulosic-asbestos fiber filter pads. Cellulosic fibers comprise about 43 to about 89 percent by weight of the total fiber weight, asbestos



fibers and glass fibers comprising the remainder of the fiber content of the pad with the ratio of asbestos fibers to glass fibers being in the range of about 6:1 to about 4:3. The process comprises passing a liquid to be filtered through a pad filter comprising, as the filter medium, the above referred to fibrous filter pad.

3,796,660
SEPARATION OF LIQUID-LIQUID MULTIPHASE MIXTURES
Robert Kaiser, Cambridge, Mass., assignor to Avco Corporation, Cincinnati, Ohio
Continuation-in-part of abandoned application Ser. No. 45,962, June 15, 1970. This application May 18, 1971, Ser. No. 144,563
Int. Cl. B01d *17/04*
U.S. Cl. 210—21 **7 Claims**



This process relates to separating multi-phase liquid-liquid mixtures such as emulsions and involves dispersing

therein a ferrofluid preferentially soluble in one phase of the mixture and thereafter passing the mixture through a strong magnetic field gradient. The magnetic field serves to at least concentrate, often to separate out, the phase containing the magnetic particles therein. As little as 0.0001% by volume of magnetic particles in one phase is adequate for significant phase separation by a strong magnetic field gradient.

3,796,661

SULFURIZED TRIISOBUTYLENE

Jugmohan R. Suratwala, Beaumont, John E. May, Nederland, and Billy R. Allen, Bridge City, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed July 19, 1971, Ser. No. 164,055

Int. Cl. C10m *1/38*

U.S. Cl. 252—45 **3 Claims**

Sulfurized triisobutylene, lubricating oil compositions thereof having improved extreme pressure properties and reduced copper corrosivity, and method of manufacture of said sulfurized triisobutylene comprising the sequential steps: (1) forming a mixture of triisobutylene and sulfur utilizing a mole ratio of triisobutylene to sulfur of between about 1:2.5 and 1:5 at between about 50 and 100° 100° F., (2) continuously blowing the resultant mixture with an inert gas at a rate of between about 0.1 and 1 s.c.f.g./gallon mixture at a temperature between about 375 and 465° F. under a continuous pressure of between about 20 and 100 p.s.i.g. until the free sulfur content in said resultant reaction mixture is less than 0.3 wt. percent; (3) stripping the blown mixture with inert gas at a rate of between about 0.1 and 1 s.c.f.g./gallon at a temperature of between about 320 and 360° F. at subatmospheric pressure; and (4) filtering the stripped product.

3,796,662

EXTENDED LIFE FUNCTIONAL FLUID

Richard E. Lyle, El Cerrito, and Edward G. Foehr, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,235

Int. Cl. C10m *1/32, 1/48*

U.S. Cl. 252—32.7 E **7 Claims**

Functional fluid lubricating oil compositions are provided which comprise (A) a major amount of an oil of lubricating viscosity, and (B) an effective amount of each of the following: (1) an alkyl succinimide, (2) a Group II metal salt of a dihydrocarbyl dithiophosphoric acid, (3) a tertiary amine selected from N-fatty alkyl-N,N-diethanol amines, N-fatty alkyl-N,N - di - ethoxyethanol amines, and N-fatty alkyl-N,N-di-poly-(ethoxy)ethanol amines, and (4) a Group II metal salt of a hydrocarbyl sulfonic acid. Such lubricating compositions are useful as functional fluids in systems requiring fluid coupling, hydraulic fluid and/or lubrication of relatively moving parts. The lubricating compositions of the invention are particularly useful as the functional fluid in automatic transmissions, particularly in passenger automobiles.

3,796,663

LUBRICATING OIL ADDITIVES

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Sept. 29, 1971, Ser. No. 184,962

Int. Cl. C10m *1/36*

U.S. Cl. 252—51.5 A **4 Claims**

The N-hydroxy hydrocarbyl-substituted cyclic imides, e.g., tetrapropenylsuccinic hydroximide, are multifunctional lubricating oil additives which serve to inhibit rust, reduce wear and control friction on metallic surfaces.

3,796,664

MATERIALS IN ELECTROPHOTOGRAPHIC PROCESS

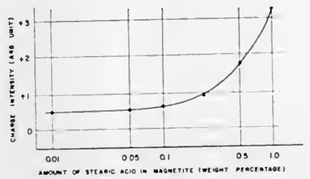
Yoshiki Hayashi, Hirakata-shi, and Hikofumi Oido, Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Original application Oct. 4, 1965, Ser. No. 492,695, now Patent No. 3,438,773, dated Apr. 15, 1969. Divided and this application Jan. 28, 1969, Ser. No. 834,181

Claims priority, application Japan, Oct. 2, 1964, 39/56,714; Oct. 29, 1964, 39/61,927; Nov. 9, 1964, 39/63,913; Mar. 26, 1965, 40/17,946

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **2 Claims**



The present invention is directed to a dry powder resin free toner composition for developing electrostatic images comprising a magnetic carrier and a fatty acid.

3,796,665

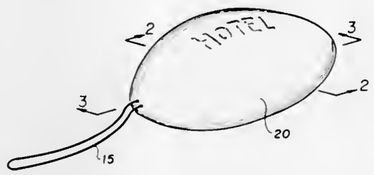
SOAP BAR

Levi G. Allen, Crown Point, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,077

Int. Cl. C11d *17/04*

U.S. Cl. 252—90 **6 Claims**



An improved buoyant cake of soap which is formed of composite construction, the core consisting of an insoluble material such as plastic or wood, with the outer layer consisting of soap, which remains of a size large enough to be conveniently handled. A looped cord of plastic material is fastened to the insoluble core, which may be hung from the looped cord, when not in use.

3,796,666

COMPOSITION AND METHOD FOR DISPERSING PROTEINACEOUS STAINS

Alan Jones, Newcastle-upon-Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 7, 1972, Ser. No. 260,650

Claims priority, application Great Britain, June 15, 1971, 28,016/71

Int. Cl. C11d *1/04, 9/30*

U.S. Cl. 252—110 **5 Claims**

A detergent composition is formulated to contain an aminothiol of the formula $HS(CH_2)_nNH_2$ where n is from 2 to 4, a protein swelling anionic surface-active agent and a pH buffering compound. This detergent composition has particular utility for dispersing proteinaceous stains.

3,796,667

METHOD FOR INHIBITING IRON CONTAINING SCALE FORMATION IN SEAWATER DISTILLATON PLANTS

Jacob Block, Rockville, Md., and Bruce Morgan Watson, Vienna, Va., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed June 2, 1972, Ser. No. 259,245

Int. Cl. C02b *5/06*

U.S. Cl. 252—180 **2 Claims**

A process for prevention of increased fouling due to the presence of iron in saline water distillation plants by adding certain iron specific chelating agents to the saline water being fed to the distillation unit to inhibit the formation of iron containing deposits. These deposits are extremely heat flow resistant.

3,796,668

FLUORESCENT DYE COLORED PVC

Ralph T. Hickcox, Orinda, Calif., assignor to Hercules, Incorporated, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 107,915, Jan. 20, 1971. This application June 14, 1972, Ser. No. 262,916

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 R **12 Claims**

Rigid or non-plasticized polyvinyl chloride or copolymers thereof containing an organic fluorescent dye such as a rhodamine dye to impart fluorescent coloration to the resin has improved initial fluorescence and fade resistance upon exposure to light through the incorporation of chlorinated polyethylene, preferably 25–45% by weight of the polyvinyl chloride and chlorinated polyethylene content. Added improvement in these areas is gained through the use of a vinyl stabilizer selected from nonmercaptide organo tin or a chelator with barium-cadmium-zinc or strontium-zinc.

3,796,669

PROCESS FOR THE PRODUCTION OF OILY LIQUID-CONTAINING MICROCAPSULES AND THE MICROCAPSULES PRODUCED THEREBY

Masataka Kiritani and Hiroharu Matsukawa, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,369

Claims priority, application Japan, Apr. 28, 1970, 45/36,545, 45/36,546

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **11 Claims**

A process for the production of oily liquid-containing microcapsules which comprises mixing a polyvalent polyisocyanate as a first wall-forming material and a second wall-forming material capable of producing a high molecular weight compound by reaction with said polyisocyanate, in said oily liquid, to form a mixture, dispersing or emulsifying said mixture in a polar liquid forming a continuous phase, and reacting said polyvalent isocyanate with said second wall-forming material to thereby form the microcapsule wall from the inside of the oil drop is disclosed. The second wall-forming material is selected from the group consisting of epoxy compounds, acid anhydride compounds, compounds having at least two groups selected from the class consisting of a hydroxyl group, a thiol group, an amino group, and a carboxylic acid group, and prepolymers of said compounds.

3,796,670

METHOD OF REGENERATING AN AGED RANEY NICKEL CATALYST WITH CARBOXYLIC ACID AND BASE TREATMENT

William Johan Meindert Pieters, Denville, N.J., John Freel, Oakmont, Pa., and Robert Bernard Anderson, Ancaster, Ontario, Canada, assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,832

Int. Cl. B01j *11/02, 11/30*

U.S. Cl. 252—413 **7 Claims**

Raney nickel catalysts which have aged from storage are regenerated by successive treatment in an aqueous organic acid solution and in an aqueous base solution. Then the catalyst is separated and washed. The regenerated catalyst has a higher activity than the freshly prepared catalyst.

3,796,671

BLACK OIL CONVERSION CATALYST

William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Aug. 23, 1972, Ser. No. 282,998

Int. Cl. B01j *11/82*

U.S. Cl. 252—432 **8 Claims**

Asphaltene - containing hydrocarbonaceous charge stocks are reacted with hydrogen in contact with a catalytic composite of at least one metal component selected from the group consisting of the borides and borohydrides of the metals from Groups IV, V and VI. A slurry-type process, which may be effected either with the metallic component being composited with a porous carrier material, or with the unsupported metallic component, and admixed with the fresh feed charge stock.

3,796,672

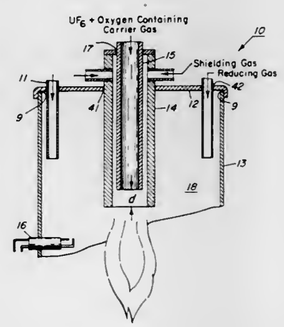
PROCESS FOR PRODUCING URANIUM DIOXIDE RICH COMPOSITIONS FROM URANIUM HEXAFLUORIDE

Abdul G. Dada and William R. De Hollander, San Jose, Calif., assignors to General Electric Company

Filed Oct. 2, 1970, Ser. No. 77,446

Int. Cl. G21c *19/42*

U.S. Cl. 252—301.1 R **26 Claims**



Conversion of gaseous uranium hexafluoride to a uranium dioxide rich composition in the presence of an active flame in a reaction zone is achieved by introducing a gaseous reactant comprising a reducing gas and a gaseous reactant comprising a mixture of uranium hexafluoride and an oxygen-containing carrier gas, the reactants being separated by a shielding gas as introduced to the

therein a ferrofluid preferentially soluble in one phase of the mixture and thereafter passing the mixture through a strong magnetic field gradient. The magnetic field serves to at least concentrate, often to separate out, the phase containing the magnetic particles therein. As little as 0.0001% by volume of magnetic particles in one phase is adequate for significant phase separation by a strong magnetic field gradient.

3,796,661

SULFURIZED TRIISOBUTYLENE

Jugmohan R. Suratwala, Beaumont, John E. May, Nederland, and Billy R. Allen, Bridge City, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed July 19, 1971, Ser. No. 164,055

Int. Cl. C10m *1/38*

U.S. Cl. 252—45 **3 Claims**

Sulfurized triisobutylene, lubricating oil compositions thereof having improved extreme pressure properties and reduced copper corrosivity, and method of manufacture of said sulfurized triisobutylene comprising the sequential steps: (1) forming a mixture of triisobutylene and sulfur utilizing a mole ratio of triisobutylene to sulfur of between about 1:2.5 and 1:5 at between about 50 and 100° 100° F., (2) continuously blowing the resultant mixture with an inert gas at a rate of between about 0.1 and 1 s.c.f.g./gallon mixture at a temperature between about 375 and 465° F. under a continuous pressure of between about 20 and 100 p.s.i.g. until the free sulfur content in said resultant reaction mixture is less than 0.3 wt. percent; (3) stripping the blown mixture with inert gas at a rate of between about 0.1 and 1 s.c.f.g./gallon at a temperature of between about 320 and 360° F. at subatmospheric pressure; and (4) filtering the stripped product.

3,796,662

EXTENDED LIFE FUNCTIONAL FLUID

Richard E. Lyle, El Cerrito, and Edward G. Foehr, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,235

Int. Cl. C10m *1/32, 1/48*

U.S. Cl. 252—32.7 E **7 Claims**

Functional fluid lubricating oil compositions are provided which comprise (A) a major amount of an oil of lubricating viscosity, and (B) an effective amount of each of the following: (1) an alkyl succinimide, (2) a Group II metal salt of a dihydrocarbyl dithiophosphoric acid, (3) a tertiary amine selected from N-fatty alkyl-N,N-diethanol amines, N-fatty alkyl-N,N - di - ethoxyethanol amines, and N-fatty alkyl-N,N-di-poly-(ethoxy)ethanol amines, and (4) a Group II metal salt of a hydrocarbyl sulfonic acid. Such lubricating compositions are useful as functional fluids in systems requiring fluid coupling, hydraulic fluid and/or lubrication of relatively moving parts. The lubricating compositions of the invention are particularly useful as the functional fluid in automatic transmissions, particularly in passenger automobiles.

3,796,663

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No Drawing. Filed Sept. 29, 1971, Ser. No. 184,962

Int. Cl. C10m *1/36*

U.S. Cl. 252—51.5 A **4 Claims**

The N-hydroxy hydrocarbyl-substituted cyclic imides, e.g., tetrapropenylsuccinic hydroximide, are multifunctional lubricating oil additives which serve to inhibit rust, reduce wear and control friction on metallic surfaces.

3,796,664

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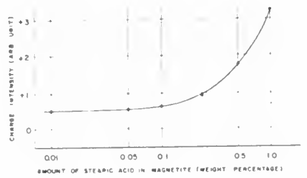
Yoshiki Hayashi, Hirakata-shi, and Hikofumi Oido, Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Original application Oct. 4, 1965, Ser. No. 492,695, now Patent No. 3,438,773, dated Apr. 15, 1969. Divided and this application Jan. 28, 1969, Ser. No. 834,181

Claims priority, application Japan, Oct. 2, 1964, 39/56,714; Oct. 29, 1964, 39/61,927; Nov. 9, 1964, 39/63,913; Mar. 26, 1965, 40/17,946

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 **2 Claims**



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3,796,665

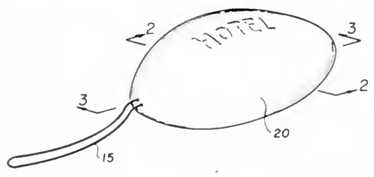
SOAP BAR

Levi G. Allen, Crown Point, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,077

Int. Cl. C11d *17/04*

U.S. Cl. 252—90 **6 Claims**



An improved buoyant cake of soap which is formed of composite construction, the core consisting of an insoluble material such as plastic or wood, with the outer layer consisting of soap, which remains of a size large enough to be conveniently handled. A looped cord of plastic material is fastened to the insoluble core, which may be hung from the looped cord, when not in use.

3,796,666

COMPOSITION AND METHOD FOR DISPERSING PROTEINACEOUS STAINS

Alan Jones, Newcastle-upon-Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 7, 1972, Ser. No. 260,650

Claims priority, application Great Britain, June 15, 1971, 28,016/71

Int. Cl. C11d *1/04, 9/30*

U.S. Cl. 252—110 **5 Claims**

A detergent composition is formulated to contain an aminothiol of the formula $HS(CH_2)_nNH_2$ where n is

from 2 to 4, a protein swelling anionic surface-active agent and a pH buffering compound. This detergent composition has particular utility for dispersing proteinaceous stains.

3,796,667

METHOD FOR INHIBITING IRON CONTAINING SCALE FORMATION IN SEAWATER DISTILLATION PLANTS

Jacob Block, Rockville, Md., and Bruce Morgan Watson, Vienna, Va., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed June 2, 1972, Ser. No. 259,245

Int. Cl. C02b *5/06*

U.S. Cl. 252—180 **2 Claims**

A process for prevention of increased fouling due to the presence of iron in saline water distillation plants by adding certain iron specific chelating agents to the saline water being fed to the distillation unit to inhibit the formation of iron containing deposits. These deposits are extremely heat flow resistant.

3,796,668

FLUORESCENT DYE COLORED PVC

Ralph T. Hickcox, Orinda, Calif., assignor to Hercules, Incorporated, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 107,915, Jan. 20, 1971. This application June 14, 1972, Ser. No. 262,916

Int. Cl. C09k *1/02*

U.S. Cl. 252—301.2 R **12 Claims**

Rigid or non-plasticized polyvinyl chloride or copolymers thereof containing an organic fluorescent dye such as a rhodamine dye to impart fluorescent coloration to the resin has improved initial fluorescence and fade resistance upon exposure to light through the incorporation of chlorinated polyethylene, preferably 25–45% by weight of the polyvinyl chloride and chlorinated polyethylene content. Added improvement in these areas is gained through the use of a vinyl stabilizer selected from nonmercaptide organo tin or a chelator with barium-cadmium-zinc or strontium-zinc.

3,796,669

PROCESS FOR THE PRODUCTION OF OILY LIQUID-CONTAINING MICROCAPSULES AND THE MICROCAPSULES PRODUCED THEREBY

Masataka Kiritani and Hiroharu Matsukawa, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,369

Claims priority, application Japan, Apr. 28, 1970, 45/36,545, 45/36,546

Int. Cl. B01j *13/02;* **B44d** *1/02*

U.S. Cl. 252—316 **11 Claims**

A process for the production of oily liquid-containing microcapsules which comprises mixing a polyvalent polyisocyanate as a first wall-forming material and a second wall-forming material capable of producing a high molecular weight compound by reaction with said polyisocyanate, in said oily liquid, to form a mixture, dispersing or emulsifying said mixture in a polar liquid forming a continuous phase, and reacting said polyvalent isocyanate with said second wall-forming material to thereby form the microcapsule wall from the inside of the oil drop is disclosed. The second wall-forming material is selected from the group consisting of epoxy compounds, acid anhydride compounds, compounds having at least two groups selected from the class consisting of a hydroxyl group, a thiol group, an amino group, and a carboxylic acid group, and prepolymers of said compounds.

3,796,670

METHOD OF REGENERATING AN AGED RANEY NICKEL CATALYST WITH CARBOXYLIC ACID AND BASE TREATMENT

William Johan Meindert Pieters, Denville, N.J., John Freel, Oakmont, Pa., and Robert Bernard Anderson, Ancaster, Ontario, Canada, assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,832

Int. Cl. B01j *11/02, 11/30*

U.S. Cl. 252—413 **7 Claims**

Raney nickel catalysts which have aged from storage are regenerated by successive treatment in an aqueous organic acid solution and in an aqueous base solution. Then the catalyst is separated and washed. The regenerated catalyst has a higher activity than the freshly prepared catalyst.

3,796,671

BLACK OIL CONVERSION CATALYST

William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Aug. 23, 1972, Ser. No. 282,998

Int. Cl. B01j *11/82*

U.S. Cl. 252—432 **8 Claims**

Asphaltene - containing hydrocarbonaceous charge stocks are reacted with hydrogen in contact with a catalytic composite of at least one metal component selected from the group consisting of the borides and borohydrides of the metals from Groups IV, V and VI. A slurry-type process, which may be effected either with the metallic component being composited with a porous carrier material, or with the unsupported metallic component, and admixed with the fresh feed charge stock.

3,796,672

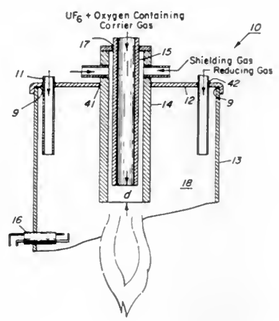
PROCESS FOR PRODUCING URANIUM DIOXIDE RICH COMPOSITIONS FROM URANIUM HEXAFLUORIDE

Abdul G. Dada and William R. De Hollander, San Jose, Calif., assignors to General Electric Company

Filed Oct. 2, 1970, Ser. No. 77,446

Int. Cl. G21c *19/42*

U.S. Cl. 252—301.1 R **26 Claims**



Conversion of gaseous uranium hexafluoride to a uranium dioxide rich composition in the presence of an active flame in a reaction zone is achieved by introducing a gaseous reactant comprising a reducing gas and a gaseous reactant comprising a mixture of uranium hexafluoride and an oxygen-containing carrier gas, the reactants being separated by a shielding gas as introduced to the

reaction zone. The shielding gas temporarily separates the gaseous reactants and temporarily prevents substantial mixing and reacting of the gaseous reactants.

3,796,673

METHOD OF PRODUCING MULTICOMPONENT METAL-METAL OXIDE SINGLE CRYSTALS

Grady W. Clark, Oak Ridge, James C. Wilson, Kingston, and Bennie F. Oliver, Knoxville, Tenn., and Alan T. Chapman, Jr., Atlanta, Ga., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed June 30, 1972, Ser. No. 267,770
Int. Cl. H01b *1/02*
U.S. Cl. 252—515 **5 Claims**

A method is disclosed for the directional solidification of a binary composition from a ternary melt.

3,796,674

ORGANO-TIN AMINOCARBAMATE CATALYST FOR PREPARATION OF POLYURETHANE FOAM

Guenther Fritz Lengnick and Kailash Chandra Pande, Manitou Beach, Mich., assignors to Stauffer-Wacker Silicone Corporation

No Drawing. Original application Nov. 8, 1971, Ser. No. 196,841, now abandoned, which is a division of application Ser. No. 43,296, Apr. 23, 1970, now Patent No. 3,697,477, which in turn is a division of application Ser. No. 604,139, Dec. 23, 1966, now Patent No. 3,520,910. Divided and this application Jan. 22, 1973, Ser. No. 325,463
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AC **7 Claims**

A process for producing a polyurethane foam by reacting a polyalkylene glycol with an organic diisocyanate in the presence of a blowing agent and a catalytic amount of an organo-substituted tin aminocarbamate.

3,796,675

COMPOSITIONS AND METHOD FOR MAKING VINYL RESIN FOAM PRODUCTS

Nicolas Fischer, Paris, France, assignor to Rhone-Progil, Courbevoie, France

No Drawing. Continuation of abandoned application Ser. No. 707,313, Feb. 21, 1968. This application Jan. 26, 1971, Ser. No. 109,950
Claims priority, application France, Feb. 23, 1967, 96,241
Int. Cl. C08f *47/08*
U.S. Cl. 260—2.5 P **10 Claims**

A composition and method for the preparation of foam products of vinyl resins in which the vinyl resin in particulate form has absorbed thereon a compound in the form of an alkali metal alkylsulphate or mixture thereof with an alkanolamine alkylsulphate or admixtures thereof with one of the compounds such as an alkylene oxide condensate of an alcohol or phenol and an alkanolamide wherein the vinyl resinous particles with the compounds absorbed thereon are formed into a plastisol which is foamed by physical beating or whipping and then heated in the form desired to produce the foam product.

3,796,676

ORGANOSILICONE POLYMERIC FOAM STABILIZER COMPOSITION AND POLYESTER URETHANE FOAM PRODUCED THEREWITH

Bernard Kanner, West Nyack, and Bela Prokai, Mahopac, N.Y., and Walter R. Rosemund, Englewood, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,415
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AH **25 Claims**

Organosilicone polymers are provided containing silicon-containing units A, B and C, where A is $SiO_{4/2}$, B is a monofunctional siloxy unit in which silicon is bonded to at least one organic moiety bearing an organic-capped poly(oxyalkylene) chain, and C is a monofunctional trihydrocarbylsiloxy unit, and in which there are from about 0.75 to about 2 moles of A, and from about 0.1 to about 1 mole of C, per mole of B. The polymers are useful as surfactants and find particular application in the manufacture of flexible polyester urethane cellular products, including flame-retarded foams.

3,796,677

INCORPORATING RUBBER INTO THERMOPLASTICS

Walter Laber, Gimmeldingen, Alfred Gottschalk, Wachenheim, Josef Schwaab, Maikammer, Guenter Jeckel, Landau, and Helmut Mosthaf, Bad Durkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed July 26, 1971, Ser. No. 166,081
Claims priority, application Germany, July 30, 1970, P 20 37 784.8
Int. Cl. C08c *9/14*
U.S. Cl. 260—4 **12 Claims**

A process for incorporating moist rubber into thermoplastics. Rubber latex is first coagulated, and the rubber is freed from the major portion of the water and then mixed with the molten thermoplastic. The resulting impact resistant modified thermoplastics are distinguished by high gloss and improved dimensional stability under heat.

ERRATUM

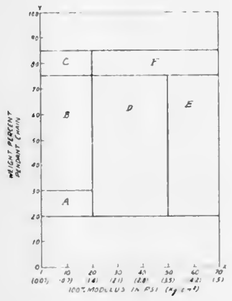
For Class 260—17.40 see:
Patent No. 3,796,718

3,796,678

HIGHLY BRANCHED, CAPPED POLYURETHANES FOR PRESSURE SENSITIVE ADHESIVES

Dennis C. Bartizal, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 17, 1970, Ser. No. 64,270
Int. Cl. C08g *22/08, 51/24;* **C09i** *7/00*
U.S. Cl. 260—29.2 TN **21 Claims**



The disclosed prepolymers contain at least about 20 weight percent pendant chains, and, when chain extended, form polyurethane, polyurethane-polyurea, or polyurea polymers, also having at least about 20 weight percent pendant chains. These polymers are formed in and/or dissolved or dispersed in liquid media to provide liquid adhesive systems, e.g. aqueous latex adhesive systems. Such systems, upon evaporation of the liquid phase, provide a film or coating with pressure-sensitive adhesive properties. These films exert a tensile stress of less than about 70 p.s.i. at 100% elongation.

3,796,679

ADHESIVE COMPOSITION

Erich F. Kujas, Philadelphia, Pa., assignor to Prodesco, Inc., Parkasie, Pa.

No Drawing. Continuation-in-part of application Ser. No. 864,205, Oct. 6, 1969, now Patent No. 3,645,951. This application Feb. 9, 1972, Ser. No. 224,952
The portion of the term of the patent subsequent to Feb. 29, 1989, has been disclaimed
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.4 UA **15 Claims**

An adhesive composition and method of making such composition are disclosed. The composition is suitable for use in bonding carpeting yarns to carpet backing. The composition consists essentially of hydroxy methacrylic acid ester latex, a melamine formaldehyde condensate, dodecenyl succinic anhydride and zinc oxide.

3,796,680

NON-CORROSIVE POLYVINYLIDENE CHLORIDE LATEX

Charles E. Brockway and David R. Smith, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation of abandoned application Ser. No. 720,375, Apr. 10, 1968. This application Mar. 31, 1972, Ser. No. 240,310
Int. Cl. C08f *29/14, 45/56*
U.S. Cl. 260—29.6 MQ **12 Claims**

A stabilized, substantially non-corrosive polyvinylidene chloride latex is produced by adding stabilizing quantities of an alkali metal bisulfite to a polyvinylidene chloride latex containing residual peroxides. The stabilized composition has particular utility as a coating for cellulosic substrates.

3,796,681

LOW UNIFORM REMOVAL TORQUE GASKET-FORMING PLASTISOLS

Floyd A. Ratliff, 2214 Milton, Muncie, Ind. 47304, and Donald A. Giessler, 8 Ferncliffe Drive, Barrington, R.I. 02806

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,693 (Filed under Rule 47(a) and 35 U.S.C. 116)
Int. Cl. C08f *45/40*
U.S. Cl. 260—31.8 R **16 Claims**

Plastisol gasket-forming compositions capable of providing low uniform removal torques through the use of a combination of certain lubricants including stearyl alcohol and silicon, and the gaskets so formed.

3,796,682

MOLDING COMPOSITION

Manfred Lottermoser, Wedel, Holst, Gundolf Fuchs, Steinbek Mellsen uber Bucholz, Hans-Albrecht Meyer-Stoll, Rheinkamp, Dietrich Pirck, Reinbek, and Baldur Rauscher, Hamburg, Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,366
Claims priority, application Germany, Aug. 17, 1970, P 20 40 711.8
Int. Cl. C08g *51/04*
U.S. Cl. 260—42.29 **3 Claims**

A molding composition which may be cured to a polyurethane-bound material prepared by mixing of between about 80 and 98 wt. percent sand, between about 1 and 10 wt. percent of a diisocyanato compound and between about 1 and 10 wt. percent of a polyalkoxylated copolymer material selected from the group consisting of (a) an alkoxylated copolymer of styrene and a half ester of an unsaturated dicarboxylic acid, (b) a mixture of the alkoxylated copolymer of (a) and a phenol-formaldehyde resin, (c) a mixture of the alkoxylated copolymer of (a) and an alkanone-formaldehyde condensation product, and (d) a mixture of the alkoxylated copolymer of (a) and an alkyd resin.

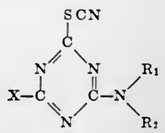
3,796,683

VULCANIZATION OF NATURAL AND SYNTHETIC RUBBERS FROM HALOGEN FREE DIENES

Werner Schwarze, Frankfurt, Herman Westlinning, Kleinostheim, Siegfried Wolff, Bruhl, and Horst Fleischhauer, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed July 7, 1972, Ser. No. 269,865
Claims priority, application Germany, July 9, 1971, P 21 34 214.3
Int. Cl. C08c *11/10, 11/18, 11/60*
U.S. Cl. 260—42.33 **10 Claims**

Natural and synthetic rubbers from halogen free dienes are vulcanized in the presence of sulfur and/or sulfur donors and a vulcanization accelerator of the formula



where R_1 and R_2 are hydrogen, alkyl, hydroxyalkyl, aralkyl, cycloalkyl, phenyl, alkyl phenyl or heterocyclic and X is —SCN or

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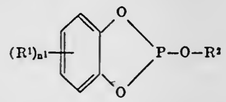
3,796,684

POLYMER COMPOSITIONS STABILIZED WITH SUBSTITUTED 4,5 - BENZO-1,3,2-DIOXAPHOSPHOLANES

James L. Dever, Lewiston, and James J. Hodan, Williamsville, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Original application Aug. 31, 1967, Ser. No. 664,603, now Patent No. 3,632,690. Divided and this application May 24, 1971, Ser. No. 146,502
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.8 R **1 Claim**

This invention is directed to a composition comprising a polymer and a novel stabilizer of the formula:



in which R^2 is selected from the group consisting of aryl and substituted aryl, R^1 is selected from the group consisting of alkyl, substituted alkyl, aryl and substituted aryl, and n^1 is from 0 to 4. Where n^1 is more than 1, the substituents R^1 may be the same or different. Polymers stabilized in the practice of this invention include polyethylene, polypropylene, acrylonitrile-butadiene-styrene copolymers and polystyrene.

3,796,685

ORGANIC MATERIAL STABILIZED WITH ALPHA, ALPHA,ALPHA',ALPHA'-TETRAKIS(4-HYDROXY-3,5 - DISUBSTITUTED PHENYL)XYLENE AND PROCESS THEREOF

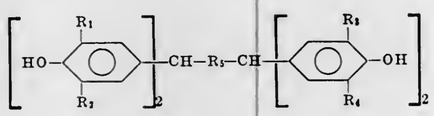
Gordon D. Brindell, Crystal Lake, and Joseph P. Wuskell, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed May 12, 1972, Ser. No. 252,860

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.85 S **24 Claims**

Organic material normally tending to undergo oxidative deterioration stabilized with a tetraphenolic compound of the following formula is disclosed;



wherein R_1, R_2, R_3, and R_4 are alkyl or aralkyl, and R_5 is o-, m- or p-phenylene.

3,796,686

ORGANOPOLYSILOXANE COMPOSITIONS CONVERTIBLE INTO ELASTOMERS AT ROOM TEMPERATURE

Hans Dietrich Golitz, Cologne-Stammheim, Walter Simmler, Odenthal-Schlinghofen, and Peter Schwabe, Leichlingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 105,604, Jan. 11, 1971, which is a division of application Ser. No. 857,203, Sept. 11, 1969, now Patent No. 3,621,047. This application Feb. 2, 1973, Ser. No. 328,999

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **8 Claims**

Novel cross-linking agents are disclosed which can be combined with plastically shapable organo-polysiloxanes; the resulting novel mixtures or compositions being storage stable under exclusion of all moisture. The cross-linking reaction takes place on exposure of the compositions to water, atmospheric humidity sufficing, at temperatures below 50° C. The compositions are especially adapted to be used for the filling of joints and as sealing materials in the building industry. The elastomers resulting therefrom have an increased adhesion to the substrate saving the expenditure of priming, and are transparent. The novel compositions comprise:

(A) an α,ω-dihydroxy-poly-(diorgano-siloxane) which, in addition to its diorgano-siloxane units, may contain up to 10 mol-percent of siloxane units having the formula $CH_3SiO_{3/2}$, and may be admixed with fillers and an α,ω-bis-(trimethyl - siloxy)-poly-(diorgano - siloxane); and

(B) a cross-linking agent having the formula

$$[(RO—)_3Si—CH(R')—]_nNQ_{3-n}$$

in which n is 2 or 3, R is an alkyl radical with 1 to 4 carbon atoms, R' is a hydrogen atom, an alkyl radical with 1 to 6 carbon atoms, a cyclohexyl radical or a phenyl radical, and Q is an alkyl or alkenyl radical with 2 to 4 carbon atoms, an aralkyl radical with 7 to 10 carbon atoms, a dimethylaminoalkyl radical with 2 to 4 carbon atoms in its alkylene group, or a methoxy- or ethoxy-ethyl or -propyl radical.

3,796,687

FUNCTIONALLY SUBSTITUTED TERPOLYMERS AND TETRAPOLYMERS OF α-OLEFINS AND PROCESS FOR MANUFACTURING FUNCTIONAL SUBSTITUTED COPOLYMERS

John Wilfred Collette, Rolland Shih-Yuan Ro, and Fred Max Sonnenberg, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application June 2, 1969, Ser. No. 829,758, now abandoned. Divided and this application June 14, 1971, Ser. No. 152,988

Int. Cl. C08f *15/40*

U.S. Cl. 260—47 UA **2 Claims**

Addition terpolymers of ethylene with an α-olefin and an unsaturated, functionally substituted monomer. Addition tetrapolymers of ethylene with an α-olefin having 3–18 carbon atoms, a nonconjugated diene having only one polymerizable double bond, and an unsaturated, functionally substituted monomer. A process for preparing copolymers of ethylene with an unsaturated functionally substituted monomer, and optionally also with at least one of the following: an α-olefin having 3–18 carbon atoms and a nonconjugated diene having only one polymerizable double bond; wherein the monomers are contacted in the presence of a vanadium compound soluble in hydrocarbons and chlorinated hydrocarbons, in which vanadium is in the oxidation state of at least +3, an organoaluminum compound, and an organic compound having at least one carbon atom substituted by three halogen atoms which can be chlorine or bromine.

3,796,688

POLYESTERS FROM 4,4'-BIS(2-HYDROXYETHOXY)-TETRAPHENYLMETHANE

Ewald Schneider, Kufstein, Tyrol, Austria, assignor to Ciba-Geigy A.G., Basel, Switzerland

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,875

Claims priority, application Austria, Apr. 21, 1971, 3,417/71

Int. Cl. C08g *17/08*

U.S. Cl. 260—47 C **4 Claims**

This invention relates to heat-stable, thermoplastic saturated polyesters synthesized from aromatic dicarboxylic acids, in particular terephthalic acid, optionally with small amounts of aliphatic dicarboxylic acids, and from 4,4' - bis(2-hydroxyethoxy)-tetraphenylmethane, optionally with aliphatic and/or cycloaliphatic diols and small amounts of a crosslinking component.

3,796,689

PREPARATION OF POLYPHENYLENE ETHERS WITH DIALKYL SULFOXIDE PROMOTED COPPER-AMINE CATALYSTS

James G. Bennett, Menands, and Arthur Katchman, Delmar, N.Y., assignors to General Electric Company

No Drawing. Original application Apr. 30, 1971, Ser. No. 139,216, now Patent No. 3,730,944. Divided and this application Feb. 14, 1973, Ser. No. 332,383

Int. Cl. C08g *23/18*

U.S. Cl. 260—47 ET **16 Claims**

Improved process for the preparation of high molecular weight polyphenylene ethers by oxidatively coupling a di-ortho-substituted phenolic precursor in a reaction system containing oxygen and a complex catalyst formed from a copper salt and either a primary, secondary or tertiary amine and an alkylene carbonate or a dialkyl sulfoxide promotor or a primary or tertiary amine and a dialkyl formamide promotor. Use of the promotors results in the formation of higher molecular weight polymer in a given reaction time or polymer of comparable molecular weight in substantially decreased reaction time.

3,796,690

METHOD FOR THE PREPARATION OF WATER-INSOLUBLE THERMOSETTING COMPOSITIONS OF MATTER FROM SUBSTITUTED ACRYLAMIDE AND AN ALDEHYDE

Eugene Richard Farone, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,485, Dec. 15, 1970. This application Mar. 14, 1973, Ser. No. 341,216

Int. Cl. C08g *3/00, 9/20*

U.S. Cl. 260—64 **11 Claims**

Water-insoluble thermosetting resinous compositions of matter are prepared by heating an N-3-oxohydrocarbon-substituted acrylamide (preferably diacetone acrylamide) with an aldehyde or with a water-soluble condensation product of such aldehyde with said acrylamide, at a temperature high enough to liquefy the reaction mass and for a period of time sufficient to remove substantially all volatile components therefrom. The molar ratio of aldehyde to substituted acrylamide in the mixture is at least 1:1. Preferably, temperatures up to about 200° C. are employed. The products may be used in molding compositions and to replace unsaturated polyesters in the preparation of impregnated glass fiber mats, laminates and the like.

3,796,691

POLYESTER CONDENSATION CATALYZED BY ORGANOTIN, TRIVALENT ANTIMONY AND PENTAVALENT PHOSPHORUS COMPOUNDS

Kazuya Chimura, Shunichi Takashima, and Masao Kawashima, Otake, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,279

Claims priority, application Japan, Sept. 26, 1970, 45/83,794

Int. Cl. C08g *17/015*

U.S. Cl. 260—75 R **10 Claims**

An improved process for producing a linear polyester wherein polycondensation of glycol terephthalate is performed in the presence of (1) a trivalent antimony compound, (2) a phosphorus compound and (3) an organotin compound in the proportions satisfying the following atomic ratios; $Sn/Sb>0.2$ and $P/Sn>1$. The resultant polyester exhibits excellent whiteness and transparency and therefore, is particularly useful for a textile fiber and film.

3,796,692

POLYAMIDE POLYMERIZATION CONTROL

Ronald J. Foltz, Taylors, and Bruce W. Portus, Greenville, S.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Continuation-in-part of abandoned application Ser. No. 860,321, Sept. 23, 1969. This application July 12, 1971, Ser. No. 161,180

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R **8 Claims**

A method and apparatus for controlling polyamide continuous polymerization to obtain substantially constant polymer properties, particularly as measured by amine end groups, carboxy end groups and relative viscosity. Substantially constant polymer properties are obtained even with changes in the rate at which the produced polymer is removed or extruded from the melt collecting zone. The control is achieved by nuclear radiation sensing of the liquid level of the produced polymer in the polymer holding reservoir and controlling the input of feed material into the reactor based on said level so as to achieve a substantially constant holding period of molten polymer prior to being extruded or spun into filaments.

3,796,693

HIGH MODULUS AROMATIC POLY(AMIDE HYDRAZIDE) FIBERS

Herbert S. Morgan, 410 Cooke St., Apex, N.C. 27502; and Jack Preston, 2703 Ashland St. 27608; and William B. Black, 751 Currituck Drive 27609, both of Raleigh, N.C.

Continuation of abandoned application Ser. No. 748,443, July 29, 1968. This application Aug. 23, 1971, Ser. No. 174,215

Int. Cl. C08g *20/00, 20/04*

U.S. Cl. 260—78 A **5 Claims**

High temperature organic fibers having densities greater than 1.37 and unusually high intial moduli of over 700 g.p.d. at elongations of 2 percent or greater have been prepared through the use of high viscosity wholly aromatic polymers. These fibers are less brittle, less water sensitive and more versatile than high modulus glass fibers in fiber reinforced resinous composite structures.

3,796,694

PROCESS FOR THE PREPARATION OF CYCLIC ACID ANHYDRIDES

William J. Heilman, Allison Park, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 93,469, Nov. 27, 1970, now Patent No. 3,706,703, which is a continuation-in-part of application Ser. No. 828,001, May 26, 1969, now Patent No. 3,580,893, and which is a continuation-in-part of abandoned application Ser. No. 594,347, Oct. 25, 1966. This application Aug. 21, 1972, Ser. No. 282,169.

Int. Cl. C08f *27/12*

U.S. Cl. 260—78.5 T **10 Claims**

A process is defined for heating an organic compound prepared by the reaction of maleic anhydride and a vinyl ether and containing at least one half-ester of a dicarboxylic acid where the carbonyl groups are directly connected to adjacent internal aliphatic carbon atoms to a temperature of at least about 105° C. and preferably from about 105° C. to 149° C. to convert the half-ester groups to cyclic anhydride groups and a by-product alcohol. The organic compound is a 1:1 copolymer of a vinyl ether having at least three carbon atoms, such as methylvinylether, and maleic anhydride. If the organic compound contains both half-ester and diester groups, the resulting compound after heating to a temperature from 105° C. to 149° C. will contain anhydride and diester linkages.

3,796,695

COORDINATION BONDING IN ETHYLENE POLYMERS

Bert H. Clampitt, Overland Park, Ronald E. Gilbert, Shawnee Mission, and Joseph W. Jones, Jr., Leawood, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,557

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.73 **5 Claims**

Coordination bonding in ethylene polymers is obtained by contacting a water-insoluble, self-emulsifiable ethylene-acrylamide polymer containing pendant acid and/or ammonium salt groups dispersed in an aqueous medium with a carbonate or bicarbonate salt of a polyvalent metal at elevated temperatures.

3,796,696

SKIN-PACKAGING POLYMER AND PROCESS

Francis E. Brown, Orange, Tex., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

No Drawing. Continuation of abandoned application Ser. No. 361,254, Apr. 20, 1964. This application Feb. 15, 1968, Ser. No. 705,858

Int. Cl. C08f *1/06*

U.S. Cl. 260—87.3 4 Claims

Ethylene-vinyl acetate copolymers having unique optical and physical properties are prepared by the bulk high-pressure copolymerization of ethylene and 5 to 8 mol percent of vinyl acetate.

3,796,697

PENTAPEPTIDE

George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Nov. 2, 1971, Ser. No. 199,392

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 9 Claims

The synthesis of the pentapeptide

Gly—Leu—Arg—Pro—Gly—amide

carrying easily removable protective groups on the N^{α} of glycine and on the Arg moiety is described; the correspondingly protected tetrapeptide is used as the starting material. The new pentapeptide, upon removal of the protective group on the amino group of the glycine moiety is an important intermediate for the preparation of the gonadotropin-releasing hormone.

3,796,698

ANTIBIOTIC DERIVATIVES OF GENTAMICIN C_2

Takayuki Naito, Susumu Nakagawa, and Yoshio Abe, Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Oct. 18, 1972, Ser. No. 298,748

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB 8 Claims

Derivatives of gentamicin C_2 have been prepared which possess substantially improved antibacterial activity. An example of such an agent is 1-[L-(—)-γ-amino-α-hydroxybutyryl]-gentamicin C_2 [III, BB-K75].

3,796,699

ANTIBIOTIC DERIVATIVES OF GENTAMICIN C_{1a}

Takayuki Naito, Susumu Nakagawa, and Yoshio Abe, Tokyo, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Nov. 6, 1972, Ser. No. 303,741

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB 9 Claims

Derivatives of gentamicin C_{1a} have been prepared which possess substantially improved antibacterial activity. An example of such an agent is 1-[L-(—)-γ-amino-α-hydroxybutyryl]-gentamicin C_{1a} [IV, BB-K92].

3,796,700

ADENOSINE DERIVATIVES AND THE PRODUCTION THEREOF

Yoshio Yoshioka, Osaka, Ryuji Marumoto, Minoo, Mikio Honjo, Takatsuki, and Kenzo Kikuchi, Ibaraki, Japan, assignors to Takedo Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed June 23, 1971, Ser. No. 156,138

Claims priority, application Japan June 30, 1970, 45/57,507

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R 7 Claims

Novel therapeutically active adenosine derivatives are provided including a process for the preparation thereof. These compounds are characterized by a prolonged coronary dilatory action and platelet aggregation inhibiting action.

3,796,701

5α,9-OXAZINO STEROIDS AND 9-CARBOXAMIDO STEROIDS

Christopher M. Cimarusti, Hamilton, and Seymour D. Levine, North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Feb. 26, 1973, Ser. No. 336,103

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.55 D 17 Claims

5α,9-Oxazino steroids and 9-carboxamido steroids, having utility as anti-inflammatory agents, are disclosed.

3,796,702

α-CYANAMINOACETYL PENICILLINS

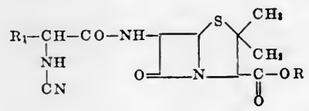
Hermann Breuer, Burgweinting, Germany, and Joseph Edward Dolfini, Princeton, Raymond C. Erickson, Metuchen, and William L. Parker, North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Nov. 19, 1971, Ser. No. 200,522

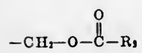
Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 7 Claims

α-Cyanaminoacetyl penicillins of the general formula



wherein R is hydrogen, lower alkyl, aralkyl, tri(lower alkyl)silyl, a salt forming ion or the group



R_1 is hydrogen, lower alkyl, lower alkenyl, cycloalkyl, unsaturated cycloalkyl, adamantyl, aralkyl, aryl or certain heterocyclic groups; and R_2 is lower alkyl, aryl or aralkyl; are useful as antibacterial agents.

3,796,703

ACRYLAMIDE DERIVATIVES OF SUBSTITUTED PIPERAZINES

Claude P. Fauran, Michel J. Turin, and Guy M. Raynaud, Paris, and Janine M. Thomas, Neuilly, France, assignors to Delalande S.A., Courbevoie, Hauts-de-Seine, France

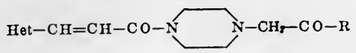
No Drawing. Filed Jan. 14, 1972, Ser. No. 217,936

Claims priority, application France, Jan. 21, 1971, 7101885

Int. Cl. C07d *51/72*

U.S. Cl. 260—240 J 4 Claims

Compounds of the formula

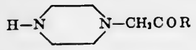


in which

Het is thienyl, furyl or pyridyl, and

R is ethoxy, pyrrolidino or isopropylamino,

are prepared by reacting Het—CH=CH—COCl with



The compounds possess anticonvulsive, anxiolytic, analygesic, antiinflammatory, hypotensive and vasodilatory properties.

3,796,704

PHENYL-IMIDAZOLYLALKANYL DERIVATIVES

Carl Metzger, Werner Meiser, Karl Heinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,201

Claims priority, application Germany, Aug. 22, 1970, P 20 41 771.4

Int. Cl. C07d *49/36*

U.S. Cl. 260—240 K 32 Claims

Phenyl-imidazolylalkanyl derivatives are antimycotic agents. They are prepared by a number of processes including acylation or sulfonylation of a phenyl-imidazolylalkanol, treatment of a phenyl-alkanyl-carbinol with a diimidazolyl sulfone, oxidation of a phenyl-imidazolylalkylmercaptan or reduction of a phenyl-imidazolylalkanote or alkanonitrile. A typical embodiment is 1-(1,1-diphenyl-2-acetoxyethyl)imidazole.

3,796,705

STILBENE DERIVATIVES

Adolf Emil Siegrist, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

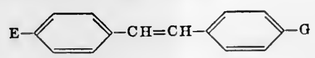
No Drawing. Filed Sept. 30, 1971, Ser. No. 185,395

Claims priority, application Switzerland, Oct. 1, 1970, 14,515/70

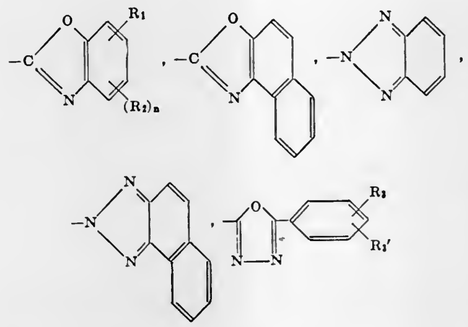
Int. Cl. C07d *55/04*

U.S. Cl. 260—240 C 2 Claims

The invention concerns new fluorescent whitening agents corresponding to the formula



wherein E denotes a benztriazol-2-yl or naphth-[1,2-d]-triazol-2-yl radical and G represents a radical of the formula



wherein R_1 represents hydrogen, chlorine, alkyl or alkoxy with 1 to 4 carbon atoms, phenyl or phenylalkyl with 1 to 4 carbon atoms in the alkyl part, R_2 represents hydrogen or alkyl with 1 to 8 carbon atoms, R_3 and R_3' are identical or different and denote hydrogen, alkyl with 2 to 4 carbon atoms or a methyl group in the m-position, chlorine or alkoxy with 1 to 2 carbon atoms, and *n* represents the numbers 1, 2 or 3, as well as a process for their preparation by means of the anile-synthesis.

3,796,706

1,3-DIARYL PYRAZOLE OPTICAL BRIGHTENERS

Heinrich Häusermann, Riehen, and Eduard Troxler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 703,865, Feb. 8, 1968. This application Aug. 20, 1970, Ser. No. 65,699

Int. Cl. C07b *49/18*

U.S. Cl. 260—240.1 2 Claims

Fluorescent 1,3 - diaryl-pyrazole compounds are described as optical brighteners, especially for application to cellulose and polyamide fiber materials.

3,796,707

DIBENZOFURYL-BENZOXAZOLYL-STYRENES

Adolf Emil Siegrist, Basel, and Jacques Garmatter, Bern, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 14, 1972, Ser. No. 289,185

Int. Cl. C07d *5/44*

U.S. Cl. 260—240 D 4 Claims

The invention relates to new dibenzofuran compounds, which are substituted in position 2 or 3 with a benzoxazolyl-styryl residue and wherein the benzoxazolyl moiety may be further substituted with non-chromophoric substituents.

The compounds are useful as fluorescent whitening agents, especially for spinning masses of synthetic organic materials.

3,796,708

SUBSTITUTED 1-PHENYL-4-N-ACETOACETATAMINO-5-HALOPYRIDAZONE-(6) COMPOUNDS

Wolfgang Vilsmeier, Bad Durkheim, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,747

Claims priority, application Germany, Mar. 5, 1970, P 20 10 397.3

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A 3 Claims

New and valuable 1-phenyl-4-acetoacetatamino-5-halopyridazone-(6) compounds which have a good herbicidal action and a process for controlling the growth of unwanted plants with these compounds.

3,796,709

(α-CYANAMINO)ACETAMIDOCEPHALOSPORINS

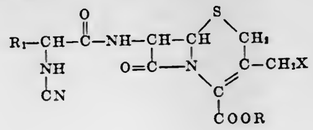
Hermann Breuer, Burgweinting, Germany, and Joseph Edward Dolfini, Princeton, Raymond C. Erickson, Metuchen, and William L. Parker, North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Nov. 19, 1971, Ser. No. 200,605

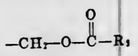
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C 7 Claims

New (α-cyanamino)acetamidocephalosporins of the following general formula, and their salts



wherein R is hydrogen, lower alkyl, aralkyl, tri(lower alkyl)silyl, a salt forming ion or the group



R_1 is hydrogen, lower alkyl, lower alkenyl, cyclo-lower alkyl, unsaturated cyclo-lower alkyl, adamantyl, aryl, aralkyl or a heterocyclic group; R_2 is lower alkyl, aryl or aralkyl and X is hydrogen, hydroxy, lower alkanoyloxy, aroyloxy, aralkanoyloxy, the radical of a nitrogen base, a quaternary ammonium radical or together X and R represent a bond linking carbon and oxygen in a lactone ring; are useful as antibacterial agents.

3,796,710

1H-2,1,4-BENZOTHIADIAZINES

Alan Charles Barker, Peter Doyle, and Richard Gregory Foster, Macclesfield, and John Roger Hadfield, Camberley, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,582

Claims priority, application Great Britain, Apr. 13, 1971, 9,224/71

Int. Cl. C07d *93/30*

U.S. Cl. 260—243 R **4 Claims**

1H-2,1,4-benzothiadiazines bearing a 3-carbamate radical and a 6- or 7-benzoyl or phenylsulphonyl radical, which are useful as anthelmintics or intermediates; processes for their manufacture and also phenylthioureas useful as intermediates for making the benzothiadiazines.

3,796,711

PROCESS FOR PREPARING CEPHALOSPORIN INTERMEDIATES

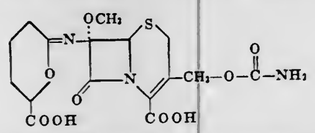
Torleif Utne, Warren, and Ronald B. Jobson, Old Bridge, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Nov. 13, 1972, Ser. No. 306,225

Int. Cl. C07d *93/08*

U.S. Cl. 260—243 R **4 Claims**

A process for the preparation of the compound:



(I)

is provided, which employs diazotization of 7-(5'-amino-5' - carboxyvaleramido) - 3 - carbamoyloxymethyl-7-methoxy decephalosporanic acid in the absence of an extraneous acid. The Compound I can be used to prepare useful compounds having anti-bacterial activity.

3,796,712

N-CHLOROTHIOAMINO TRIAZINES

James D. Cleveland, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 8, 1972, Ser. No. 251,088

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **9 Claims**

N-chlorothioamino triazines are produced by the reaction of sulfur dichloride and a triazine containing an amino substituent having at least one hydrogen substituted on the amino nitrogen atom in the presence of a rate determining amount of an acid acceptor. The N-chlorothioamino triazines are useful intermediates in the preparation of pesticides.

3,796,713

4-ACETYL[1,2-a]PYRIMIDO-(1,4)-BENZODIAZEPINES

Michael Edward Derieg, Caldwell, Rodney Ian Fryer, North Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,253

Int. Cl. C07d *51/42*

U.S. Cl. 260—256.4 F **3 Claims**

Novel 1H - 1,4 - benzodiazepine derivatives bearing between the 1,2-positions a 5- or 6-membered heterocyclic ring possessing two nitrogen atoms are disclosed. These 1,2-heterocyclic-1H-1,4-benzodiazepines are useful as muscle relaxant, anti-convulsant and sedative agents.

3,796,714

LACTONE AND SULTONE ADDUCTS OF BICYCLIC TERTIARY AMINES

Karl Brack, Hyde Park, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed July 1, 1971, Ser. No. 159,016

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 T **9 Claims**

Adducts of lactones containing 3 carbon atoms in the lactone ring or of sultones containing 2 or 3 carbon atoms in the sultone ring with mono- or diaza-bicyclo[2·2·2] octanes, as, for example, triethylenediamine or quinuclidine, are described. These adducts are useful as aids in the cross-linking of unsaturated polymers present in sealant, adhesive and coating compositions.

3,796,715

8-ALKOXY-3,4-DIHYDROISOQUINOLINES

Willy Leimgruber, Montclair, and Fausto Eugenio Schenker, Bloomfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Sept. 9, 1970, Ser. No. 70,923, now Patent No. 3,661,913, which is a division of application Ser. No. 664,269, Aug. 30, 1967, now Patent No. 3,562,280. Divided and this application Jan. 7, 1972, Ser. No. 216,255

Int. Cl. C07d *35/1*

U.S. Cl. 260—289 R **2 Claims**

Novel pharmacologically active 8-(lower alkoxy)-1,2,3,4-tetrahydroisoquinolines, 8 - (lower alkoxy) - 1 and/or 2-(lower alkyl)-1,2,3,4-tetrahydroisoquinolines and intermediates therefor, are prepared utilizing, for example, 8-isoquinolinol as a starting material. The pharmacologically active compounds of the invention are useful as hypotensive agents.

3,796,716

PRODUCTION OF o-AMINOPHENYLACETIC ACID

Takayuki Naito, Tokyo, and Jun Okumura, Yokohama, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Mar. 22, 1972, Ser. No. 236,981

Int. Cl. C07d *33/16*

U.S. Cl. 260—289 R **1 Claim**

Yields in the production of o-aminomethylphenylacetic acid are improved by first reacting 2-indanone with sodium azide and sulfuric acid to produce o-aminomethylphenylacetic acid lactam which is then refluxed in hydrochloric acid to produce o-aminomethylphenylacetic acid hydrochloride.

3,796,717

PRODUCTION OF o-AMINOMETHYLPHENYLACETIC ACID LACTAM

Richard Root Smith and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,422

Int. Cl. C07d *33/16*

U.S. Cl. 260—289 R **1 Claim**

Yields in the production of o-aminomethylphenylacetic acid are improved by first reacting 2-indanone oxime with phosphorus pentachloride to produce o-aminomethylphenylacetic acid lactam which is then refluxed in hydrochloric acid to produce o-aminomethylphenylacetic acid hydrochloride.

3,796,718

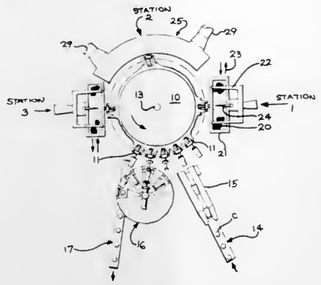
GLASS DECORATION

Charles L. Benford, Jr., and James E. Mielke, Toledo, Ohio, assignors to Owens-Illinois, Inc.

Continuation of application Ser. No. 548,908, May 10, 1966. This application July 27, 1970, Ser. No. 64,081

Int. Cl. C08d *9/06;* **C08f** *45/18*

U.S. Cl. 260—17.4 R **18 Claims**



A fast drying, fluid, glass decorating composition especially suitable for silk screen decorating methods and having from about 40 to about 60 percent by weight of a finely divided ceramic and/or glass frit and having as the balance of the composition a liquid vehicle as a carrier for the frit and comprising, on a percent by weight basis, about 0.8 to about 6.5 percent of a copolymer of N-vinyl pyrrolidone and a vinyl substance such as vinyl acetate, and about 60 to about 95 percent of an aliphatic organic solvent containing oxygen in its structure and having a boiling temperature within the temperature range of from about 100° C. to about 190° C. The liquid vehicle preferably may also include sucrose benzoate and/or an acrylic resin, and an anionic surfactant.

3,796,719

SUBSTITUTED SULFONYLUREAS

Hermann Bretschneider, Klaus Grassmayr, and Kraft Hohenlohe-Oehringen, Innsbruck, Austria, and André Grüssner, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Oct. 17, 1967, Ser. No. 675,796, now abandoned. Divided and this application Sept. 30, 1971, Ser. No. 185,390

Claims priority, application Switzerland, Oct. 28, 1966, 15,651/66; Apr. 24, 1967, 5,822/67; July 17, 1967, 10,187/67

Int. Cl. C07d *29/34*

U.S. Cl. 260—293.56 **8 Claims**

Novel bicyclic sulfonylurea derivatives and intermediates therefor have been prepared by various processes, such as, for example, by the reaction of a sulfonylcarbamic acid or a sulfonylisocyanate with a bicyclic amine. The bicyclic sulfonylurea derivatives are useful as hypoglycemic agents.

3,796,720

METHOD FOR PRODUCING PYRIDOXINE AND INTERMEDIATES THEREFOR

Hideki Miki and Hiroo Saikawa, Yamaguchi, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Apr. 20, 1972, Ser. No. 245,905

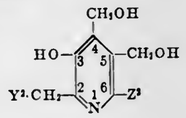
Claims priority, application Japan, Apr. 23, 1971, 46/27,084

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 VB **7 Claims**

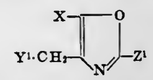
This invention relates to a novel method for producing pyridine derivatives useful as vitamin B_6 or its analogous substances.

More particularly stating, this invention relates to a method for producing a pyridine derivative represented by the general formula:



(II)

wherein each of Y^2 and Z^2 stands for a hydrogen atoms or an alkoxycarbonyl group, which comprises reacting an oxazole derivative represented by the general formula:



(I)

wherein X stands for an alkoxy group or an alkoxyalkoxy group and Y^1 and Z^1 are the same with or different from each other and each of them stands for a hydrogen atom, a carboxyl group or an alkoxycarbonyl group, with 2-butene - 1,4 - diol in the presence of sulfolane or N-methyl-2-pyrrolidone.

3,796,721

ETHYL 4-CARBOMETHOXY-2,2-DIMETHYL-THIAZOLIDINE-3-THIOLOCARBOXYLATE

Morris Fishman, East Windsor, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Jan. 12, 1972, Ser. No. 217,293

Int. Cl. C07d *91/16*

U.S. Cl. 260—306.7 **1 Claim**

Ethyl 4-carbomethoxy - 2,2 - dimethylthiazolidine - 3-thiolocarboxylate useful for controlling insect populations is described.

3,796,722

1,2-HETEROCYCLIC-1,4-BENZODIAZEPINES

Rodney Ian Fryer, North Caldwell, and Armin Walser, West Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,586

Int. Cl. C07d *99/02, 99/10*

U.S. Cl. 260—306.7 **7 Claims**

Novel 1,4-benzodiazepine derivatives, bearing between the 1,2-positions a 5-membered heterocyclic ring possessing two hetero atoms, are disclosed. These 1,2-heterocyclic-1,4-benzodiazepines are useful as muscle relaxant anti-convulsant and sedative agents.

3,796,723

CYCLODOPA DERIVATIVES

Ado Kaiser, Neu-Frenkendorf, Wolfgang Koch, Riehen, Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,089

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 **7 Claims**

N-carbonyl, thio or sulfonyl substituted cyclodopa derivatives which are useful as hypotensive, anti-pyretic and anti-parkinson agents, and a method of preparing these cyclodopa derivatives including intermediates.

3,796,724
4-CARBOXY-2-SULFOBENZOIC ANHYDRIDE

Franz Scheidl, Gersthofen, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 12, 1972, Ser. No. 252,548

Claims priority, application Germany, May 15, 1971, P 21 24 173.6

Int. Cl. C07d *89/06*

U.S. Cl. 260—327 S **1 Claim**

4-carboxy-2-sulfobenzoic anhydride is prepared by dehydration of 2-sulfoterephthalic acid; the dehydration may be carried out in a thermal process or by means of dehydration agents. The anhydride is appropriate as starting material for the preparation of plastics, dyestuffs, pecticides, plant protection products and drugs.

3,796,725
N-OXIDES OF 5-(AMINOALKYL)-5,11-DIHYDRODIBENZOXAZEPINES AND 5,11-DIHYDRODIBENZTHIAZEPINES

Harry Louis Yale and Jack Bernstein, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 655,352, July 24, 1969, and Ser. No. 17,966, Mar. 9, 1970, both now abandoned. This application Jan. 27, 1971, Ser. No. 110,327

Int. Cl. C07d *87/00*

U.S. Cl. 260—333 **6 Claims**

This invention relates to new N-oxides of basically substituted-5,11-dihydrodibenzoxazepines and 5,11-dihydrodibenzthiazepines which are useful as anti-arrhythmic agents and surface disinfectants.

3,796,726
PIPERONYL ETHERS HAVING JUVENILE HORMONE MIMETIC ACTIVITY

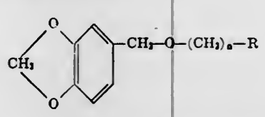
Laroy H. Edwards, Napa, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Feb. 16, 1972, Ser. No. 226,963

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **11 Claims**

Compound of the formula



wherein R is hydroxy, halogen of atomic number 9 to 35, vinyl, alkoxy group of 1 to 4 carbon atoms, alkylthio group of 1 to 4 carbon atoms, epoxy group, acyl group or carbamoyl group singly substituted on the nitrogen atom with an alkyl group of 1 to 4 carbon atoms and *n* is a whole number in the range of 1 to 14, have juvenile hormone mimetic activity.

3,796,727
SYNTHESIS OF NOVEL BENZOPYRAN COMPOUNDS

Charles D. Deboer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,272

Int. Cl. C07d *7/26*

U.S. Cl. 260—345.2 **13 Claims**

Novel 2H-3-substituted-5,6-benzopyrans and processes for their preparation are disclosed. Vinyl ketone compounds are reacted under basic conditions with o-hydroxybenzaldehydes to form the novel benzopyran compounds. The compounds can be used to prepare light-sensitive polymers useful in photosensitive elements and processes.

3,796,728
STEROIDAL DERIVATIVES, METHODS FOR THEIR MANUFACTURE, AND COMPOUNDS PRODUCED THEREBY

Masato Tanabe, Palo Alto, Calif., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Application June 20, 1967, Ser. No. 647,315, which is a continuation-in-part of application Ser. No. 644,761, June 6, 1967, now abandoned. Divided and this application Dec. 28, 1970, Ser. No. 102,095

Int. Cl. C07d *7/04*

U.S. Cl. 260—345.9 **17 Claims**

Steroidal 5-keto-4,5-seco-3-ynes of the estrane, androstane, and pregnane series are prepared from 3-keto-4-dehydrosteroids via the 3-hydrocarbon-sulfonylhydrazono-4,5-oxido derivative thereof which undergoes fission and rearrangement in situ to form the 5-keto-4,5-seco-3-yne structure. The 6- and/or 10-hydrocarbon substituted-5-keto-4,5-seco-3-ynes are prepared by reacting a 6- and/or 10-unsubstituted-5-keto-4,5-seco - 3 - yne in an alkylating medium with a hydrocarbon sulfonate or, preferably, a hydrocarbon halide.

The steroidal 5-keto-4,5-seco-3-ynes of this invention are useful as intermediates in preparing pharmacologically valuable 6- and/or 10-hydrocarbon substituted-3-keto-4-dehydro steroids, e.g.

(1) by reaction with mercuric acetate and sulfuric acid in acetic acid; or

(2) by reaction with mercuric oxide and trifluoroacetic acid followed by treatment of the thereby formed 3,5-diketo - 4,5 - seco steroid with potassium t - butoxide in t-butanol.

3,796,729
N-(1-AZIDO-2,2,2-TRIHALOETHYL) FURAMIDES

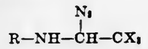
Malcolm S. Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Jan. 7, 1969, Ser. No. 789,595, now Patent No. 3,636,062. Divided and this application June 28, 1971, Ser. No. 163,519

Int. Cl. C07d *5/16, 5/18, 5/30*

U.S. Cl. 260—347.3 **4 Claims**

Azides of the formula



in which X is Cl or Br and R is a carboxyacyl, sulfonylacyl or alkoxycarbonyl group. These azides are nematocidal.

3,796,730
SUBSTITUTED FURFURYLESTERS OF CHRYSANTHEMUMIC ACID

Yoshio Katsuda, Osaka, Japan, assignor to Dainippon Jochugiku Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation-in-part of abandoned applications Ser. No. 629,422, Apr. 10, 1967, and Ser. No. 809,036, Mar. 20, 1969. This application Feb. 2, 1971, Ser. No. 112,061

Claims priority, application Japan, June 28, 1966, 41/42,289; Aug. 24, 1966, 41/55,930; Dec. 23, 1966, 41/84,365

Int. Cl. C07c *5/16, 5/30*

U.S. Cl. 260—347.4 **6 Claims**

The present invention relates to new substituted furfurylesters of chrysanthemumic acid which have improved insecticidal properties selected from the group consisting of 3,4-dichloro - 5 - propargylfurfurylester of chrysanthemumic acid, 3,4-dibromo-5-cyclopentadienyl furfurylester of chrysanthemumic acid, 5-ethoxy-methylfurfurylester of chysanthemumic acid, 3-acetyl-5-allylfurfurylester of chrysanthemumic acid, 5-acetylfurfurylester of chrysanthemumic acid, 3,4 - dichloro-5-benzylfurfurylester of chrysanthemumic acid, 5 - phenylvinylfurfurylester of chrysanthemumic acid, 5-propargylfurfurylester of chrysanthemumic acid, 3-methoxy-5-propargylfurfurylester of chrysanthemumic acid, and 3-methyl-5-propargylfurfurylester of chrysanthemumic acid.

3,796,731
EPOXY SUBSTITUTED PHOSPHONATES

John B. Siddall, Palo Alto, Calif., and Jean Pierre Calame, Locarno, Switzerland, assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Application July 14, 1969, Ser. No. 841,609, now Patent No. 3,694,526, which is a continuation-in-part of application Ser. No. 800,267, Feb. 18, 1969, which in turn is a continuation-in-part of application Ser. No. 618,321, Feb. 24, 1967, both now abandoned. Divided and this application Mar. 19, 1971, Ser. No. 126,267

Int. Cl. C07f *9/38*

U.S. Cl. 260—348 R **10 Claims**

Hydrocarbon phosphonates containing from 12 to 13 carbon atoms in the hydrocarbon backbone chain and lower alkyl substituents at the C–3, 7 and 11 positions and unsaturation or saturation between C–2, 3, C–6,7 and C–10,11 and/or substituents at each of positions C–2,3, 6,7,10 and 11 which are arthropod maturation inhibitors.

ERRATUM

For Class 260—362 see:
Patent No. 3,796,733

3,796,732
PROCESS FOR OXIDIZING PHENOLS TO QUINONES

Wolf Brenner, Oberwil, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed May 8, 1972, Ser. No. 250,886

Claims priority, application Switzerland, May 17, 1971, 7,228/71; Dec. 17, 1971, 18,434/71

Int. Cl. C07c *49/64*

U.S. Cl. 260—396 R **13 Claims**

Process for oxidizing a methyl substituted phenol to a methyl substituted quinone by contacting the phenol, in a solution containing copper and halogen ions, with oxygen.

3,796,733
PROCESS FOR MANUFACTURING DIBENZO (a,h)PYRENE-7,14-DIONE

Joseph Peter Savoca, New Brunswick, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 16, 1971, Ser. No. 199,339

Int. Cl. C09b *3/52*

U.S. Cl. 260—362 **7 Claims**

The process for producing dibenzo[a,h]pyrene-7,14-dione (Vat Yellow 4) by the dehydrogenation and ring-closure of 1,5-dibenzoylnaphthalene in an alkali metal chloride/aluminum chloride melt in the presence of a hydrogen acceptor is improved, and the product obtained in higher yield and purity, by adding the 1,5-dibenzoylnaphthalene and the hydrogen acceptor simultaneously to the melt.

3,796,734
PREPARATION OF OMEGA-NITROESTERS BY THERMAL CLEAVAGE AND REACTION OF CYCLIC ALPHA-NITROKETONES WITH ALCOHOLS

Roger G. Duranleau, Ardonia, Mahmoud S. Kablaoui, Wappingers Falls, and Richard F. Love, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,194

Int. Cl. C07c *79/40, 79/46*

U.S. Cl. 260—404 **18 Claims**

A method for preparing omega-nitroesters by thermally cleaving and reacting a cyclic alpha-nitroketone with an alcohol in a non-aqueous environment at a temperature of from about 50 to about 200° C. The esters so prepared are useful as lubricant and fuel additives and as intermediates for the production of amino acids.

3,796,735
ESTERS BY THERMAL CLEAVAGE AND REACTION OF ALPHA-NITROKETONES WITH ALCOHOLS

Roger G. Duranleau, Ardonia, Mahmoud S. Kablaoui, Wappingers Falls, and Richard F. Love, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,151

Int. Cl. C07c *69/24, 69/76*

U.S. Cl. 260—410.6 **21 Claims**

A method for preparing esters, and as a valuable co-product nitroalkanes, by thermally cleaving and reacting an alpha-nitroketone with an alcohol in a non-aqueous environment at a temperature of from about 110° C. to about 190° C. The esters so prepared are useful as synthetic lubricants, cutting fluids, plasticizers, cosmetic additives and surfactant additives.

3,796,736
ESTER SYNTHESIS FOR PREPARATION OF SYNTHETIC FATS

Lawrence C. Mitchell, Southfield, Mich., Paul Kobetz, Baton Rouge, La., and William Burns, Warren, Mich., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed July 21, 1971, Ser. No. 164,914

Int. Cl. C07c *69/30;* **C11c** *3/00*

U.S. Cl. 260—410.7 **2 Claims**

Employment of catalytic quantities of amines such as 2,6-lutidine in the reaction of a carboxylic acid with epihalohydrin, or ester derivative promotes opening of the epoxy ring to form 1-propyl ester with a minimized amount of 2-propyl ester isomer.

3,796,737
METHOD FOR PROCESSING ANIMAL RAW MATERIAL

Christen Holboll, Klampenborg, Denmark, assignor to Titan Separator A/S, Soborg, Denmark

Filed Feb. 17, 1971, Ser. No. 116,130

Claims priority, application Denmark, Feb. 24, 1970, 918/70

Int. Cl. C11b *1/12*

U.S. Cl. 260—412.6 **2 Claims**

For the purpose of reducing the amount of fat in the dry product obtained from raw animal material that is

subjected to boiling and is separated, in one or more stages, in pure fat, glue water, and sludge, the sludge is returned to the boiler for renewed heat treatment together with raw material not yet boiled.

3,796,738

RARE EARTH FLUOROALIPHATIC SULFONATES

Karl F. Thom, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Original application Oct. 30, 1969, Ser. No. 872,726, now Patent No. 3,615,169. Divided and this application Jan. 25, 1971, Ser. No. 109,579

Int. Cl. C07f *5/00*

U.S. Cl. 260—429 R **2 Claims**

A method is disclosed for the preparation of anhydrous fluorides of high purity substantially free from oxyfluorides of trivalent metals of Group III*b* of the periodic system particularly of scandium, yttrium and the lanthanide rare earth metals by pyrolysis of fluoroaliphatic-sulfonates of these metals. A process for producing the latter salts which are isolated as complexes with water or organic molecules is also disclosed. These salts have unusual solubility properties.

3,796,739

GROUP VIII-B METAL ORGANOMERCURY COMPOUNDS AND PROCESS OF PREPARATION

George M. Intille, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,226

Int. Cl. C07f *3/10*

U.S. Cl. 260—432 **25 Claims**

Novel compounds of the formula

$$M(CO)_y(ERR^1R^2)_zHgR^3$$

where

M is cobalt, rhodium or iridium,
E is a Group V–A element except bismuth,
R, R^1 and R^2 are hydrogen or organic groups,
R^3 is an organic group,
y is an integer from 1 to 3, and
z is an integer from 1 to 3.

Also described is a process for the preparation of the above compounds comprising reacting a carbonyl (organo-substituted Group V–A element) transition metal with an alkali metal in the presence of carbon monoxide followed by a further reaction of the product so obtained with an organomercury compound.

3,796,740

DIHYDRO-$PGF_{1\beta}$

Sune Bergstrom and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Application Feb. 12, 1971, Ser. No. 115,108, now abandoned, which is a continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of application Ser. No. 199,209, Apr. 9, 1962, now abandoned, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. Divided and this application July 3, 1972, Ser. No. 268,456

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 D **7 Claims**

The prostaglandin dihydro-$PGF_{1\beta}$, and its salts, esters, and alkanoates are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,796,741

$PGF_{1\beta}$

Sune Bergstrom and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Application Feb. 12, 1971, Ser. No. 115,108, now abandoned, which is a continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of application Ser. No. 199,209, Apr. 9, 1962, now abandoned, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. Divided and this application July 3, 1972, Ser. No. 268,455

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 D **7 Claims**

The prostaglandin $PGF_{1\beta}$, and its salts, esters, and alkanoates are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,796,742

PROCESS FOR PREPARING CYCLOALKENONE ESTERS

Peter Oberhansli, Zurich, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

No Drawing. Filed Aug. 10, 1972, Ser. No. 279,598
Claims priority, application Switzerland, Aug. 20, 1971, 12,247/71

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 K **6 Claims**

A novel process for making cycloalkenones useful as intermediates for jasmine-like fragrances, is disclosed.

3,796,743

$PGF_{2\beta}$ COMPOUNDS

Sune Bergstrom and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Continuation of abandoned application Ser. No. 115,108, Feb. 12, 1971, which is a continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of abandoned application Ser. No. 199,209, Apr. 9, 1962, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. This application Aug. 23, 1972, Ser. No. 282,951

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 D **12 Claims**

The prostaglandins dihydro-$PGF_{1\beta}$, $PGF_{1\beta}$, $PGF_{2\beta}$, and $PGF_{3\beta}$, and their salts, esters, and alkanoates are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,796,744

ACRYLOYLOXYALKYL ALKYLOXYSTILBENE-CARBAMATES

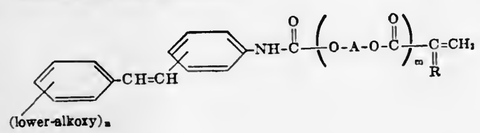
Durvasula V. Rao, Cheshire, Henri Ulrich, Northford, and Fred A. Stuber and Adnan A. R. Sayigh, New Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Application Feb. 1, 1971, Ser. No. 111,692, now Patent No. 3,718,692, which is a division of application Ser. No. 864,218, Oct. 6, 1969, now Patent No. 3,583,940. Divided and this application Dec. 26, 1972, Ser. No. 317,958

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **2 Claims**

Stilbenes of the formula



wherein *n* is an integer from 1 to 3, *m* is an integer from 0 to 1, A is lower-alkylene and R is hydrogen or lower-alkyl, are disclosed, as well as homopolymers of said compounds, and copolymers of said compounds with monomers containing a polymerizable $CH_2{=}C<$. The above stilbenes and the polymers derived therefrom are photosensitive and can be used in the preparation of photoresist systems.

3,796,745

PROCESS FOR PREPARING LOWER CARBOXYLATE ESTERS OF BIS-(HYDROXYETHYL) TEREPHTHALATE

Charles N. Winnick, Teaneck, and Judd Posner, Hackensack, N.J., assignors to Halcon International, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 41,653, May 28, 1970. This application Apr. 30, 1971, Ser. No. 139,179

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 P **11 Claims**

The present invention provides a process for the direct production of lower carboxylate esters of bis-(hydroxyether) terephthalate and of mixtures of such esters with the corresponding esters of mono-(hydroxyethyl) terephthalate involving the reaction of terephthalic acid with lower carboxylate esters of ethylene glycol.

3,796,746

UNSATURATED ESTER OF HALOGENATED ALKENES

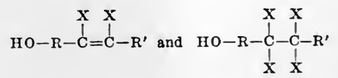
Gaetano F. D'Alelio, 2011 E. Cedar St., South Bend, Ind. 46617

No Drawing. Original application Dec. 19, 1968, Ser. No. 785,336, now Patent No. 3,637,813. Divided and this application Nov. 15, 1971, Ser. No. 198,948

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 H **10 Claims**

This invention deals with new unsaturated esters of α,β-unsaturated carboxylic acids derived from halogenated alcohols of the formulas



wherein R is a divalent hydrocarbon moiety having at least one and no more than 10 carbon atoms, X is a member selected from the class of bromine and chlorine, and R′ is a member selected from the class of hydrogen, X and a molovalent hydrocarbon containing at least one and no more than 20 carbon atoms. Typical esters are the acrylates, methacrylates, maleates, fumarates, itaconates and cinnamates. The monomers possess fire-retardant properties and are useful for the synthesis of polymers and copolymers.

3,796,747

L-N-ACYL-O-ETHYLTHREONINE

Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Dec. 22, 1967, Ser. No. 692,699, now Patent No. 3,639,382, dated Feb. 1, 1972. Divided and this application Feb. 1, 1971, Ser. No. 111,666

Int. Cl. C07c *101/04*

U.S. Cl. 260—501.11 **1 Claim**

This disclosure relates to new compounds represented by O-ethyl threonine, as well as N-substituted and carboxy-substituted derivatives thereof. Several of the compounds, and especially the L-isomers, are useful in the treatment of livestock to control infection by pleuropneumonia-like organisms.

3,796,748

DEHYDROABIETYLAMMONIUM D-(—)-2-CHLOROACETYLAMINO - 2 - (p - HYDROXYPHENYL)-ACETATE

Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Aug. 16, 1972, Ser. No. 281,096

Int. Cl. C07c *101/72*

U.S. Cl. 260—501.11 **2 Claims**

Racemic 2-(p-hydroxyphenyl)glycine is efficiently resolved by N-chloroacetylation followed by the addition of about 0.5 equivalents of dehydroabietylamine (DHA) in isopropanol: water (2:1 v/v) to precipitate the substantially pure, crystalline DHA salt of D-(—)-N-chloroacetyl-2-(p-hydroxyphenyl)-glycine from which the amine is removed by extraction into methylene chloride at pH 10.7 followed by removal of the N-chloroacetyl group by hot acid hydrolysis to produce the desired D-(—)-2-(p-hydroxyphenyl)glycine.

3,796,749

PROCESS FOR PRODUCING AMINO METHYLENE PHOSPHONIC ACIDS

Friedrich Krueger, 27 Erzbergerstrasse, 6803 Edingen, Germany; Lieselotte Bauer, 62A Seebacher Strasse, 6702 Bad Duerkheim, Germany; and Walter Michel, 67 Neue Schulstrasse, 6804 Ilvesheim, Germany

No Drawing. Continuation-in-part of application Ser. No. 125,857, Mar. 18, 1971. This application May 19, 1972, Ser. No. 255,022

Int. Cl. C07f *9/38*

U.S. Cl. 260—502.5 **14 Claims**

The improved process of producing substantially pure amino methylene phosphonic acids in a high yield comprises reacting N-substituted α-amino mono- or polycarboxylic acids or their alkali metal salts with phosphorous acid in the presence of water-binding agents at a temperature between about 90° C. and about 160° C.

3,796,750

PROCESS FOR THE MANUFACTURE OF PURE L-N-BENZOYL-3,4-DIHYDROXYPHENYLALANINE

Hans Schubel, Siegburg-Seligenthal, Paul Janssen, Bensberg-Refrath, and Heinz Ratz, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,530
Claims priority, application Germany, Dec. 20, 1969, P 19 63 991.9

Int. Cl. C07c *103/30*

U.S. Cl. 260—519 **5 Claims**

Process of producing L-N-benzoyl-3,4-dihydroxyphenylalanine by resolving a mixed DL-N-benzoyl-3,4-dihydroxyphenyl-alanine; recovering the L-isomer; reacting the D-isomer with acetic anhydride; precipitating the acetoxy derivative thus formed; hydrolyzing the acetoxy derivative with alkali to form racemic DL-N-benzoyl-3,4-dihydroxyphenylalanine; resolving the racemate; recovering the L-isomer; and recycling the D-isomer.

3,796,751

PREPARATION OF N-ACYL AMINO ALKANOIC ACIDS

Robert Fuhrmann, Morris Plains, Fred William Koff, Clifton, and John Pisanchyn, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,188

Int. Cl. C07c *103/48*

U.S. Cl. 260—534 R **9 Claims**

A process for transforming an alkyl amino acid salt of a mineral acid into the corresponding N-acyl amino alkanoic acid comprising neutralizing the mineral acid portion. The ammonium salt is separated out by adding alkadroxide, separating out the thereby formed ammonium salt of the mineral acid, and acylating the remaining solution. The ammonium salt is separated out by adding alkanoic acid to the neutralized solution.

3,796,752

PROCESS FOR MANUFACTURING THIOPHOSPHONYL HALIDES

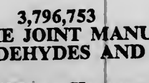
Harold Mahonrai Pitt, Lafayette, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,742

Int. Cl. C07f *9/40, 9/42*

U.S. Cl. 260—543 P — 2 Claims

This invention relates to the process of manufacturing ester derivatives of phosphonic acid that have insecticidal properties. More particularly, this invention relates to the manufacture of intermediate compounds having the following formula:



wherein R is selected from a group consisting of methyl and ethyl and X is chlorine or bromine. This reactive intermediate is formed by reacting alkyl aluminum sesquihalide with an excess of phosphorus trihalide. The reaction product is then treated with sulfur to form the end product. This product is then treated with an alkylate and reacted with thiophenol or an alkyl or halo-substituted thiophenol to produce the insecticidal ester derivatives of phosphonic acid.

3,796,753

PROCESS FOR THE JOINT MANUFACTURE OF ALIPHATIC ALDEHYDES AND CARBOXYLIC ANHYDRIDES

Wilhelm Vogt, Hurth-Efferen, Hermann Glaser, Erftstadt-Lechenich, and Helmut Dyrschke, Erftstadt-Kottingen, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Aug. 10, 1972, Ser. No. 279,431

Claims priority, application Germany, Aug. 12, 1971, P 21 40 409.1

Int. Cl. C07c *51/56*

U.S. Cl. 260—549 — 10 Claims

Aliphatic aldehydes and carboxylic anhydrides are jointly produced by subjecting aliphatic carboxylic acid alkenyl esters to acylolysis at elevated temperature and, if desired, under pressure in contact with a catalyst and by subjecting the resulting reaction mixture to distillation so as to separate resulting aldehyde and resulting carboxylic anhydride therefrom. To this end, a vapor mixture of an aliphatic carboxylic acid alkenyl ester with at most 7 carbon atoms, an aliphatic carboxylic acid with at most 4 carbon atoms and, if desired, an inert gas is passed, at elevated temperatures substantially between 250 and 500° C. and under pressure, if desired, over an acid catalyst. The catalyst comprises silicic acid or an acid aluminosilicate or an inert carrier including, for example aluminum oxide, pumice or active carbon which is impregnated with phosphoric acid or one or more heteropolyacids.

3,796,754

5-SUBSTITUTED BENZOPHENONE HYDRAZONE COMPOUNDS AND PROCESS FOR THE PRODUCTION THEREOF

Minoru Shindo, Tokyo, Morio Kakimoto, Yono, and Hiroyuki Nagano, Ageo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,825

Claims priority, application Japan, Apr. 8, 1971, 46/21,427; Mar. 23, 1972, 47/28,555

Int. Cl. C07c *109/16*

U.S. Cl. 260—566 B — 3 Claims

5-substituted benzophenone hydrazones which possess an activity on the central nervous system are disclosed. The 5-substituted benzophenone hydrazones are prepared by the reaction of 5-substituted benzophenones with hydrazine.

3,796,755

STABILIZATION OF CHLORINATED HYDROCARBONS

Norman L. Beckers, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Application July 13, 1970, Ser. No. 54,567, now Patent No. 3,682,830, dated Aug. 8, 1972, which is a continuation-in-part of abandoned application Ser. No. 794,410, Jan. 27, 1969. Divided and this application Apr. 6, 1972, Ser. No. 241,552

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 B — 2 Claims

A class of hydrazones, alkoxyaldehyde hydrazones, particularly useful as stabilizers for chlorinated hydrocarbons, are disclosed.

3,796,756

C-ALKYLOXY SUBSTITUTED TERT.-BUTYL AMINES

Nicolaas Bakker, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Sept. 6, 1968, Ser. No. 758,123, now Patent No. 3,640,855, dated Feb. 8, 1972. Divided and this application Aug. 26, 1970, Ser. No. 76,338

Int. Cl. C07c *93/00*

U.S. Cl. 260—584 C — 1 Claim

Tert.-butyl amines having an alkyl group of at least 10 carbon atoms bonded through a heteroatom to carbon find use as detergents in lubricating oils.

3,796,757

ORGANIC PEROXIDES

Yun Ger Chang, Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Original application Aug. 12, 1969, Ser. No. 849,488. Divided and this application May 4, 1971, Ser. No. 140,263

Int. Cl. C07c *49/06*

U.S. Cl. 260—590 — 6 Claims

This invention discloses a process of making an organic beta-keto perester. Accordingly, 2,2,4-trimethyl-3-hydroxy-3-pentenoic acid beta lactone is reacted with an organic hydroperoxide at a temperature ranging from about −10° C. to about 80° C. in the presence of an acidic or a basic catalyst. The mole ratio of the reactants can vary from about 1:10 to about 10:1.

3,796,758

STABILIZATION OF CHLORAL

Paul H. Goble, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed June 21, 1972, Ser. No. 264,895

Int. Cl. C07c *47/24*

U.S. Cl. 260—601 H — 4 Claims

The oxidation, decomposition and polymerization of chloral during prolonged storage are essentially inhibited by incorporating therein from about 0.05% to 0.5%, by weight, of a C_{12-18} alkyl ester of thiodipropionic acid.

3,796,759

DETERGENT COMPOSITION

Hill M. Priestley, North Bergen, and James H. Wilson, Demarest, N.J., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 365,487, May 6, 1964, which is a continuation-in-part of applications Ser. No. 725,505, Apr. 1, 1958, and Ser. No. 60,546, Oct. 5, 1960, all now abandoned. This application Aug. 25, 1969, Ser. No. 869,985

Int. Cl. C07c *147/14*

U.S. Cl. 260—607 A — 10 Claims

The compounds, dodecyl glyceryl sulfoxide, dodecyloxyethyl methyl sulfoxide, dodecyl acetonyl sulfoxide, dodecyl 2-chloroethyl sulfoxide, dodecyl 2-hydroxyethyl sulfoxide, dodecyloxyethoxyethyl methyl sulfoxide, dodecyl 2-iodoethyl sulfoxide, dodecyl 2-mercaptomethyl ethyl sulfoxide, dodecyl 2-(2-hydroxy)ethoxyethyl sulfoxide, dodecyl 2-methoxyethyl sulfoxide, dodecyl 2-ethoxyethyl sulfoxide, dodecyl 2-allyloxyethyl sulfoxide, dodecyl acetonyl sulfide, dodecyloxyethyl methyl sulfide, dodecyloxyethoxyethyl methyl sulfide, and dodecyloxyethoxyethyl chloride are disclosed as suds-stabilizer additives or intermediates therefor.

3,796,760

TETRAHYDRO-CYCLOPROPA[b]NAPHTHALENES

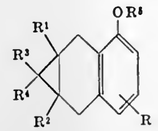
Venkatachala L. Narayanan, Hightstown, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Original application Sept. 18, 1970, Ser. No. 73,668, now Patent No. 3,694,512. Divided and this application May 12, 1972, Ser. No. 252,814

Int. Cl. C07c *43/20*

U.S. Cl. 260—612 R — 4 Claims

Compounds are provided having the structure



These compounds are useful as antiparasitic agents, antibacterial agents, and anti-inflammatory agents as well as surface active agents.

3,796,761

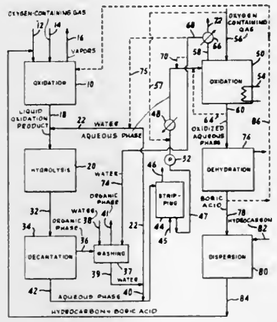
OXIDATION OF HYDROCARBONS TO ALCOHOLS VIA BORATE ESTERS

Richard L. Marcell, Bergenfield, N.J., and Tsuan Y. Chang, Baldwin, N.Y., assignors to Halcon International, Inc.

Filed Aug. 18, 1971, Ser. No. 172,702

Int. Cl. C07c *27/12, 31/02, 35/08*

U.S. Cl. 260—631 B — 10 Claims



In a process for the oxidation of hydrocarbons in the presence of boric acid to form an oxidation product comprising borate esters of the alkanol corresponding to the hydrocarbon oxidized, the oxidation product is hydrolyzed to form an aqueous solution containing substantially all of the boric acid liberated in the hydrolysis reaction, and an organic phase, the aqueous solution is subjected to a second oxidation to remove substantially all organic compounds from it, the boric acid is recovered from the resulting solution by dehydration, and the recovered dehydrated boric acid is returned to the hydrocarbon oxidation reaction.

3,796,762

LOW MOLECULAR WEIGHT DIENE POLYMERS USING AQUEOUS HYDROGEN PEROXIDE AND CYCLOHEXANOL(ONE) MEDIUM

Joseph A. Verdol, White Plains, N.Y., and Patrick W. Ryan, Glen Mills, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,491

Int. Cl. C07c *33/02, 33/06;* C08g *22/04*

U.S. Cl. 260—635 R — 10 Claims

There is disclosed a process for polymerizing conjugated diene monomers to form relatively low molecular weight polymers. The reaction can be conducted at temperatures of above 100° C. to about 200° C. in the presence of a hydrogen peroxide catalyst and a reaction medium which is an essentially water-insoluble, alicyclic, monocyclic alcohol or ketone having at least six carbon atoms in a carbocyclic ring. The reaction system has at least two liquid phases formed by the monomer, catalyst and reaction medium. Cyclohexanol is a preferred reaction medium.

3,796,763

PROCESS FOR THE PARTIAL HYDROGENATION OF DIPHENYL DERIVATIVES

Sigurt Hartung, Cologne-Mauenheim, Helmut Dierichs, Leverkusen, Wilhelm Müller, Schildgen, and Walter Schmidt, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 16, 1972, Ser. No. 253,710

Claims priority, application Germany, May 22, 1971, P 21 25 473.9

Int. Cl. C07c *5/10, 15/14*

U.S. Cl. 260—667 — 15 Claims

Diphenyl derivatives and polynuclear compounds containing the diphenyl carbon skeleton are partially hydrogenated in the presence of a cobalt containing catalyst.

3,796,764

HYDROGENATION OF BENZENE TO CYCLOHEXANE

Robert M. Suggitt, Wappingers Falls, and Norman D. Carter, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed June 27, 1972, Ser. No. 266,837

Int. Cl. C07c *5/10*

U.S. Cl. 260—667 — 9 Claims

Aromatic hydrocarbons are hydrogenated to corresponding saturated hydrocarbon with high selectivity using an iron group metal catalyst in a first hydrogenation stage and a noble metal catalyst in a second hydrogenation stage.

3,796,765

PROCESS FOR DISPROPORTIONATING TOLUENE

Tomonori Shioiri, Yokohama, and Sinji Takase, Kawasaki, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

No Drawing. Filed Dec. 16, 1971, Ser. No. 208,886

Claims priority, application Japan, Dec. 28, 1970, 46/120,154

Int. Cl. C07c *3/62*

U.S. Cl. 260—672 T — 3 Claims

A process for disproportionating toluene which comprises bringing the toluene in the presence of a hydrogen-containing gas at a pressure from ordinary to 150 kg./cm.^{2} and a temperature from 150° C. to 700° C. into contact with a catalyst obtained by halogenating crystalline aluminosilicate of the zeolite type with openings from 5 to 15 A. with one or more halogenated hydrocarbons wherein the halogen is fluorine and/or chlorine at a temperature from 0° C. to 600° C. to a halogen content from 0.05 to 15% by weight on the basis of said crystalline aluminosilicate or a catalyst containing in addition to the above a metal of the Group I–B or VIII in the Periodic Table is disclosed.

3,796,766

OLEFIN HYDROISOMERIZATION PROCESS

John C. Hayes, Palatine, Roy T. Mitsche, Island Lake, Richard E. Rausch, Mundelein, and Frederick C. Wilhelm, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 232,905, Mar. 8, 1972, now Patent No. 3,697,393, which is a division of application Ser. No. 56,008, July 17, 1970, now Patent No. 3,720,628, which in turn is a continuation-in-part of application Ser. No. 34,539, May 4, 1970, now Patent No. 3,660,309. This application Feb. 5, 1973, Ser. No. 329,508

Int. Cl. C07c *5/22*

U.S. Cl. 260—676 R **8 Claims**

Hydroisomerizable olefins are hydroisomerized utilizing a catalytic composite containing catalytically effective amounts of a platinum group component and a Group IV–A metallic component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate such as mordenite. Also disclosed is a catalytic composite comprising a platinum group component, a Group IV–A metallic component and a Friedel-Crafts metal halide component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate.

3,796,767

PROCESS FOR PREPARING DIOLEFINS

John G. McNulty and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 19, 1973, Ser. No. 352,534

Int. Cl. C07c *1/30*

U.S. Cl. 260—680 R **9 Claims**

A process for converting 2,3-dibromo-2-methylbutane or 2,3-dibromo-2,3-dimethylbutane to isoprene or 2,3-dimethylbutadiene, respectively, which involves heating a mixture of 2,3-dibromo-2-methylbutane or 2,3-dibromo-2,3-dimethylbutane and steam at elevated temperatures.

3,796,768

COMBINED WULFF PROCESS AND COKING PROCESS

Bruce R. Starzenski, Burghausen, Upper Bavaria, Germany, and Robert H. Reitsema, Findlay, Ohio, assignors to Marathon Oil Company, Findlay, Ohio

Filed Jan. 4, 1968, Ser. No. 695,598

Int. Cl. C07c *3/30;* **C10g** *37/02*

U.S. Cl. 260—683 R **10 Claims**

Unsaturated hydrocarbons are prepared by pyrolysis of hydrocarbons in a regenerative type furnace, and effluent gases containing unsaturated hydrocarbons from the regenerative type furnace are rapidly quenched with an oil quench system and recycled to a coker which can provide a portion of the feedstock for the furnace, a quench oil for the quencher, and coke as a by-product.

3,796,769

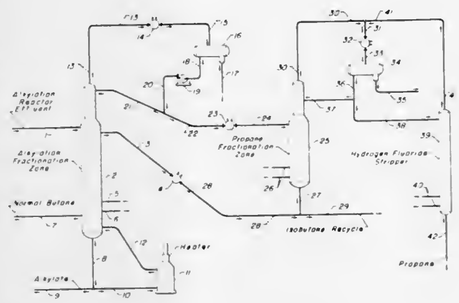
SEPARATING ALKYLATION HYDROCARBON EFFLUENT AT LOW FRACTIONATION PRESSURE

Dennis John Ward, South Barrington, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 19, 1971, Ser. No. 200,551

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.43 **5 Claims**



A method for separating components of the hydrocarbon effluent from an isobutane-olefin alkylation reaction zone by charging the effluent to a fractionation zone maintained at a pressure below about 200 p.s.i.g.; removing an overhead fraction comprising propane and isobutane; condensing the overhead fraction and reintroducing a portion of the condensed overhead to said fractionation means; removing an isobutane side cut; removing a normal butane side cut; and removing alkylation reaction product in the bottoms from said fractionation zone.

3,796,770

WATER-SOLUBLE COATING COMPOSITIONS

Wolfgang Daimer, Graz, Gerfried Klintschar, Weiz, and Heiner Verdino, Graz, Austria, assignors to Vianova-Kunstharz A.G., Vienna, Austria

No Drawing. Continuation-in-part of application Ser. No. 841,619, July 14, 1969, now Patent No. 3,658,795. This application July 8, 1971, Ser. No. 160,884

Claims priority, application Austria, July 22, 1970, A 6,667/70

The portion of the term of the patent subsequent to Apr. 25, 1989, has been disclaimed

Int. Cl. B01k *5/00;* **C08g** *37/16*

U.S. Cl. 260—839 **11 Claims**

Coating compositions characterized in that they are water-soluble upon neutralization comprising (A) a reaction product of a diene polymer and an alpha,beta-ethylenically unsaturated carboxylic acid and/or a dicarboxylic acid and/or an anhydride and/or a semi-ester and/or a semi-amide thereof, wherein up to about 70 percent of the carboxyl groups are reacted with a monohydric alcohol; and (B) a heat-reactive condensation product of formaldehyde with phenol carboxylic acids are described. The compositions, while being quick drying, have a low sensitivity to air oxidation.

3,796,771

ACRYLIC MODIFIERS FOR POLYCARBONAMIDES

Frederick H. Owens, Willingboro, N.J., and James S. Clovis, Morrisville, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 71,228, Sept. 10, 1970, now Patent No. 3,668,274. This application June 5, 1972, Ser. No. 263,353

The portion of the term of the patent subsequent to June 6, 1989, has been disclaimed

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 G **13 Claims**

An impact resistant nitrogenous polymer comprises a multiphase amine-reactive moiety-containing polymer grafted to a polycarbonamide containing recurring amide linkages as an integral part of the polymer chain; the grafting, by reaction of an amine-reactive moiety of the polymer with an amine end group of the polycarbonamide. Preferably the amine-reactive moiety-containing polymer is a multiphase carboxylic acid-containing polymer comprising (A) a first elastomer phase that is preferably polymerized from monomers comprising; 50 to 99.9 parts by weight alkyl acrylate wherein the alkyl group contains 1 to 15 carbon atoms, butadiene or substituted butadiene; 0 to 40 parts by weight of other ethylenically unsaturated monomers; 0 to 5 parts by weight of a polyethylenically unsaturated crosslinking monomer; and 0 to 5 parts by weight of a graft-linking monomer; and (B) a final rigid thermoplastic stage containing amine-reactive carboxylic acid groups and polymerized from monomers comprising; 0.1 to 50 parts by weight of a copolymerizable carboxylic acid; 50 to 99.9 parts by weight of a member selected from the group consisting of alkyl methacrylates, styrenes, acrylonitrile, methacrylonitrile and olefins that, when homopolymerized, form polymers having a heat distortion temperature greater than about 20° C.; 0 to 49 parts by weight of another acrylic monomer; and 0 to 40 parts of another copolymerizable ethylenically unsaturated monomer. The impact resistant nitrogenous polymer is characterized by superior hot strength that renders the polymer extrudable, blow moldable, and injection moldable.

3,796,772

FLAME RETARDANT POLYMER COMPOSITION CONTAINING IN ADMIXTURE CALCIUM TITANATE

John B. Luce, Mount Vernon, Ind., assignor to General Electric Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,155

Int. Cl. C08g *39/10*

U.S. Cl. 260—860 **4 Claims**

A flame retardant polymer composition having in admixture therewith certain titanates and halogen containing flame retardant additives.

3,796,773

GRAFT POLYMERS

Lester Earl Coleman, Willoughby Hills, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. 56,699, July 20, 1970. This application Mar. 19, 1971, Ser. No. 126,322

Int. Cl. C08f *5/12, 15/02, 15/10*

U.S. Cl. 260—879 **8 Claims**

Macromolecular compositions which are synthetic polymers onto which have been grafted moieties derived from certain N-substituted acrylamides such as diacetone acrylamide.

3,796,774

GRAFT COPOLYMER HAVING AN ALKYL VINYL ETHER POLYMER BACKBONE

Nathan D. Field, Allentown, Pa., Donald H. Lorenz, Basking Ridge, N.J., Robert T. Lu, Wilmington, Del., and Herman S. Schultz, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 864,882, Oct. 8, 1969. This application Oct. 8, 1971, Ser. No. 187,922

Int. Cl. C08f *29/56*

U.S. Cl. 260—881 **9 Claims**

A novel graft copolymer composition comprising methyl methacrylate, alone or together with one or more additional vinyl monomers grafted onto an alkyl vinyl ether polymer or copolymer. Such graft copolymers are produced by free radical polymerization. The graft copolymer is useful as a resin additive, particularly, as an additive for polyvinyl chloride wherein, in a minor amount, the graft copolymer improves the extrusion and similar processing characteristics of the base resin.

3,796,775

MOLDING COMPOSITIONS HAVING IMPROVED ENVIRONMENTAL STRESS-CRACK RESISTANCE AND LOW-TEMPERATURE IMPACT STRENGTH

Rudolf Glaser, Ludwigshafen, Juergen Schmidtchen, Frankenthal, and Peter Bauer, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 22, 1971, Ser. No. 191,770

Claims priority, application Germany, Oct. 29, 1970, P 20 53 067.0

Int. Cl. C08f *37/04*

U.S. Cl. 260—897 B **6 Claims**

Compositions of matter having improved environmental stress-crack resistance and low-temperature impact strength comprising (a) polyethylene, (b) polyisobutylene or ethylene copolymers and (c) N,N'-distearoylethylenediamine. The compositions are used for electrical insulating purposes and the production of moldings.

3,796,776

VINYL CHLORIDE POLYMER BLENDED WITH A CROSS-LINKED VINYL CHLORIDE POLYMER

Fumio Ide and Tsuneo Kodama, Otake, and Isao Sasaki, Iwakuni, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

No Drawing. Filed July 15, 1971, Ser. No. 163,065

Claims priority, application Japan, July 20, 1970, 45/62,775

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 **3 Claims**

It has been found that processabilities of vinyl chloride polymer or copolymer can be improved, without affecting the surface characteristics and mechanical properties thereof, by the incorporation of 0.1 to 20% by weight of a cross-linked vinyl chloride copolymer.

3,796,777

METHOD OF MAKING HOLLOW SPHERES BY SPRAY DRYING

David I. Netting, Springfield, Pa., assignor to Philadelphia Quartz Company, Philadelphia, Pa.

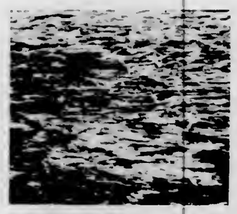
No Drawing. Filed Feb. 3, 1972, Ser. No. 223,313

Int. Cl. B01j *2/04*

U.S. Cl. 264—13 **7 Claims**

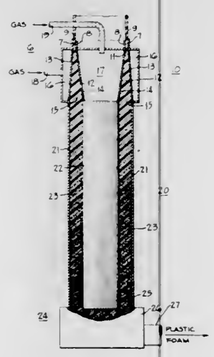
The invention relates to a process for the manufacture of an economical filler of low bulk density that is especially useful for incorporation in unsaturated polyester systems and which does not react with the components of the unsaturated polyester system. Solutions of sodium silicate and ammonium pentaborate are mixed, spray dried, and the product from the spray drier is then further dried to a water content below about 7%.

3,796,778
METHOD FOR PREPARING FIBROUS POLYOLEFIN MATERIALS
Lawrence Vincent Gallacher, East Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Original application May 1, 1969, Ser. No. 820,761. Divided and this application Feb. 16, 1971, Ser. No. 115,733
Int. Cl. B29d *27/00*
U.S. Cl. 264—49 **5 Claims**



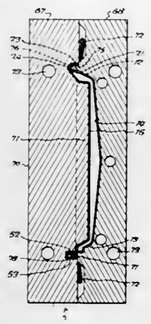
An extensively fibrillated thermoplastic resin material and method for preparing the same is given whereby a solid particulate thermoplastic resin which is insoluble in a selected leaching solvent is mixed and fibrillated under heat and pressure with another thermoplastic resin which is soluble in the selected leaching solvent. Following fibrillation, the resin mixture is subsequently contacted with the selected leaching solvent to remove the soluble resin thereby leaving an extensively fibrillated thermoplastic resin product which may be used as a synthetic fabric, and in other industrial applications.

3,796,779
MIXING OF MOLTEN PLASTIC AND GAS
Walter H. Greenberg, Syosset, N.Y., assignor to Bischoff Chemical Corporation, Hicksville, N.Y.
Continuation-in-part of abandoned application Ser. No. 17,246, Mar. 6, 1970. This application Feb. 2, 1972, Ser. No. 222,982
Int. Cl. B29d *27/00;* **B29f** *1/00*
U.S. Cl. 264—50 **3 Claims**



Gas is injected into a flowing stream of molten plastic to provide a mixture containing an amount of gas which at ambient conditions would constitute about 10% to about 98% of the volume of the mixture. A relatively thin, large diameter annular stream of molten plastic advances through the mixing zone, the gas being injected into the mixture through at least one of the generally cylindrical walls of the mixing zone. Of particular importance, the gas is injected through a porous wall having more than a thousand openings per square centimeter, such as an ultra-fine sintered glass filter type of gas diffusion member. Each of the walls of the mixing zone is desirably tapered, so that the thickness of the molten cellular plastic effluent is greater than the thickness of the entering stream. The mixture advances through a length of mixing zone which is from about ten to about one hundred times the marginal increase in thickness of the stream. The effluent from the mixing zone flows through a heated stabilization zone which is several times longer than the mixing zone. The stabilized mixture can then be reshaped for flowing into streams utilizing the mixture of molten plastic and gas.

3,796,780
METHOD OF BLOW MOLDING A PLASTIC CONTAINER HAVING HINGE PIN BEARING PORTIONS
Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Original application Feb. 9, 1970, Ser. No. 9,529, now Patent No. 3,659,999, dated May 2, 1972. Divided and this application Oct. 4, 1971, Ser. No. 186,357
Int. Cl. B29c *17/07*
U.S. Cl. 264—98 **10 Claims**

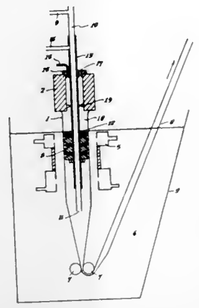


A method for forming a plastic container having integral hinge pin bearing portions of double wall thickness. A length of tubing is extruded and mold cavity sections are moved into engagement therewith to enclose a section of the tubing and to fold a portion of the tubing upon itself to form the double thickness bearing portion. The remainder of the enclosed tubing is expanded within the mold cavity sections to form the container part integral with the bearing portion.

3,796,781
EXTRUSION PROCESS
William Joseph Edwards and James Jack, Manningtree, England, assignors to Bakelite Xylonite Limited, London, England
Filed July 20, 1971, Ser. No. 164,341
Claims priority, application Great Britain, July 21, 1970, 35,301/70
Int. Cl. B29c *25/00;* **B29d** *23/04*
U.S. Cl. 264—89 **15 Claims**

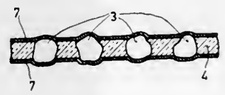
A process for quenching a continuously extruded tube of polymeric material in which the tube is quenched externally in a quenching bath and is simultaneously

quenched internally by passing quenching liquid into and removing it from the interior of the tube, the tube passing



over and the internal quenching liquid passing through an assembly of two or more calibrating discs.

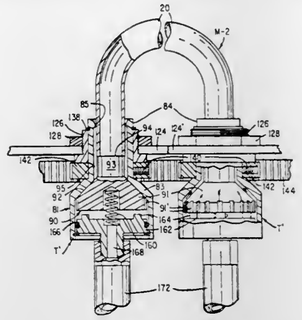
3,796,782
METHOD OF MANUFACTURING ELECTRONIC DEVICES, IN PARTICULAR SEMICONDUCTOR DEVICES
Ties Siebolt Te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of abandoned application Ser. No. 764,579, Oct. 2, 1968. This application May 13, 1971, Ser. No. 143,213
Claims priority, application Netherlands, Oct. 5, 1967, 6713531
Int. Cl. H01c *17/00*
U.S. Cl. 264—104 **4 Claims**



The manufacture of a semiconductor device comprising a thin layer of active grains bound together by an insulating material. Polyester binders, especially polyurethane binders are described, which are etched by saponification using an alcoholic lye solution to expose the grain surfaces for receiving electrical charge transport means.

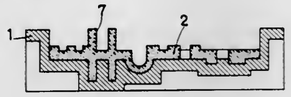
3,796,783
METHOD OF PRODUCING A PLASTIC BOND BETWEEN FIRST AND SECOND TUBULAR TUBE MEMBERS
James E. Greever, Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Original application May 19, 1969, Ser. No. 825,662, now abandoned. Divided and this application Mar. 2, 1972, Ser. No. 231,238
Int. Cl. B29c *27/00;* **B32b** *3/02;* **B65h** *69/02*
U.S. Cl. 264—135 **2 Claims**

The present invention is directed to the bonding of tube joints exemplified by the securement of bell and spigot tube ends on plate fin or spiral fin coil units employed in refrigeration apparatus, the bonding process being characterized in part by accurate metering of a predetermined quantity of a thermosetting structural adhesive to particular locations on the mating tube joint members and productive of an extremely high strength bond



therebetween resistive to deterioration after long exposure to normal environmental conditions.

3,796,784
PROCESS FOR MOULDING STRUCTURES OF PLASTICS MATERIAL
Rene Henri Cournut, Bordeaux-Cauderan, France, assignor to Societe Bordelaise de Matieres Plastiques, Bordeaux-Cauderan, France
Filed Dec. 15, 1971, Ser. No. 208,388
Claims priority, application France, Dec. 15, 1970, 7045209
Int. Cl. B29c *11/00;* **B29d** *9/00*
U.S. Cl. 264—255 **11 Claims**

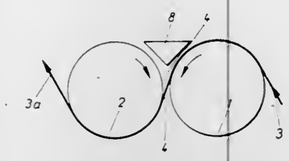


Process for moulding a structure from thermoplastic material in a cavity defined by a male half-mould and a female half-mould. An amount of at least one plastics material in particulate form is placed in the female half-mould and the latter is heated to render the material pasty or semi-liquid. The male half-mould, which is at room temperature, is applied for a short period and at low pressure on the plastics material so as to cause the mould cavity to be completely filled thereby. Owing to the relatively cold surface of the male half-mould, the latter forms a shell on the part of the plastics material which comes in contact with the male half-mould. This shell performs the function of the male half-mould and enables the latter to be withdrawn before finally cooling the plastics material in the female half-mould.

3,796,785
METHOD OF STRETCHING A THERMOPLASTIC SHEET USING A SHORTENED STRETCHING ZONE
Wilhelm Rest and Karl Huff, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation-in-part of application Ser. No. 19,112, Mar. 12, 1970, which is a continuation-in-part of application Ser. No. 616,320, Feb. 15, 1967, both now abandoned. This application Mar. 15, 1971, Ser. No. 124,433
Int. Cl. B29d *7/24*
U.S. Cl. 264—288 **9 Claims**

A method and apparatus for stretching thermoplastic in a shortened gap between a heated feed roller and a heated

delivery roller, the temperature of the feed roller being maintained below the softening temperature of the thermoplastic in its unstretched state and the temperature of the



delivery roller being maintained above the softening temperature of the thermoplastic in its unstretched state and below softening the temperature of the thermoplastic in its stretched state.

3,796,786

PROTECTED LAMINATE ARTICLE AND PROCESS FOR ITS PREPARATION

Walter T. Koch, Havertown, and Richard A. Glinski, West Chester, Pa., assignors to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed July 31, 1972, Ser. No. 276,793

Int. Cl. B29d *7/02*

U.S. Cl. 264—331 **7 Claims**

A process of preparing a protected resin laminate article from a syrup of an unsaturated polyester and styrene wherein the syrup is placed in contact with a transfer coat on a non-fibrous cellulosic base sheet, is disclosed herein. The transfer coat is of a specified composition in order to maintain its integrity during the forming process, permit eventual release of its carrier sheet, adhere strongly to the laminate article and provide protection for the polyester surface.

3,796,787

METAL EXTRACTION PROCESS

Raymond C. Burrows, Mississauga, Ontario, Canada, assignor to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,911

Int. Cl. C01g *3/00, 9/00, 53/00*

U.S. Cl. 423—24 **10 Claims**

Substituted diphenyl sulfides serving as effective ionic extractants for the recovery of metal values from dilute aqueous solutions thereof.

3,796,788

METHOD FOR INTENSIFIED CONTACTING OF PLURAL FLUIDS

Tibor Blickle, Budapest, Laszlo Balla, Veszprem, and Laszlo Bacs, Budapest, Hungary, assignors to Magyar Tudomanyos Akademia Muszaki Kemiai Kutato Intezete, Veszprem, Hungary

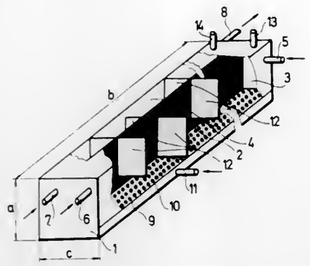
Original application July 29, 1968, Ser. No. 748,404, now Patent No. 3,607,104, dated Sept. 21, 1971. Divided and this application Apr. 22, 1971, Ser. No. 136,488

Claims priority, application Hungary, Aug. 1, 1967, MA 1,745

Int. Cl. B01d *11/00, 11/02*

U.S. Cl. 423—36 **5 Claims**

Different fluids are caused to flow along at least two paths separated by an upright wall having fine perforations through which the streams of different components are in contact. If the fluid is liquid it can be foamed with gas and if the fluid is a stream of particulate solids it can be fluidized. To foam or fluidize, gas can be introduced



through a perforated wall from below the streams and removed above the streams.

3,796,789

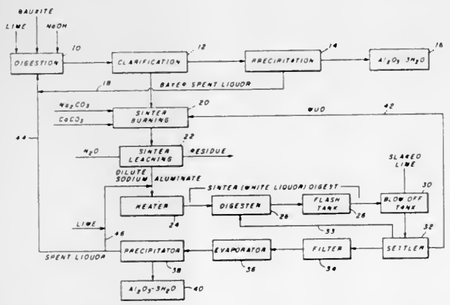
REMOVAL OF IRON FROM SODIUM ALUMINATE LIQUOR

Lavert A. Adams, Benton, Ark., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 818,653, Apr. 23, 1969. This application Apr. 7, 1972, Ser. No. 242,204

Int. Cl. C01f *7/00, 7/02*

U.S. Cl. 423—122 **5 Claims**



Lowering iron content by addition of slaked lime to the blow-off liquor resulting from digestion of the solution formed by leaching a soda-lime sinter product from an alumina source.

3,796,790

PROCESS FOR RECOVERING CONCENTRATED PHOSPHORIC ACID

Aurelio F. Sirianni and Ira E. Puddington, Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Continution-in-part of application Ser. No. 827,993, May 26, 1969. This application Apr. 25, 1972, Ser. No. 247,472

Int. Cl. C01f *1/00;* **C22b** *29/00*

U.S. Cl. 423—166 **18 Claims**

A process is provided for separating phosphoric acid (of high strength) directly from its suspension with a gelatinous or a finely divided precipitate, such as, for example, the calcium sulfate product first formed in a process for producing phosphoric acid. The process involves

treating the suspension both with a particularly recited surfactant and a particularly recited minimum amount of a bridging liquid and agitating until dense agglomerates form. Then the phosphoric acid is separated easily from the agglomerates, e.g. by decanting, filtering or centrifuging.

3,796,791

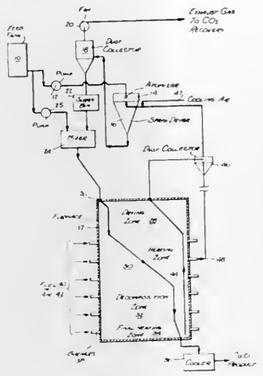
PROCESS FOR RECLAIMING LIMESTONE MUD

Haagen Bach Nielsen, Glen Ridge, N.J., and Edwin J. Bonner, Staten Island, and Ernest A. Lado, Hastings-on-Hudson, N.Y., assignors to Nichols Engineering & Research Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 210,075

Int. Cl. C04b *1/02*

U.S. Cl. 423—177 **5 Claims**



Apparatus and process for reclaiming limestone mud wherein a supply of the mud in a wet condition is passed to a spray type dryer and dried to a bone dry free-flowing powder by the use of hot drying exhaust gases from a calciner furnace. The dry powder together with the exhaust gases are then passed to a dust collector for removing substantially all of the fines from the gases. The spent lime powder may then be back-mixed with some of the original spent mud in proportions designed to yield a calciner feed having the desired moisture content for optimum physical condition of both feed and calcined product. The pugged mixture is then conveyed to the top of the calciner furnace and passed downwardly through successive zones including a heating zone, a drying zone, a decomposition zone wherein the spent lime is decomposed into calcined lime and gaseous carbon dioxide, and a second heating zone to increase the density without loss of activity thereof, while passing hot gases upwardly in countercurrent flow with respect to the downwardly flowing spent lime. The calcined lime is discharged at the bottom of the furnace and conveyed to a cooler wherein the temperature is reduced to usable levels for recycling in the system.

3,796,792

COMPOSITE METAL HYDROXIDES

Shigeo Miyata, Teruhiko Kumura, and Minoru Shimada, Takamatsu, Japan, assignors to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1970, Ser. No. 96,084

Claims priority, application Japan, Dec. 12, 1969, 44/99,358

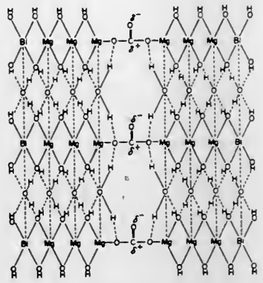
Int. Cl. C01g *56/00, 49/00;* **C01b** *35/00*

U.S. Cl. 423—250 **5 Claims**

A composite metal hydroxide expressed by the following composition formula:

$$Mg_xM_y^{3+}(OH)_{2x+3y-2z}(A^{2-})_z \cdot aH_2O$$

such composite metal hydroxide having a layer crystal structure and exhibiting an endothermal peak owing to



isolation of crystal water at a temperature exceeding 170° C. in the differential thermal analysis.

3,796,793

PRODUCTION OF FINELY DIVIDED SOLID MATERIALS

Abraham Metzer, Ettore Basevi, and Avraham M. Baniel, Haifa, and Chanoch Gorin, Kiryat Bialik, Israel, assignors to Israel Mining Industries-Institute for Research and Development, Haifa, Israel

Filed Feb. 18, 1971, Ser. No. 116,589

Claims priority, application Israel, Mar. 16, 1970, 34,081/70

Int. Cl. C01f *17/00*

U.S. Cl. 423—263 **10 Claims**

Solid material in finely divided, active form is prepared by contacting an aqueous dispersion of at least one substance with an inert organic compound acting as heat carrier and heated to a temperature of at least 100° C. higher than that of the dispersion. There forms a dispersion of finely divided solid material in the heat carrier from where the solid material is recovered. The aqueous dispersion and heat carrier may be contacted by injecting them continuously and simultaneously into a reaction chamber.

3,796,794

USE OF CARBOXYLIC ACIDS AS CRYSTAL GROWTH MODIFIERS FOR SODIUM CARBONATE MONOHYDRATE

Joseph M. Ilardi, Randall Park, N.J., assignor to International Research and Development, Green River, Wyo.

No Drawing. Filed June 1, 1972, Ser. No. 258,657

Int. Cl. C01d *7/36, 7/40*

U.S. Cl. 423—421 **7 Claims**

Sodium carbonate monohydrate of acicular crystalline form is obtained by crystallizing sodium carbonate monohydrate in aqueous solution containing as a crystal modifying agent an aliphatic carboxylic acid having from 4 to about 18 carbon atoms and from 1–3 carboxylic acid functions. On calcination of the sodium carbonate monohydrate it yields soda ash having a lower bulk density than that produced from unmodified sodium carbonate monohydrate.

3,796,795

REDUCING OXYSULFUR COMPOUNDS WITH A BIMETALLIC CATALYST

Peter Urban, Northbrook, and David J. Albert, Chicago, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application Feb. 8, 1971, Ser. No. 113,724. Divided and this application Sept. 14, 1972, Ser. No. 289,191

Int. Cl. C01b *17/20, 17/28;* **C01c** *1/20*

U.S. Cl. 423—560 **20 Claims**

A method for the low temperature reduction of oxysulfur compounds with hydrogen using a novel bimetallic

catalyst is disclosed. The bimetallic catalyst is a combination of catalytically effective amounts of molybdenum sulfide and of cobalt sulfide with a porous carrier material. It is prepared by impregnating the carrier material with a first metallic component, drying and sulfiding to form a sulfided monometallic composite, purging free sulfide from contact with same, impregnating the resulting composite with the second metallic component to form a bimetallic composite, and thereafter, drying and sulfiding the resulting bimetallic composite to produce the bimetallic catalyst. A specific example of the disclosed invention is a method for reducing an inorganic, water-soluble oxysulfur compound wherein an aqueous solution of the oxysulfur compound and hydrogen are contacted with the novel bimetallic catalyst at reduction conditions.

3,796,796

PROCESS FOR CONVERTING HYDROGEN SULFIDE AND SULFUR DIOXIDE TO ELEMENTAL SULFUR

Andre Deschamps, Chaton, Claude Dezael, Maisons-Laffitte, and Philippe Renault, Noisy-le-Roi, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,227

Claims priority, application France, Nov. 30, 1970, 7043077

Int. Cl. C01b *17/04*

U.S. Cl. 423—575 **9 Claims**

Sulfur is obtained by reacting hydrogen sulfide with sulfur dioxide in contact with a liquid phase containing a selected alcohol, polyol, polyalkyleneglycol or ether thereof. An essential feature is the use of a catalyst which is both a partial ester and a partial salt of metal I_A or II_A from an organic polycarboxylic acid. This catalyst is highly active and stable over long periods, the activity decrease being, for example, less than about 1.5% after 20 hours of run.

3,796,797

MOLASSES CHLORAL FEED COMPOSITION FOR IMPROVING FEED UTILIZATION OF RUMINANTS

Roger C. Parish, King of Prussia, and John E. Trel, West Chester, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 881,915, Dec. 3, 1969, now Patent No. 3,615,649. This application Oct. 22, 1971, Ser. No. 191,813

Int. Cl. A23k *1/02;* **A61k** *27/00*

U.S. Cl. 424—180 **15 Claims**

The reaction product of chloral with molasses improves the feed efficiency of ruminant animals. The products are inexpensive and easily prepared. The active ingredient is fed orally to ruminants usually admixed with the feed. The preferred active ingredient is the reaction product of wood molasses with chloral.

3,796,798

3-(1-PIPERAZINYLIMINOMETHYL) RIFAMYCIN SV ANTIVIRAL METHODS

Giancarlo Lancini, Pavia, Italy, and Lise Thiry, Brussels, Belgium, assignors to Gruppo Lepetit S.p.A., Milan, Italy

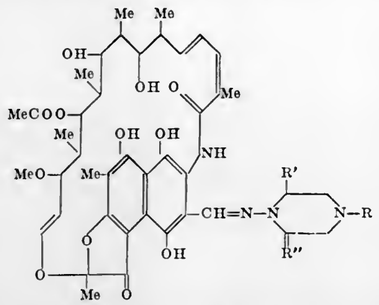
No Drawing. Filed June 1, 1971, Ser. No. 149,086

Claims priority, application Italy, June 1, 1970, 25,381/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **4 Claims**

Methods for treating viral-infected animal tissue and animals with an antiviral effective amount of a 3-(1-piperazinyliminomethyl)-substituted rifamycin SV compound corresponding to the formula



wherein Me represents methyl, R represents H or phenyl-lower alkyl, and each of R′ and R″ represents H or lower alkyl. The active compounds are prepared by condensing 3-formylrifamycin SV with 1-aminopiperazine or with a 1-aminopiperazine having a 4-phenyl-lower alkyl substituent and/or 2,6-di-lower alkyl substitution.

3,796,799

INSECTICIDAL O,O-DIALKYL-β-PHENYLTHIOVINYL PHOSPHATES

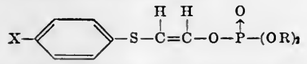
Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Feb. 12, 1968, Ser. No. 704,557, now Patent No. 3,584,084. Divided and this application Dec. 4, 1970, Ser. No. 128,600

Int. Cl. A01n *9/36*

U.S. Cl. 424—216 **7 Claims**

Vinyl phosphates of the formula:



where R is alkyl of 1 to 4 carbon atoms and X is hydrogen, halogen of atomic number 17 to 35 or alkyl of 1 to 4 carbon atoms are used as insecticides and molluscicides.

ERRATUM

For Class 424—246 see:
Patent No. 3,796,801

3,796,800

ANTI-INFLAMMATORY TRIAZOLE COMPOSITIONS AND METHODS FOR USING SAME

Zaven S. Ariyan, Woodbury, Conn., and Marshall Kulka and William A. Harrison, Guelph, Ontario, Canada, assignors to Uniroyal, Inc., Middlebury, Conn., and Uniroyal Ltd., Montreal, Quebec, Canada

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,143

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 **28 Claims**

A broad class of thiazole derivatives, including certain 2-aminothiazoles and 2-(N-morpholido)-thiazoles, are useful as anti-inflammatory agents.

3,796,801

METHOD OF COMBATING ENTEROBACTER INFECTIONS

Joseph R. Guarini, Malvern, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,820

Int. Cl. A61k *27/00*

U.S. Cl. 424—246 **12 Claims**

7-mandelamido or 7-aminophenylacetamido cephalosporins bearing a 3-heterocyclicthiomethyl substituent are effective in combating Enterobacter infections. Five-membered heterocyclic rings having at least two hetero atoms are preferred.

3,796,802

MITICIDAL METHOD CONTAINING ACTIVE FLUORO PHTHALIMIDE DERIVATIVES

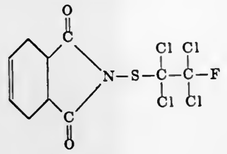
Don R. Baker, Orinda, Calif., and Peter F. Epstein, Prairie Village, Kans., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Mar. 10, 1971, Ser. No. 122,987. Divided and this application Dec. 29, 1971, Ser. No. 217,695

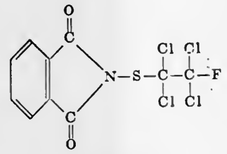
Int. Cl. A01n *9/22*

U.S. Cl. 424—274 **2 Claims**

A method of controlling mites with compounds of the formulas:



and



3,796,803

3,3-DIMETHYL-2-NORBORNANE DERIVATIVES USED AS FUNGICIDES

Jerry Glenn Strong, Fanwood, N.J., assignor to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 126,960, Mar. 22, 1971. This application July 10, 1972, Ser. No. 270,424

Int. Cl. A01n *9/00, 9/20, 9/24*

U.S. Cl. 424—316 **10 Claims**

Certain 3,3-dimethyl-2-norbornane derivatives form a new class of soil fungicides.

3,796,804

METHOD FOR THAWING FROZEN FOOD

Earle W. Ballentine, 3641 Via Palomino, Palos Verdes Estates, Calif. 90275

Continuation-in-part of abandoned application Ser. No. 29,369, Apr. 3, 1970, which is a division of application Ser. No. 553,065, May 26, 1966, now Patent No. 3,604,334. This application June 1, 1972, Ser. No. 258,744

Int. Cl. A23l *3/36*

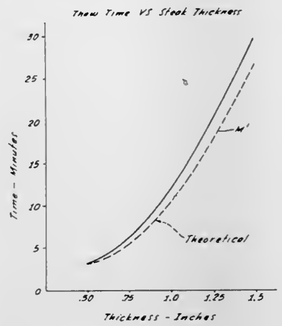
U.S. Cl. 426—524 **22 Claims**

The method of thawing frozen food without cooking by producing a homogeneous mixture of steam and air with a dewpoint of 170° F. or lower and a mixture temperature below 212° F., external to a thawing chamber, and forcing the steam-air mixture to flow towards the top and bottom surfaces of frozen food supported in the thawing chamber.

The method of reconstituting frozen food in three distinctly different steps:

1. A hot gas heats a food chamber to the serving temperature of food. The food chamber has a multiplicity of apertures positioned in the top and bottom walls of the chamber.

2. Water is vaporized by adiabatic transformation of a portion of the sensible heat in the hot gas to the latent heat of the water vapor. The water vapor is then intermixed externally to the food chamber with the hot gas in order to produce a vapor aeriform gas which has a temperature substantially higher than its dewpoint. The vapor aeriform gas is forced into the chamber apertures in order to create turbulent jets which flow normal to the top and bottom surfaces of the frozen food positioned within the food chamber. The food is heated to the dewpoint of the vapor aeriform gas by vapor condensation primarily, thereby leaving the condensate on the food surface.



3. The food is then heated to the serving temperature by the sensible heat of the vapor aeriform gas wherein the condensate is removed by vaporization.

ERRATA

For Classes 426—2 thru 426—287 see:
Patents Nos. 3,796,809 thru 3,796,817

3,796,805

PROCESS FOR PRODUCING COFFEE EXTRACT

Pierre Lemonnier, Lamorlaye, Jacques Cardozo, Epiais-Rhus, and Georges Grandgury, Maison-Alfort, France, assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed July 27, 1972, Ser. No. 275,672

Int. Cl. A23f *1/08*

U.S. Cl. 426—388 **3 Claims**

A process for producing coffee extract from a blend of at least two coffee varieties of differing quality comprising separately roasting and grinding each coffee variety, separately loading each variety into an extraction vessel, and contacting the coffees, with an aqueous extraction liquid.

3,796,806

FLUID SHORTENING MANUFACTURE

Michael J. McCarthy, Oklahoma City, Okla., assignor to Swift & Company, Chicago, Ill.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,275

Int. Cl. A23d *5/00*

U.S. Cl. 426—417 **7 Claims**

Fluid shortening compositions are prepared from normally plastic shortening agents by melting the plastic shortening agent, and then cooling same in the presence of a suitable crystal inhibitor. The presence of the crystal inhibitor in the mixture acts to fluidize the normally plastic shortening agent.

3,796,807

PROCESS OF TREATING CEREAL GRAIN

John C. Whelan, Woodland, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,816

Int. Cl. A23l *1/10;* **A23k** *1/00*

U.S. Cl. 426—468 **3 Claims**

A cereal grain at ambient pressure is mechanically deformed by being passed between mill rollers spaced

apart about .002 of an inch while the grain is at its maximum plasticity at a temperature of between about 143 degrees and 160 degrees C. and preferably at 154 degrees C.

3,796,808
METHOD OF EVAPORATING HEAT SENSITIVE LIQUIDS
Peter Antonelli, Ashford, and Roy Herbert Seager, Maidstone, England, assignors to Tullamore S.A., Geneva, Switzerland
Continuation of application Ser. No. 68,729, Sept. 1, 1970. This application Sept. 5, 1972, Ser. No. 286,252
Int. Cl. A23g *3/00*
U.S. Cl. 426—492 **2 Claims**

A method of continuously producing a solid confectionery from an 80% solids sugar solution by heating the solution and immediately passing it through a tubular evaporator in less than one second and subsequently cooling the confection.

ERRATUM

For Class 426—524 see:
Patent No. 3,796,804

3,796,809
PRODUCTION OF LIVESTOCK FEED FROM SUGARCANE
Robert Boothe Miller, Montreal, Quebec, Canada, and C. Keith Laurie, Bridgetonn, Barbados, assignors to Canadian Cane Equipment, Ltd., Montreal, Quebec, Canada
Continuation-in-part of application Ser. No. 26,598, Apr. 8, 1970. This application Dec. 11, 1970, Ser. No. 97,308
The portion of the term of the patent subsequent to Mar. 20, 1990, has ben disclaimed
Int. Cl. A23k *1/00, 3/03*
U.S. Cl. 426—2 ND **10 Claims**

A process for sustaining livestock, e.g., ruminants such as cattle, is described which involves providing the livestock with a feed comprising sugarcane pith which contains substantially all of its naturally present sugar juice and the fine inner fibers of the sugarcane stalk interior, but which is substantially free from the highly lignified outer rind fibers of the sugarcane. This feed may also contain chopped sugarcane plant tops, nonvegetable protein sources such as fish meal or nitrogeneous protein substituents such as urea, vegetable protein sources such as leguminous meal, and various minerals. The sugarcane pith may be obtained by longitudinally opening sugarcane without expressing a significant amount of the sugar juice from the pith, and then separating the pith from the outer rind fibers while retaining substantially all of the sugar juice in the pith. This sugarcane pith feed may be stored by drying to a moisture-free condition and placing in an airtight container, or by an ensiling process involving placing the feed in a silo and in contact with lower alkyl carboxylic acid-producing microorganisms such as Lactobacillus.

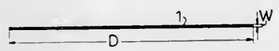
3,796,810
BAKERY PRODUCTS WITH A NON-HYDROPHILIC AGENT, POLYPROPYLENE GLYCOL
John R. Moneymaker, Overland Park, Kans., and Curtis J. Forsythe, Raytown, Mo., assignors to Top-Scor Products, Inc., Kansas City, Kans.
No Drawing. Filed Mar. 3, 1972, Ser. No. 231,713
Int. Cl. A21d *2/14*
U.S. Cl. 426—19 **7 Claims**

Yeast-raised bakery products show improvements in various desirable characteristics upon the incorporation into the dough of polypropylene glycol having an average molecular weight of about 1000 to about 5000. This is a departure from traditional bakery product additives which heretofore have been classified broadly as "lipid type" in that the polypropylene glycols are predominately hydrophobic, while lipid type additives contain both a functional hydrophilic and a functional hydrophobic moiety.

3,796,811
METHOD OF PRODUCING A CONCENTRATED MEAT PRODUCT AND PRODUCT PRODUCED THEREBY
Heinz Huth and Hans Schum, Holzminden, Germany, assignors to Dragoco Spezialfabrik Konz, Riech- und Aromostoffe Gerberding & Co. GmbH, Holzminden, Germany
No Drawing. Filed Dec. 10, 1971, Ser. No. 206,896
Claims priority, application Germany, June 11, 1971, P 21 29 168.9
Int. Cl. A23l *1/44*
U.S. Cl. 426—59 **12 Claims**

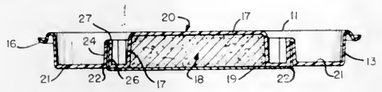
This invention relates to the production of concentrated meat-like aromatics and aromatic compositions. In accordance with the invention animal body parts are comminuted, mixed with water to form a pasty mass, heated, cooled and the aqueous phase thereof is treated with a protein-splitting enzyme. Concentration of the aqueous liquid results in a concentrated aromatic product that can be added to foods, particularly for the making of so-called "convenience" foods.

3,796,812
FISH FEED, ESPECIALLY FOR PET FISH
Ulrich Baensch, 70 Herrenteich, 452 Melle, Federal Republic of Germany
Filed Dec. 23, 1971, Ser. No. 211,179
Claims priority, application Germany, Dec. 24, 1970, P 20 63 814.6
Int. Cl. A23k *1/18*
U.S. Cl. 426—62 **1 Claim**



Fish feed, especially for pet fish with thin-walled feed bodies of crushed feed particles held together by a binding agent, said feed bodies being formed by sheets having a surface in excess of three square centimeters.

3,796,813
CLOSURE CAP FOR A CONTAINER
Ronald Ira Kurland, Baltimore, Md. (3823 Kilburn Road, Randallstown, Md. 21133)
Filed Jan. 5, 1972, Ser. No. 215,605
Int. Cl. A23l *1/00*
U.S. Cl. 99—78 **5 Claims**



Closure cap for a beverage container having a pocket portion. A beverage additive is enclosed within the pocket by a film of soluble edible material. The film dissolves upon contact with the beverage releasing the additive into the beverage.

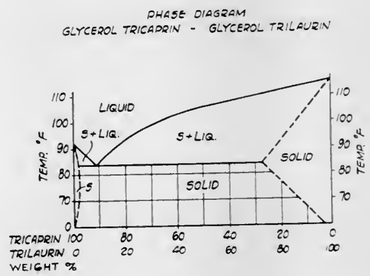
3,796,814
HEAT-SENSITIVE CONDIMENT-CONTAINING FATTY PARTICULATE
Robert E. Cermak, Chicago, Ill., assignor to SCM Corporation, Cleveland, Ohio
No Drawing. Continuation-in-part of application Ser. No. 797,236, Feb. 6, 1969, now Patent No. 3,647,480. This application Nov. 15, 1971, Ser. No. 198,964
The portion of the term of the patent subsequent to Mar. 7, 1989, has been disclaimed
Int. Cl. A23l *1/26*
U.S. Cl. 426—98 **3 Claims**

Condiment-containing fatty particulates with a substantially continuous fatty matrix phase at the surface. The composite particles are prepared by contacting a heat-sensitve condiment with preformed fatty matrix particles at a temperature not substantially above the Wiley melting point of the matrix particles for a time sufficient for the condiment to be absorbed. Agglomerates of the composite particles can be formed.

3,796,815
POURABLE EMULSION
Herbert Willem Lincklaen, Westenberg, and Johannes Henricus Maria Rek, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Filed Sept. 3, 1971, Ser. No. 177,873
Claims priority, application Great Britain, Sept. 8, 1970, 42,968/70
Int. Cl. A23d *3/00*
U.S. Cl. 426—195 **9 Claims**

The specification describes a pourable margarine which shows a significant reduction in spattering behavior during frying and which has an improved stability against oil separation at relatively high use temperatures (e.g. about 20 to 35° C.). The pourable margarine contains about 20% by weight of an aqueous phase and about 80% by weight of a fatty phase. The fatty phase contains about 90 to 99.5% by weight of a liquid vegetable oil and about 10 to 0.5% by weight of a hard fat component. The aqueous phase contains a phosphatide from 5–35% by weight of which is a monoacylglycerophosphatide whose acyl group is derived from a fatty acid having at least 12 carbon atoms.

3,796,816
HARD BUTTER COMPOSITIONS FROM NON-RANDOMIZED TRIGLYCERIDES
John Michael Hasman and Richard Joseph Zielinski, Middleburg Heights, Ohio, assignors to SCM Corporation, Cleveland, Ohio
Filed July 5, 1972, Ser. No. 269,200
Int. Cl. A23g *3/00*
U.S. Cl. 426—201 **4 Claims**



A hard butter having a solid content index over a temperature range from 80° to about 92° F. consisting essentially of from about 45% to 80% of glycerol tricaprin, from about 20% to 55% glycerol trilaurin, and 0% to 8% of partial glycerides, the fatty acid moiety having from 8 to 22 carbon atoms and confectioners coatings employing this hard butter.

3,796,817
METHOD FOR PEELING CASHEW NUTS
Otto T. Aepli, Southgate, and Malachy E. Sorgenfrei, Trenton, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed July 8, 1971, Ser. No. 160,906
Int. Cl. A23l *1/36*
U.S. Cl. 426—287 **9 Claims**

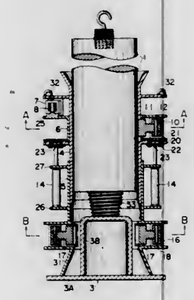
The skins of nut meats or kernels are effectively removed by immersing the unpeeled nut in an aqueous acid-surfactant solution to loosen the skin and, thereafter, washing and drying the so-treated kernel.

ELECTRICAL

3,796,818
ELECTRODE CONNECTING APPARATUS FOR FURNACES

Iwao Yuasa, and Seiji Nonoyama, both of Nagoya, Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan

Filed Mar. 14, 1973, Ser. No. 340,951
Claims priority, application Japan, Mar. 16, 1972, 47-26151
Int. Cl. H05b *7/14*
U.S. Cl. 13—18 5 Claims



An electrode connecting apparatus for furnaces comprises upper and lower casings slidably coupled to each other through a shock absorber, a lower gripping means provided on said lower casing, an upper gripping means provided on said upper casing, and a cylinder means for rotating said upper gripping means independently of said upper casing.

3,796,819
COOLED LAMINATED CONDUCTOR RIBBON WITH SPACERS

Alfred Wagner, and Vladimir Bruckler, both of Essen, Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

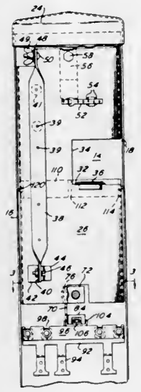
Filed Mar. 6, 1973, Ser. No. 338,627
Claims priority, application Germany, Mar. 14, 1972, 2212214
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 C 8 Claims

A laminated electric conductor ribbon which has, at its two opposite ends, electric coupling terminals, is disposed within a hose that extends between the two terminals. The latter are provided with flow passages to permit the circulation of a liquid coolant through the hose.

3,796,820
TERMINAL BOX FOR UNDERGROUND CONDUCTORS

Theodore M. Bunten, Rydal, Pa., assignor to Repco Products Corporation, Philadelphia, Pa.

Filed Mar. 2, 1973, Ser. No. 337,335
Int. Cl. H02g *9/02*
U.S. Cl. 174—38 15 Claims

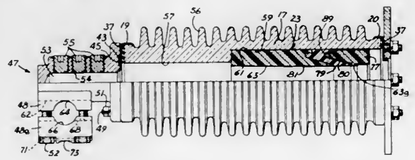


A terminal box for underground conductors includes a pivotable panel behind which unassigned conductor loops may be supported with assigned conductor loops spliced to the panel. The panel is mounted for pivotable movement to expose structure therebehind. In all pivotable positions of the panel, it is grounded by means of contact members spring-biased into engagement with one another with one contact member being connected to lower bracket means.

3,796,821
HIGH VOLTAGE CABLE TERMINATION

George E. Lusk, Downers Grove, Ill., assignor to G & W Electric Specialty Company, Blue Island, Ill.

Filed Oct. 6, 1972, Ser. No. 295,507
Int. Cl. H02g *15/02*
U.S. Cl. 174—73 R 21 Claims

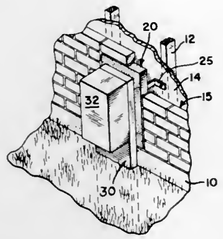


A cable termination is provided with a terminator having a rigid insulator suited for outdoor application and an inner stress relief element contained in the insulator. The terminator is applied in telescopic relation to a prepared end of a power cable which has a region of high electrical stress. The inner stress relief element includes a compressible portion having electrically conductive properties and forming a stress control shield, and a contiguous high dielectric strength portion. The two portions are related to one another such that the compressible portion provides continuous compliance of the stress relief element on the prepared cable end of any solid plastic or elastomeric insulated cable that is within a given range of cable sizes. The terminator may include a sealable compression lug for the making of an external electrical connection to the terminator.

3,796,822
ELECTRICAL SERVICE MOUNTING

Willis Victor Eickman, 9570 Washington Church Rd., Miamisburg, Ohio

Filed Feb. 9, 1973, Ser. No. 330,988
Int. Cl. H02g *3/02*
U.S. Cl. 174—48 3 Claims

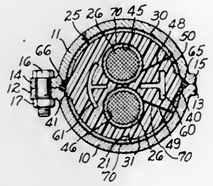


A mounting pedestal for electrical service to a building is provided in the form of a rigid block having provisions on one side for supporting electrical service connections and a meter on the exterior of the building, and on the other side of the block one or more mounting brackets which space the block from the exterior load bearing walls of the building so as to be flush with veneer later applied to the exterior of the building.

3,796,823
SPLICE CASE WITH GAS TIGHT SEAL

James A. Wright, and James M. Kosmala, both of Allegany, N.Y., assignors to The Dexter Corporation, Olean, N.Y.

Filed June 6, 1972, Ser. No. 260,224
Int. Cl. H02g *15/08*
U.S. Cl. 174—92 12 Claims



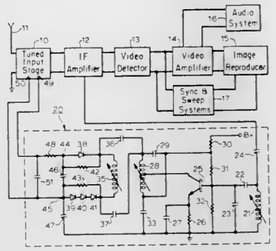
A gas tight seal for a communication cable splice case to withstand high and low temperature cycling and suitable for installation in the field. A split case with a resilient grommet at each end in compressive engagement with the case and cable, with the grommet oversize in the dimension perpendicular to the case flanges and having interior cavities for internal deformation of the grommet when compressed by the closing of the case urging the grommet into sealing engagement with the case and with the cable.

3,796,824
TV AFC CIRCUIT ELIMINATES BIASED DIODES FOR SYMMETRICAL PULL-IN

Roy F. Baker, Franklin Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 26, 1972, Ser. No. 220,913
Int. Cl. H04n *5/44*; H04b *1/16*
U.S. Cl. 178—5.8 AF 9 Claims

The automatic frequency control (AFC) system of a television receiver includes a discriminator network and a pair of non-biased rectifier arrangements with load circuits, operating over a small range of frequency deviations centered about the desired mean frequency. The rectifier arrangements are non-biased for compatibility with varactor tuning systems and include three serially connected diodes in one of the rectifier arrangements and a single diode in the other to achieve extended pull-in. The three serially connected diodes vary the conduction threshold of the positive portion of the discrimina-

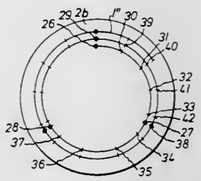


tor network to assure proper shaping of the frequency response characteristic of the FM detector. Accordingly, for conditions of gross mistuning, control voltages are obtained from the two rectifier arrangements that are of the same polarity and aid one another in obtaining an augmented frequency correcting effect.

3,796,825
RECORDING CARRIER FOR VIDEO SIGNALS WITH SPIRAL OR HELICAL TRACK AND AN ODD NUMBER OF FIELDS PER TURN

Horst Redlich; Gerhard Dickopp, and Franz-Eberhard Krause, all of Berlin, Germany, assignors to Ted Bildplatten Aktiengesellschaft, Zug, Switzerland

Filed Oct. 25, 1972, Ser. No. 300,489
Claims priority, application Germany, Oct. 29, 1971, 2153917
Int. Cl. H04n *5/76*
U.S. Cl. 178—6.6 DD 4 Claims



On a recording carrier on which video information is recorded along a spiral recording track, each frame of the recorded picture is recorded as an odd number plurality of fields, each turn of the recording track consists of such odd number of fields, and each field is constituted by a whole number of picture lines plus a portion of a picture line whose relation to a whole picture line is represented by a proper fraction whose numerator is an integer and whose denominator is equal to the number of lines recorded per field, so that the horizontal sync pulses on adjacent track turns lie on common lines normal to the direction of scanning of the carrier.

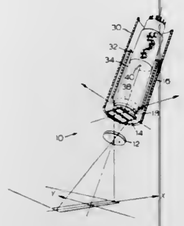
3,796,826
MULTISPECTRAL CAMERA

Howard Stewart Kerr, Scarborough, Ontario, Canada, assignor to Spar Aerospace Products Limited, Toronto, Ontario, Canada

Filed Mar. 8, 1972, Ser. No. 232,895
Claims priority, application Canada, Mar. 11, 1971, 107425
Int. Cl. H04n *5/26*
U.S. Cl. 178—7.2 4 Claims

A multispectral camera device according to the present invention consists of a high resolution lens, sensing means capa-

ble of converting photon energy into electrical energy and wedge interference filter means disposed between the lens



means and the sensing means. The sensing means being disposed to read the image transmitted by the wedge interference filter means.

3,796,827

LOW VOLTAGE SUPPLY CIRCUIT FOR SOLID-STATE T.V. RECEIVER, WITH FEEDBACK INHIBITOR

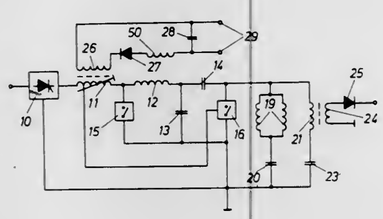
Werner Riechmann, Sibbesse, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Dec. 7, 1972, Ser. No. 311,719

Claims priority, application Germany, Dec. 17, 1971, 2162881

Int. Cl. H04n *5/44*

U.S. Cl. 178—7.3 R **7 Claims**



To prevent feedback of inductive peaks in low-voltage supply circuits of solid-state television receivers, in which a low-voltage supply circuit is energized during the retrace interval from the line deflection circuit, and in which the line deflection circuit includes controlled rectifiers, which controlled rectifiers might be triggered spuriously by such feedback peaks, an inhibiting circuit is connected to the rectifier circuit of the low-voltage supply, which is fed from an inductance, to suppress feedback through the inductance upon sudden drawing of current by the supply circuit; this inhibit circuit may be an inductance connected in series with the rectifier of the low-voltage supply, or an additional source of direct current which pre-charges the smoothing capacitor of the rectifier circuit; such low voltage d-c can be obtained, for example, from the filament transformer for the cathode ray tube, with a half-wave rectifier, the voltage being delivered to the low-voltage supply being less than that normally required by the low-voltage supply so that, when the low-voltage supply draws current, the half-wave rectifier will block and prevent power from being fed from the supply into the power transformer.

3,796,828

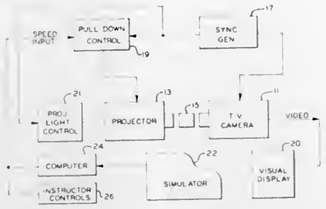
TELECINE SYSTEM CONTROL ELECTRONICS TO PROVIDE SYNCHRONISM BETWEEN THE PROJECTOR PULLDOWN AND TELEVISION SCAN OVER A WIDE RANGE OF PULLDOWN RATES

Philip G. Barboni, Vestal, and John A. Cooksey, Binghamton, both of N.Y., assignors to The Singer Company, Binghamton, N.Y.

Continuation of Ser. No. 133,208, April 12, 1971, abandoned. This application Aug. 3, 1972, Ser. No. 277,754

Int. Cl. H04n *5/86;* **G11b** *15/54*

U.S. Cl. 178—7.2 **14 Claims**



A telecine system for use in a simulator visual system which synchronizes the application of light to the motion picture image, and the pulldown with the vertical sync of the television camera. The system is adapted to operate in a synchronized manner at variable speeds from zero up to the television field rate avoiding problems of uneven images shutter bars, etc.

3,796,829

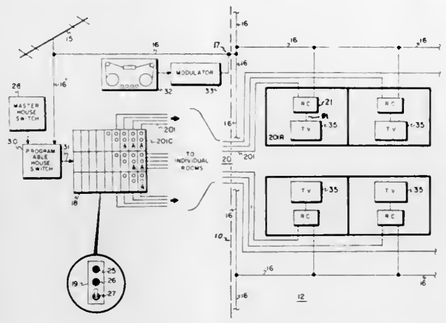
CLOSED TELEVISION NETWORK WITH AN OPEN TELEVISION SYSTEM AND A CLOSED TELEVISION SYSTEM

Robert G. Gray, Levittown, Pa., assignor to Athena Communications Corporation, New York, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,031

Int. Cl. H04n *7/00*

U.S. Cl. 178—DIG. 13 **34 Claims**



A closed television (TV) network includes an off-air open TV system providing TV signals with programs broadcast to the general public and a closed-circuit or private TV system providing in-house or other closed-circuit programs. The open TV system provides off-air TV signals with programs broadcast to the general public to the TV receiver in the closed network for normal, unrestricted use. The closed-circuit TV system provides private or closed-circuit programs over the same closed TV network with central, controlled use by the TV receivers in the closed TV network. Central control over the closed-circuit program is maintained over the individual TV receivers in the network with permissive-selective viewing of the closed-circuit program with non-restricted selective viewing of the off-air programs.

3,796,830

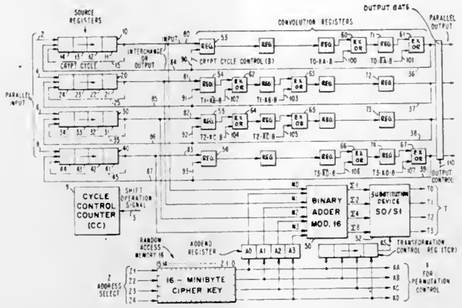
RECIRCULATING BLOCK CIPHER CRYPTOGRAPHIC SYSTEM

John Lynn Smith, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1971, Ser. No. 194,836

Int. Cl. H041 *9/02*

U.S. Cl. 178—22 **9 Claims**



This is a cryptographic system for enciphering a block of binary data under the control of a subscriber cipher key consisting of a preassigned combination of binary symbols. The block of data is processed on a segmented basis with each segment of data being serially transformed in accordance with control signals determined from the binary values of key segments. The system is utilized within a data processing environment to provide complete privacy of data that is stored, or transmitted within a computer network.

The ciphered message is developed by passing the clear message through a series of nonlinear transformations, each transformation being a function of the binary values that appear in the subscriber key.

3,796,831

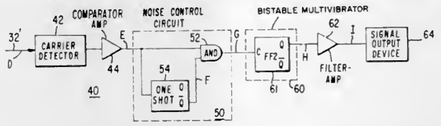
PULSE MODULATION AND DETECTION COMMUNICATIONS SYSTEM

John August Bauer, Medford, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1972, Ser. No. 305,697

Int. Cl. H04b *1/10, 1/16*

U.S. Cl. 178—68 **1 Claim**



In a pulse modulation and detection communications system suitable for use with high-power carrier sources such as light emitting diodes or transferred electron oscillators, the zero axis crossings of an audio frequency signal are used to control the output pulse width of the carrier source. The carrier pulses are detected and frequency divided to provide a square wave exhibiting the same zero axis crossings as the original audio frequency signal. The detected square wave is filtered before being applied to an audio signal output device.

3,796,832

SOUND ENHANCING SYSTEM

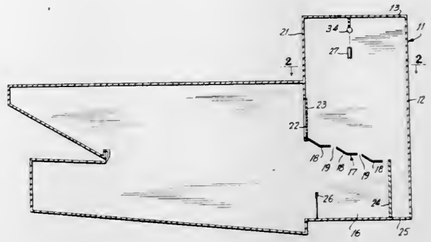
Christopher Jaffe, 167 E. Rocks Rd., Norwalk, Conn.

Filed June 2, 1972, Ser. No. 258,966

Int. Cl. H04r *3/00*

U.S. Cl. 179—1 J **7 Claims**

A sound enhancing system for either an open or a closed auditorium includes a reverberation chamber positioned above the ceiling of the shell from which said sound originates. Speakers within the reverberation chamber receive low



frequency signals from microphones in the shell. The reverberation chamber has an opening in the wall facing the audience through which sound can pass.

3,796,833

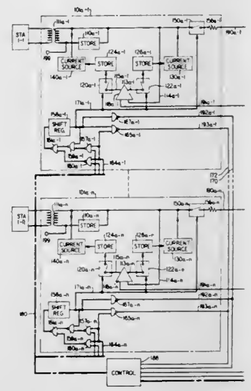
TIME DIVISION COMMUNICATION SYSTEM

Theras Gordon Lewis, and John Francis O'Neill, both of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 31, 1972, Ser. No. 276,897

Int. Cl. H04j *3/02*

U.S. Cl. 179—15 AT **19 Claims**

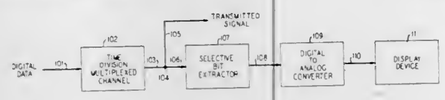


A time division communication system wherein a plurality of time slots occurs in repetitive cycles includes a plurality of storage devices, first and second buses, a control signal source and a summing amplifier connected between the first and second bus. Each storage device has an associated circuit responsive to the control signal to apply the signal in the storage device to the first bus and to generate a signal corresponding to the difference between a signal received from the second bus and the storage device signal. The generated signal is stored and a signal corresponding to the stored generated signal is applied to the associated storage device. During a distinct time slot, the control signal is applied to selected storage device circuits; the storage device signals on the first bus are summed in the summing amplifier; and the summing amplifier output is applied to the second bus whereby signals are exchanged among the selected storage devices.

3,796,834
TECHNIQUE AND APPARATUS FOR TESTING A TIME DIVISION MULTIPLEXED TRANSMISSION SYSTEM USING SELECTIVE SIGNAL BIT EXTRACTION

John Kuhar, Jr., Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1972, Ser. No. 315,549
Int. Cl. H04j *3/14*
U.S. Cl. 179—15 BF **8 Claims**

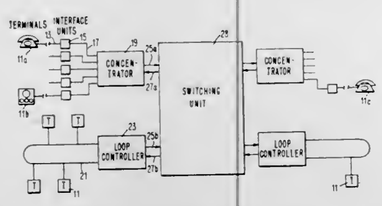


A method and apparatus are described for monitoring the performance of a time division multiplexed transmission system. At a test point the time division signal is split. One part of the signal continues to be transmitted without interruption in the system. The other part of the signal is delivered to the apparatus which selectively extracts digital data bits from the time division multiplexed data signal by identifying a group of bits within the data signal after which a sequence of bits, but not all bits, are extracted from the identified group. The remaining bits up through, but not including, the sign bit in a selected digital word are inhibited whereas the sign bit is also extracted. By placing the extracted data bits in positions adjacent in significance to the extracted sign bit, a signal gain is effected upon the digital to analog conversion of the signal. Upon display of the analog signal, transmission characteristics of the system are advantageously obtained by visual analysis.

3,796,835
SWITCHING SYSTEM FOR TDM DATA WHICH INDUCES AN ASYNCHRONOUS SUBMULTIPLEX CHANNEL

Felix Hugo Closs, Adliswil; Hans Rudolf Mueller; Erich Port, both of Rueschlikon; Harry Rudin, Jr., Thalwil, and Daniel Wild, Adliswil, all of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,737
Claims priority, application Switzerland, Sept. 30, 1970, 14474/70
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BY **5 Claims**

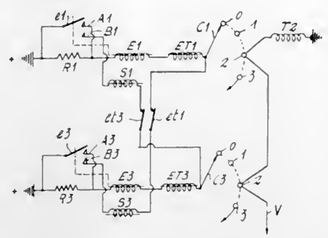


A TDM multiplex communications system for effectively transmitting voice, or high speed, and signalling information or low speed data, between a plurality of stations by employing an asynchronous sub-multiplex channel for the low speed data transmission. The sub-multiplex channel comprises one or more time slots of the equally divided time slot intervals of the normal multiplexing time frame, and is available for use by any connected station of the incoming highways to the central switch, having signaling information or low speed data ready for transmission. Each of the connected stations of the incoming highways having voice or high speed data is assigned, for synchronous operation, particular ones of the remaining time slots, in cyclic fashion, within the multiplexing time frame. Since the submultiplex channel is arranged so that the sending or receiving station address is carried beside the data to be transmitted, any data rate is acceptable thereby.

3,796,836
DEVICE FOR AUTOMATICALLY SIGNALLING INCOMING CALLS ON NORMAL ALREADY ENGAGED TELEPHONES

Irene Monleone, via Guglielmo Silva 29, Milan, Italy (20149)

Filed July 24, 1972, Ser. No. 274,336
Claims priority, application Italy, Aug. 12, 1971, 27466/71
Int. Cl. H04m *3/42*
U.S. Cl. 179—18 BG **5 Claims**

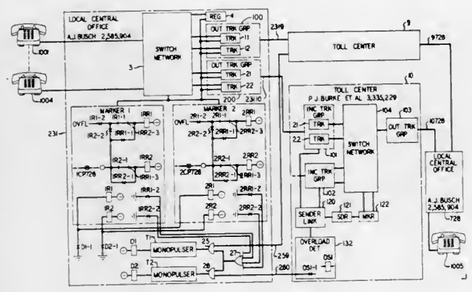


A device for automatically signalling incoming calls on normal telephones already engaged, the device comprising, for every telephone in network, an electric circuit located in the telephone exchange and having a resistor in series with the coil of a line selector relay and a switch shunting the resistor and actuated by the coil, the coil of the said relay being connected to the movable arm of the line selector board of the telephone. The circuit also comprises a series of preselectors. In one of the power supply wires of each telephone there is a supplementary resistor with at least one shunt switch. In the auxiliary circuit there is the coil of a very low voltage auxiliary relay controlling the opening of the switch located in the shunt across the supplementary resistor. In series with the coil of each line selector relay there is a thermal switch which is heated when electric current passes and thus opens in the exchange the respective switch located in the auxiliary circuit of each telephone of the network. The opening of the switch located in the shunt across the supplementary resistor determines a drop in the electric voltage supplied to the telephone and hence the signalling of an incoming call.

3,796,837
NETWORK TRAFFIC CONTROL SYSTEM

Harold Charles Mathews, West End, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 13, 1972, Ser. No. 288,507
Int. Cl. H04m *3/42*
U.S. Cl. 179—18 EA **10 Claims**

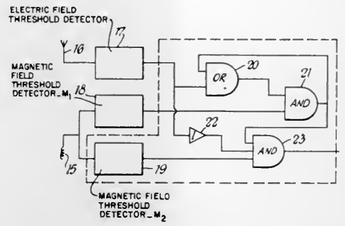


A traffic control arrangement for use in a communication switching network wherein the rate of incoming calls offered a preferred trunk group is time controlled to reduce the number of calls appearing at a congested switching center. A detector ascertains subscriber calls routed from a local center office to an overloaded switching center. During the overload period the detector enables timing apparatus to control the rate at which incoming subscriber lines are connnected with trunks of the preferred trunk group terminated in the congested switching center.

3,796,838
VEHICLE COMMUNICATIONS

Alan H. Cribbens, and Clive V. Smith, both of Derby, England, assignors to British Railways Board, London, England

Filed June 27, 1972, Ser. No. 266,827
Int. Cl. H04b *5/00*
U.S. Cl. 179—82 **4 Claims**

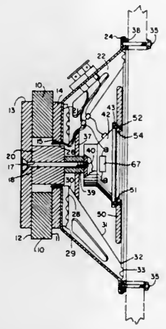


A vehicle communication system for a vehicle moving along a trackway comprises a conductor loop laid in the path of the vehicle, a transmitter arranged to feed a signal into the conductor loop, magnetic and electric field sensing means being provided on the vehicle to pick up the magnetic and electric fields produced by the signal flowing in the loop and wherein a multi-turn coil extending in the path of the vehicle is connected to one end of the loop. Means are provided to suppress the electric field produced by the signal flowing in the coil, and electronic means are carried by the vehicle and arranged to receive the signals from the sensing means and so to determine the relative positioning of the loop and coil with respect to the direction of travel of the vehicle.

3,796,839
LOUD SPEAKER SYSTEM

William R. Torn, St. Charles, Ill., assignor to Dukane Corporation, St. Charles, Ill.

Filed Aug. 30, 1972, Ser. No. 285,012
Int. Cl. H04r *9/06*
U.S. Cl. 179—116 **4 Claims**

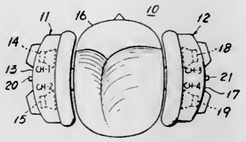


This invention provides a loudspeaker system having two coaxial cone diaphragm type nested speakers (woofer and tweeter) for handling an extended range of audio frequencies. The speaker system embodying the invention is characterized by a phasing baffle plate extending part way from a region spaced near the rim of the tweeter toward the woofer cone diaphragm. By controlling the dimensions, spacing and material of the phasing baffle plate, the overall frequency response for the two speakers may be rendered substantially uniform over the extended range.

3,796,840
FOUR-CHANNEL HEADPHONE

Kazuho Ohta, Sagamihara, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa-ken, Japan

Filed Dec. 2, 1971, Ser. No. 204,148
Claims priority, application Japan, Dec. 5, 1970, 45-107810
Int. Cl. H04r *5/02, 5/04;* **H04m** *1/05*
U.S. Cl. 179—156 R **7 Claims**

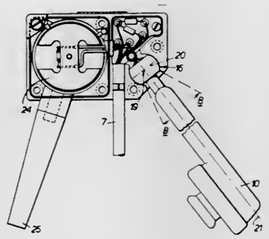


A four-Channel headphone comprises a pair of left and right headphone body casings, a front channel speaker and a rear channel speaker respectively provided in each casing and electrical signal supplying means for supplying rear channel signals to the rear channel speakers with shifted phase. When the signals shifted in phase are reproduced and sounded from the rear channel speakers in the headphone body casings, the sounds produce a panoramic surrounding sound effect for a listener who uses the four-channel headphone.

3,796,841
HEADSETS

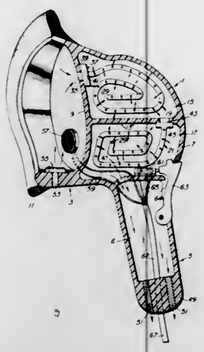
Anthony Graham Gorman, Ruislip, England, assignor to Amplivox Communications Limited

Filed May 2, 1972, Ser. No. 249,602
Claims priority, application Great Britain, May 17, 1971, 15355/71
Int. Cl. H04m *1/05*
U.S. Cl. 179—156 A **9 Claims**



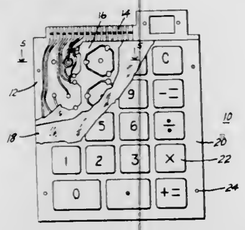
A headset is provided with a mounting member attached to the headband or for mounting on a spectacle frame. The earpiece is in the end of a support member which is pivotally mounted on the mounting member in such a way that it can rotate about two mutually perpendicular axes perpendicular to the longitudinal axis of the support member.

3,796,842
DICTATION MASK
Eric L. Guille, 4521 Maple Ave., Bethesda, Md.
Filed July 20, 1972, Ser. No. 273,648
Int. Cl. H04r *1/28*
U.S. Cl. 179—188 **5 Claims**

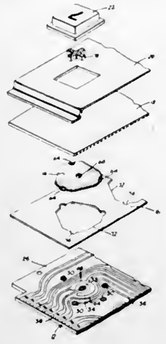


A dictation mask adaptable for use by a court reporter, or the like, which is electrically connected to a recording apparatus for recording the voice of the dictator. A generally spherically-shaped member providing an area for fitting on the face of the dictator and including a plurality of chambers serially in communication by means of sole apertures, and certain of the chambers having muffling coils mounted therein for receiving the breath and voice of the dictator and muffling the sound therefrom, and each such muffling coil provided with a plurality of spaced-apart breath exhaust passages, said spherically-shaped member being provided with a handle and said handle providing one of said plurality of chambers, and said dictation mask including moisture-absorbing means.

3,796,843
CALCULATOR KEYBOARD SWITCH WITH DISC SPRING CONTACT AND PRINTED CIRCUIT BOARD
Gilbert H. Durkee; Per G. Wareberg, and Alan C. Yoder, all of Fort Wayne, Ind., assignors to Bomar Instrument Corporation, Ft. Wayne, Ind.
Filed Jan. 2, 1973, Ser. No. 320,147
Int. Cl. H01h *13/52*
U.S. Cl. 200—5 A **22 Claims**

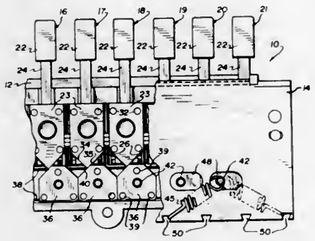


A keyboard switch assembly including a printed circuit board having four switch terminals on one side of the board, three of the terminals being arranged in a triangle and the fourth disposed within the triangle. Conductors on the one side of the board are respectively joined to the interior terminal and at least one of the three terminals. A conductive, generally triangular, snap-acting dome switch member is provided having arcuate apices, projections being respectively formed from the apices and respectively engaging the three terminals thereby spacing the periphery of the switch element from the one surface of the printed circuit board and the conductors thereon, at least the conductor connected to the interior terminal extending under the dome. The switch element has a fourth protection formed from the interior of the dome adjacent the center thereof which is in registry with the interior terminal and engages that terminal when the dome is deflected thereby completing an electrical circuit between the three terminals and the interior terminal. A layer of insulating material covers the conductors exclusive of the terminals. A sheet of insulating material covers the insulating layer and has



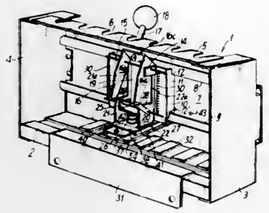
an opening therein which receives and locates the switch member. Another sheet of insulating material covers the first sheet and the switch member. A plate covers the second insulating sheet and has an opening therein which receives a push button in registry with the switch element, depression of the push button actuating the dome of the switch member to a non-overcenter, deflected position in which the interior projection on the dome engages the interior switch terminal.

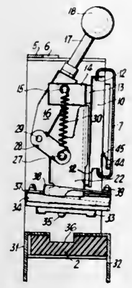
3,796,844
MULTIPLE CIRCUIT CONTROL SWITCH ASSEMBLY WITH MOMENTARY ACTION INTERLOCKING MEANS
Thomas F. Osika, Gary, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.
Filed Mar. 26, 1973, Ser. No. 344,601
Int. Cl. H01h *9/26*
U.S. Cl. 200—5 E **11 Claims**



A pushbutton switch assembly having a sliding block-type switch action wherein longitudinally displaceable pushbutton actuators selectively engage one or more of a plurality of spring-biased laterally displaceable members which may momentarily return the actuated pushbutton to its unactuated position. A projection having cam surfaces extends from each of the pushbutton actuators and engages matching cam surfaces on the spring-biased displaceable members which are positioned within the switch housing and spring biased to the coverplate of the switch housing. These members are laterally moved as a result of camming action by the pushbutton projection, with such lateral movement of the members releasing any previously depressed pushbutton actuators for return and also returning the member and its corresponding pushbutton actuator to the unactuated position.

3,796,845
NORMAL SPRING BIASED BRIDGING TAP CHANGER RECIPROCATING CONTACT ASSEMBLY WITH LONGITUDINALLY DISPLACEABLE ACTUATOR MEANS
Shinichi Shirae, 4-3, Chuo 6-chome, Tokyo, Japan
Continuation-in-part of Ser. No. 260,701, June 7, 1972, abandoned, which is a continuation of Ser. No. 134,716, April 16, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,335
Claims priority, application Japan, Dec. 7, 1970, 45-107641
Int. Cl. H01h *3/46, 13/60*
U.S. Cl. 200—17 R **10 Claims**

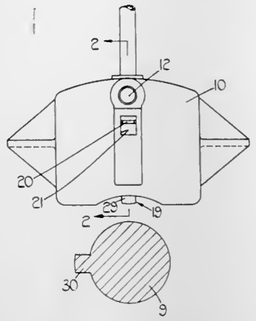




A tap changer is housed within a vertically arranged rectangular frame structure and contains a plurality of spaced taps. The taps can be selectably engaged by a contact element through the medium of a handle rod which is movably displaceable within the frame structure along a rectilinear path. In the top portion of the frame structure a number of receiving slots, corresponding in number and spacing to the taps in the tap changer, are arranged perpendicularly to the rectilinear path of the handle rod so that the handle rod can be inserted selectably into the slots in effecting contact between the contact elements and a selected one of the taps. The handle rod is connected to the contact elements through a link arrangement positioned within the frame structure and the link arrangement includes springs for biasing the contact elements into contact when a circuit is closed and for withdrawing the contact element when a circuit is opened. Due to the link arrangement, as the contact element is moved into a closed position a wiping action is provided with the taps. Movement of the handle rod between the receiving slots can only be effected when the contact element is in an open-circuit state.

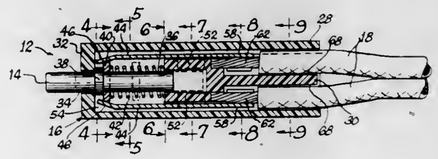
3,796,846
SELF CANCELLING DIRECTION INDICATOR SWITCHES
Norman Wilkinson, Barrowford, near Nelson, and David Shaw, Accrington, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England
Continuation of Ser. No. 243,741, April 13, 1972, abandoned. This application Feb. 26, 1973, Ser. No. 335,563
Claims priority, application Great Britain, Apr. 16, 1971, 9627/71
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.27 **5 Claims**

A self cancelling direction indicator switch includes a pawl member with a plurality of projecting fingers. An operating member is shaped to displace the pawl member towards the path of a striker and the pawl member is spring loaded against the member. The member operating has detent means which coact with the pawl member to hold the pawl member advanced and the member in an operative position. In this posi-



tion movement of the striker in one direction causes indexing of the pawl member without releasing it from the detent means, whereas movement of the striker in the other direction rolls the pawl member out of engagement with the detent means.

3,796,847
MINIATURE PUSH-BUTTON ELECTRICAL SWITCH WITH INSERTABLE STATIONARY CONTACT MOUNTING MEANS
Andrew F. Raab, Morton Grove, Ill., assignor to Indak Manufacturing Corp., Northbrook, Ill.
Filed Oct. 30, 1972, Ser. No. 302,031
Int. Cl. H01h *13/52, 13/10*
U.S. Cl. 200—159 R **1 Claim**

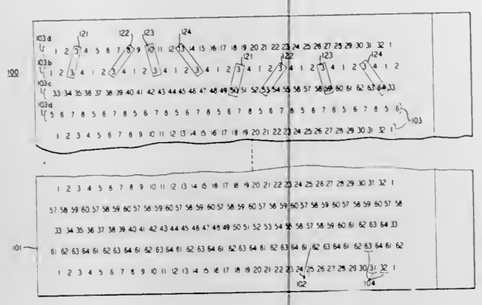


The illustrated electrical switch comprises an insulating push button or pin which is axially slidable in a guide opening formed in an insulating housing or case. A contactor in the form of a metal disc is mounted on the pin and is engageable with a stop shoulder which is also engageable with an end wall on the housing to limit the outward movement of the pin. A coil spring is mounted around the pin and is compressed between the contactor and an insulating insert mounted in the housing. The contactor is engageable with the inwardly slanting end portions of a pair of contact strips confined between the insert and the outer shell of the housing. The spring normally biases the contactor into engagement with the contacts. The insert is retained within the outer shell of the housing by a barb which is formed on the insert and is receivable in an opening formed in the outer shell.

3,796,848
PIN CONNECTOR SWITCH
Hamilton Southworth, Jr., New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 6, 1972, Ser. No. 295,469
Int. Cl. H01h *13/33*
U.S. Cl. 200—175 **13 Claims**

A distribution board or pin connector switch for a main distributing frame utilizes a printed circuit pin board with a spe-

cial pin arrangement to obtain the advantages of a pin crosspoint switch simultaneous with a substantial reduction in the number of pins required in comparison with such a crosspoint switch. Input conductors are connected to pins in alternate rows with each group of four consecutive input conductors being connected to a plurality of groups of pins within one of the rows depending upon the total number of crosspoints. The output conductors are divided into two groups with the conductors of these groups being consecutively connected to the



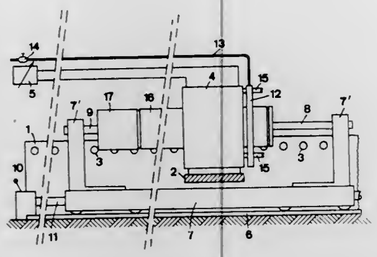
pins in the two rows on each side of the rows of input pins. This produces in essence a symmetrical pin arrangement wherein an input pin is shared by eight output pins and conversely. Thus the total number of pins required by the board is reduced by a factor of approximately eight as compared with a pin crosspoint switch. Connections between any input and output conductor can be effected by automated apparatus utilizing a small rigid connector to connect the appropriate input and output pins.

3,796,849

METHOD AND APPARATUS FOR HEATING AND COOLING MOVING TUBES

Michel Charles Cuvelier, Liege, Belgium, assignor to Elphiac, Charleroi, Belgium

Filed Jan. 15, 1973, Ser. No. 323,921
Claims priority, application Belgium, Jan. 14, 1972, 112831
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.41 **6 Claims**



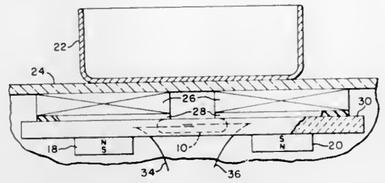
A method and apparatus for heating and cooling a large diameter moving metal tube by progressively displacing it across a heating inductor, the induction current and the moving speed of the tube being adjusted so that the tube reaches its tempering temperature as it comes out of the inductor, and progressively cooling the tube rapidly at a predetermined distance from the outlet of the inductor, the distance being selected to enable a minimum tempering time to occur outside the inductor.

3,796,850

PAN DETECTOR FOR INDUCTION HEATING COOKING UNIT

William C. Moreland, II, Export; Robert A. McCoy, Turtle Creek, and Terence D. Malarkey, Monroeville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 31, 1973, Ser. No. 365,671
Int. Cl. H05b *5/04*
U.S. Cl. 219—10.49 **5 Claims**



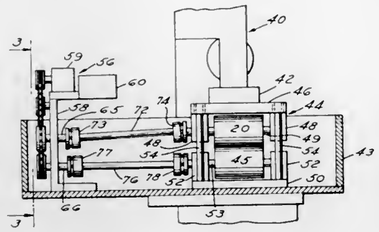
A pan detection and control arrangement is provided for an induction heating cooking unit by providing a reed switch and a pair of permanent magnets disposed relative to the reed switch to hold the reed switch in a closed position in the absence of a sufficient size cooking vessel in position overlying the work coil, the reed switch operating to an open position to permit energization of the work coil when the ferromagnetic mass provided by the cooking vessel is in place to shunt a sufficient part of the magnetic field through the vessel and away from the reed switch. Opening of the reed switch permits energization of the work coil.

3,796,851

APPARATUS FOR MAKING CYLINDRICAL DIES

Alan R. Pfaff, Jr., Orchard Lake, Mich., assignor to Bernal Rotary Systems, Inc., Troy, Mich.

Continuation of Ser. No. 69,881, Sept. 4, 1970, abandoned, which is a division of Ser. No. 752,612, Aug. 14, 1968, Pat. No. 3,550,479. This application July 28, 1972, Ser. No. 276,085
Int. Cl. B23p *1/12*
U.S. Cl. 219—69 V **5 Claims**



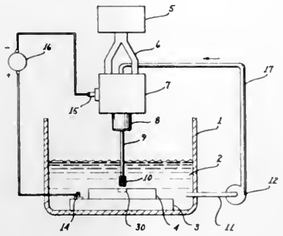
A cylindrical cutting die is made by mounting a line drawing of the pattern to be cut on a copy cylinder supported on the table of a milling machine for rotary movement in unison with a negative cylinder. A scanning device senses the pattern on the copy cylinder and coordinates rotary movement of the machine table to cause a cutter mounted on the machine spindle to form a grooved reproduction of the pattern on the negative cylinder, which is then used in an electrical discharge machine, equipped with a fixture for rotatably supporting the negative cylinder on the machine head in axially parallel relation with a die blank cylinder in the machine tank and for rotating the cylinders at equal rotational speed, to cause a raised cutting pattern to be machined on the die cylinder corresponding to the grooved reproduction on the negative cylinder.

3,796,852

ELECTRICAL DISCHARGE MACHINING TOOL

Donald A. Vlach, 4446 N. 36th St., Apt. 30, Phoenix, Ariz.

Filed Dec. 6, 1971, Ser. No. 205,199
Int. Cl. B23k *9/16*
U.S. Cl. 219—69 E **5 Claims**



A method and apparatus are disclosed for machining a cavity within a work piece by electrical discharge machining with a tool having a replaceable electrode tip. The tool includes a positioning member, a holder, a stem attached to the holder, and a tip secured to the stem. The tool is aligned with the work piece wherein the cavity is to be formed and movable toward and away from the work piece without affecting the alignment. During the electrical discharge machining, which produces the cavity, the tip erodes and becomes worn, necessitating replacement. When the tip has become worn, the stem and holder are moved away from the work piece to permit replacement of the worn tip with a new tip. While the tip is being replaced, the alignment of the stem with respect to the work piece is unaffected and the new tip will be automatically aligned with the partial cavity already machined. The tool with the new tip is moved toward the work piece and the electrical discharge machining may be resumed.

3,796,853

CONNECTION TYPE CARBON ELECTRODE

Kojiro Matsuo; Fukutaro Mizukami; Koshi Ishihara; Masanori Maeda, and Hideo Ishii, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Dec. 18, 1972, Ser. No. 315,912
Claims priority, application Japan, Dec. 27, 1971, 47-1715
Int. Cl. B23k *35/00*
U.S. Cl. 219—145 **3 Claims**

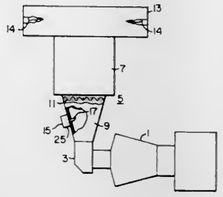
A connectable carbon electrode having a coaxial projecting portion and a coaxial socket portion for connecting a plurality of the electrodes in succession in which a plurality of elongated indentations are provided on the projecting portion along a predetermined length thereof. This enables the projecting portion to be securely fitted into the inner wall of the socket portion by scrapping off the indentations by the inner wall of the socket portion.

3,796,854

ICE DETECTION SYSTEM FOR A GAS TURBINE

Alan D. Bennett, Essington, Pa., and Robert C. Farkas, Anchorage, Alaska, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1972, Ser. No. 292,239
Int. Cl. H05b *1/00*
U.S. Cl. 219—201 **14 Claims**



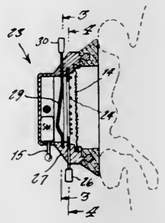
To prevent ice from clogging a trash screen disposed in an air supply duct for a gas turbine, a conduit is disposed in communication with the duct downstream of the trash screen and has a pivotally mounted screen cooperatively associated with a spring and a switch so that the switch closes and initiates operation of an auxiliary heater disposed in the duct when ice begins to form on the pivotally mounted screen.

3,796,855

EAR HEATING PADS

Joseph E. Brown, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y.

Filed July 23, 1973, Ser. No. 381,508
Int. Cl. H05b *1/00*
U.S. Cl. 219—211 **4 Claims**



A portable device for being carried on a person in order to relieve an ear-ache pain; the device consisting of a heating pad placable against the ear and being connected by wiring to either to a household electric outlet or else to a dry cell battery and switch than can be carried in a pocket so the person is thus free to move about either in the home or out-of-doors.

3,796,856

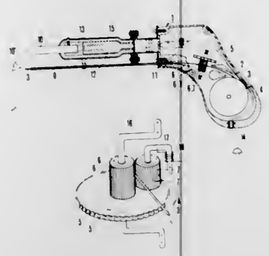
SOLDER FEEDING ELECTRIC SOLDERING IRON

Kuo Wei-Cheng, No. 48, Pa-Teh Rd., Section 1, Taiwan, China

Filed Sept. 20, 1972, Ser. No. 290,647
Int. Cl. H05b *1/00;* **B23k** *3/06*
U.S. Cl. 219—230 **6 Claims**

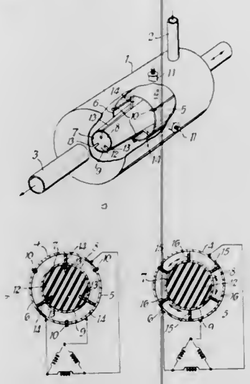
An electric soldering iron has a grip from which there extends a heated copper soldering tip. A roll of wound wire-solder is housed within the grip and the wire-solder is led through a guide to a point adjacent the soldering tip. The wire-

solder is fed by being gripped between a pair of gears, one of which is secured to a disk and the other of which is spring biased toward the first gear. The peripheries of the two gears are formed with mating annular grooves through which the wire solder extends. The disk has a knurled periphery which



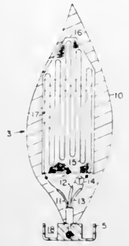
projects outwardly through a side wall of the grip. Wire solder can be delivered to the pointed head of the tip of the heater through the wire-delivery pipe by rotating the periphery of the disk with a finger tip and the soldering can be conducted easily with one hand.

3,796,857
ELECTRODE BOILER
Eric D. Henley, Derby; Michael T. Hall, and Godfrey Toole, both of Swindon, all of England, assignors to British Railways Board, London, England
Filed Dec. 15, 1971, Ser. No. 208,342
Claims priority, application Great Britain, Dec. 23, 1970, 61176/70
Int. Cl. H05b *3/60*
U.S. Cl. 219—285 **3 Claims**



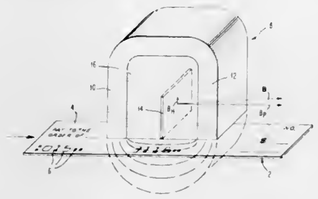
This invention relates to an electrode boiler in which the power electrodes are fixed and in which a separate transfer electrode, which is insulated from the power electrodes, is positioned in the current flow path between the power electrodes through the liquid to be heated. By altering the position of this transfer electrode, the power output of the boiler can be varied. The transfer electrodes are electrically insulated from each other and are electrically "floating" in the sense that they are not grounded nor connected to a terminal of the power source. The power electrodes are arranged in the form of a truncated cone as are also the transfer electrodes, the transfer electrodes being positioned concentrically of the power electrodes. Also, the transfer electrodes are rotatable relative to the power electrodes to permit varying the amount of effective overlap between the power electrodes.

3,796,858
DECORATIVE AQUARIUM HEATER
Joseph D. Cohn, 3814 Beverly Dr., Sherman Oaks, Calif.
Filed Dec. 5, 1972, Ser. No. 312,351
Int. Cl. F24h *1/00*
U.S. Cl. 219—331 **9 Claims**



An electrical resistance heater is embedded in an electrically insulating mass configured as a natural element of an aquarium such as a leaf, coral or diver for example. A base adapted to receive the heater component is provided for location under the gravel in the base of the tank. A temperature controlling circuit is provided utilizing solid state devices in a manner permitting a degree of proportional control and eliminating the arcing and potential electrical hazards associated with the conventional bimetallic strip aquarium thermostats.

3,796,859
MAGNETIC INK RECORDING SYSTEM TO BOTH MAGNETIZE AND READ INK
David A. Thompson, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 27, 1971, Ser. No. 212,579
Int. Cl. G11b *5/30;* **G06k** *7/08*
U.S. Cl. 235—61.11 D **3 Claims**

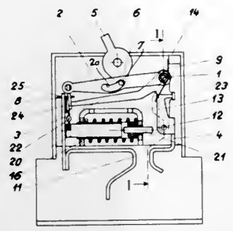


A magnetoresistive recording head is employed to both magnetize magnetic ink on a document as well as to read the magnetized ink prior to its loss of magnetism. A strong magnet produces the desired bias field along the easy axis of the ink to magnetically polarize the ink, but such strong field is applied perpendicular to the magnetoresistive sensing element, which strong field serves only to bias that sensing element, not switch it.

3,796,860
ELECTRICAL CIRCUIT-BREAKER
Hermann Kick, Schaffhausen, and Walter Schwyn, Beringen, both of Switzerland, assignors to Carl Maier & CIE, Schaffahusen, Switzerland
Filed Sept. 25, 1972, Ser. No. 292,132
Claims priority, application Switzerland, Sept. 30, 1971, 14377/71
Int. Cl. H01h *73/02*
U.S. Cl. 335—21 **7 Claims**

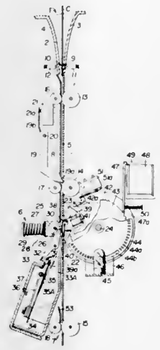
An electrical circuit-breaker comprising a housing, fixed and movable contact members and a breaker mechanism for

actuating the movable contact member. The breaker mechanism includes a pivotable handle for manual operation of the breaker. A first axle is fixed in the housing. There is provided a first lever with two arms of unequal length, said lever being pivotably supported by said axle and being operatively connected with said handle in direction of closing the breaker by the handle. A coil spring is arranged on the axle for urging



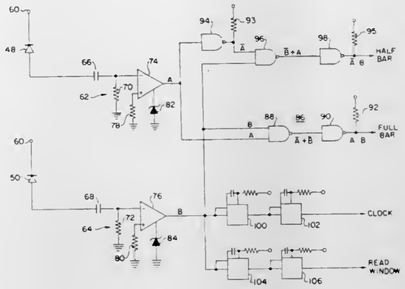
the lever in a direction to open the contacts. The first axle also carries a second lever having a coulisse mechanically engaged with the handle, that the two arms of the first lever stand nearly at an angle of 90° to each other, the summit of the angle coinciding almost with the axle and that the movable contact member is mounted on the shorter arm of the first two armed lever.

3,796,861
INFORMATION CARD READ-OUT DEVICE
Shinichi Hirata; Iwao Mitsugi, both of Kanagawa-ken; Toshiya Ogawa; Masayuki Suzaki, both of Tokyo, and Takami Suzuki, Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 30, 1971, Ser. No. 129,519
Claims priority, application Japan, Apr. 22, 1970, 45/39514; Apr. 22, 1970, 45/39517
Int. Cl. G06k *7/04*
U.S. Cl. 235—61.11 C **10 Claims**



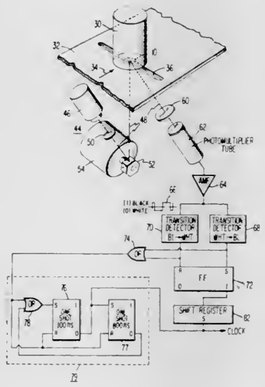
A rotatable disk is stepped angularly to produce successive timing pulses, and card feed rollers are stepped angularly in synchronism with the disk, to shift the information card column-by-column in accordance with the timing pulses. The information is read-out when the card is stationary following each stepped advance of the card. Upon completion of reading out of the information in all of the card columns, the last timing pulse is extended or prolonged and, during prolongation of the last timing pulse, a read-out termination signal is produced by an end cam. Blocking means are provided to prevent insertion of a second card into the device unitl reading out of a first card has been completed.

3,796,862
BAR CODE READER
Satya P. Asija, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Sept. 27, 1971, Ser. No. 184,014
Int. Cl. G06r *7/10*
U.S. Cl. 235—61.11 E **3 Claims**



A bar code reader for optically reading the visual two-bar code used for Postal Service applications is described. The reader employs two photosensors and relatively simple logic circuitry which has increased noise immunity and facilitates real time operation.

3,796,863
OPTICAL SCANNING ARRANGEMENT AND ARTICLE USEFUL THEREWITH
Franklyn George Nickl, Northboro, Mass., and Joseph Francis Schanne, Cheltenham, Pa., assignors to RCA Corporation, New York, N.Y.
Filed Jan. 19, 1972, Ser. No. 218,972
Claims priority, application Great Britain, Mar. 23, 1971, 7591/71
Int. Cl. G06k *7/10, 19/06;* **G08c** *9/06*
U.S. Cl. 235—61.11 E **3 Claims**



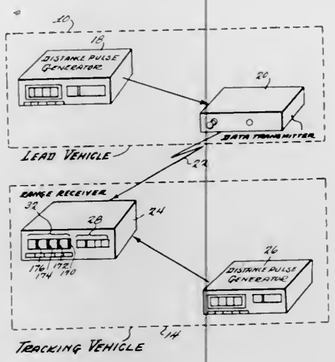
A machine readable binary encoded label having preamble, data and end sections comprising concentric annuli of two different reflectivities. The width of each annulus is an integral multiple N of some unit width. By limiting N to not greater than some given value, the data on the label, when read by optical scanning equipment which can detect transitions between reflectivities, provides the transition signals needed to resynchronize the scanning equipment clock circuitry.

3,796,864

VEHICLE SEPARATION MEASURING SYSTEM

Harry R. Sampey, Vanderbilt, Pa., assignor to Pentron Industries, Inc., Cleveland, Ohio

Filed Apr. 19, 1972, Ser. No. 245,432
Int. Cl. G06m *3/14*
U.S. Cl. 235—92 EV **22 Claims**



Apparatus and method for monitoring the separation distance between a lead vehicle and a following or tracking vehicle. Besides merely monitoring such separation distance, provisions are made which greatly facilitate the maintenance of a predetermined value of distance separation. Furthermore, the predetermined value of distance separation may be adjustably preset to any desired value. First and second pulse trains are generated representing distance increments travelled by the lead and tracking vehicles respectively. The first and second pulse trains are coupled to the up and to the down counting inputs respectively of an up-down counter such that the instantaneous contents of the up-down counter represents the distance separation between the lead and tracking vehicle. The contents of the up-down counter is compared with a preset number representing a desired separation between the two vehicles and an audio oscillator or other indicator is controlled as a result of this comparison process. In the exemplary embodiment, a steady tone is emitted when the desired separation exists while burst tones of different frequencies are produced when the separation distance is either above or below the preset desired value. The repetition rate of the tone bursts is approximately proportional to the speed of vehicle separation or closure as the case may be. In the preferred embodiment, distance pulses from a moving lead vehicle are transmitted via a radio communications circuit to the up-down counter and comparison apparatus which is located in the tracking vehicle to facilitate the marking of highways for passing and no-passing zones, etc.

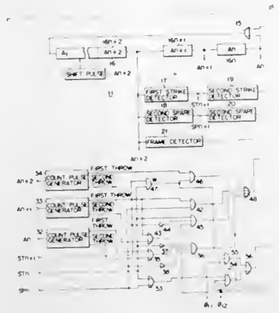
3,796,865

APPARATUS FOR AUTOMATICALLY PROCESSING SCORES OF BOWLING GAMES

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1972, Ser. No. 305,280
Claims priority, application Japan, Nov. 11, 1971, 46-90162
Int. Cl. A63d *5/04*
U.S. Cl. 235—92 GA **1 Claim**

The apparatus comprises a dynamic shift register constructed to continuously store signals concerning the results of throwing a ball for at least one game, means for successively reading out information from an output section of the shft register, means for successively summing up the number of fallen pins which are read out by the read out means starting from the first frame, discriminating means for deriving out a strike signal and a spare signal from the information read out from the output section, means responsive to the output signal from the discriminating means for reading out the information concerning the result of the first throw or first and second throws succeeding to the first mentioned information read out from the output section, a sum up counter for adding the



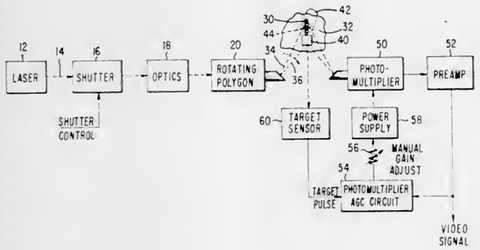
number of fallen pins corresponding to the second mentioned information to the result of the operation of the sum up means and dynamic display means for successively displaying the information from the dynamic shift register and the sum up counter for respective frames.

3,796,866

AUTOMATIC GAIN CONTROL CIRCUIT

William Reed McClellan, North Chelmsford, Mass., assignor to RCA Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,632
Int. Cl. H03k *13/02;* **H03f** *11/02*
U.S. Cl. 235—92 PK **14 Claims**



The count stored in a counter is translated to a gain control voltage for a light sensing device such as a photomultiplier. An electrical signal is produced by the sensing device each time it receives a light signal from a reference source. If the level of the electrical signal differs from a given value by more than a given amount, the count in the counter is changed, to change the gain control voltage in a sense to return the electrical signal level to said given value.

3,796,867

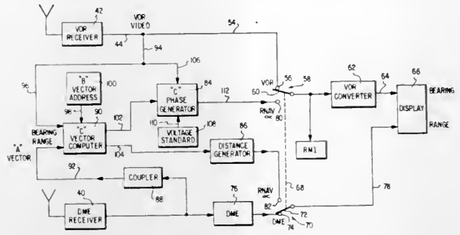
ANGLE MODE AREA NAVIGATION COMPUTER

Albert C. Abnett, Westerville, and Robert M. Watson, Uniontown, both of Ohio, assignors to Autech, Inc., Columbus, Ohio

Filed June 6, 1972, Ser. No. 260,194
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.27 **29 Claims**

Disclosed is an area navigation system which generates course deviation information in terms of angular measure-

ment. The system is compatible with all standard VOR and DME equipment. It comprises a vector computer for computing the "C" vector from a waypoint to an aircraft and from the computer output generates a voltage signal representative of



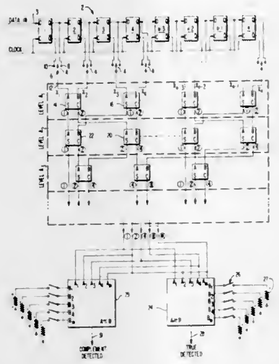
distance and a variable phase signal representative of varying angle. It incorporates an approach mode switch for maintaining an approximately constant maximum angular course width sensitivity in the area of the waypoint.

3,796,868

VARIABLE THRESHOLD DIGITAL CORRELATOR

Pradman Prithvinath Kaul, Washington, D.C.; William Gaunt, Potomac, and Harold Ford, Clarksburg, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 11, 1972, Ser. No. 279,892
Int. Cl. G06f *15/34*
U.S. Cl. 235—181 **8 Claims**



A digital code word correlator for detecting a unique code word in a serially received data stream. The correlator includes a digital adder tree producing a binary number representing the number of matches between the bits of the received word and the bits of a stored replica of the expected unique word. The binary number is supplied to true and complement variable threshold digital comparators which generate detection signals in response to predetermined numbers of matches.

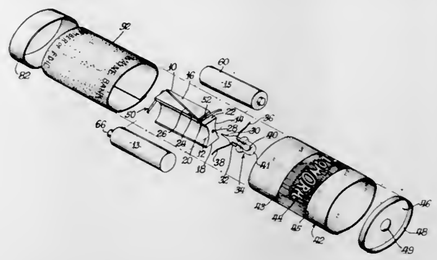
3,796,869

SELF-ILLUMINATED CASE

Wilfred Schafer Stone, 134, La Salle St., Wayne, Ill.

Filed Oct. 24, 1972, Ser. No. 299,858
Int. Cl. F21v *9/16*
U.S. Cl. 240—2.25 **14 Claims**

This invention relates to a flashlight (1) that may be seen in the dark, (2) which carries a universal mounting on one external wall, and (3) an internal switch adjacent the opposite wall which is elastic and which on pressing will close the switch. By mounting the flashlight above, for example, a keyhole, the flashlight can be seen, and when the outer wall is pressed, the keyhole is illuminated. Moreover, the light bulb within three or four seconds restores the phosphorescent band to luminosi-



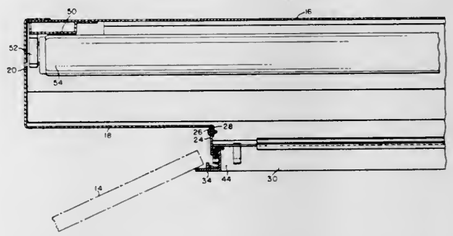
ty, (reactivation chamber) because part of it is located in a regenerative phosphorescent chamber so that it performs not only the normal lighting function, but regenerates the phosphorescent material on the chamber walls as well. The phosphorescent material, a zinc sulphide or zinc-cadmium sulphide (harmless) has a persistence of glow of two to twelve hours.

3,796,870

RECESSED SQUARE FLUORESCENT LUMINAIRE

William J. Pettyjohn, Jr., Atlanta, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1973, Ser. No. 344,016
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.11 R **6 Claims**



A fluorescent luminaire of the recessed type for use in a modular ceiling system. The luminaire displays only a three-foot square opening in the ceiling system but will receive through the opening and mount within the luminaire, conventional four-foot fluorescent lamps thereby shielding the ends of the lamp and the lamp holders from view as well as providing a new light exit shape with conventional lamps.

3,796,871

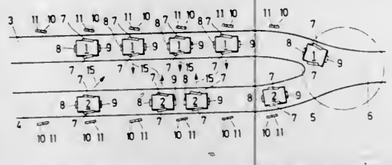
METHODS AND MEANS FOR MERGING TWO LANES OF TRAFFIC

Conrad D. Helmcke, Munich, and Hans J. Wendt, Buxtehude, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Mar. 14, 1972, Ser. No. 234,605
Claims priority, application Germany, Mar. 26, 1971, 2114622
Int. Cl. B61l *23/14*
U.S. Cl. 246—167 R **31 Claims**

Two crowded single file traffic lanes of electronically speed-controlled vehicles are merged at a merge point by electroni-

cally establishing gaps sufficient to accept vehicles between the vehicles of each lane before they approach the merge point. The vehicles of one lane are then electronically guided



into the gaps of the other as they pass the merge point. Lane-side transmitters and receivers along each lane cooperate with the vehicles to control the spacing between the vehicles in the approach toward the merge point.

3,796,872

MASS SPECTROMETRY

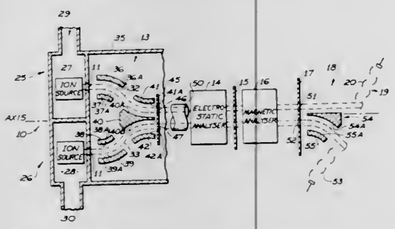
Thomas Oliver Merren, Hale, England, assignor to Associated Electrical Industries Limited, London, England

Filed Dec. 13, 1971, Ser. No. 207,234

Claims priority, application Great Britain, Dec. 18, 1970, 60229/70

Int. Cl. H01j *39/34*; **B01d** *59/44*

U.S. Cl. 250—283 **8 Claims**



A mass spectrometer in which plural beams of ions are generated from a common substance for simultaneous passage through an analyzer region. An auxiliary electrostatic analysis is performed on one of the analyzed beams which are received by separate collectors. Metastable ions are observed at one collector while their parents are observed at another collector.

3,796,873

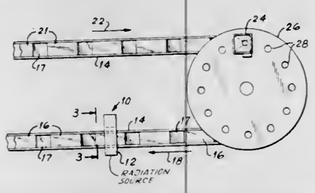
CONTAINER FILL WEIGHT CONTROL USING NUCLEAR RADIATION

Lowell A. Ledgett, Ridgewood, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 817,048, April 17, 1969, abandoned. This application May 3, 1971, Ser. No. 139,897

Int. Cl. G01n *23/10*

U.S. Cl. 250—357 **2 Claims**



An apparatus for maintaining a desired weight for individual containers including radiation means spaced from a conveyor unit for irradiating filled containers. Suitable detection means are used to actuate a filler corresponding to a signal from an irradiated package and based upon a predetermined standard of absorption, the filling of later packages is controlled.

3,796,874

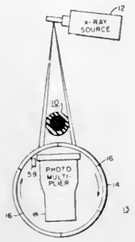
NON-DESTRUCTIVE ECCENTRICITY AND INSULATION THICKNESS MEASUREMENT SYSTEM

Robert F. Roller, McMurray; Robert R. Ferber, Pittsburgh, and Wallace D. Loftus, Clairton, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 18, 1971, Ser. No. 172,672

Int. Cl. G01n *23/20*

U.S. Cl. 250—363 **24 Claims**



A non-destructive insulated cable insulation thickness and eccentricity gaging system is disclosed herein which utilizes X-rays and one dimensional X-ray imaging combined with a digital data processing and readout system to determine the insulation thickness of the cross section of a cable from two orthogonal directions; displays the relative thickness on an electronic readout display for use by the operator in removing eccentricity manually; provides a numerical display of the upper insulation thickness, lower insulation thickness, left insulation thickness, right insulation thickness, average measured insulation thickness, or cable outside diameter on command, or at prescribed intervals under operator or automatic sequence control; and provides an adjustable means for detecting a "high lay" in a cable. This system can be installed on insulated cable production lines to enable rapid process correction and control capability on the insulation extrusion process.

3,796,875

METHOD AND APPARATUS FOR THE NON-DESTRUCTIVE ANALYSIS OF NUCLEAR FUELS

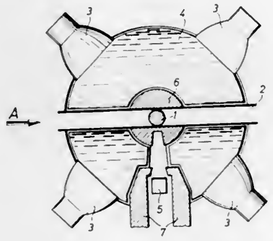
Walfried Friedrich Arthur Michaelis, Karlsruhe, Germany, assignor to Gesellschaft Fur Kernforschung MbH, Karlsruhe, Webeustrasse, Germany

Continuation-in-part of Ser. No. 750,547, Aug. 6, 1968, abandoned. This application Aug. 18, 1971, Ser. No. 172,810

Claims priority, application Germany, Aug. 25, 1967, 5096442

Int. Cl. G01j *39/18*

U.S. Cl. 250—363 **7 Claims**



A process and apparatus for analyzing a nuclear fuel body by placing such in a channel surrounded by a liquid scintillator with a channel therein in which the body resides, irradiating the body through the channel with low-energy neutrons whereby releasing fast neutrons (n_s) and prompt gamma pulses (γ); measuring the fast neutrons and prompt gamma pulses so emitted by means of detectors and photomultipliers surrounding the irradiated body; and subtracting the n_s, γ coincidences from said gamma pulses, whereby evaluating and analyzing said body.

3,796,876

DEVICE FOR NON DESTRUCTIVELY AND SEPARATELY DETERMINING CONCENTRATIONS OF FISSIONABLE MATERIAL IN A TEST SPECIMEN

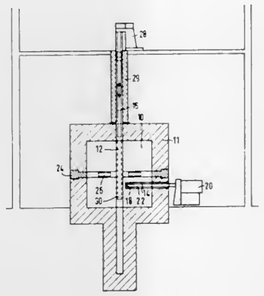
Herbert Krinninger, Bensberg, Cologne, and Siegfried Wiesner, Dusseldorf/Heerdt, both of Germany, assignors to Interatom, Internationale Atomreaktorbau GmbH, Bensberg/Cologne, Germany

Continuation of Ser. No. 18,462, March 11, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,855

Claims priority, application Germany, Mar. 14, 1969, 1912982

Int. Cl. G01t *1/20, 3/00*

U.S. Cl. 250—363 **10 Claims**



Device for non-destructively and separately determining concentrations of fissionable material in a test specimen includes a heavy moderator formed of lead having a given slowing-down time and having means for receiving a test specimen therein, means for irradiating the test specimen with neutrons so as to effect nuclear fissions producing prompt fission neutrons therein and for producing in the moderator a pulse of monoenergetic fast neutrons of short duration compared to the given slowing-down time of the moderator, and detector means including at least one recoil proton counter for determining, over various time intervals, in accordance with different mean energies of the irradiating neutrons being slowed-down in the moderator, the number of prompt fission neutrons produced in the test specimen.

3,796,877

NEUTRON-INELASTIC GAMMA RADIATION WELL LOGGING METHOD AND APPARATUS WITH BACKGROUND ACCOUNTED FOR

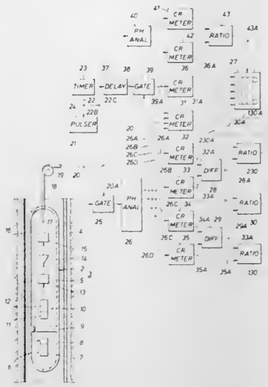
Harry Davis Smith, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 145,815, May 21, 1971, abandoned. This application Jan. 10, 1973, Ser. No. 322,573

Int. Cl. G01t *1/16*

U.S. Cl. 250—270 **43 Claims**

Methods and apparatus are provided for making improved pulsed neutron derived measurements of the carbon:oxygen ratio in subsurface earth formations. Plural radiation measurements are made as a function of time from the initiation of the neutron pulse to distinguish inelastic and thermal neutron interactions. These measurements are also, within their respective time functions, energy dependent. The time and energy dependent radiation measurements are then combined in



several different manners to provide an improved carbon:oxygen ratio measurement and multiple porosity and formation lithology indication measurements.

3,796,878

ROTARY SUPPORT FOR RADIATION TREATMENT APPARATUS

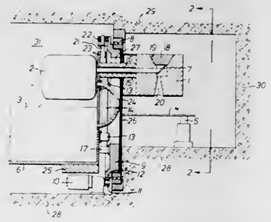
Bernd Peter Offermann, and Rolf Barthel, both of Hamburg, Germany, assignors to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Germany

Filed Nov. 2, 1971, Ser. No. 194,987

Claims priority, application Germany, Nov. 5, 1970, 2054386

Int. Cl. G21g *3/04*

U.S. Cl. 250—445 **10 Claims**



A neutron radiation treatment apparatus having a high voltage generator, a neutron generator and a collimator. The neutron generator is supplied with power from the high voltage generator. The collimator forms a beam of useful rays suitable for radiation treatment. The high voltage generator, the neutron generator and the collimator are rigidly connected together and are fastened to a rotatably mounted support plate. The high voltage generator and the neutron generator are disposed on one side of the support plate. The collimator is disposed on the other side of the support plate.

3,796,879

AUTOMATED MULTIPLE SAMPLE PROCESSING FOR WELL TYPE RADIOACTIVITY COUNTERS

Raymond F. Obrycki, Mt. Prospect, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

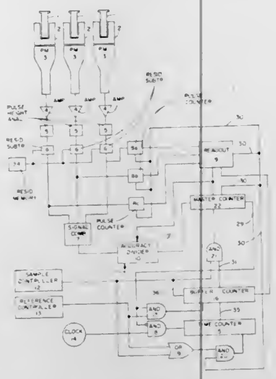
Filed Mar. 24, 1972, Ser. No. 237,662

Int. Cl. G01j *39/18*

U.S. Cl. 250—362 **13 Claims**

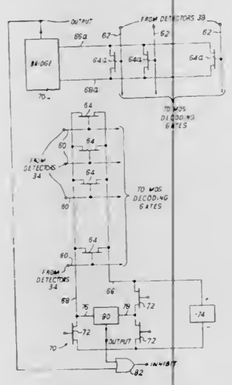
A means for radioactivity analysis of samples containing a substance present at least partially in a radioactive form, but

present in varying quantities in different samples. The radioactivity in the samples is automatically compared with the radioactivity level of a reference set of samples containing the



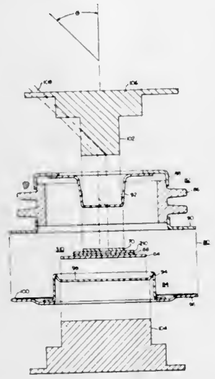
aforesaid substance in a maximum concentration of radioactive to non-radioactive forms. Concurrent analysis is performed on multiple samples in a sample set to reduce the sample processing time.

3,796,880
KEYBOARD HAVING DOUBLE KEY DETECTOR
Howard Anthony Dorey, Godalming, England, assignor to The Solartron Electronic Group Limited, Farnborough, Hampshire, England
Filed Oct. 10, 1972, Ser. No. 296,401
Int. Cl. B41j *5/22*; **G01d** *5/34*; **G08c** *1/00*
U.S. Cl. 250—209 **1 Claim**



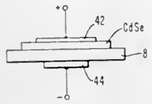
The invention relates to a particularly simple and economical keyboard, of which the major part, the base, can be made as a one-piece plastics moulding. Thus the base includes two sets of intersecting channels along which radiant energy, particularly light, can be passed, the channels of the first set being perpendicular to the channels of the second set. Keys representing letters, numbers, symbols or the like are arranged at the respective intersections of each pair of channels so as to be capable of controlling the passage of light along the channels. Thus in one embodiment, light is directed along the channels, and the operation of a particular key blocks the passage of the light in the unique pair of channels (one from each of the first and second sets) at whose intersection the particular key is located. Respective photo-electric detectors at one end of each channel produce output signals representative of the particular key operated. A circuit is provided which detects when the energy passing along at least two channels has changed which indicates that at least two keys have been operated.

3,796,881
ENCAPSULATED LIGHT ACTIVATED SEMICONDUCTOR DEVICE
John S. Roberts, Export, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 28, 1972, Ser. No. 248,453
Int. Cl. H01l *11/10*
U.S. Cl. 250—211 J **7 Claims**



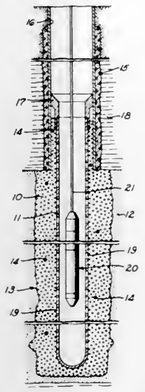
This disclosure is concerned with a four region light activated controlled rectifier encapsulated in a flat package case thereby readily lending to stacking of the device. The controlled rectifier, which comprises in part a body of semiconductor material, preferably silicon, having two opposed and substantially parallel major surfaces has four alternate regions of opposite type conductivity, the two end regions being emitter regions and the two middle regions being base regions, is "turned-on" by light. The light enters the encapsulated package at an angle to the perpendicular, called the "angle of incidence" and strikes one major surface of the body of semiconductor material, passes entirely through the body to the opposed major surface and is reflected back through the body.

3,796,882
SILICON-CADMIUM SELENIDE HETEROJUNCTIONS
John G. Cahill, Brewster, N.Y.; Bhim S. Sharma, San Jose, Calif., and Yde J. Van der Meulen, Yorktown Heights, N.Y., assignors to International Business Machines, Armonk, N.Y.
Filed May 8, 1972, Ser. No. 251,205
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 J **4 Claims**



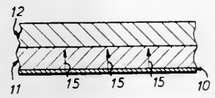
It is desirable to provide photodiodes that can be manufactured at low temperatures (≤ 250°C), have large light-sensitive areas (≥ 1cm²), produce a photocurrent that is linearly responsive to photon flux, have low dark sensitivity and high light sensitivity, a low optimum operating voltage of ~ 1.5 volts and relatively fast rise and decay times of the order of 3 microseconds. A silicon-cadmium selenide p-n heterojunction has been found to have the above noted desirable characteristics.

3,796,883
METHOD FOR MONITORING GRAVEL PACKED WELLS
Donald M. Smith, 13282 La Vaughn Dr., Garden Grove, Calif., and Allen C. Nelson, 313 College Park Dr., Seal Beach, Calif.
Continuation of Ser. No. 786,008, Dec. 23, 1968, abandoned. This application Mar. 22, 1971, Ser. No. 126,913
Int. Cl. G21h *5/02*
U.S. Cl. 250—260 **2 Claims**



The effectiveness and competency of a well gravel pack and changes therein are determined by monitoring the location of radioactive pellets within the gravel pack. The size and specific gravity of the radioactive pellets is substantially the same as that of the gravel particles which comprise the gravel pack.

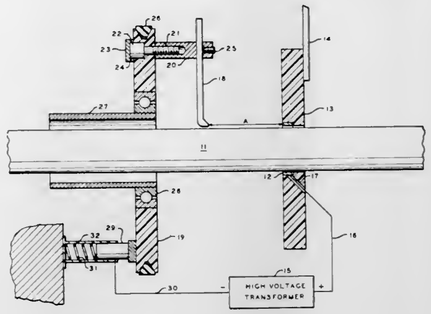
3,796,884
THERMOGRAPHIC PLATE
Jean Tricoire, 19, avenue Victor Hugo, Paris, France
Filed Oct. 18, 1971, Ser. No. 190,384
Claims priority, application France, Oct. 20, 1970, 70.37758
Int. Cl. B41n *5/00*
U.S. Cl. 250—316 **22 Claims**



A process for manufacturing a thermographic plate is disclosed, wherein a sensitive layer comprised of liquid crystals, is associated to a heat guiding layer made of latex and producing a screen effect perpendicularly to said sensitive layer. The thermographic plate is used for diagnosis of several cutaneous and subcutaneous affections. The invention relates also to the thermographic plate itself as well as to thermographic recording device comprising said thermographic plate and a fixture connecting at an adjustable distance said plate with a photographic camera.

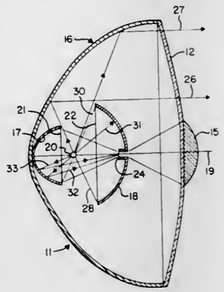
3,796,885
APPARATUS FOR TREATING A MOVING SURFACE WITH A SPARK DISCHARGE
Don L. Shofner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Feb. 10, 1972, Ser. No. 225,042
Int. Cl. H01j *37/00*; **G01n** *23/00*
U.S. Cl. 250—492 **4 Claims**

The surface of an elongated article, particularly one of substantially circular cross section such as a rod or tube, is treated with a spark discharge by employing an apparatus comprising a stationary encircling electrode and a revolving electrode. The elongated article advances through the encircling elec-



trode while the revolving electrode is caused to revolve about it at a rate sufficiently fast to insure the entire surface of the tube or rod is treated with the spark that discharges between the two electrodes.

3,796,886
RADIANT ENERGY REFLECTORS
Miller L. Freeman, Burbank, Calif., assignor to John W. Ervin, Beverly Hills, Calif., a part interest
Filed May 18, 1973, Ser. No. 361,452
Int. Cl. H01j *5/02*
U.S. Cl. 250—493 **7 Claims**

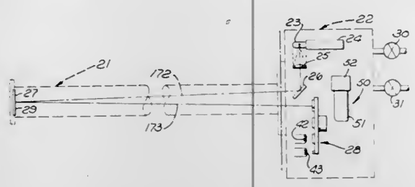


A light projector particularly suitable for automobile headlights which will direct the light to provide separate beams substantially without energy loss. The light projector is provided with a rear reflector which may be of parabolic shape or partially or entirely of the shape of an anamorphoscope. It has a second rear reflector of elliptical shape having one of its focal points in the light source. There is also provided a spherical front reflector having its origin in the light source. The front reflector has an aperture located in the second focal point of the elliptical rear reflector. A plano-convex lens may be provided having its focal point in the aperture of the front reflector to project an intense light beam having the shape of the aperture. This will now provide two light beams of different intensity, one being very intense which may be of rectangular shape corresponding to the shape of the aperture. The projector may also be used to direct or project any radiant energy such as electromagnetic waves or sound waves.

3,796,887
PHOTOMETRIC ANALYZER

Arthur Leonard Vincent, Monrovia; Lawrence Eugene Wysocki, Glendora, and Herman B. Abrams, Manhattan Beach, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,098
Int. Cl. G01n *21/26*
U.S. Cl. 250—565 **17 Claims**

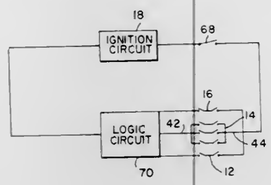


A photometric analyzer to monitor oone or more constituents of a mixture, such as by producing indications of the concentrations of sulfur dioxide and nitrogen dioxide in flue gases. A rotating wheel carries appropriate filters, and the outputs of reference and measuring filters are time shared. A photomultiplier is operated to produce a logarithmic function in accordance with Beer's Law. Logarithmic functions of the reference and measuring filter outputs are subtracted by the use of circuits including an amplifier. A voltmeter calibrated in concentration is then connected from the amplifier.

3,796,888
SWITCH STRUCTURE

Norman H. Berry, 49 Cambridge, Pleasant Ridge, Mich.

Filed Sept. 5, 1972, Ser. No. 286,128
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 SB **13 Claims**



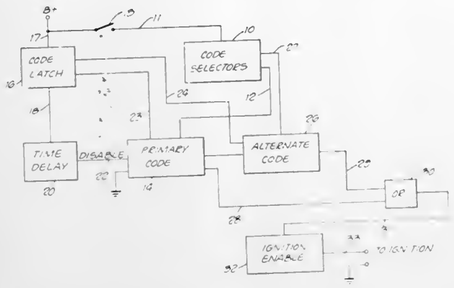
A bimetal, pressure actuated switch which when placed between the springs and cushioning material of an automobile seat or the like will be actuated by a person having approximately the same weight under extremes of temperature, said switch comprising an insulating base having a contact member thereon, a bimetal spring secured to the base and extending over the contact member, cover means movable toward the base and into contact with the bimetal spring for urging the bimetal spring into engagement with the contact member, and resilient means supporting the cover in spaced relation to the base.

3,796,889
CODED ELECTRICAL LOCKING DEVICE

Neil E. Fradkin, P.O. Box 3061, Fullerton, Calif., and Carl Frederick Wolcott, West Los Angeles, Calif., assignors to said Fradkin, by said Wolcott

Filed Sept. 18, 1972, Ser. No. 289,889
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT **14 Claims**

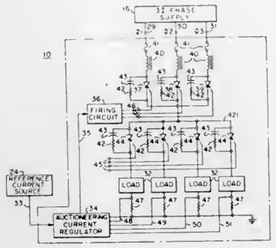
An electrical circuit for restricting the application of electrical power to an automobile ignition circuit or for controlling other electro-mechanical locking devices wherein a plurality of switches are actuated by a numbered keyboard according to a preselected code so that they must be actuated in proper sequence to unlock the mechanism. The primary code sequence can be changed using the same keyboard to set up a simpler, alternate sequence without the necessity for any electrical or mechanical variations in the device, so that access is permitted by others for limited purposes without the necessity of disclosing the entire code to anyone. The circuit also includes a time delay mechanism which disables the circuit if the proper code sequence is not followed or is not performed within a predetermined period of time.



3,796,890
POWER REGULATION SYSTEM

Francis T. Thompson, Murrysville, Pa., and Andre Wavre, Neuchatel, Switzerland, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 798,912, Feb. 13, 1969, Pat. No. 3,619,635. This application Aug. 31, 1971, Ser. No. 176,543
Int. Cl. H02j *3/10*
U.S. Cl. 307—24 **5 Claims**

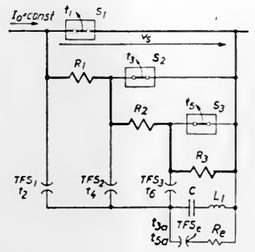


A system is disclosed for providing a desired energizing current, according to a reference current signal, to a load or group of load elements. Three phase energizing current is rectified by a plurality of controlled switching devices such as thyristors, and means are provided for varying the firing angle of the thyristors in accordance with the reference current signal to regulate the resulting output voltage therefrom and thereby regulate the energizing current through the load. Digital transmission means are provided to transmit digital signals in a high noise level environment. A plurality of error detecting circuits provide alarm signals in the event that the desired current is exceeded, maximum current is called for, or one of the power phases is missing, for more than predetermined time periods. Improved means are also provided for synchronizing asynchronous generators to provide a single three phase power source.

3,796,891
CIRCUIT ARRANGEMENT FOR THE INTERRUPTION OF CURRENT

Dieter Kind, Knappstrasse 4, and Hagen Hartel, both of Braunschweig, Germany, assignors to said Kind, by said Hartel

Filed July 21, 1972, Ser. No. 274,102
Claims priority, application Germany, July 24, 1971, 2137082
Int. Cl. H01h *9/30*
U.S. Cl. 307—135 **10 Claims**

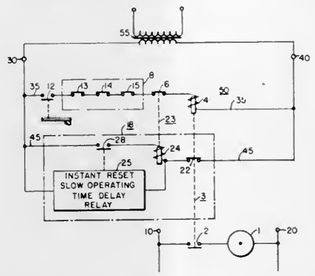


A circuit arrangement for current limiting interruption of current at high voltage includes a plurality of series connected individual commutation stages. Each stage has an energy dissipating member, such as a resistor. A single commutation capacitor is provided. Switching devices are operatively arranged for consecutively switching the single commutation capacitor into each stage in parallel with the respective energy dissipating member included in each stage.

3,796,892
TIMED SHUTDOWN CONTROL CIRCUIT FOR ELECTRIC REFRIGERATION AND AIR CONDITIONING SYSTEMS

Robert S. Stewart, Staunton, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 30, 1972, Ser. No. 285,392
Int. Cl. H01h *3/34, 33/59*
U.S. Cl. 307—141.4 **2 Claims**

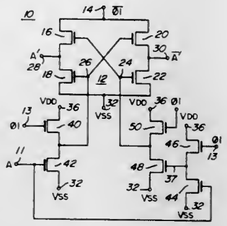


This invention relates to a refrigeration compressor motor control and protection circuit which assures a timed shutdown period of the compressor motor each time the compressor is shut down for any reason. A normally closed starter control contact is positioned in the control circuit so as to immediately initiate a time delay whenever the compressor is deenergized and before the motor can be restarted. A compressor protection contact is arranged in series with the motor starter winding and is adapted to be opened to prevent energization of the winding whenever the time delay is initiated. The control circuit includes a time delay relay which can be instantaneously reset so as to provide a timed shutdown each time the compressor motor shuts off, regardless of how soon the next shutdown should occur.

3,796,893
PERIPHERAL CIRCUITRY FOR DYNAMIC MOS RAMS

Charles Robert Hoffman, Tempe, Ariz., and Donald H. Kube, San Jose, Calif., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 28, 1972, Ser. No. 284,183
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 **5 Claims**

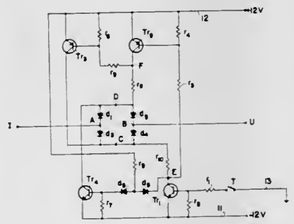


Improved circuits for a dynamic MOS RAM having a storage array of inverting storage cells, including an improved input buffer, an improved write circuit, and a sense circuit. The input buffer circuit includes a dynamic latch circuit clocked by the first clock complement signal and is compatible with TTL logic levels. The cross coupled gate nodes of the dynamic latch are conditionally discharged by circuitry which includes a ratio type first address inverter, and a second ratio type address inverter followed by a third ratioless inverter, whose output conditionally discharges one of the cross coupled gate nodes of the dynamic latch. A separate write circuit drives each digit-sense column bus line, and includes a push-pull driver clocked by the third clock input signal. The pull-up and pull-down field effect transistors of the push-pull driver each have an exclusive OR type circuit for conditionally discharging the precharged gate electrodes of the pull-up and pull-down field effect transistors, depending on the voltages on the data input signal and the data control signal. The ratioless data control inverter and the data input inverter provide the complement signals required by the two exclusive OR type circuits.

3,796,894
ELECTRONIC SWITCHING SYSTEM

Gianfranco Marchetti, Monza, and Alterto Tronconi, Rovescala, both of Italy, assignors to Societa Italiana Telecommunicazioni Siemens S.p.A., Milan, Italy

Filed Apr. 5, 1972, Ser. No. 241,280
Claims priority, application Italy, Apr. 6, 1971, 22767/71
Int. Cl. H03k *17/00*
U.S. Cl. 307—257 **6 Claims**



An electronic switching system, particularly for a base band of video signals, comprises a diode bridge with a signal source and a load connected to respective ends of a main diagonal and a pair of normally blocked switching transistors connected between respective ends of a control diagonal and opposite terminals of a d-c supply. The two switching transistors

are of opposite conductivity types and are cascaded to conduct simultaneously upon the application of an unblocking voltage to one of them, thereby causing a biasing current to flow in parallel through two pairs of bridge diodes in their forward direction. In the absence of this biasing current, the control diagonal is virtually short-circuited by a low-resistance path including either a pair of serially connected ancillary diodes with grounded junction or two ancillary transistors, also of opposite conductivity types, which are cut off in the conductive condition of the switching transistors.

3,796,895

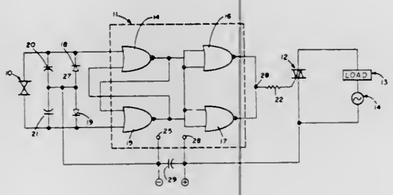
PIEZOELECTRICALLY CONTROLLED SOLID STATE SWITCHING CIRCUIT

Edmund T. Maclag, Middleburg Heights, Ohio, assignor to Vernitron Corporation, Great Neck, Long Island, N.Y.

Filed Nov. 20, 1972, Ser. No. 307,971

Int. Cl. H03k *3/00*

U.S. Cl. 307—278 **7 Claims**



A compact solid state switching circuit substantially independent of the rate of actuation, employing a piezoelectric bimorph element operative in conjunction with a bistable circuit to control the triggering of a thyristor.

3,796,896

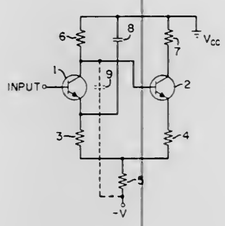
TRANSISTOR LOGIC CIRCUIT

Alan William Fulton, Naperville, and Ray Allen Reed, Bolingbrook, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 8, 1973, Ser. No. 330,866

Int. Cl. H03k *3/295, 19/30, 19/34*

U.S. Cl. 307—290 **3 Claims**



The logic circuit includes two transistors in a Schmitt trigger configuration in which control is exerted over the conduction state of the first transistor by input signals between its base and emitter and by positive feedback from the emitter of the second transistor to the emitter of the first transistor. Additional circuitry is connected between the emitter of the first transistor and a reference potential to decrease the switching time of this circuit by causing the conduction state of the first transistor to be controlled for a predetermined period of time by the input signals independently of feedback from the second transistor. Switching time of this circuit is further decreased by providing a differential amplifier on the outputs.

3,796,897

HIGH VOLTAGE GENERATING APPARATUS UTILIZING PIEZOELECTRIC TRANSFORMERS

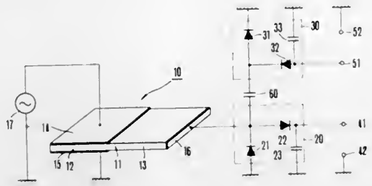
Yasunobu Sakurai, Kawasaki, Japan, assignor to Denki Onkyo Company, Ltd., Tokyo, Japan

Filed June 14, 1971, Ser. No. 152,521

Claims priority, application Japan, June 16, 1970, 45-59800

Int. Cl. H04r *17/00*

U.S. Cl. 310—8.1 **6 Claims**



In a high voltage generating apparatus comprising a combination of a piezoelectric transformer and a voltage multiplying rectifying circuit connected to the output electrode of the piezoelectric transformer there are provided a pair of independent voltage multiplying rectifying circuits for producing high DC voltages of the opposite polarities.

3,796,898

MAGNETIC TYPE TRANSMISSION ARRANGEMENT

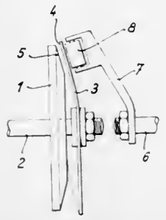
Hans Kleinwaechter, Kreuzstrasse 105, Loerrach, Germany

Filed Aug. 31, 1972, Ser. No. 285,518

Claims priority, application Germany, Sept. 1, 1971, 2143662

Int. Cl. H02k *49/00*

U.S. Cl. 310—103 **15 Claims**



A magnetic type transmission wherein a first shaft drives a coaxial second shaft at a greatly reduced speed through the intermediary of a flexible disk which is secured to the second shaft and has at one of its sides an annular surface located opposite the conical surface of a rigid conical frustum. The maximum diameter of the conical surface is less that the outer diameter of the annular surface in undeformed condition of the disk. Successive increments of the annular surface are caused to contact and to travel along the conical surface (whereby the disk rotates with the second shaft relative to the rigid frustum and the first shaft) in response to travel of at least one roller along the other side of the disk opposite the annular surface. The roller is mounted on and orbits about the axis of the first shaft. Alternatively, the conical frustum can attract the annular surface toward its conical surface; the roller is then replaced with one or more magnets which are driven by the first shaft and attract the adjacent portions of the disk so that at least one series of successive increments of the annular surface again travel along the conical surface and the disk rotates with the second shaft at a speed which is a function of the difference between the circumferential lengths of the annular and conical surfaces and the vertex angle of the conical surface.

3,796,899

PERMANENT MAGNET SPEED DETECTOR

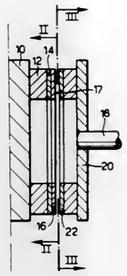
Marco Giachello, Turin, Italy, assignor to Fiat Societa Per Azioni, Turin, Italy

Filed July 27, 1972, Ser. No. 275,666

Claims priority, application Italy, Aug. 2, 1971, 69596/71

Int. Cl. H02k *21/12*

U.S. Cl. 310—156 **1 Claim**



This invention provides an improved magnetic angular speed detector in which an annular magnet having a number of magnetised sectors of alternate polarity rotates, with a member the speed of which is to be detected, relative to an annular coil formed with a number of loops, preferably as a printed circuit of zig-zag configuration. The circumferential width of the loops of the coil is equal to the circumferential spacing between like pole sectors of the annular magnet.

3,796,900

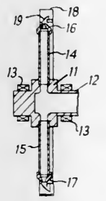
CURRENT TRANSFER IN HOMOPOLAR MACHINES

Ian Roderick McNab, Newcastle upon Tyne, England, assignor to International Research & Development Company, Limited, Fossway, Newcastle upon Tyne, England

Continuation of Ser. Nos. 64,997, Aug. 19, 1970, Pat. No. 3,681,633, and Ser. No. 97,163, Dec. 11, 1970, abandoned. This application Mar. 15, 1972, Ser. No. 234,979

Int. Cl. H02k *31/00*

U.S. Cl. 310—178 **15 Claims**



Current transfer in a homopolar dynamo-electric machine is effected by liquid metal which is caused to flow from the periphery of the rotor by centrifugal action and impinges on a stationary trough which provides a current transfer surface and serves to collect the liquid metal, which can then be recirculated to the rotor. The liquid metal is sprayed from an annular distribution trough which projects from the periphery of the rotor into the collecting trough.

3,796,901

TUBE ARRANGEMENT FOR RECORDING ULTRA-HIGH SPEED VARIATIONS IN HIGH INTENSITY LIGHT AND METHOD OF OPERATING THE SAME

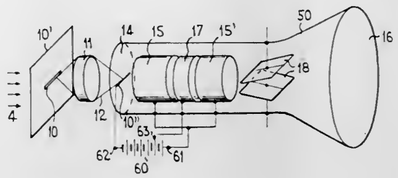
Guy Mayer, and Georg Wendt, both of 101 Bl. Murat, 16 eme, Paris, France

Continuation-in-part of Ser. No. 800,056, Feb. 18, 1969, abandoned. This application Sept. 16, 1971, Ser. No. 180,978

Claims priority, application France, Feb. 20, 1968, 68.140550

Int. Cl. H01j *31/50*

U.S. Cl. 313—65 R **6 Claims**



An electron tube arrangement for recording ultra-rapid variations in the intensity of light comprising means such operated that they impress upon the photoelectrons, as soon as emitted by the photocathode, an accelerating energy so high that the energy dispersion inherent to photoelectronic emission can be disregarded.

3,796,902

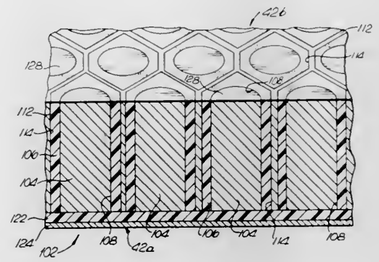
ELECTRON STORAGE DEVICE WITH LONG STORAGE TIME CAPABILITY

Walter E. Crandall, Malibu, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Dec. 15, 1971, Ser. No. 208,252

Int. Cl. H01j *31/08, 29/08*

U.S. Cl. 313—68 R **4 Claims**



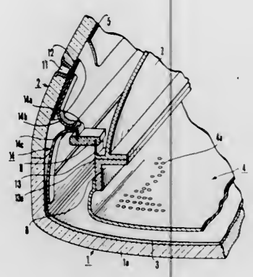
A storage tube target for use in a read and write storage tube system. A conductive plate member or shield contains openings into which conductive rods are inserted. Insulating dielectric material is used to space the rods from the shield. The conductive rods separated from the conductive shield by the dielectric material form individual capacitances making it possible to achieve exceptionally long storage times for the storage elements in this target. Moreover, the rods provide conductive connection between the write and read ends of the target.

3,796,903

CONNECTING MEMBER IN POST FOCUSING TYPE COLOUR PICTURE TUBES

Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 19, 1972, Ser. No. 273,326
Claims priority, application Japan, Aug. 11, 1971, 46/71362
Int. Cl. H01j *29/06*
U.S. Cl. 313—85 S 7 Claims



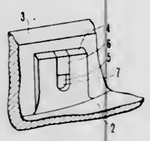
In a post focusing type colour picture tube of the type wherein a fluorescent screen is connected to an external terminal by means of a connecting member which is supported by a post focusing electrode through an insulating member, the insulating member is connected to the connecting member and the post focusing electrode member by welding, fusion or brazing instead of using a bonding agent which is liable to be broken by mechanical shock or aging.

3,796,904

COLOUR PICTURE TUBES

Masaaki Yamauchi, Mobara; Yoshiro Takezawa, Soka, and Kihachiro Koizumi, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 31, 1972, Ser. No. 302,598
Claims priority, application Japan, Nov. 1, 1971, 46-302598
Int. Cl. H01j *29/18*
U.S. Cl. 313—92 B 5 Claims



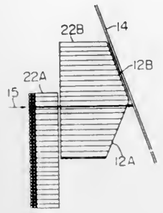
In a colour picture tube including a colour selection electrode assembly mounted on a panel close to a fluorescent screen, there are provided a plurality of projections on the inner surface of the vertical edge wall of the panel. Each projection is formed with a groove which is partially filled with a filler member to define a recess which is adapted to receive a mounting member of the colour selection tube.

3,796,905

CATHODE-RAY TUBE HAVING PRISM-SHAPED FIBRE OPTICS FACEPLATE

Kaoru Tomii; Eiichi Miyazaki, and Haruo Maeda, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Osaka, Japan

Filed Nov. 10, 1972, Ser. No. 305,578
Claims priority, application Japan, Nov. 10, 1971, 46-90186
Int. Cl. H01j *29/18*
U.S. Cl. 313—92 LF 1 Claim



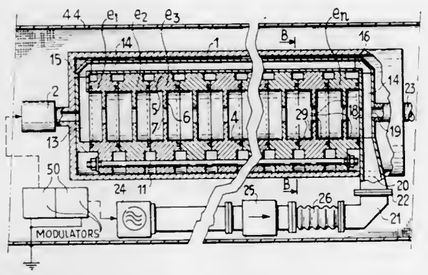
A cathode-ray tube including a fibre optics faceplate having two slanted front end faces angled from a plane perpendicular to the axes of the optical fibres of the faceplate. The fibre optics faceplate is cut into two pieces along an intermediate plane substantially perpendicular to the axes of the optical fibres.

3,796,906

LINEAR PARTICLE ACCELERATORS

Georges Henry-Bezy, and Hubert P. Leboutet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 25, 1972, Ser. No. 247,346
Claims priority, application France, May 4, 1971, 71.16046
Int. Cl. H01j *25/10*
U.S. Cl. 315—5.41 7 Claims



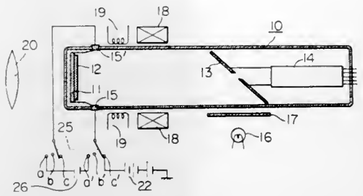
Linear particle accelerator of compact dimensions, intended for industrial or medical applications, comprising, in a vacuum enclosure, a particle source and an accelerating structure having an input coupler connected to a waveguide extending along the lateral and end walls of said accelerating structure, the waveguide portion located against the end wall of said structure being provided with two holes located along the beam path for the passage of accelerated particles; a hood arrangement groups all parts of the accelerating device (accelerator, UHF electromagnetic power source, voltage supplies).

3,796,907

APPARATUS FOR ERASING AN OPTICAL IMAGE STORED IN A STORAGE TUBE

Yoshihiro Uno, Kadoma City, Japan, assignor to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan

Continuation-in-part of Ser. No. 830,438, June 4, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 187,084
Claims priority, application Japan, June 7, 1968, 43-39789; July 8, 1968, 43-48615
Int. Cl. H01j *31/26*
U.S. Cl. 315—10 1 Claim



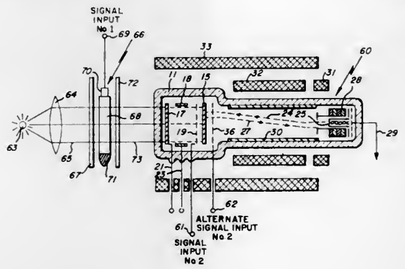
An image storage tube is provided, which comprises a transparent back plate coated on one face with a storage layer made of a cathodochromic material and on the other with an electrically resistive coating; an electron gun including a cathode adapted to be maintained substantially at the earth potential and spaced from the back plate; and a apparatus for erasing an image stored in the storage layer which includes an image erasing power source for supplying a current to the resistive coating, a switch means for connecting the erasing power source with the back plate when energized, a high voltage generator for applying to the back plate a high voltage relative to the cathode, and control means for alternatively energizing the switch means and the high voltage generator.

3,796,908

ELECTROOPTICAL CORRELATOR TUBE HAVING A REAR TARGET MESH ELECTRODE

Rudolf C. Hergenrother, West Newton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed July 22, 1968, Ser. No. 746,505
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 7 Claims



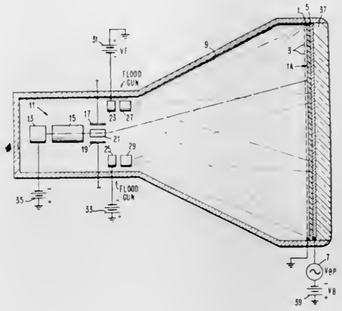
An electron discharge device of the image orthicon type having a storage target member and adjacent target mesh electrode provided with a substantially similar mesh electrode on the opposing side of the storage target member within the readout and signal multiplier section. For operation in an electrooptical correlation mode signal modulation voltages superimposed on either the target mesh electrode or rear target mesh electrode potentials will effectively control the induced charge distribuion on the storage target member produced by secondary electron emission. An electrooptical correlation system having two imputs to result in a single correlated output signal will result utilizing the present invention.

3,796,909

ELECTROLUMINESCENT STORAGE DISPLAY

Ifay F. Chang, Mahopac, and William B. Pennebaker, Carmel, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 15, 1972, Ser. No. 263,038
Int. Cl. H01j *29/41*
U.S. Cl. 315—12 11 Claims



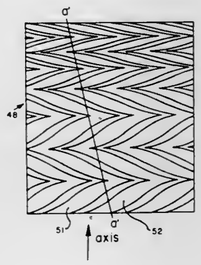
A bistable storage and display tube using an electroluminescent layer capable of storing an "on" charge pattern, created by an electron write gun, on the inner surface thereof. An electron flood gun is employed to clamp the potential of the inner surface of the electroluminescent layer, in the "on" regions where a charge pattern is created, to the potential of a collector electrode. An a.c. signal applied to the electroluminescent layer, via a transparent conductive layer in contact with the outer surface thereof, acts to develop an alternating field across the layer in the "on" regions, to thereby produce luminescence thereat.

3,796,910

ELECTRON BEAM DEFLECTION SYSTEM

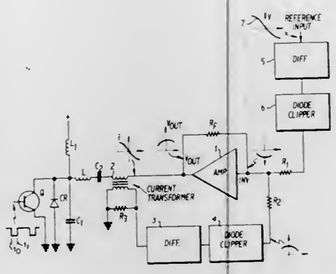
Edward F. Ritz, Jr., Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 4, 1972, Ser. No. 277,901
Int. Cl. H01j *29/70*
U.S. Cl. 315—17 19 Claims



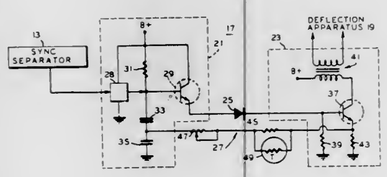
A focus projection and scanning electron beam deflection system that eliminates shading error while maintaining high resolution, good deflection sensitivity and low solenoid power consumption.

3,796,911
WAVEFORM CORRECTION FOR RESONANT RECOVERY DEFLECTION SYSTEMS
John W. Ensor, New Windsor, and Alfred E. Popodi, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 25, 1972, Ser. No. 292,208
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 GD **14 Claims**



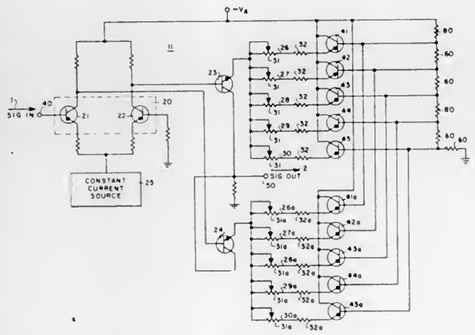
The electrical current waveform of a resonant recovery deflection amplifier is corrected to meet requirements of linearity in cathode ray tube displays. A correction amplifier receives as one input a voltage proportional to the derivative of the current in the deflection yoke, as derived from a current transformer connected in series with the deflection yoke, and as a second input a voltage comprising the derivative of a linearity corrected reference sweep voltage. The correction amplifier output is supplied to the deflection yoke circuit, the latter including an S-curve correction capacitor, thereby making the electrical current waveform more symmetrical. The system of the invention maintains the efficiency of a resonant recovery amplifier while providing a current waveform satisfying linearity requirements of precision displays.

3,796,912
VERTICAL DEFLECTION LINEARITY AND TEMPERATURE COMPENSATION CIRCUITRY
David Lee Funston, Batavia, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.
Continuation-in-part of Ser. No. 54,429, July 13, 1970, abandoned. This application Nov. 16, 1972, Ser. No. 307,151
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 R **11 Claims**



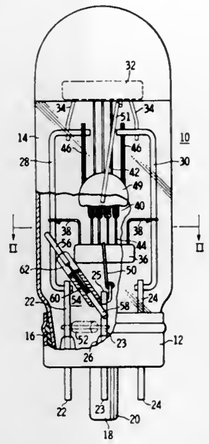
In a television receiver having a deflection yoke with vertical deflection windings whose resistance varies as a function of temperature and whose output signal linearity varies as a function of input signal linearity, vertical deflection circuitry includes an oscillator means coupled by a non-linear device to an output circuit means connected to a deflection yoke. Also, a feedback means couples the output circuit means to the oscillator means and includes a thermistor affixed to a heat source whose temperature varies in accordance with temperature variations of the deflection yoke.

3,796,913
DYNAMIC FOCUS WAVEFORM GENERATORS
Robert C. Harding; Lewis Leslie, both of Dallas, and Edward H. Olsen, Richardson, all of Tex., assignors to Seaco Computer-Display Incorporated, Garland, Tex.
Continuation of Ser. No. 115,441, Feb. 16, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,522
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 R **20 Claims**



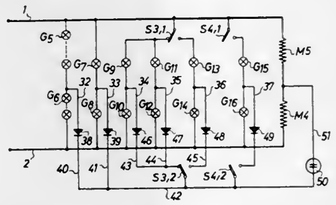
Disclosed is waveform shaping network responsive to an incoming signal of varying magnitude and polarity for producing an output signal which waveform or slope is altered, the network including a differential amplifier coupled to the input terminal having a variable level constant current source coupled thereto, the respective outputs of the differential amplifier being coupled to a pair of transistors having their collector outputs coupled to the output terminal of the network, the emitter terminals of each of the transistors respectively coupled to a pair of variable resistance networks, each of the variable resistance networks having a plurality of parallel resistive paths including a fixed and variable resistor and an emitter follower transistor for selectively and sequentially coupling each of the parallel resistive paths to the emitter of the coupled transistor for varying the slope of the signals provided at the output terminal in response to the breakpoint or conduction level of each of the emitter follower transistors. The waveform shaping network is embodied in a pair of focus generators respectively coupled to horizontal and vertical position generators which produce output signals proportional to the horizontal and vertical excursion of the electron beam of a CRT system, the output signals from the focus generators thereafter being coupled through an amplifier to the focus means for effecting the dynamic focus of the electron beam as it engages in its excursions across the CRT tube face.

3,796,914
COMBINATION FUSE-MOUNT SUPPORT FOR PROJECTION LAMPS
Aristide R. De Caro, Edison, and Nicholas J. Rainone, Clifton, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 2, 1970, Ser. No. 7,696
Int. Cl. H01k *1/66*
U.S. Cl. 315—74 **7 Claims**



A fused, four pin base, projection lamp having a combined stabilizing support wire and fuse for providing both alignment maintenance and electrical safety to an elaborate, multi-filament and reflector mount structure carried between a pair of laterally disposed upright rigid lead-in conductors.

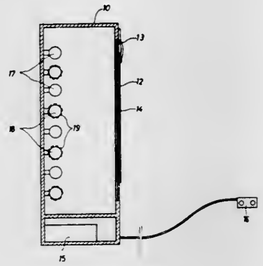
3,796,915
ILLUMINATION INSTALLATION
Horst Bickl, Munich; Joachim Lange, Unterhaching; Heinrich Neumann, Munich; Bernhard Goschin, Munich, and Alois Rieder, Munich, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Postfach, Germany
Division of Ser. No. 81,267, Oct. 16, 1970, Pat. No. 3,732,461. This application May 4, 1972, Ser. No. 250,314
Int. Cl. G05f *1/10*
U.S. Cl. 315—130 **3 Claims**

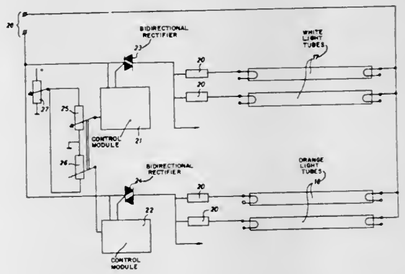


An illumination installation, in particular for lighting a transparent table or supporting step-by-step microfilm camera apparatus, such installation providing for the even illumination of a condenser of an image projecting apparatus. A plurality of lamps are distributed over the surface to be illuminated, the lamps being divided into at least two groups. In certain embodiments the current supply circuit for feeding the lamps is divided into two parallel circuits, each of which contains a resistor, there being an amplifier which scans the voltage drop at the resistors and operates an optical and/or acoustical signal transmitter upon an unbalance of the voltage drops through the respective resistors.

In another embodiment, the feeding of current to the lamps is divided into at least two parallel circuits, the passage of circuit through which is compared by a compensatory current transformer which controls a relay controlling an optical and/or acoustic signal transmitter and/or a switch controlling a further apparatus controlling circuit.

3,796,916
X-RAY IMAGE VIEWER
Maurice Hector De Belder, Mechelen; Romain Henri Bollen, Hove, and Luc Yves Natens, Berchem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium
Filed Jan. 12, 1971, Ser. No. 105,923
Claims priority, application Great Britain, Jan. 12, 1970, 1469/70
Int. Cl. H05b *37/02*
U.S. Cl. 315—151 **4 Claims**



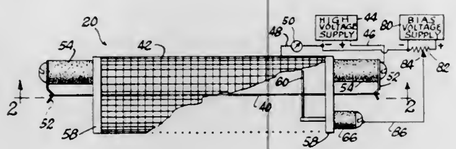


An X-ray viewer for coloured radiographic images. The apparatus comprises two groups of light sources with different colour temperature. The current through the groups can be progressively varied so as to increase or decrease the amount of irradiating light which lies in part of the visible spectrum which is complementary to the predominating wavelength in the image colour. The variation in the spectral composition causes no substantial change in the illumination of the image.

3,796,917
DEVICES FOR IONIZING RESIDUAL GASES IN VACUUM SYSTEMS
Donald Hiller, Deforest, Wis., assignor to National Electrostatics Corp., Middleton, Wis.
Filed Aug. 21, 1972, Ser. No. 282,329
Int. Cl. H01j *19/70, 41/00*
U.S. Cl. 317—4 **4 Claims**

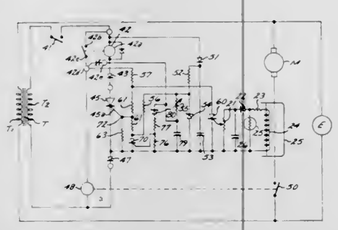
The disclosed ionizers are of the orbitron type utilizing a high voltage anode in the form of a wire or rod extending axially within an outer generally cylindrical electrode which may be in the form of a cylindrical conductive screen connected to the negative terminal of the power supply. One or more of the

ionizers are mounted within a vacuum space containing residual gas molecules to be ionized. The resulting ions may be propelled by electrostatic field forces to the cylindrical screen and also to the walls of the vacuum chamber where the ions may be absorbed or gettered by freshly deposited titanium or some other gettering material. By this mechanism of ion getter pumping, gas molecules are effectively removed from the vacuum space so as to improve the vacuum. In accordance with the present invention, electrons are injected into the space between the axial anode and the outer cylindrical electrode by an electron-emitting electrode which is typically in the form of a generally circular loop or ring encircling the axial anode and spaced inwardly from the cylindrical outer electrode in the radial electric field beween the inner and outer electrodes. The electron-emitting electrode is preferably energized with a direct current which causes heating of the electron-emitting electrode so that electrons are emitted thermionically therefrom. The current also produces an axial mag-



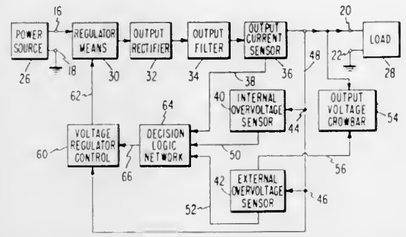
netic field in the space between the electron-emitting electrode and the anode. The combination of the radial electric field and the axial magnetic field causes a high percentage of the emitted electrons to go into orbits around the anode so that the electrons have extremely long mean-free paths before finally being attracted to the anode. In this way, the orbiting electrons produce a high degree of ionization of the residual gas molecules in the vacuum space. The axial magnetic field may be enhanced by an electromagnet or a permanent magnet disposed near the circular electron-emitting electrode and preferably aligned axially therewith. The electromagnet may take the form of a loop having one or more turns disposed near the electron-emitting electrode or a coil having a multiplicity of turns and preferably having a core of magnetic material. The permanent magnet may be generally cylindrical in shape and disposed axially. The ionizer may also be used to provide an ion gage in which the ion current to the cylindrical electrode is measured.

3,796,918
CURRENT OVERLOAD PROTECTION SYSTEM
Wesley V. DeForest; Bradford N. Hull, both of Long Beach, and Harold A. McIntosh, South Pasadena, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Mar. 26, 1973, Ser. No. 345,011
Int. Cl. H02h *7/085, 3/08*
U.S. Cl. 317—13 A **8 Claims**



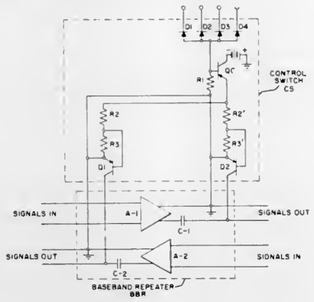
A current overload protection device including a relay for interrupting the primary conductor to an A.C. load and being maintained in a conductive state by the conduction of a first silicon controlled rectifier (SCR) controlling a control switch. The gating signal to the first SCR is connected in shunt by a combination of a second and third SCR which, when both are conducting, will shunt off the gating signal of the first SCR. The second SCR is rendered conductive by a current overload in the primary conductor while the third SCR is gated by a timing network initiated by the closure of the control switch. The timing network includes capacitive elements which must be bled off by interruption of signal before a new timing interval can be achieved.

3,796,919
POWER SUPPLY OVER VOLTAGE PROTECTION SYSTEM
Miles Carrington Johnson, Mount Holly, N.J., assignor to RCA Corporation, New York, N.Y.
Filed May 14, 1973, Ser. No. 359,903
Int. Cl. H02h *3/38*
U.S. Cl. 317—16 **7 Claims**



A power supply system is disclosed having a plurality of voltage regulator circuits connected in parallel with each other between a source of unregulated voltage and a load. Each of the voltage regulators includes an over voltage protection circuit whereby a particular regulator is taken out of service when the current in that regulator exceeds a certain level and the voltage across the load is at a first level. The regulator is not taken out of service when the current through the regulator is below the certain level and the voltage across the load is above the first level but below a second, higher, level.

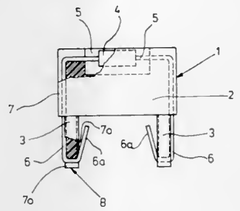
3,796,920
ARRANGEMENT FOR A REPEATERED POWER LINE CARRIER SYSTEM THAT PROVIDES PROTECTIVE RELAYING
Donald L. Hedrick, Madison Heights, and Elgie W. Wilmoth, Jr., Lynchburg, both of Va., assignors to General Electric Company, Lynchburg, Va.
Filed June 20, 1973, Ser. No. 371,835
Int. Cl. H02h *3/28, 3/30*
U.S. Cl. 317—28 R **1 Claim**



In power line carrier systems, repeaters are provided at station or switchyard locations between line sections to transmit

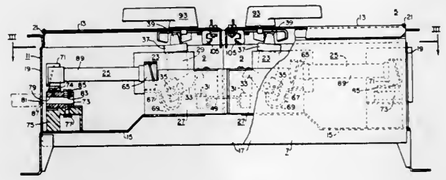
signals in both directions around the location. In some systems tones are transmitted to provide protective relaying. In such cases, it is desirable or essential that the tones be restricted to the desired line sections and not be transmitted by the repeaters to further line sections so that proper protective relaying is provided. A circuit arrangement is provided to block the repeaters at each location, either in response to a tone from a distant location or in response to a tone being produced at the one location for transmission to a distant location, and thus provide proper protective relaying.

3,796,921
LEAD SUPPORTING HOUSING FOR ELECTRICAL COMPONENT
Artur Fischer, Althelmer Str. 219, D-7241 Tumlingen, Germany
Filed June 14, 1973, Ser. No. 370,060
Claims priority, application Germany, June 30, 1972, 2232013
Int. Cl. H01r *9/02*
U.S. Cl. 317—99 **5 Claims**



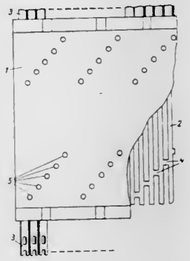
One or more electrically energized electric circuit components are provided each having two leads. One or more plug-in carrier module is provided having a body portion provided on one side with a recess dimensioned to accommodate the respective circuit component, and provided on the other side with two parallel projecting pins which are integral with the body portion and each provided on their outer, inner and free end faces with a continuous groove into which one of the leads of the circuit component can be inserted, so that when these pins are inserted into recesses of a circuit bore, the leads may contact with the same.

3,796,922
ENCLOSED SWITCHGEAR WITH IMPROVED INSULATING SUPPORT MEANS
Stephen A. Mrenna, and Glenn R. Thomas, both of Beaver, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Division of Ser. No. 88,380, Nov. 10, 1970, abandoned. This application Aug. 24, 1972, Ser. No. 283,616
Int. Cl. H02b *1/06*
U.S. Cl. 317—112 **3 Claims**



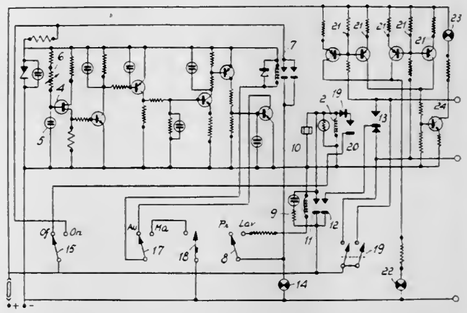
The herein disclosed enclosed switchgear comprises an enclosure and switchgear supported in the enclosure with efficient utilization of the available space within the enclosure. A fuse clip terminal connector is constructed and arranged to enable the positioning of a fuse close to an end wall of the enclosure. Two enclosed circuit interrupters are constructed and arranged to efficiently utilize available space and to provide adequate insulation between adjacent line terminal conductors. An improved cover interlock is provided to releasably lock the cover closed when the circuit interrupter is closed and to prevent closing of the circuit interrupter when the cover is only partially closed.

3,796,923
TERMINAL STRIP AND PROCESS FOR PRODUCING THE SAME
Gustav Gunnar Johansson, Huddinge, Sweden; Birger Roat Jorgensen, Tikob, Denmark; Folke Teodor Mogestad, Stockholm, and Thysk Rune Nils Anders, Skarholmen, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Sept. 7, 1972, Ser. No. 287,071
Claims priority, application Sweden, Sept. 10, 1971, 11549/71
Int. Cl. H02b *9/00*
U.S. Cl. 317—122 **4 Claims**



A terminal strip comprises a U-shaped bar of insulating material having a rib and two branches with soldering tags outwardly extending from the branches.

3,796,924
ELECTRIC CONTROL SYSTEM FOR ACTUATING IN A PREDETERMINED SEQUENCE A PLURALITY OF ELECTRO-MAGNETIC RELAYS
Ludovico Fontana, Bari, Italy, assignor to Technical Arco Establishment, Schaan, Liechtenstein
Filed Dec. 29, 1972, Ser. No. 319,701
Int. Cl. H01h *47/14*
U.S. Cl. 317—140 **10 Claims**



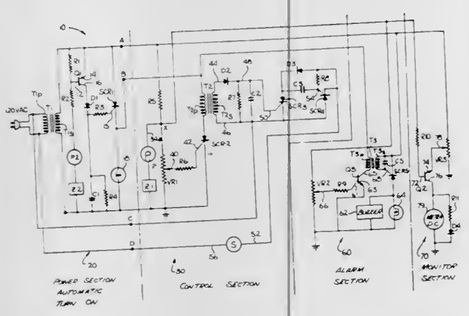
An electric control device for activating, according to a predetermined sequence, a plurality of electromagnetic relays, comprising an electronic program-switch connected to the relays by means of only three conductors only, two of

which provide control signals and the other being a common return. Suitable change-over switches are included, so that the electric pulses alternatively sent through the program-switch onto the two control conductors, give rise to the sequential activation of said relays. The program-switch comprises: a transistor electronic circuit for generating controlling the frequency, duration and stability of the pulses, and a rotary relay, which when energized by a servo-relay, switches the pulses, alternatively, between the two control conductors. The program-switch also includes too a secondary electronic circuit for the control of the connection of the relays to the program-switch, and for adjusting the operation of the relays, each relay being connected to the return conductor through a change-over switch acted on by the preceding relay.

3,796,925
AC SOLENOID CONTROL CIRCUIT

William C. Breeding, Arleta, Calif., assignor to Richard Heern, Santa Barbara, Calif.

Filed Aug. 17, 1972, Ser. No. 281,474
Int. Cl. H01h *47/32*
U.S. Cl. 317—157 **6 Claims**

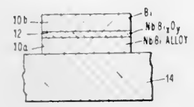


A solid state low power circuit for controlling an AC solenoid, comprising a power section and a control section. The control section provides a means which responds to the conductivity of a fluid, preferably a low impedance probe, and a means for switching AC power to a solenoid when the conductivity falls below a predetermined level. Typically, the present invention is used to control the concentration of a particular material in a fluid such as, for example, the concentration of a detergent in the water bath of a commercial dishwashing apparatus. The invented circuit monitors the concentration of the material in the fluid and activates an AC solenoid when additional material is required. The solenoid, when activated, causes the controlled material to be dispensed into the fluid. The power section is adapted to receive AC power from a conventional source; it provides low AC power to the control section. A preferred embodiment of the power section has an automatic turn-on capability provided by the use of the low impedance probe which detects the presence of the fluid (typically water) in the vicinity of its supply source. The present invention is adapted to operate with an electronic alarm and an electronic monitor section. The alarm section provides an audio and visual indication when the conductivity of the fluid, i.e., the concentration of the controlled material, reaches a predetermined alarm level. The monitor section provides a meter which, when properly calibrated, indicates the conductivity of the fluid and, therefore, the concentration of the controlled material therein. The present invention is characterized by a high degree of sensitivity to changes in the concentration of the controlled material, very sharp turn-on and turn-off of the solenoid without bounce, great accuracy or resolution of control, and relative insensitivity to temperature changes of the fluid.

3,796,926
BISTABLE RESISTANCE DEVICE WHICH DOES NOT REQUIRE FORMING

James N. Cole, Peekskill; Jerome J. Cuomo, Bronx; Robert B. Laibowitz, Peekskill, and Kyu C. Park, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,832
Int. Cl. H011 *3/16*
U.S. Cl. 317—234 R **6 Claims**

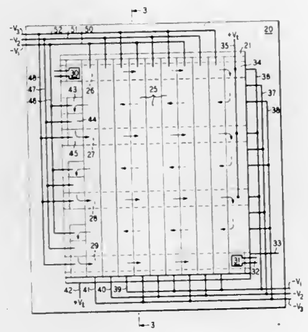


A switchable device using a doped insulator having two stable resistance states which does not require application of a forming voltage when being fabricated. The insulator is, for example, a multivalent oxide of 100–2,500 A thickness, containing impurities which provide conduction centers. Examples of these impurites include Bi, Sb, As, P, Ti, W, in amounts 0.05–10 percent by weight (10^{18}–10^{21} impurities/cm.^{3}). The insulator is contacted by two electrodes which can be metals, such as transition metals. A particularly good device is NbBi alloy — $NbBi_xO_y$—Bi.

3,796,927
THREE DIMENSIONAL CHARGE COUPLED DEVICES

Willard Sterling Boyle, Summit, and George Elwood Smith, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 16, 1970, Ser. No. 98,619
Int. Cl. H011 *11/14*
U.S. Cl. 317—235 R **10 Claims**

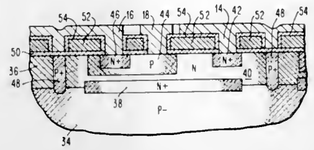


The specification describes a new class of semiconductor devices in which the charge is controllably translated in three dimensions. Translation control circuits can be disposed on both sides of the usual semiconductor wafer giving a new dimension in the design of logic and memory devices. In the exemplary specific embodiment the concept is described in connection with a shift register. Extension to logic circuits, e.g., to perform crossover and fan-in functions, is straightforward.

3,796,928
SEMICONDUCTOR SHIFT REGISTER

Ven Y. Doo; Irving T. Ho, both of Poughkeepsie, and Teh-Sen Jen, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,355
Int. Cl. H011 *19/00*
U.S. Cl. 317—235 R **7 Claims**

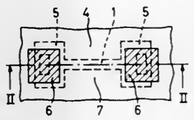


A semiconductor bucket brigade shift register having a plurality of cells, each cell embodying a transistor and a large capacitance element coupled across the base and the collector contacts of the transistor. Each cell, includes a first layer of insulating material bonded to the surface of the semiconductor body, a second layer of polycrystalline silicon overlying the first layer, a third layer of insulating material over the second layer, emitter, base, and collector contacts to the body of semiconductor material extending through the first, second, and third layers and insulated from the second layer, an electrical connection between the base contact and the second layer of polycrystalline material, and a relatively large surface area of a conductive layer in contact with the collector contact overlying at least in part the second layer.

3,796,929
JUNCTION ISOLATED INTEGRATED CIRCUIT RESISTOR WITH CRYSTAL DAMAGE NEAR ISOLATION JUNCTION

Keith Harlow Nicholas, 20, Vogan Close, Reigate; Ronald Alfred Ford, 2 Tilegate Way, Crawley, and Julian Robert Anthony Beale, 25, Windermere Way, Reigate, all of England

Filed Dec. 2, 1971, Ser. No. 204,229
Claims priority, application Great Britain, July 27, 1971, 58478/71
Int. Cl. H011 *19/00*
U.S. Cl. 317—235 R **10 Claims**



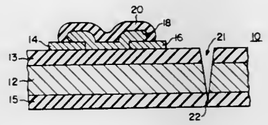
The present invention provides an improvement of the voltage linearity of a resistor in a semiconductor device by implanting neutral ions of suitable energy in a semiconductor body to introduce neutral ions and crystal lattice damage in the vicinity of a p-n junction therein to reduce the effective mobility of majority charge carriers in the vicinity of the junction.

3,796,930
THIN FILM HIGH VOLTAGE SWITCH

Derrick J. Page, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 15, 1968, Ser. No. 745,039
Int. Cl. H011 *11/14*
U.S. Cl. 317—235 R **6 Claims**

This disclosure is concerned with a charge controlled high voltage switch. The switch is a gateless field effect transistor which can be switched with a positive, negative or alternating voltage. "Gateless" as used in this disclosure to describe a

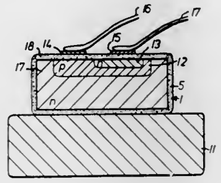


device, means a device which does not have a separate and distinct gate electrode.

3,796,931
P-N JUNCTION SEMICONDUCTOR DEVICE PROVIDED WITH AN INSULATING LAYER HAVING TWO STABLE RESISTANCE STATES

Hans-Jurgen Maute, Heilbronn-Brockingen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 25, 1970, Ser. No. 75,324
Claims priority, application Germany, Sept. 27, 1969, 1948895; Sept. 27, 1969, 6937807
Int. Cl. H011 *11/00, 15/00*
U.S. Cl. 317—235 R **11 Claims**

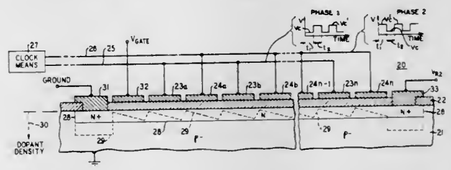


A semiconductor device comprising a monocrystalline semiconductor body having at least two regions of different types of conductivity and an insulating layer which is provided at the surface of the semiconductor body and which consists of a material which can assume states of different resistance.

3,796,932
CHARGE COUPLED DEVICES EMPLOYING NONUNIFORM CONCENTRATIONS OF IMMOBILE CHARGE ALONG THE INFORMATION CHANNEL

Gilbert Frank Amelio, Basking Ridge; Robert Harold Krambeck, South Plainfield, and Kenneth Arnold Pickar, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 28, 1971, Ser. No. 157,507
Int. Cl. H011 *11/14*
U.S. Cl. 317—235 R **29 Claims**



In Charge Coupled Apparatus laterally graded distributions of immobile charge are disposed under the electrodes and, optionally, between the electrodes to enhance the desired unidirectionality of charge transfer and, optionally, to enable the gap regions between electrodes to act as active storage

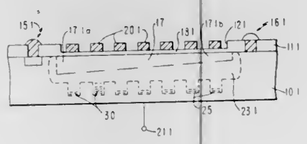
sites in the information channel. A graded distribution of immobile charge under an electrode provides a built-in electric field in the desired direction of charge propagation so that field-enhanced charge transfer, and concomitant improved speed, is effected. A graded distribution of immobile charge in a gap between electrodes provides a built-in, suitably asymmetric potential well in the gap. This built-in potential well in the gap can be used as a temporary storage site for charge carriers (much like any other potential well in a CCD) to enable one-phase operation and more compact devices.

3,796,933

SINGLE-PHASE CHARGE-COUPLED SEMICONDUCTOR DEVICE

Patrick C. Arnett, Jericho; Lawrence G. Heller, Essex Junction, and Charles H. Stapper, Jr., Jericho, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,339
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **9 Claims**



A charge-coupled semiconductor device for transmitting information in the form of mobile charges through a depletion layer which comprises an electrode structure on the surface of a semiconductor body that has within it an elongated region containing an impurity gradient. When the body is biased to create a depletion under the region and packets of charges are introduced into the body near the region, the charges will under the influence of the field gradients in the depletion layer be caused to pass through the body, in a known period of time.

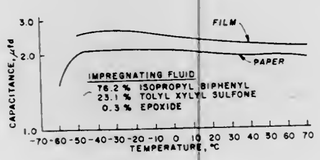
If due to space charge broadening the charge packets slowly spread out, they may be regrouped by applying a single clock pulse to the electrode structure, which will create sharply defined potential wells under the impurity gradient. The device is particularly useful as both a delay line and as a simple, fast, reliable, memory array.

3,796,934

CAPACITOR WITH NON-HALOGENATED IMPREGNANT

Ralph H. Munch, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 232,152, March 6, 1972, abandoned. This application Aug. 16, 1972, Ser. No. 281,068
Int. Cl. H01g *3/04*
U.S. Cl. 317—259 **4 Claims**



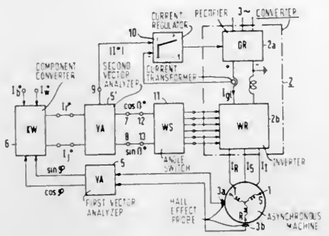
Electrical capacitors are impregnated with liquid dielectric compositions comprising mixtures of diaryl sulfones and halogen-free aromatic organic compounds.

3,796,935

APPARATUS FOR THE FIELD-RELATED REGULATION OF ASYNCHRONOUS MACHINES

Felix Blaschke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 226,141, Feb. 14, 1972, abandoned. This application Jan. 29, 1973, Ser. No. 327,869
Claims priority, application Germany, Feb. 12, 1971, P 21 06 789.0
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **8 Claims**



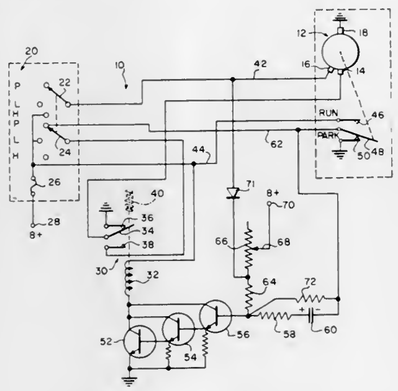
An asynchronous machine is supplied with impressed stator current by an inverter in a field-related manner as disclosed in copending application Serial No. 63,073. A definite commutation sequence is achieved by utilizing a sine-cosine oscillator for cyclically driving the control paths of the inverter. The frequency of the oscillator is limited to values of one sign. An additional angle correction control eliminates the commutation error angle.

3,796,936

WINDSHIELD WIPER CONTROL DEVICE

Robert W. Kearns, 9725 Lookout Pl., Gaithersburg, Md.

Division of Ser. No. 84,451, Oct. 27, 1970, which is a division of Ser. No. 815,060, April 10, 1969. Pat. No. 3,581,178. This application Dec. 15, 1972, Ser. No. 315,401. The portion of the term of this patent subsequent to May 25, 1988, has been disclaimed.
Int. Cl. B60s *1/08*
U.S. Cl. 318—443 **7 Claims**



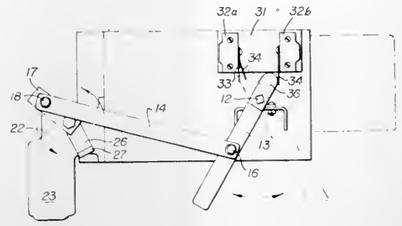
An electric control device controlling a wiper motor to operate windshield wiper blades intermittently with a dwell period between successive wiping cycles. The wiper motor current is carried by relay contacts and a solid state timing circuit controls the energization of the relay coil.

3,796,937

MOTOR-DRIVEN LINE TRANSFER CONTROL

Erich W. Loffler, and Hans Kruger, both of 2466 Bay Rd., Redwood City, Calif.

Continuation-in-part of Ser. No. 238,280, March 27, 1972, Pat. No. 3,736,054. This application May 10, 1973, Ser. No. 359,018
Int. Cl. H01h *3/02*
U.S. Cl. 318—468 **3 Claims**



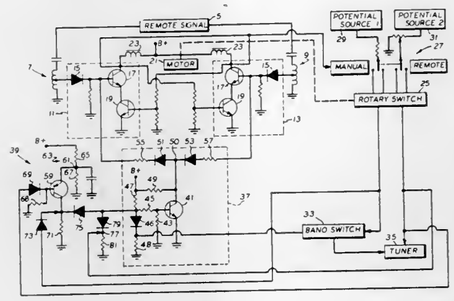
An oscillatory shaft line switch is driven by means of a motor which is responsive to load line voltage emergencies. A lever on the shaft of the line switch is connected by a link to a second lever on the shaft of a gear reduction box of the motor. The second lever is loose. Fixed to the shaft of the box is a crank having a bent outer end which turns the second lever as the motor turns. The first mentioned shaft has a contactor which engages either of two micro-switches to de-energize the motor after the line switch has been thrown in either direction. The loose connection of the second lever enables the first lever to be thrown by hand when necessary.

3,796,938

REMOTE CHANNEL OVER-RIDE SYSTEM

David Lee Funston, Batavia, N.Y., assignor to GTE Sylvania, Seneca Falls, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,491
Int. Cl. G05b *11/01*
U.S. Cl. 318—467 **9 Claims**



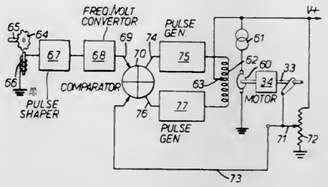
A receiver includes a remote-manual switching means and bi-directional motor means responsive to remote signals for driving a rotary switching means to provide potentials representative of selected signal channels for a tuner. A sustaining circuit serves to maintain operation of the motor means intermediate signal channel selection and a remote channel over-ride system compares the potential of the selected signal channel with a reference potential to control the sustaining circuitry and the motor means whereby signal channels may be adjusted to cause over-ride thereof by the motor means.

3,796,939

DEVICES FOR MOVING CAMS RELATIVE TO THEIR DRIVING SHAFTS

Lodovico Raggi, Milan, Italy; David A. Parker, Rugby, and John Noddings, Coventry, both of England, assignors to Associated Engineering Limited, Leamington Spa, Warwickshire, England

Filed Dec. 4, 1972, Ser. No. 311,473
Claims priority, application Great Britain, Dec. 2, 1971, 55,902/71
Int. Cl. G05b *11/28*; **F01l** *1/34*
U.S. Cl. 318—599 **16 Claims**



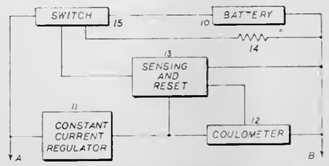
A cam is capable of angular movement on a cam shaft. A disc eccentrically mounted on the shaft is driven from the shaft via a pin connection and drives the cam by a similar connection. The degree of eccentricity of the disc, which is adjustable, determines the acceleration and deceleration given to the cam as it rotates. There is disclosed an electro-mechanical servo system, responsive to the speed of an engine incorporating the cam and cam shaft, for controlling the eccentricity of the disc in dependence on the speed. Also disclosed is an electronic servo system for the same purpose.

3,796,940

BATTERY POWER SUPPLY, MAINTENANCE FREE

Robert E. Mauch, and Robert I. Sarbacher, both of Santa Monica, Calif., assignors to John C. Bogue, Santa Monica, Calif.

Filed Dec. 27, 1971, Ser. No. 212,178
Int. Cl. H02j *7/00*
U.S. Cl. 320—14 **16 Claims**



A power supply which automatically provides the necessary maintenance cycling for secondary batteries according to a predetermined schedule is disclosed. The power supply is designed to eliminate the detrimental effects of long idle periods during which the battery is not used. This system will, at a predetermined time, or at the end of a predetermined period, cause the battery to go through a discharge-charge cycle. Several embodiments of the invention are disclosed.

3,796,941

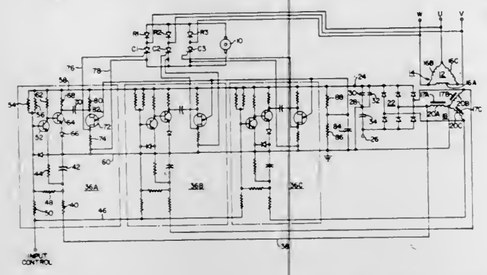
FIRING CIRCUITS FOR THREE-PHASE RECTIFIER EMPLOYING CONTROLLED RECTIFIER ELEMENTS

George E. Danz, Williamsville, and Alan F. Wilkinson, Jr., Clarence Center, both of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 87,754, Nov. 9, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,434
Int. Cl. H02m *7/00*
U.S. Cl. 321—5 **16 Claims**

A low-cost linear gate pulse generator and power supply designed for use in gating controlled rectifiers and, in particu-

lar, controlled rectifiers in a three-phase bridge arrangement. The power supply portion supplies power to both the gating circuits and auxiliary control circuits and necessitates the use



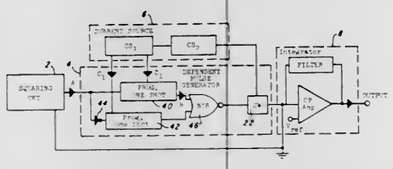
of only three low-cost single-phase transformers unlike other circuits which historically use separate transformers for control power, timing waves and pulsing.

3,796,942

INTEGRATED CIRCUIT FREQUENCY TO VOLTAGE CONVERTER

Byron Glen Bynum, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,332
Int. Cl. H02m *7/00*
U.S. Cl. 321—6 **8 Claims**



Disclosed is a frequency to voltage converter especially suitable for integrated circuit application in providing a DC signal having magnitude related to and varying with the frequency of a variable input signal over a wide range of device and environmental conditions. A squaring circuit in response to the variable input signal provides a first train of squared pulses to a pulse generator which generates a second train of pulses time displaced therefrom. A first current generator controls the pulse generator so as to provide the second train of pulses with a predetermined pulse width. A second current source tracking the first current source is responsive to the second pulse train for generating a third pulse train in direct frequency proportion thereto having an amplitude variable so as to compensate for pulse width changes. The third pulse train is accordingly comprised of pulses of substantially constant energy. An integrator thereupon integrates the regulated third pulse train into a DC signal of magnitude varying with the frequency of the input signal.

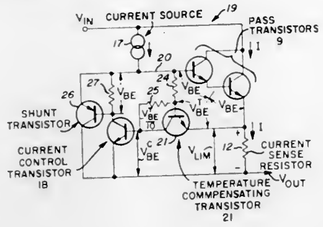
3,796,943

CURRENT LIMITING CIRCUIT

Carl T. Nelson, Sunnyvale, and Robert C. Dobkin, Menlo Park, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 2, 1973, Ser. No. 319,994
Int. Cl. G05f *1/58*
U.S. Cl. 323—9 **22 Claims**

A current sense voltage is derived which is proportional to the current to be limited. The current sense voltage is applied in phase opposition to a difference voltage obtained by opposing the base-to-emitter diode voltage drops of a temperature compensating transistor and a current control transistor for substantially reducing the value of the current limit sense voltage necessary to cause current limiting. Temperature compensation is obtained by superimposing a selected temperature



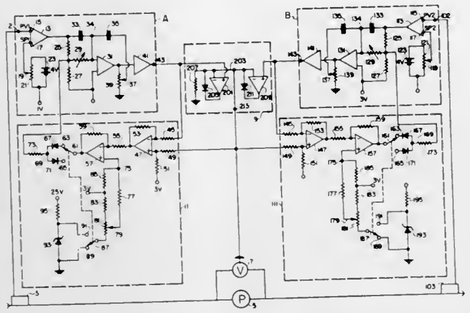
compensating portion of the base-to-emitter diode drop of a temperature compensating transistor on the base-to-emitter turnon voltage of the current control transistor, whereby any desired temperature coefficient including zero is obtained for the current limiting circuit over the operating temperature range of −55° C to +125° C.

3,796,944

MULTI-CONTROLLER APPARATUS WITH CONTROLLER LIMITING

Philip W. Bur, III, Horsham, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 2, 1973, Ser. No. 356,344
Int. Cl. G05f *1/00*
U.S. Cl. 323—100 **9 Claims**



A process controlling apparatus includes a plurality of controllers wherein a selected controller regulates a single controlled element. The input signal of an amplifier in the unselected controller, is so limited by an associated limiting circuit that the output signal thereof does not deviate more than a predetermined percentage from the output signal of the selected controller which is regulating the controlled element.

3,796,945

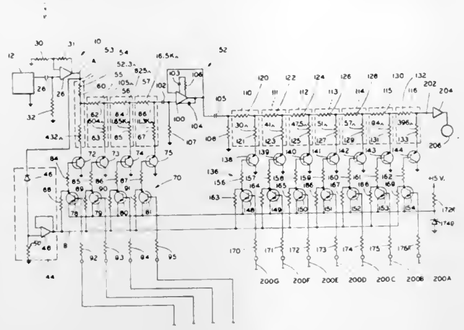
DIGITAL ATTENUATOR WHEREIN TRANSISTOR SWITCH MEANS ARE BIASED BY RECTIFIER CIRCUIT

Stanley Feldman, Evanston, and William J. Mellenthin, Arlington Heights, both of Ill., assignors to Beltone Electronics Corporation, Chicago, Ill.

Filed May 15, 1973, Ser. No. 360,555
Int. Cl. H01p *1/22;* **H04r** *29/00*
U.S. Cl. 323—74 **9 Claims**

The disclosure describes a digital attenuator having non-isolated, L-type attenuator sections. The sections comprise shunt

legs that are switched to ground potential by bipolar NPN transistors. An adder circuit and a decoder circuit provide switching signals that enable predetermined attenuator sections through PNP transistors that are connected to the NPN



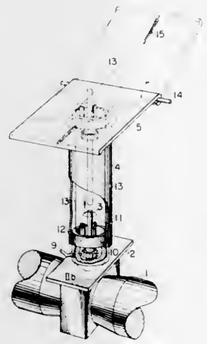
transistors. A rectifier circuit produces a half-wave signal that biases the NPN transistors during their off state to prevent audio signals having a large magnitude from switching on the NPN transistors.

3,796,946

NUCLEAR MAGNETIC RESONANCE SPECTROMETER

Yoshiharu Utsumi, and Katsunobu Abe, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 211,877
Claims priority, application Japan, Dec. 25, 1970, 45-117615
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **10 Claims**



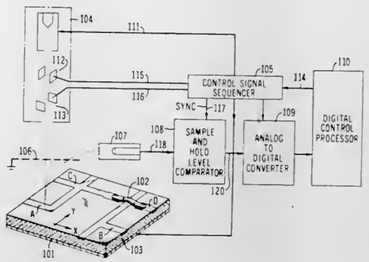
A sample intake means for a nuclear magnetic resonance spectrometer having a sample tube including a sample to be analyzed, a holder for supporting the sample tube, a guide provided between an inlet of the spectrometer case and a nuclear magnetic resonance signal detector for guiding the holder, strings for hanging the holder from a cover provided on the inlet so that the holder moves up and down with the opening and closing motion of the cover.

3,796,947

ELECTRON BEAM TESTING OF FILM INTEGRATED CIRCUITS

William Lee Harrod, Oak Brook; David Karl Hindermann, Naperville, and John Michael Sebeson, Chicago, all of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley, Calif.

Filed Feb. 27, 1973, Ser. No. 336,261
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **6 Claims**



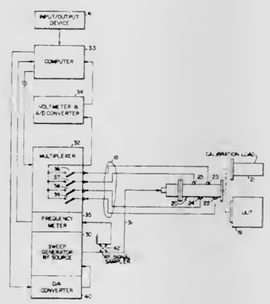
The application discloses apparatus for testing integrated circuit boards for continuity and isolation of conductive paths on the boards without physical connections to the elements under test. The electrical states of the elements of a board are obtained by observation of the time dependence of secondary electron emission when the elements are the targets of a controllable electron beam which is selectively addressed to the elements under test.

3,796,948

STANDING WAVE DETECTOR

Frederick L. Wentworth, Baldwin, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 25, 1972, Ser. No. 274,930
Int. Cl. G01r *27/04*
U.S. Cl. 324—58 B **8 Claims**



A system and a method for determining the impedance of a given microwave device by measuring the standing wave in a transmission line is disclosed. A section of transmission line having a plurality of field-sensing probes therein is disposed between an RF signal source and the device. The output signals of these probes are sampled by the system, and the device impedance in terms of the reflection coefficient and the standing wave ratio are calculated using a mathematical process and a digital computer. The frequency of the RF source is variable permitting the measurements to be made over a predetermined frequency range.

3,796,949

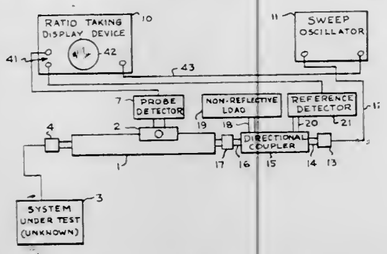
SLOTTED LINE WITH MATCHED FEED DETECTOR

Harmon W. Banning, Durham, Conn., assignor to Andrew Alford, Winchester, Mass.

Filed Jan. 22, 1973, Ser. No. 325,232

Int. Cl. G01r *27/04*

U.S. Cl. 324—58 B **10 Claims**



In a high frequency system for measuring standing wave ratio (SWR) measurements with a slotted transmission line having a probe moveable along the slotted transmission line and a stationary detector at the feed end of the slotted line that is intended to duplicate or match the moveable probe so that signals at the stationary detector and moveable probe when compared yield a signal representative of the SWR in the line, the stationary detector is a directional coupler for which the signal attenuation versus frequency characteristic from the primary to the secondary line thereof, matches the signal attenuation versus frequency characteristic from the feed end of the slotted line through the moveable probe. Thus, the frequency response of the matched detectors at the outputs of the moveable probe and directional coupler are substantially identical except for variations along the slotted line caused by the standing wave being measured.

3,796,950

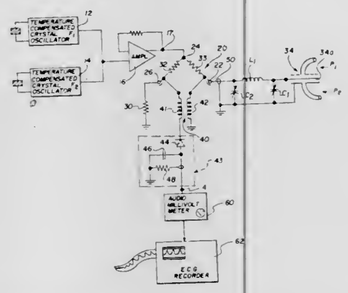
MEASUREMENT APPARATUS

John A. Kuecken, Pittsford, N.Y., assignor to Radionics, Inc., Webster, N.Y.

Filed June 18, 1973, Ser. No. 370,666

Int. Cl. G01r *27/02*

U.S. Cl. 324—61 R **9 Claims**



A measurement apparatus is disclosed which is adapted to make physical measurements as a function of variations in a parameter includes means for producing a modulated AC signal, a bridge circuit coupled to the AC signal and having a plurality of terminals, a reference impedance coupled to one terminal of the bridge circuit, a probe member coupled to another terminal of the bridge circuit and defining an impedance parameter which varies as a function of the variations in the measurement parameter, and output means including an envelope detector being coupled to still another terminal of the bridge and adapted to produce an output signal indicative of the physical measurement which is related to the probe member impedance parameter.

3,796,951

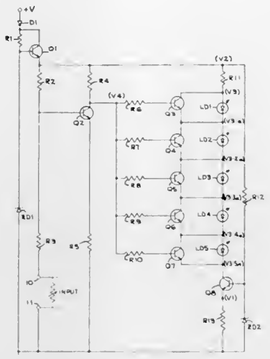
SOLID STATE ELECTRONIC GAUGE

Craig L. Joseph, San Jose, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed June 28, 1971, Ser. No. 157,237

Int. Cl. G01r *19/00, 19/16*

U.S. Cl. 324—122 **5 Claims**



A gauge comprised of a series of light emitting diodes (LEDs) connected in series to a constant current source with the number of consecutively arranged LEDs which are turned on being indicative of the level of an analog signal. A series of serially connected transistor switches are arranged with one transistor connected in parallel across each light emitting diode, and the analog signal is utilized to selectively and serially turn on the transistor switches to thereby short circuit an equivalent number of the LEDs whereby the magnitude of the analog signal to the switches is inversely proportional to the number of diodes which are turned on.

3,796,952

FREQUENCY-SELECTIVE CALIBRATED AMPLITUDE-MEASURING SYSTEM

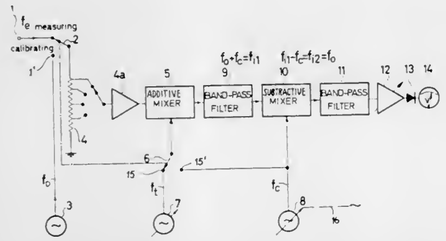
Herbert Bayer, Reutlingen, Germany, assignor to Wandel u. Goltermann, Reutlingen, Germany

Filed Apr. 24, 1972, Ser. No. 246,950

Claims priority, application Germany, Apr. 23, 1971, P 21 19 898.1

Int. Cl. G01r *1/02, 1/38*

U.S. Cl. 324—130 **6 Claims**



An incoming signal voltage of frequency f_e, whose amplitude is to be measured, is additively heterodyned in a first mixer with a locally generated variable test frequency f_t to provide a first beat frequency $f_{t1} = f_e + f_t$ clearing a first filter with a pass band including that beat frequency. In a second mixer, preceding a second filter with a narrow pass band centered on a second beat frequency f_{t2}, the first beat frequency f_{t1} is subtractively heterodyned with a locally generated ancillary frequency f_c of magnitude $f_{t1} - f_{t2}$ to provide the frequency f_{t2} which passes the second filter and reaches an amplitude indicator through an adjustable amplifier or attenuator. In a calibrating position, a fixed reference frequency $f_o = f_{t2}$ from a local oscillator is substituted for the input frequency f_e whereas the test frequency f_t is replaced by the ancillary frequency f_c in the first mixer.

3,796,953

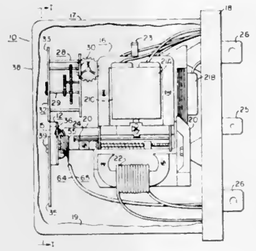
SOLID STATE POTENTIAL INDICATOR FOR WATTHOUR METERS

William J. Zisa, and Theodore M. McClelland, III, both of Cary, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 23, 1971, Ser. No. 201,470

Int. Cl. G01n *11/02*

U.S. Cl. 324—137 **3 Claims**



A solid state potential indicator for watthour meters is mounted on the front of the meter movement. Solid state light emitters are oriented for direct viewing within the normal meter reading viewing area.

3,796,954

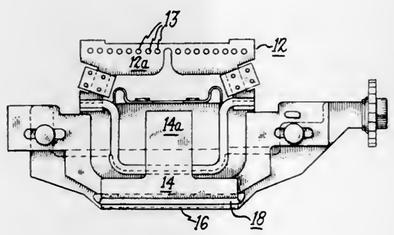
WATTHOUR METER ASSEMBLY HAVING AN AUXILIARY LAG PLATE MOUNTED ON A POTENTIAL FLUX RETURN BAR

Alexander M. McQuarrie, Rochester, N.H., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 24, 1972, Ser. No. 283,389

Int. Cl. G01r *11/02*

U.S. Cl. 324—138 **5 Claims**



An induction type watthour meter is provided with a variable resistance lag loop mounted on its potential stator, and an auxiliary lag plate, having a fixed resistance, rigidly mounted around a potential flux return bar of the meter adjacent the periphery of the rotatable induction disc of the meter. The structure and mounting arrangement of the auxiliary lag plate is such that it affords sufficient over-lagging effect to enable a meter to be adjusted so it can accurately measure power that is supplied to loads at widely different frequencies.

3,796,955

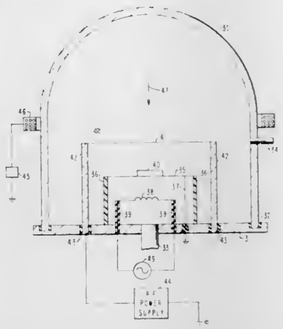
GATE OXIDE EARLY FAIL SCREENING TEST UTILIZING A LOW PRESSURE PLASMA

Arup Bhattacharyya, Essex Junction, and John B. Dinklage, South Burlington, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1971, Ser. No. 203,385

Int. Cl. G01r *31/26, 31/12*

U.S. Cl. 324—158 T **11 Claims**



A method of accelerating early gate oxide failures in Field Effect transistor devices. This method uses a d.c. glow discharge or plasma as a means for electrically inducing, on the gate electrode of such Field Effect Transistors, an electrical potential sufficient to stress the gate oxide under the electrode to a level higher than that seen in normal service. This stressing of the gate oxide is sufficient to cause in a short period of time the failure of those gate oxides which would normally fail within the first few hundred hours of use in the field. The described method accomplishes this very desirable result without affecting those other gate oxides which will perform satisfactorily in service.

This use of a plasma or glow discharge to induce the stressing voltage of the gate oxide eliminates the need of mechanically contacting each and every unit. The method of the invention, therefore, not only permits the batch stressing of such units during the production cycle, while the units are still incorporated in a wafer, but further allows subsequent testing of the units whether they be individual FET devices or whether they be corporated in an integrated circuit design.

3,796,956

BLOCK SYNCHRONIZATION SYSTEM OF MULTINARY CODES

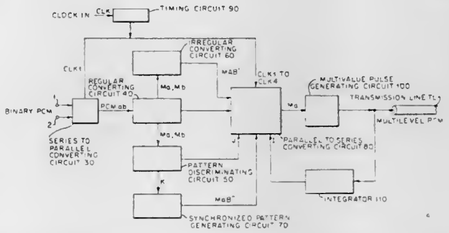
Isao Fudemoto; Masakatsu Sakai, and Yozo Fujisaki, all of Tokyo, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 20, 1971, Ser. No. 210,085

Claims priority, application Japan, Dec. 23, 1970, 45/117122; Dec. 26, 1970, 45/125253

Int. Cl. H04b *1/00*

U.S. Cl. 325—38 A **2 Claims**



A multinary transmission system transmits multinary code blocks converted in block unit from binary codes. When two

identical code blocks are to be transmitted continuously, the succeeding code block is converted into a code block having special patterns so that the same pattern as the patterns of the preceding code block may not appear in the succeeding code block. Thus, the multinary code block is so constituted that no specific two codes may be generated continuously and transmission is such that the specific two codes may be continuous only at the break point of the block. Block synchronization is provided at the receiver by detecting the special patterns or by detecting two specific continuous codes.

3,796,957

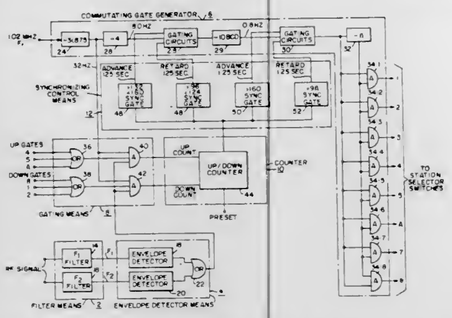
AUTOMATIC IDENTIFICATION AND SYNCHRONIZATION CIRCUIT

Edward J. Jackson, and Robert F. Linfield, both of Boulder, Colo., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 4, 1972, Ser. No. 250,214

Int. Cl. H04h *3/00*

U.S. Cl. 325—58 **9 Claims**



In a receiver an automatic signal identification and synchronization circuit is utilized to identify the transmitting station and to synchronize internally generated commutating gates with the received signal. The received RF signal format is compared with a selected series of commutating gates by utilizing an up/down counter and a series of synchronizing control gates to either advance or retard the series of internally generated gate pulses. By solely retarding or advancing the commutating gates synchronization with the incoming RF signal format is achieved. A filter and envelope detector is utilized in the identification and synchronization circuit which passes no signal in a high noise environment thereby eliminating false synchronization.

3,796,958

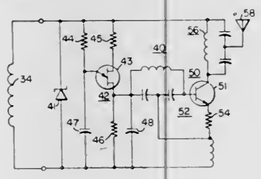
TRANSMITTER CIRCUIT

Paul M. Johnston, Greensburg; Raymond W. MacKenzie, Pittsburgh, both of Pa., and John R. Reeves, Orange, Conn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 14, 1972, Ser. No. 271,880

Int. Cl. H04b *1/04*

U.S. Cl. 325—185 **5 Claims**



The invention pertains to an improved transmitter circuit design which responds to a DC input pulse by generating an AC signal of a predetermined frequency and exhibiting a pulse width corresponding to the pulse width of the DC input pulse. The AC signal is used to frequency modulate an RF carrier signal and the resulting frequency modulated RF carrier signal is transmitted for remote reception by a radio receiver circuit which functions to recover the original AC signal and pulse width information.

3,796,959

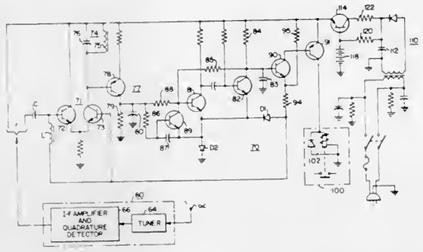
RECEIVER-DISCRIMINATOR CIRCUIT

Raymond W. MacKenzie, Pittsburgh; Paul M. Johnston, Greensburg, both of Pa., and John R. Reeves, Orange, Conn., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 14, 1972, Ser. No. 271,878

Int. Cl. H04b *1/16*

U.S. Cl. 325—345 **3 Claims**



This invention pertains to circuitry for responding to a transmitter RF signal having impressed thereon an AC pulse signal wherein a radio receiver circuit acts to remove the RF carrier signal and supply the AC pulse signal to a discriminator circuit. The discriminator circuit is designed to respond to a fixed predetermined frequency and if the frequency of the AC pulse signal corresponds to said fixed predetermined frequency, the signal is amplified and applied to a pulse width detecting circuit. The pulse width detecting circuit further analyzes the AC pulse signal to determine if the pulse width of the signal falls within predetermined maximum and minimum limits. The recognition of an AC pulse signal exhibiting the predetermined frequency and pulse width characteristics results in the generation of an output signal.

3,796,960

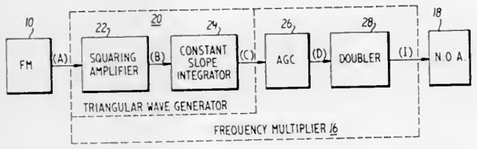
ELECTRONIC SIGNAL MULTIPLIER

Joseph G. Frizzell, and Jack R. Hulme, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sept. 5, 1972, Ser. No. 286,429

Int. Cl. H03b *19/00*

U.S. Cl. 328—20 **12 Claims**



A frequency multiplier for frequency variable electronic signals for use with a fluid flow measuring system. The generally sinusoidal output signal from a fluid flowmeter is converted to a square wave signal of the same frequency. The square wave signal is integrated to form a triangular wave signal variable in both amplitude and frequency with the frequency of the square wave signal. The peak-to-peak amplitude of the triangular wave signal is then adjusted to a

predetermined value irrespective of input signal amplitude or frequency in an automatic gain control circuit, and the frequency of the triangular wave is thereafter doubled to the desired value by cascaded doubling stages. Each doubling stage includes a two-channel half-wave rectifier, means for shifting the bias of the rectified waves, and means for both inverting one of the bias shifted waves for combining the inverted wave with the other bias shifted wave to center the combined wave about a zero volt axis. In an alternative embodiment, with the output signal from the flowmeter in the form of a series of constant amplitude, constant width, variable recurrence rate pulses, a reversible ramp generator is used to form a triangular wave signal having an amplitude and a frequency variable with the frequency of pulse recurrence. The peak-to-peak amplitude of this triangular wave is likewise adjusted to a predetermined constant value and the frequency multiplied in cascaded doubling stages as described above.

3,796,961

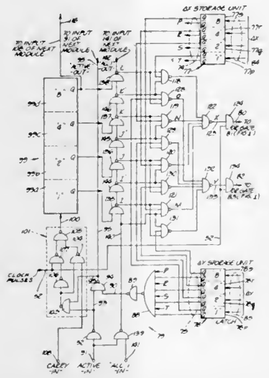
PULSE TRAIN CONVERSION SYSTEM

Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, Valhalla, N.Y.

Division of Ser. No. 117,582, Feb. 22, 1971, Pat. No. 3,725,654. This application Oct. 31, 1972, Ser. No. 302,541

Int. Cl. H03k *1/16, 3/72*

U.S. Cl. 328—61 **14 Claims**



A pulse train conversion system includes a binary counter having a plurality of stages which store a count, the count being advanced in response to a clock pulse. The counter stages are respectively connected to counter inputs of a logic circuit, digital value inputs of the logic circuit being connected to registers having a plurality of stages. The logic circuit provides an output pulse in response to the output of a particular stage of the counter being false and outputs of all stages of the counter of lesser significance than the particular stage being true concurrently with a stage of the register, corresponding to the particular stage of the counter, being true.

3,796,962

PHASE LOCK LOOP AND FREQUENCY DISCRIMINATOR EMPLOYED THEREIN

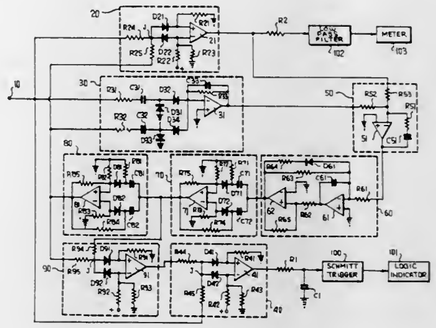
Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.

Division of Ser. No. 181,434, Sept. 17, 1971. This application Oct. 6, 1972, Ser. No. 295,727

Int. Cl. H03d *13/00*

U.S. Cl. 328—133 **2 Claims**

A phase lock loop employs a frequency discriminator having a relatively slow response to pull a voltage controlled oscillator into frequency lock with an input signal. After frequency lock the output of the frequency discriminator is nulled and a phase detector becomes effective to maintain phase lock. The frequency discriminator utilizes an operational amplifier to which both the input and oscillator signals are capacitively coupled through respective oppositely poled diode gates. A feedback capacitor, which is much larger than the input



coupling capacitors, has charge transferred thereto from each coupling capacitor during alternate half cycles of the input and oscillator signals. The net charge across the feedback capacitor is a measure of the frequency difference between the input and oscillator signals, and is zero at frequency lock.

3,796,963

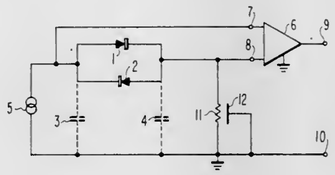
SIGNAL LIMITER FOR EXALTED CARRIER AM DETECTOR

Alvin Reuben Balaban, Raritan, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,796

Int. Cl. H03d *1/04, 1/10, 1/18*

U.S. Cl. 329—101 **8 Claims**

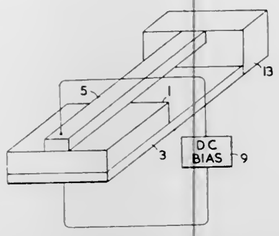


A signal limiter operable at video i-f frequency with substantially less AM to PM conversion than prior art signal limiters includes a pair of diodes in inverse parallel combination (with the anode of one diode connected to the anode of the other) between the emitter electrodes of first and second common-collector transistors. Anti-phase i-f signals are applied respectively to the first transistor and second transistor base electrodes. The transistors alternately function as emitter followers to provide a low impedance (of the order of diode forward-impedance) drive to the diode combination to maintain limiter frequency response despite stray capacitances. While one of the transistors functions as an emitter follower, the other has its base-emitter junction reverse-biased, permitting the quiescent current demands of the limiter to be lower than where emitter-follower action is constantly maintained in both transistor circuits. The signal limiter output signal is extracted by differential amplifier means having inverting and non-inverting input terminals connected at respective ends of the diode combination. The differential amplifier may be arranged to be a product detector in an exalted carrier video detector.

3,796,964
NEGATIVE CONDUCTIVITY AMPLIFIERS AND OSCILLATORS

Alexander Christopher Baynham, Malvern, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 21,463, March 20, 1970, abandoned. This application Mar. 14, 1972, Ser. No. 234,585
Int. Cl. H03f *3/04*; **H03b** *7/06*
U.S. Cl. 330—5 **8 Claims**

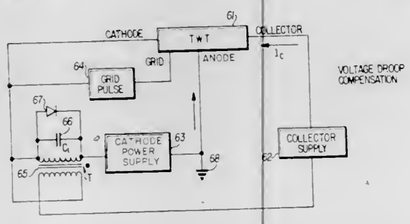


A solid state negative conductivity amplifier or oscillator in which a transverse electromagnetic wave is propagated inside a body of negative conductivity material. By varying the dimensions and the conductivity of the body of material and the surface reflection co-efficients the device can be made into a broadband amplifier, a narrow band amplifier or an oscillator.

3,796,965
VOLTAGE DROOP COMPENSATION CIRCUIT FOR TRAVELING WAVE TUBES

Arden L. Quesinberry, Towson, and Peter G. Espersen, Glen Burnie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 28, 1971, Ser. No. 213,084
Int. Cl. H03f *3/58*
U.S. Cl. 330—43 **5 Claims**



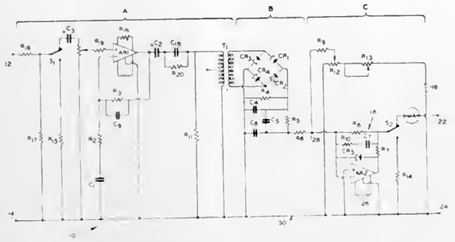
Voltage droop on the body of an electronic traveling wave tube during the time of response to an input pulse is compensated by transferring energy from the less critical collector supply to the body supply. A compensation circuit is connected in series with the body supply and includes a compensation capacitor charged by autotransformer action from the collector supply, thereby producing a rise voltage compensating for the drop in cathode voltage of the body supply and thereby minimizing the droop in the body to cathode voltage.

3,796,966
NOISE-REDUCTION AMPLIFIER

Otto A. Rauhut, Chesterfield, Mo., assignor to Wide Range Electronics Corporation, St. Louis, Mo.

Filed Oct. 4, 1971, Ser. No. 186,359
Int. Cl. H03f *1/26*
U.S. Cl. 330—149 **8 Claims**

A noise-reduction amplifier in an optical-sound recording system for motion pictures wherein the noise-reduction amplifier furnishes a variable bias signal to a galvanometer, the magnitude of the bias signal varying in accordance with the modulation of the sound being recorded. The noise-reduction amplifier includes a DC amplifier network having an operational amplifier and transmission means for transmitting voltage of one sign to the operational amplifier while preventing

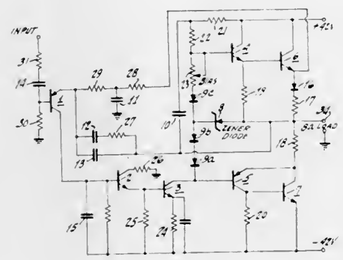


voltage of the opposite sign from passing therethrough. The transmission means, which include a diode connected across the operational amplifier, operate as a switch to electrically cut off the operational amplifier from the remainder of the DC amplifier network when voltage of the opposite sign enters the DC amplifier network.

3,796,967
AMPLIFIER PROTECTION CIRCUIT

Jack C. Sondermeyer, S. Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 19, 1966, Ser. No. 580,269
Int. Cl. H03f *27/00*
U.S. Cl. 330—207 P **9 Claims**



A protection circuit for negative feedback amplifier using electronic switch means such as a Zener diode coupled between the amplifier input circuit and the output circuit in a manner to provide a low impedance path from the input circuit to the output circuit when the applied input signal exceeds a particular threshold value.

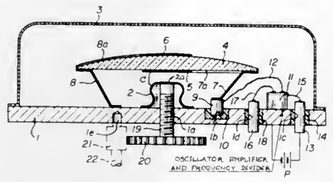
3,796,968
CRYSTAL OSCILLATOR IN AIRTIGHT ENCLOSURE WITH MOBILE WALL PORTION FORMING TRIMMER CONDENSER

Jakob Luscher, Carouge/Geneva, Switzerland, assignor to Battelle Memorial Institute, Carauge/Geneva, Switzerland

Filed Mar. 19, 1973, Ser. No. 342,735
Claims priority, application Switzerland, Mar. 20, 1972, 4091/72
Int. Cl. H03b *5/32*
U.S. Cl. 331—67 **10 Claims**

A generator of stabilized periodic signals comprises, within an airtight enclosure with predominently conductive walls, a

piezoelectric quartz crystal freely supported on a pair of conductive struts and an oscillator whose frequency-determining elements include the crystal and a trimmer condenser in parallel therewith. The trimmer condenser is constituted by the

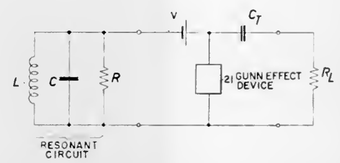


variable capacitance between a displaceable wall portion of the enclosure and a confronting electrode on the crystal. A frequency divider may be disposed within the enclosure in the output of the oscillator.

3,796,969
FREQUENCY CONTROL AND SYNCHRONIZATION OF GUNN OSCILLATIONS

Berthold Bosch, and Horst Polimann, both of Ehrestein/Ulm, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H, Ulm/Donau, Germany

Filed June 2, 1966, Ser. No. 554,822
Claims priority, application Germany, June 12, 1965, 28781; Aug. 12, 1965, 29198; Nov. 25, 1965, 29847; Dec. 4, 1965, 29940
Int. Cl. H03b *7/14*; **H03c** *3/22*
U.S. Cl. 332—16 R **21 Claims**



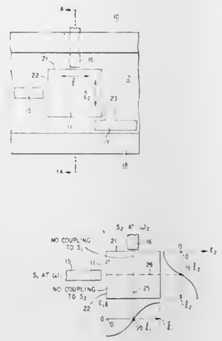
An arrangement for controlling the oscillation frequency of a Gunn effect device by applying thereto high frequency signals which act to vary the operating voltage thereacross between a value which exceeds the critical oscillation-producing voltage of the oscillator and a value which is less than such critical voltage so as to control the frequency of the oscillations produced by the oscillator.

3,796,970
ORTHOGONAL RESONANT FILTER FOR PLANAR TRANSMISSION LINES

William Walter Snell, Jr., Middletown Twp., Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 4, 1973, Ser. No. 347,839
Int. Cl. H01p *1/20, 5/12*; **H04b** *1/26*
U.S. Cl. 333—6 **16 Claims**

The conductor pattern on a dielectric substrate includes a rectangular element of finite thickness whose two surface dimensions are chosen so that each is one-half the wavelength of a desired frequency. Accordingly, the element will support two resonant orthogonal standing waves and external coupling to each wave may be provided independently. Common coupling to both waves may also be provided so that the dual resonant structure may be used as a three-port device for frequency combining and separating and is particularly well-

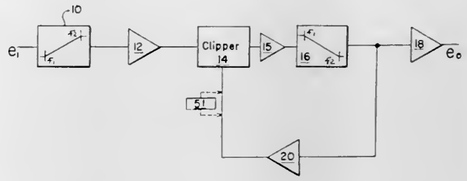


suited for frequency conversion applications. A two-port arrangement permits generation of specific filter characteristics.

3,796,971
LOW-PASS NON-LINEAR FILTER

Stanley A. Sherman, 46 Stoneleigh Rd., Trumbull, Conn.

Filed Oct. 21, 1971, Ser. No. 191,180
Int. Cl. H04b *3/04*
U.S. Cl. 333—17 **17 Claims**



A non-linear filter for high and low frequency signals comprises means for separating and dissipating the high frequency out-of-band energy and passing the low frequency in-band energy. The filtering in a low-pass filter is achieved without phase shift both in- and out-of-band by use of conjugate high- and low-pass filters located before and after the dissipating means, respectively. A hard clipper is used to perform the dissipating function, and its reference clipping level is provided so that the maximum amplitude of the in-band signal arriving at the input to the clipper is slightly less than the clipping level. The output of the low-pass filter may be fed back to set the clipping level so that this level can track the in-band signal amplitude. A sensing resistor between the clipper and the means to set the clipping level senses the high frequency information and thus, the non-linear filter can serve as a high-pass filter with no phase shift when only the low-pass filter is used after the dissipating means.

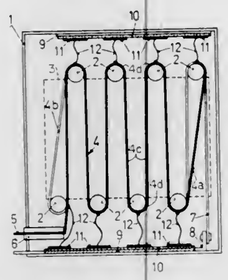
3,796,972
SIMULATED ANTENNA

Ole Snedkerud, Windisch, Switzerland, assignor to Patelhold Patentverwertungs- & Elektro-Holding AG, Glarus, Switzerland

Filed May 15, 1972, Ser. No. 253,486
Claims priority, application Switzerland, May 28, 1971, 7823/71
Int. Cl. H01p *1/26*
U.S. Cl. 333—22 R **9 Claims**

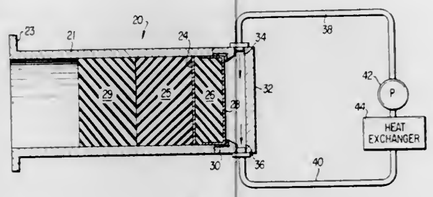
A simulated antenna structure for use in conjunction with trial or experimental operation of a radiant energy transmitter

includes a metallic tape extending in a meandering fashion in one or more parallel planes over supporting insulators located within a housing through which a current of cooling air is passed in heat transfer relation with the tape. One end of the tape is connectible to the output terminal of the transmitter and the other end is grounded. Capacities are connected respectively between the grounded end of the tape and sub-



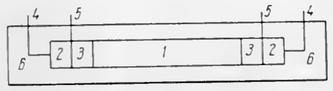
stantially equally spaced points along the tape. These capacities can be established by means including metallic linings within the supporting insulators when made in tubular form and also by metallic plates projecting into the spaces formed between adjacent loops of the tape, the metallic linings and metallic plates being electrically connected to the grounded end of the tape.

3,796,973
TERMINATIONS
Gerald I. Klein, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 189,913, Oct. 18, 1971, abandoned. This application Nov. 29, 1972, Ser. No. 310,521
Int. Cl. H01p *1/26*
U.S. Cl. 333—22 F **3 Claims**



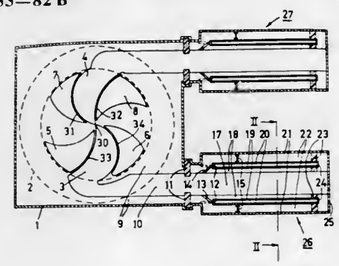
A termination for terminating or absorbing a signal transmitted through a transmission line is disclosed as comprising a transmission line having a short circuit thereacross and a thin film of a resistive material disposed within the transmission line approximately one-fourth of a wavelength of the transmitted signal from the short circuit to thereby absorb the signal energy. More specifically, the ratio of the bulk resistivity of the thin film to the thickness of the thin film is selected to be substantially equal to the characteristic impedance of the transmission line thereby ensuring substantially complete energy absorption of the transmitted signal. The thin film is disposed upon a thermally conductive member made of an illustrative material such as beryllium oxide and which not only exhibits a high conductivity but also presents low losses to signals transmitted therethrough. In order to more efficiently dissipate the generated thermal energy, a suitable fluid coolant such as air or water may be directed past the short circuit.

3,796,974
ELECTROMECHANICAL DELAY LINE
Izrail Grigorievich Khanovich, ploschad Chernyshevskogo, 10, kv. 25; Robert Avgustovich Raudson, Krasnogvardeiskaya ploschad, 1, kv. 42; Mark Saulovich Portnoi, ulitsa Smirnova, 26, kv. 16; Gennady Grigorievich Yanovsky, Mokhovaya ulitsa, 28, kv. 34; Natalia Alexandrovna Konisskaya, Lakhtinskaya ulitsa, 22, kv. 13; Avraam Vulfovich Seredinsky, ulitsa Babushkina, 60, kv. 72; Robert Ivanovich Kapranov, prospekt M. Gorkogo, 73/39, kv. 19; Felix Fomich Molokov, ulitsa Bestuzhevskaya, 11, kv. 9; Fedor Alexandrovich Bogachev, ulitsa Varshavskay, 58, kv. 28; Jury Grigorievich Sergeev, prospekt Kosmonavtov, 52, korpus 4, kv. 43; Alexandra Fedorovna Zakharova, ulitsa Lenina, 28, kv. 19, all of Leningrad; Nina Grigorievna Chomova, ulitsa Talalikhina, 1/2, kv. 237, Moscow; Ruvim Girshevich Britanishsky, prospekt Schorsa, 34, kv. 50; Alexandr Mordukhaevich Nepomnyaschy, ulitsa Sadovaya, 122, kv. 9, both of Leningrad; Vladimir Nikiforovich Zhuchin, ulitsa Sovetskaya, 2/102, kv. 27, and Valentin Vasilievich Topilin, ulitsa Krasnaya, 40, kv. 5, both of Elektrostal Moskovskoi oblasti, all of U.S.S.R.
Filed Aug. 16, 1972, Ser. No. 281,020
Int. Cl. H03h *7/30*
U.S. Cl. 333—30 **1 Claim**



An electromechanical delay line comprising an acoustic line, an input and an output piezoelectric transducer, secured to the end faces of the acoustic line by means of a coupling medium, wherein the ratio between the acoustic resistance of the material of the piezoelectric transducer and that of the acoustic line material is selected equal to 0.55 – 0.95, the ratio of the thickness of the coupling medium to the wavelength in the medium at the resonance frequency of the piezoelectric transducers is selected equal to 0.005 – 0.05, and the ratio of the area of each piezoelectric transducer, adjacent to the respective end face of the acoustic line, to the area of this end face is selected equal to 0.75 – 1.00 so that maximum bandwidth of the delay line is provided.

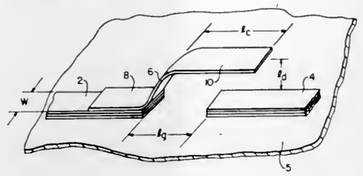
3,796,975
SHORT HIGH-FREQUENCY RESONATOR HAVING A LARGE FREQUENCY RANGE FOR CYCLOTRONS
Derk Wierts, Emmasingel, Eindhoven, and Pieter Boomsma, Beekbergen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Division of Ser. No. 132,326, April 8, 1971. This application Oct. 24, 1972, Ser. No. 299,681
Claims priority, application Netherlands, Apr. 29, 1970, 7006247
Int. Cl. H01p *7/00*
U.S. Cl. 333—82 B **5 Claims**



An electric high-frequency resonator for accelerating charged atomic particles, comprising a first hollow conductor,

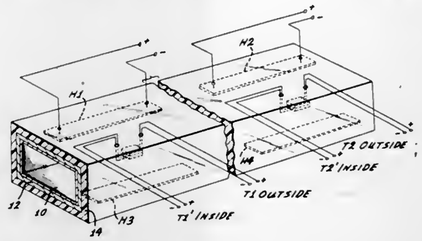
a second hollow conductor extending within the first hollow conductor, a third hollow conductor extending within the second hollow conductor and a fourth hollow conductor extending within the third hollow conductor. The second and third hollow conductors and the first and fourth hollow conductors are connected respectively to form first and second waveguides for the propagation of high-frequency waves. Input coupling means are employed to connect the interposed first and second waveguides in series thereby providing increased electrical length characteristics for the propagation of high-frequency electric waves without increasing the structural length of the resonator.

3,796,976
MICROWAVE STRIPLING CIRCUITS WITH SELECTIVELY BONDABLE MICRO-SIZED SWITCHES FOR IN-SITU TUNING AND IMPEDANCE MATCHING
Terrence M. S. Heng; Harvey C. Nathanson, and John R. Davis, Jr., all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed July 16, 1971, Ser. No. 163,367
Int. Cl. H01p *3/00, 3/08*
U.S. Cl. 333—84 M **11 Claims**



A microstrip line is divided into a number of short sections, each capacitively coupled to its neighbor by a cantilever switch. The coupling of each switch depends on the separation between sections and the spacing between the catilever switch and an adjoining section. The cantilever switches are sufficiently flexible to allow test contact between adjacent sections and is permanently bondable where desired. In such a manner sections having lengths chosen to be predetermined fractions of a desired wavelength are connected together to shift the phase of energy propagating therealong to provide tuning and impedance matching of microstrip circuits.

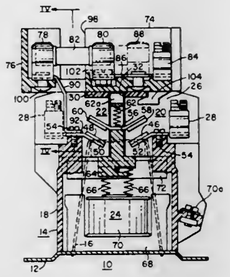
3,796,977
TEMPERATURE CONTROLLED TRANSMISSION LINE
Martin K. Elliott, 7838 Rudnick Ave., Canoga Park, Calif., and Michael A. Levin, 5516 Vanalden Ave., Tarzana, Calif.
Filed July 26, 1971, Ser. No. 166,023
Int. Cl. H01p *3/12*
U.S. Cl. 333—95 R **11 Claims**



A temperature controlled microwave transmission line or waveguide tube. Heating elements are provided along the length of the line and are automatically controlled by thermostatic means to control the temperature within the line to thereby prevent condensation of moisture within the line. The temperature control is in response to temperature both within and outside the line.

ERRATUM
For Class 335—21 see:
Patent No. 3,796,860

3,796,978
ELECTROMAGNETIC CONTACTOR WITH FUSE BLOCK
Kurt A. Grunert, and John J. Dauer, Jr., both of Beaver, Pa., assignors to Westinghouse Electric Company, Pittsburgh, Pa.
Filed June 5, 1972, Ser. No. 259,414
Int. Cl. H01h
U.S. Cl. 335—142 **2 Claims**



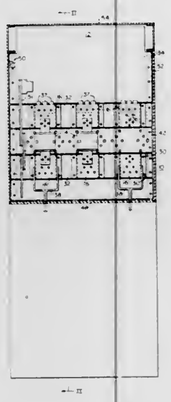
An electric control system characterized by a multipole control device and a fuse block, the control device having stationary and movable contact structures and electromagnetic means for moving the movable contact structure between operated and unoperated positions with respect to the stationary contact structure, the control device being enclosed within a housing having openings for access to the stationary contact structure; a fuse block mounted on the housing and comprising a conductor connected to one of the stationary contact structures, spaced clips for mounting a fuse block, one of which clips is connected to the conductor, and a terminal connected to the other of said clips. The electric control system also includes a crossbar having end portions extending through vertical slots in opposite sides of the housing and the portions of the housing forming the slots being seated in corresponding notches in said end portions of the crossbar whereby a pin for mounting an armature on the cross-bar is retained in place.

ERRATUM
For Class 335—176 see:
Patent No. 3,797,007

3,796,979
STANDARD ELECTRIC UTILITY CURRENT TRANSFORMER COMPARTMENT
William K. Hill, St. Louis, Mo., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 15, 1973, Ser. No. 341,641
Int. Cl. H01f *27/06, 15/10*
U.S. Cl. 336—67 **5 Claims**

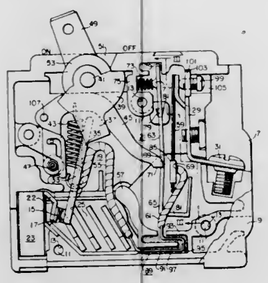
A standard utility current transformer compartment is provided for mounting various commonly used current transformers. The invention meets the common utility requirements of a barriered, sealable, dimensionally standard compartment which is acceptable to most electric utility companies. The disclosed current transformer compartment allows for initial mounting of almost all commonly used utility current transformers and permits interchangeability at any time, such as an emergency replacement, without field modification or additional costs. Generally, U-shaped flanged mounting brackets, formed from a conducting material such as aluminum or

copper, are provided for mounting the current transformers and for electrically connecting line side and load side conductors to the current transformers. The electric utility current transformer compartment construction taught in the present invention can accommodate most of the commonly used utility current transformers in the 200 amp to 2,000 amp range. The current transformers are mounted between two of the



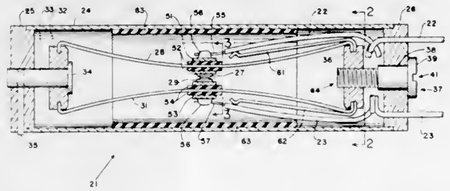
generally U-shaped mounting brackets. The free ends of the legs of the U-shaped mounting bracket have outward facing flanges. The flanges of the U-shaped brackets are connected to an insulating support base. Various hole patterns are provided in the U-shaped bracket to accommodate the various current transformers. Other openings are provided in the U-shaped bracket to facilitate attachment of conducting bus or cable as required.

3,796,980
DISPOSABLE CIRCUIT BREAKER
James P. Ellsworth, Beaver, Pa., assignor to Westinghouse Electric Company, Pittsburgh, Pa.
Filed July 31, 1972, Ser. No. 276,487
Int. Cl. H01h *71/16, 85/08*
U.S. Cl. 337—6 **8 Claims**



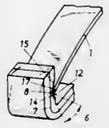
A circuit breaker characterized by relatively movable contacts and operating mechanism therefor together with a bimetal trip element and a latch member releasably restraining the operating mechanism and responsive to the movement of the bimetal trip element; the bimetal trip element deflecting in response to a predetermined range of overcurrent to operate the latch member and cause said member to release the operating mechanism, the bimetal strip element being distortable by thermal stresses when subjected to a current greater than the predetermined range of overcurrent, a fusible link connected in series with the normal current path and being destructible in response to current greater than said predetermined range of overcurrent, and a housing enclosing the foregoing parts which housing comprises separable housing means and destructible fastening means for holding the separable housing members together, whereby the circuit breaker is in a disposable condition upon the subjection of the breaker to a current greater than the predetermined range of overcurrent.

3,796,981
FAIL SAFE THERMOSTATIC SWITCH
Edward J. Poitras, Holliston, Mass., assignor to Walter Kidde & Company, Inc., Clifton, N.Y.
Filed Sept. 5, 1972, Ser. No. 286,154
Int. Cl. H01h *85/36*
U.S. Cl. 337—239 **12 Claims**



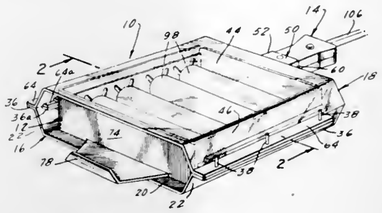
Disclosed is a temperature responsive switch including a pair of contacts that open and close in response to temperature variations and are connected to lead wires by fusible coupling such as solder. In the event of contact overheating one or both of the fusible couplings melts and a bias spring separates the affected lead wire and contact, thus opening the switch.

3,796,982
THERMOSTAT CONSTRUCTION
Robert Auracher, Stuttgart-Stamm-Heim, Germany, assignor to Europaische H. O. Canfield Co. GMBH, Gartenberg/Obb, Germany
Filed Mar. 8, 1971, Ser. No. 121,926
Claims priority, application Germany, Feb. 16, 1971, 2010715
Int. Cl. H01h *37/74*
U.S. Cl. 337—343 **14 Claims**



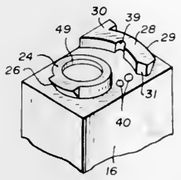
An elongated bimetallic strip has a first end portion and a spaced second end portion which is adapted to be connected to a support. A conductive copper strip is fastened at one end to the first end portion and extends with the remainder thereof spaced from the bimetallic strip towards the second end portion thereof. The conductive strip has opposite the fastened end a free end portion. A first abutment is provided on the conductive strip in the region of the free end portion thereof, and a second abutment on the bimetallic strip in the region of the first end portion thereof. An elongated spring member extends longitudinally of the strips and its spaced opposite ends respectively pivotally and under stress engage the first and second abutment means in line contact therewith.

3,796,983
ELECTRIC HOT DOG APPARATUS
Hans O. Wibben, 8424 S. Secura Way, Sante Fe Springs, Calif.
Filed Nov. 1, 1971, Ser. No. 194,385
Int. Cl. H01r *13/44, 13/60*
U.S. Cl. 339—40 **1 Claim**



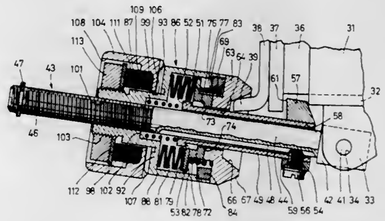
An electrical hot dog cooker having a housing comprising upper and lower parts, and the means for interlocking the parts together. One end of the housing is open and at the other end there is means for reception of an electric plug. The plug has openings, or slots, at its inner end for reception of prongs, there being movable baffles, or plates, normally closing or blocking the plug openings, or slots, against entrance of electrically conducting prongs. These baffles, or plates, are moved out of normal locking position by pins carried by the respective upper and lower housing parts. There is also, a drawer, or tray, having an electrical conductor strip at each side of the drawer, and the conductor strips have improved, aligned electrodes for operable connection or engagement with the opposite ends of hot dogs in the drawer and arranged transversely thereof. The electric conductor strips have ends, or prongs, that enter the plug openings, or slots, when the drawer is fully inserted into the housing, and there is interlocking means for interlocking the parts of the housing together when the drawer is inserted into the housing.

3,796,984
ELECTRICAL AND MECHANICAL CONNECTOR FOR TWO PART PORTABLE ELECTRONIC DEVICE
George J. Selinko, Lighthouse Point, Fla., assignor to Motorola Inc., Franklin Park, Ill.
Filed Aug. 9, 1972, Ser. No. 279,203
Int. Cl. H01r *13/54*
U.S. Cl. 339—88 R **18 Claims**



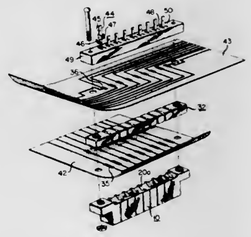
The connector mechanically connects a battery containing housing to a second housing containing electronic equipment and makes electrical connection from the battery to the equipment. The interconnecting parts may be molded of plastic material and may be integral with the housings. One part has a projection with a lip extending therefrom and the other has an opening to receive the projection with a recess to receive the lip when the projection is rotated within the opening. An arcuate shaped rib spaced from the projection and concentric therewith is received in an arcuate shaped concentric recess in the other part when the projection is rotated within the opening to provide a two-point interconnection of the two housing parts. A spring biased latch may prevent rotation to hold the parts assembled until the latch is disengaged. Resilient contacts on one part engage contacts on the other part when the connector is engaged to electrically interconnect the two housing parts. The connector can be used for a portable electronic device, such as a radio, to disengageably connect a battery housing to an equipment housing. Such connectors can be used to connect the battery housing to the equipment housing through a cable.

3,796,985
LOCKING DEVICE
Erwin Weber, Flurstrasse 18, 8034 Unterpfaffenhofen, Germany
Filed Mar. 13, 1972, Ser. No. 234,150
Claims priority, application Germany, Dec. 15, 1971, 2162192
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **3 Claims**



The locking device is used with plug-in members, such as electric plug connections. A threaded spindle is swingable from a frame which supports the plug-in members. A control grip and an internally threaded member move back and forth on the spindle depending on their direction of rotation on the spindle. A tapered ring on the spindle is engageable with a hook on one of the plug in members. When the control grip is titghtened, the ring presses the hooked member into insertion. When the control grip is loosened the ring can be released from the hook. The control grip is coupled to the internally threaded member by Hirth type serrations, spring loaded by a donut shaped spring cushion which allows the control grip to be displaced from the internally threaded member when a predetermined plug-in force is exceeded.

3,796,986
INTERCONNECTION SYSTEM FOR REUSABLE GANG-TYPE CONNECTIONS BETWEEN FLEXIBLE PRINTED CIRCUITRY AND THE LIKE
Peter James Tamburro, Morris Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 3, 1972, Ser. No. 268,725
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 M **3 Claims**



Connections to flexible printed wiring elements and rigid printed circuit board elements are effected by the disclosed interconnection system consisting essentially of a pressure contact type connector block and backing element. Various shapes of pin connectors are disclosed. Add-on features in-

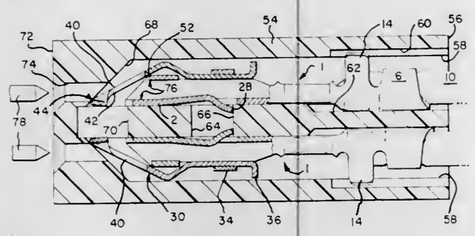
clude feed-through elements, and a variant of backing element in which removable pressure contact wire-wrap terminal elements may be inserted. Non-noble metal, low pressure contact elements are usable.

3,796,987

ELECTRICAL RECEPTACLE AND CONNECTOR

Robert John Kinkaid, New Cumberland, and John Carl Asick, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 9, 1972, Ser. No. 261,495
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **7 Claims**



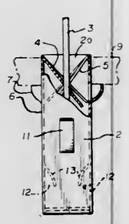
The present invention relates to a self-locking receptacle type electrical contact as well as to a protective electrically insulating connector housing for such contact. A salient feature of the present invention is that the electrical contact is self-locking when received over a post-type electrical contact. Another salient feature of the invention is that the protective housing may be manually displaced with respect to the receptacle type contact for positively unlocking the contact from the post-type contact, allowing withdrawal of the receptacle type contact therefrom.

3,796,988

WIRE RETENTION TERMINAL AND TRANSISTOR SOCKET

Dominick P. Palombella, Norridge, Ill., assignor to Palmer Industries, Ltd., Chicago, Ill.

Filed Jan. 19, 1972, Ser. No. 219,059
Int. Cl. H01r *9/06*
U.S. Cl. 339—258 R **9 Claims**



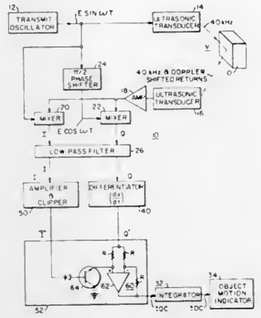
A wire retention terminal for receiving and securing a plurality of electrical leads for use in electronic and electrical assemblies whereby the leads are secured by the insertion thereof into the body of the terminal. The terminal includes a plurality of internally positioned and oppositely disposed fingers which are adapted to lodge a plurality of leads thereto in an effective manner. The terminal may be directly attached to a well known circuit board of any suitable type or may be coupled to a socket such as herein disclosed. The transistor socket of the invention effectively mounts a transistor wherein the sockets, terminal lugs and electrical leads may be all connected and mounted to a board or panel from one side.

3,796,989

DIRECTION SENSITIVE DOPPLER PROCESSOR

Richard J. Ravas, Monroeville; Theodore M. Heinrich, Murrysville; Paul M. Johnston, Greensburg, all of Pa., and John R. Reeves, Orange, Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed June 1, 1972, Ser. No. 258,592
Int. Cl. G01s *9/66;* **G08b** *13/16*
U.S. Cl. 340—1 R **4 Claims**



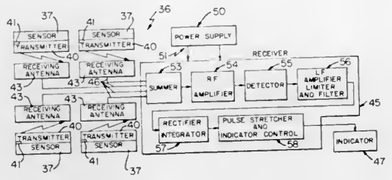
The invention relates to an improvement in direction sensitive ultrasonic Doppler detecting devices wherein an ultrasonic transducer transmits a given frequency signal toward an object which in turn reflects the given signal and Doppler shifted signals based on the movement of the object. The reflected signals including the Doppler shifted signals are processed and evaluated to determine the characteristics of the object movement both as to direction and degree. The insertion of a differentiating circuit in the processing of the reflected signals minimizes false interpretation of the reflected signals caused by non-harmonic oscillatory movement of the object. Furthermore through the addition of a signal processing circuit utilizing a non-linear multiplier circuit for multiplying the instantaneous values of the components of the reflected signals in contrast to the linear multiplication of these signals, the loss of sensitivity of the Dopper detection device as a function of distance is represented as 1 (distance to object) instead of 1 (distance to object)^2 as in the case in the conventional coherent Doppler detection devices.

3,796,990

PULSE STRETCHER FOR A RECEIVER OF A PNEUMATIC TIRE LOW PRESSURE MONITORING AND WARNING SYSTEM

Charles E. Hill, Lynn, Ind., assignor to Avco Corporation, Richmond, Va.

Filed Sept. 15, 1972, Ser. No. 289,552
Int. Cl. B60c *23/02*
U.S. Cl. 340—58 **5 Claims**



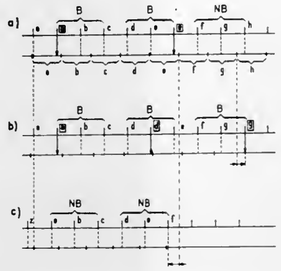
An electrical apparatus or pulse stretcher is provided and a pneumatic tire low pressure monitoring and warning system using same wherein such apparatus increases the effective time duration of useable electrical signals supplied thereto to thereby activate an indicator associated therewith. The apparatus comprises an NPN transistor having base, collector, and emitter electrodes and a cooperating PNP transistor having base, collector, and emitter electrodes with the PNP transistor having its collector electrode connected directly to the indicator and to the base of the NPN transistor by a positive feedback loop, each useable signal being supplied to the base of the NPN transistor through a rectifying diode and stored in a capacitor connected functionally from base to ground. The signal operates to turn the PNP transistor ON and simultaneously supply a voltage through the collector electrode of the PNP transistor to activate the indicator whereby the transistors operate to increase the effective time duration of each useable signal supplied to the NPN transistor.

3,796,991

ERROR-CORRECTING DEVICE FOR THE TRANSMISSION OF DATA

Claude Stenstrom, Villebon; Michel Lambourg, Meudon-la-Foret, and Robert Duprez, Briis-sous-Forges, all of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

Filed July 10, 1972, Ser. No. 270,035
Claims priority, application France, July 8, 1971, 71.25063
Int. Cl. G08c *25/00;* **H04l** *1/00*
U.S. Cl. 340—146.1 AB **7 Claims**



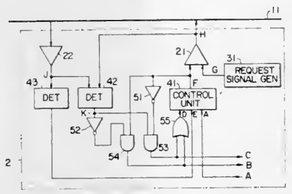
An error-correcting device for the transmission of data on a telegraph line with modulation by coded pulses (MIC) whose sampling sequence is more rapid than the telegraphic speed (number of bits per second), which leads to transmitting in the MIC pattern information bits, doubling bits, called "padded bits," as well as supplementary bits, called "packing or padded indications," which make it possible to recognize whether a given bit is an information bit or a padded bit. The succession of the valances of the packing indications follows a well defined law. The invention furnishes the means to carry out a correction if this law is not complied with.

3,796,992

PRIORITY LEVEL DISCRIMINATING APPARATUS

Hideo Nakamura; Kazuo Takasugi, and Fumiyuki Inose, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 27, 1972, Ser. No. 318,986
Claims priority, application Japan, Dec. 27, 1971, 46-105300
Int. Cl. H04q *3/00;* **H04j** *3/06*
U.S. Cl. 340—147 LP **9 Claims**



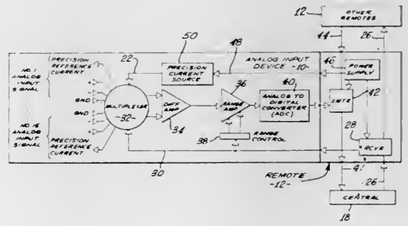
In a system wherein a number of processing units are connected to a single bus and wherein communication is conducted among the units on a time sharing basis, priority level discriminating apparatus is provided which includes means to detect the superposition on the bus between a bus-use request signal from another unit and a request signal from the particular unit to which the apparatus belongs, means to control the further transmission and non-transmission of the request signal in accordance with an address code previously assigned to each unit in the case where the superposition is detected, and means to issue a communication prohibition signal to the particular unit when the request signal from another unit is detected and the request signal of the particular unit is interrupted, and to generate a communication permission signal when the request signal from another unit is interrupted and the transmission of the request signal of the particular unit continues, whereby the use of the bus is allowed in the order of the magnitude of the address codes.

3,796,993

ANALOG INPUT DEVICE FOR DATA TRANSMISSION SYSTEMS

Duane C. Fox, Fullerton; Richard Y. Ichinose, Placentia, and Harold F. Lewis, Villa Park, all of Calif., assignors to American Multiplex Systems Inc., Anaheim, Calif.

Filed Oct. 4, 1971, Ser. No. 186,246
Int. Cl. G08b *5/22;* **H04q** *9/02*
U.S. Cl. 340—151 **7 Claims**



An analog input device for data transmission systems wherein a digital address message from a central station to a plurality of remote terminals initiates sequential scanning of the analog parameter points at the addressed remote terminal. A sensor has a resistance which varies in accordance with the magnitude of its associated analog parameter point, and a time-shared differential sensing circuit measures the voltage drop across the variable resistance of the sensor while a pulse of a precise reference current passes from a time-shared trunk line through the sensor.

3,796,994

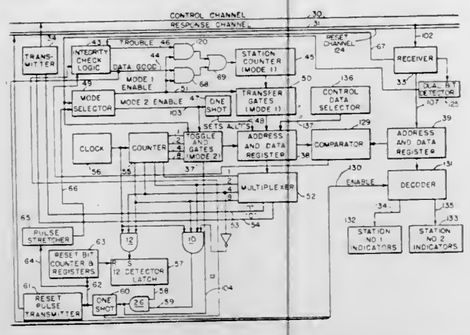
CODE COMMUNICATION SYSTEM

Robert F. Nuss, Jr., Shelton, Conn., assignor to Edwards Company, Inc., Norwalk, Conn.

Filed June 24, 1971, Ser. No. 156,221
Int. Cl. H04q *9/00*
U.S. Cl. 340—163 **19 Claims**

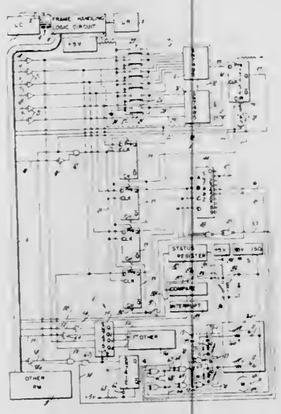
A code communication system for interrogating remote stations from a central station during successive communication cycles wherein a start at a remote station is effective when received at the central station to cause the central station to transmit in a superiority search mode. Cycle reset means is provided governed by a remote station having initiated a cycle by a start pulse for causing the communication system to reset for starting a new communication cycle whenever a bit of the code superiority address transmitted from the central station

disagrees in character with the address code of the station having transmitted the start pulse. Such a restart causes the transmission of another cycle which has an address code bit



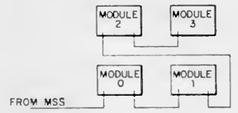
changed in character for the last address bit transmitted in the prior cycle. In this way an address code is completed only for the most superior station having registered a start.

3,796,995
REMOTE CODED DUAL STATE CONTROLLER APPARATUS
Lawrence J. Strojny, West Allis, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed Dec. 15, 1972, Ser. No. 315,447
Int. Cl. H04l *11/15*; **H04q** *9/14*
U.S. Cl. 340—163 **20 Claims**



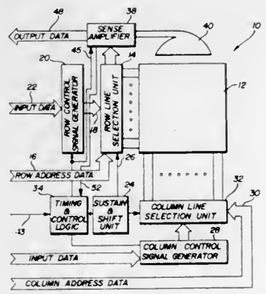
A remote station for a loop communication system includes a point module which is specifically related to an on-off load control or the like. The point module is coupled to the loop system through frame handling logic means in common with other similar or different point modules by a common input bus means, with a unique binary address. An address decoder actuates a latch to produce an enable signal which activates a command latch and decoding circuit. A binary command is received from the message frame and is placed in registers. A command control available signal generated by the frame handling logic unit conjointly with the enable sets the register and command signal decoder and establishes a corresponding unique output at a start line, a stop line, status read line and an initialize line. A load select and drive circuit receives coded information which is transferred as a result of a data available signal in combination with the enable means and an initiate signal of the command circuit means to transmit the command signal to one or more loads. The select circuit includes a delayed pulse signal to actuate a circuit isolating a relay unit to separate the digital logic circuitry from the load operating circuits. The load operating status is monitored by detecting of the last actuated contact status and selectively fed back into the loop for transmittal to the loop controller by generating of a request for a message frame. The command signal would be such as to enable the read signal line rather than a start-stop line and provide for transfer of the status information.

3,796,996
MAIN MEMORY RECONFIGURATION
John L. Curley, Sudbury; Benjamin S. Franklin, Boston, both of Mass.; Wallace A. Martland, Nashua, N.H.; Thomas J. Donahue, Hudson, and Louis V. Cornaro, Billerica, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.
Filed Oct. 5, 1972, Ser. No. 295,417
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **6 Claims**



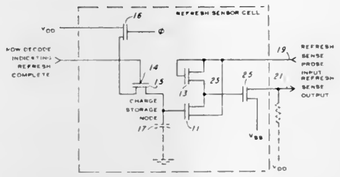
An apparatus and a method for reconfiguring an *m*-module *m*-way interleaved main memory store to a *k*-way interleaved configuration where *k* equals *m*/2. In a main memory store having m modules and operating in an n-way interleaved configuration L additional reconfiguration modes allow the isolation of any one bad module in the upper half of the memory addressing range, thus giving assurance of operation in the lower half of the memory addressing range. The remaining lower half of the memory system remains addressable so that diagnostic procedures may be run in that portion of memory simultaneously with the running of user programs on the other portion of memory.

3,796,997
OPTICAL READ-OUT/READ-IN APPARATUS FOR PLASMA DISPLAY/MEMORY PANELS
Roger L. Johnson, Monticello, and William J. Coates, Champaign, both of Ill., assignors to University of Illinois Foundation, Urbana, Ill.
Filed Nov. 24, 1972, Ser. No. 309,099
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 PL **13 Claims**



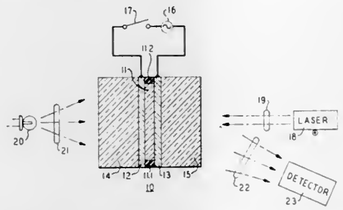
Apparatus for determining the state of selected cells in a plasma panel, including control drive means supplying a control signal during an interrogation interval between sustaining discharges capable of changing the state of a cell if the cell is in a state (A) but not if the cell is in another state (B), optical read-out means for detecting any changes in the state of a selected cell during the interrogation interval, and means for restoring the selected cell to the original state (A) if the cell was changed to state (B). Apparatus for transferring information on an image bearing document into the plasma panel by interrogating all of the cells on the panel and restoring selected cells in response to information determined by optical read-out means during said interrogation, whereby the image is then associated with selected cells on the panel.

3,796,998
MOS DYNAMIC MEMORY
Daren Ray Appelt, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sept. 7, 1971, Ser. No. 178,103
Int. Cl. G11c *11/40, 11/24*
U.S. Cl. 340—173 DR **3 Claims**



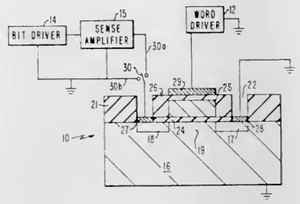
A semiconductor MOS memory system having minimal standby power requirements is described. A sensor cell is fabricated into the MOS memory chip to sense when the MOS memory chip needs to be refreshed. The sensor cell is fabricated so that it will discharge faster than the other memory cells on the MOS memory chip.

3,796,999
LOCALLY ERASABLE THERMO-OPTIC SMECTIC LIQUID CRYSTAL STORAGE DISPLAYS
Frederic Jay Kahn, Stirling, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Oct. 19, 1972, Ser. No. 299,077
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 R **10 Claims**



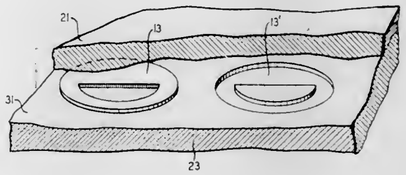
This invention provides a liquid crystal optical display apparatus, which can be both selectively written and selectively erased. Both write-in and erase steps involve the use of localized thermal heating, by means of an infrared laser for example. The localized "written" state of the liquid crystal is characterized by a significantly greater optical scattering than the localized "erased" state of the crystal. Depending upon the conditions under which a localized area of the liquid crystal is cooled, the final state of the local heat-treated area becomes the non-scattering erase state or the scattering written state, thus affording localized erase or write-in, as desired. The factors which determine this final state (scattering vs. non-scattering) include the rate of cooling. In turn, the rate of cooling can be controlled by the rate of laser scan or by the cross section of the laser beam used for the heating of the selected areas of the liquid crystal. Additionally, the final state can be affected by the presence or absence of applied fields across the liquid crystal during the cooling period.

3,797,000
NON-VOLATILE SEMICONDUCTOR STORAGE DEVICE UTILIZING AVALANCHE INJECTION AND EXTRACTION OF STORED INFORMATION
Benjamin Agusta, Burlington, and Joseph Juifu Chang, Shelburne, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,425
Int. Cl. H01l *11/14*; **G11c** *11/40*
U.S. Cl. 340—173 R **10 Claims**



A non-volatile semiconductor storage device that can be electronically erased can be realized from a double gate field effect transistor having a first and second gates, the first gate being closer to the semiconductor body than the second gate and insulated from the body and the second gate so that it is electrically floating. When the floating gate has a thickness and is biased so that complete depletion can be achieved therein and the thickness and ionization rate product is equal to unity stored information in the form of electrons are expelled therefrom due to the effects of avalanche mechanisms.

3,797,001
SINGLE WALL DOMAIN PROPAGATION ARRANGEMENT
Yu-Ssu Chen, New Providence; Joseph Edward Geusic, Berkeley Heights, and Terence John Nelson, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 7, 1972, Ser. No. 278,566
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **7 Claims**

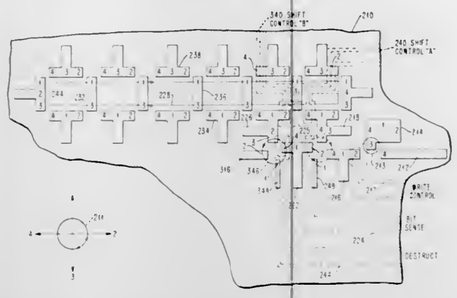


Field access, single wall domain propagation arrangements include channels defined by embossed permalloy layers. Lower drive fields and increased design flexibility result.

3,797,002
DYNAMICALLY DOUBLE ORDERED SHIFT REGISTER MEMORY
David T. Brown, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 16, 1972, Ser. No. 307,258
Int. Cl. G11c *19/00, 11/14, 11/40*
U.S. Cl. 340—174 SR **6 Claims**

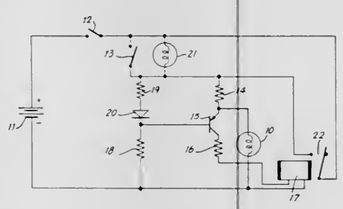
This specification discloses a memory made up of a plurality of bidirectional shift registers capable of being accessed at

either end. Each shift register stores only one bit of every page of data stored in the memory so that all the bits of any one page can be read out contemporaneously by accessing the shift registers in parallel. All the pages stored in the memory are divided into two groups with all the pages of one group



being accessed at one end of the shift registers while all the pages of the other group are accessed at the other end of the shift registers. Within each group the pages are arranged in order of last use with the most recently used page located closest to the end of the shift register at which it is being accessed.

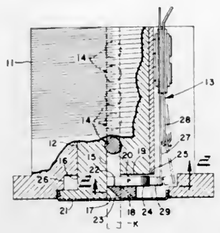
3,797,003
WARNING CIRCUITS FOR INTERMITTENTLY FLASHABLE LAMP
Anthony John Ramshaw, Hayes, England, assignor to C.A.V. Limited, Birmingham, England
Filed June 5, 1972, Ser. No. 259,822
Claims priority, application Great Britain, June 9, 1971, 19577/71
Int. Cl. G08b *21/00*
U.S. Cl. 340—251 **10 Claims**



A warning circuit for use with a lamp which in use is connected to an intermittent source of electric supply, the warning circuit comprising means for sensing the current flow through the lamp during the on period of the supply and further means operable when the current falls below a predetermined value, indicative that the lamp has failed for providing an indication of such failure.

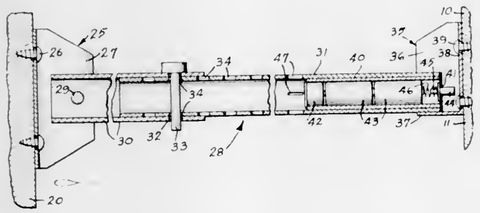
3,797,004
LOCK TUMBLER CYLINDER PICKING ALARM
Dan C. Muessel, Stamford, Conn.; William Eisenreich, White Plains, and Isadore Schieber, Bronx, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio
Filed Nov. 24, 1971, Ser. No. 201,690
Int. Cl. E05b *45/10*
U.S. Cl. 340—274 **12 Claims**

A shutter is mounted on a front portion of a key plug that rotates in a lock tumbler cylinder, and an electric switch on the cylinder has a spring contact arm pressing the shutter to position closing the entrance opening of the keyway. A key or other instrument inserted toward the keyway must move the shutter so that the spring arm will complete an electric circuit causing an alarm signal before the instrument can engage any one of the lock tumblers. The shutter will move away from the



spring arm when the key plug rotates so that the alarm signal will be brief when a proper key is used, and a short time delay in the alarm circuit then will withhold operation of an alarm. The short duration of the time delay enables the alarm to operate when the alarm signal is quite short, offering early warning when a picking instrument is inserted toward the tumblers.

3,797,005
BAR LOCK FOR SLIDING DOORS
Charles A. Schwarz, 1016-W. Broadway, Enid, Okla.
Filed Sept. 13, 1971, Ser. No. 179,916
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **4 Claims**

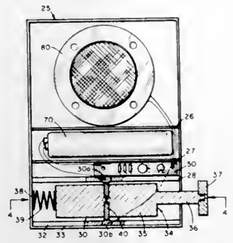


Apparatus for locking sliding doors including an alarm which will indicate the presence of an unauthorized person when the sliding door is being forced. The apparatus includes a telescoping bar which can be pivotally attached at one end to a sliding door with the remote end of the bar engaging a fixed structure. The remote end of the bar includes a trigger electrically connected to an alarm which is energized when the door is forced open a slight amount.

3,797,006
SAFETY ALARM SYSTEM AND SWITCH
Frederick Reininger, 7 Oak Park Ave., Darien, Conn.
Filed July 26, 1972, Ser. No. 275,300
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 **2 Claims**

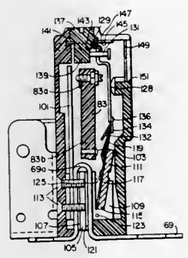
A safety alarm system adapted for placement in a cabinet to monitor uncontrolled entry into the cabinet by sounding an

alarm when the door to the cabinet is left opened for more than a predetermined time. Conventional usage of the cabinet will not trigger the alarm, but when the cabinet door is left open for an inordinate period of time, as would by typical



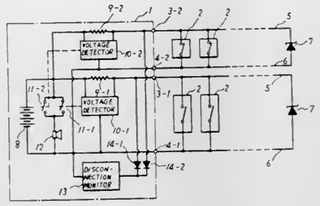
when an exploring child has entered, the alarm will sound. Also, provision is made for an adult to conveniently inactivate the alarm if the cabinet door need be left opened for a relatively long time. In such case, the ultimate closing of the cabinet door automatically resets the alarm.

3,797,007
CIRCUIT INTERRUPTER PROTECTIVE DEVICE
John G. Salvati, Beaver Falls, and Paul Skalka, Beaver, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Mar. 29, 1973, Ser. No. 346,230
Int. Cl. H01h *9/00*
U.S. Cl. 335—176 **8 Claims**



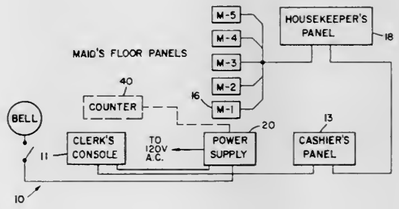
A circuit interrupter protective device responsive to abnormal currents in conductors of an electrical distribution system characterized by a circuit breaker within a first insulating housing and having a mechanism for opening and closing separable contacts which mechanism comprises a releasable member movable between latched to unlatched positions, trip means comprising a stationary magnetic structure for each conductor as well as a coil and core assembly, an armature therefor, a trip bar movable to unlatch the circuit breaker mechanism and biased in the latched position, lever means associated with the stationary magnetic structure for moving the trip bar to the unlatched position, the lever means comprising the armature and being movable in response to abnormal currents in at least one of the conductors, the lever means being biased away from the core assembly, and means for increasing the electrical current range between maximum and minimum air gaps of the magnetic circuit.

3,797,008
FIRE DETECTING SYSTEM
Hayami Yuasa, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan
Filed Jan. 21, 1972, Ser. No. 219,723
Claims priority, application Japan, Feb. 4, 1971, 46-4032
Int. Cl. G08b *17/06*
U.S. Cl. 340—227 **1 Claim**



A fire detecting system having a voltage source, a pair of conductors extending from the source with a plurality of fire detectors connected across the conductors, means at the end of said conductors placing a constant load on the voltage source and means adjoining the voltage source for detecting loss of said load resulting from a break in one of said conductors.

3,797,009
ROOM STATUS SYSTEM FOR HOTELS
Cleveland B. Crudgington, Jr., P.O. Box 836, San Rafael, Calif.
Filed Nov. 5, 1970, Ser. No. 87,248
Int. Cl. G08b *5/00*
U.S. Cl. 340—286 R **6 Claims**

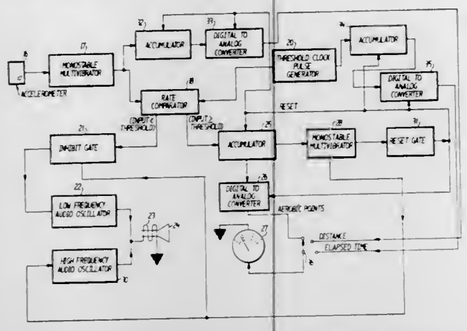


A closed signaling system which enables the status of a plurality of rooms in a hotel, motel or motor inn, to be quickly ascertained as to occupancy or service condition from a central station. The system comprises a clerk's console at the front desk which is electrically connected to a panel at the cashier's station and to either a housekeeper's panel or to separate room or floor panels. At the clerk's station, cashier's station, floor panels, or housekeeper's station, rooms are represented on the panels by button-lights incorporating a switch. Each button-light utilizes an ionizing gas glow lamp, such as a neon lamp, that is connected to its own voltage divider circuit, controlling the on-off condition of the bulb. These circuits are interconnected at the various stations in the system so that the light for one room at one station can be controlled by actuation of a switch for the same room at another station. Variations in room panels provide for signaling in different ways to indicate either inspection or occupancy status as well as a maid locator function.

3,797,010
JOGGING COMPUTER

Ronald E. Adler, 1410 35th St. N.W., Washington, D.C., and Ronald F. Bax, 6736 Bowie Dr., Springfield, Va., assignors to said Adler and Bax; Gary Coates, Ashton, Md. and Wayne Johnson, Alexandria, Va., part interest to each

Filed July 31, 1972, Ser. No. 276,470
Int. Cl. G08b *23/00*
U.S. Cl. 340—323 **16 Claims**

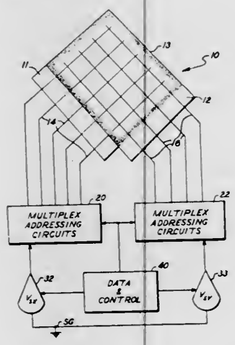


This disclosure relates to a portable solid-state device for measuring and indicating physical exercise achievement attained through exercises, for example, walking, running and/or jogging in place or over a distance course in accordance with a predetermined exercise regimen. The device includes a digital computer to which is fed the output from an electromechanical sensor adapted to generate an electrical impulse in response to each step taken by an individual while walking, running or jogging at or above a predetermined rate. The computer counts the number of steps taken by the exerciser and measures the rate thereof, and integrates the product of the number and rate over the period of the exercise. The level of the integral is continuously compared to a pre-programmed schedule of a predetermined exercise regimen, and either audible or visual signal means or both are provided for indicating desired levels of achievement of the exercise regimen.

3,797,011
OPERATION OF GASEOUS DISCHARGE DISPLAY/MEMORY PANELS

William D. Petty, Perrysburg, and David E. Liddle, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 8, 1972, Ser. No. 251,608
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 M **5 Claims**

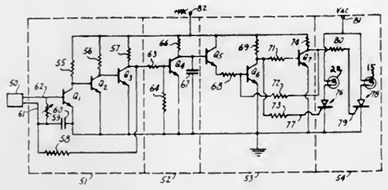


A gas discharge display/memory panel uses operating control pulses in the saturation mode. The operating control pulses include discharge initiating and/or discharge terminating pulses, each selected pulse being of a magnitude such that every discharge associated with each selected pulse occurs in the saturation mode and the effects of panel non-uniformity are minimized.

3,797,012
AMBIENT CONDITION RESPONSIVE VISUAL INDICATOR

Charles H. Gibbs, Woodstock Rd., Gates Mills, Ohio, and William O. Martim, 13460 Shady Ln., Chesterland, Ohio

Filed Mar. 4, 1971, Ser. No. 120,822
Int. Cl. G08b *5/00*
U.S. Cl. 340—366 R **24 Claims**

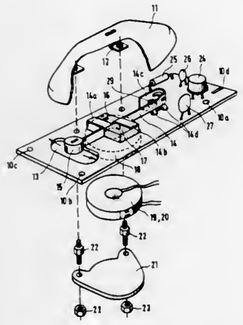


A visual indicating system comprised of a translucent panel including an opaque reflected image formed on its front surface and an opaque coating on its back surface which includes uncoated areas which form a transmitted image. The transmitted light image includes areas colored identically to the reflective image which are positioned immediately behind and encompassing the reflective image of similar color. Selective illumination means are disposed for illuminating the translucent panel thereby causing one of the images to be dominate over the other.

3,797,013
ELECTRIC BELL FOR ALARM CLOCKS

Hans Flaig, Schramberg-Sulgen; Robert Wolber, Lauterbach; Otto Hettich; Friedrich Assmus, both of Schramberg, and Josef King, Schramberg-Sulgen, all of Germany, assignors to Gebruder Junghams G.m.b.H., Schramberg, Germany

Filed May 19, 1971, Ser. No. 144,807
Claims priority, application Germany, June 8, 1970, 7021446
Int. Cl. G08b *3/00*
U.S. Cl. 340—396 **12 Claims**

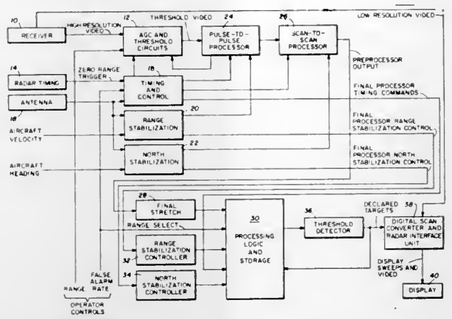


An electric bell for attachment as a unit to an electric alarm clock, the unit including a printed circuit board having a transistorized oscillator circuit on one side thereof and a leaf spring oscillating hammer on the other side thereof, the hammer being generally enclosed by a bell.

3,797,014
AUTOMATIC RADAR TARGET DETECTION AND SCAN CONVERSION SYSTEM

Birnam R. Tompkins, Plano, and John K. Smith, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 21, 1970, Ser. No. 74,097
Int. Cl. G01s *9/06*
U.S. Cl. 343—5 DP **10 Claims**



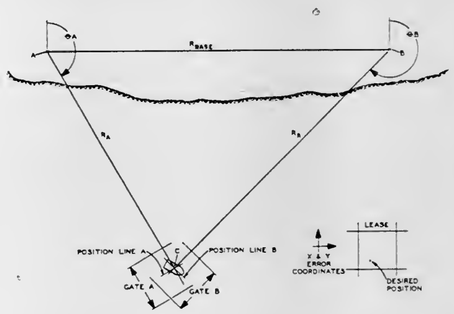
The specification discloses an automatic detection system for use with, for example, an airborne radar system. Automatic gain control circuitry is responsive to a predetermined false alarm rate for varying the amplitude of radar video signals derived from the airborne radar system. Threshold circuitry is connected to the output of the automatic gain control circuitry for passing only the radar video signals above a selected threshold. A pulse-to-pulse processor operates upon the output signals from the threshold circuitry to generate signals representative of the existence of a valid target return only if the target return occurs for a predetermined consecutive number of radar returns. A scan-to-scan processor is responsive to the output of the pulse-to-pulse processor for generating a valid target signal only when a predetermined number of target returns occur during a selected number of radar antenna scans. A final processor processes the output of the scan-to-scan processor longer than a lifetime of clutter spikes in order to generate an output signal representative of valid target returns. A range stabilization system stabilizes the pulse-to-pulse processor, scan-to-scan processor, and final processor with respect to range in dependence upon the aircraft velocity. A north stabilization circuit stabilizes the scan-to-scan processor and final processor with respect to a predetermined azimuth to enable operation of the system during an aircraft turn. A digital scan converter system is responsive to the output of the final processor for operating a multimode display.

3,797,015
METHOD OF AND SYSTEM FOR LOCATING A POSITION

Albert A. Elwood, P.O. Box 10592, Riviera Beach, Fla.

Continuation-in-part of Ser. No. 833,638, June 16, 1969, Pat. No. 3,613,095. This application Oct. 4, 1971, Ser. No. 186,206The portion of the term of this patent subsequent to Oct. 12, 1988, has been disclaimed.
Int. Cl. G01s *5/14*
U.S. Cl. 343—112 D **34 Claims**

A method of and system for locating a position in which a plurality of frequency standard devices based on the action of the natural frequencies associated with transitions between energy states in atoms and/or molecules are synchronized or phase compared at the same initial location. Two of three frequency standard devices, in a two-dimensional embodiment, are placed at transmitting stations on a known baseline. The third device is at a third station, a receiving station, which receives signals from the two transmitting stations. At each transmitting station, means are provided for producing and transmitting a radio frequency carrier signal of fixed frequency and of fixed phase under the control of the frequency standard device associated with the respective station. The radio frequency carrier signals produced at the different transmitting stations differ in frequency. The radio frequency carrier signal produced at each transmitting station is modulated with a modulating signal produced under the control of the same frequency standard device which controls the means which produce the radio frequency carrier. At the receiving station, means are provided for producing a reference signal corresponding to the modulating signal and two radio frequency signals corresponding, in frequency, to the radio frequency carrier signals transmitted, the means at the receiving station being controlled by the frequency standard device associated with the receiving station. The reference signal is compared at the receiving station with the modulating signals recovered

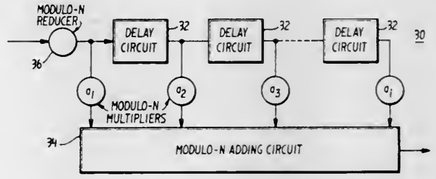


from the radio frequency carriers to determine respective time differences, the differences representing coarse position data from which the total number of phase rotations (full lanes) the receiving station is from each of the transmitting stations are determined. The phase relationships between each of the received radio frequency carrier signals and the respective one of the two radio frequency signals produced at the receiving station are determined, the relationships representing fine position data which are measurements of the receiving station position within a given phase rotation (lane). Methods and systems for locating a position in three dimensions are also described. The fine ranges, distances within given lanes, are respectively added by a computer to respective coarse ranges, each of which represents the total number of lanes to the full lane closest to respective ones of the transmitting stations, the totals being the distances between the receiving station and each of the transmitting stations.

3,797,016
DIGITAL MOVING TARGET INDICATOR RADAR SYSTEM INCORPORATING MODULO-N COMPONENTS

Raymond G. Martin, Ellicott City, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1972, Ser. No. 277,937
Int. Cl. G01s *9/42*
U.S. Cl. 343—7.7 **10 Claims**



A radar system is disclosed utilizing digital techniques for implementing a moving target indicator (MTI) or pulse dop-

pler type of radar system. More specifically, the radar system includes an MTI filter or canceler circuit for suppressing clutter signals corresponding to stationary and/or relatively slow-moving targets, while providing an output signal indicative of echo signals received from relatively fast-moving targets. The canceling circuit of this invention achieves moving target detection with digital apparatus having a capability of processing only a limited number of digital bits. The MTI filter of this invention incorporates modulo-N components having a modulus or linear range so that the minimum detectable signal of interest lies therein. The higher magnitudes of signals corresponding to echo signals received from stationary and/or slowly-moving objects will be canceled by the canceling circuit, normally. If echo signals are developed from moving targets that are of higher magnitudes than the modulus, these signals will be "aliased" by the modulo-N components about the levels N/2 and −N/2 to provide a noise-like output. Regardless of the amplitude of the echo signals derived from a relatively fast-moving target, detecting means is provided to detect the absence or presence of such signals.

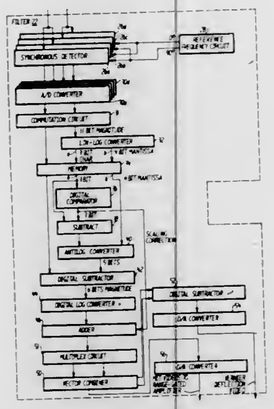
3,797,017
DIGITAL MTI RADAR SYSTEM

John W. Taylor, Jr., Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 5, 1972, Ser. No. 295,338

Int. Cl. G01s *9/42*

U.S. Cl. 343—7.7 **15 Claims**



A radar system is disclosed utilizing digital techniques for implementing a moving target indicator (MTI) or pulse doppler type of radar. Significantly, the radar system of this invention has an inherent capability for far greater dynamic range than analog radar systems of the prior art, thereby enabling the detection of moving targets in a greater variety of operating environments. In a digital radar system, the achieved dynamic range is dependent upon the number of bits that the apparatus of the system is able to store and handle. In prior art digital radar systems, increased dynamic range was achieved by utilizing simple storage devices or handling devices capable of operating upon a greater number of bits. The obvious disadvantage of this approach, is the increasing cost of such equipment. In contrast to the prior art systems, this radar system incorporates apparatus for converting digital data into a logarithmic format, which converted data may then be handled and stored by apparatus of less complexity and cost.

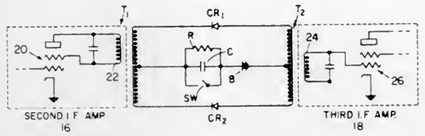
3,797,018
MEANS FOR ENHANCING THE TARGET DETECTION CAPABILITY OF A RADAR RECEIVER

Lowell V. Thompson, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 22, 1967, Ser. No. 670,522

Int. Cl. G01s *7/28*

U.S. Cl. 343—17.1 R **6 Claims**



A non-linear coupling circuit for incorporation into the I-F amplifier section of a radar receiver in order to improve the sub-clutter visibility thereof, such circuit acting in a discriminatory fashion to pass therethrough desired target signals while materially attenuating extended clutter and "jamming" energy. The circuit includes a pair of crystal diodes to which is applied a bias voltage derived from this clutter or jamming energy, such bias acting to preclude passage through the diodes of a major portion of the undesired signal while the target indications undergo negligible attenuation. The visibility of the latter is thus greatly enhanced on the radar scope.

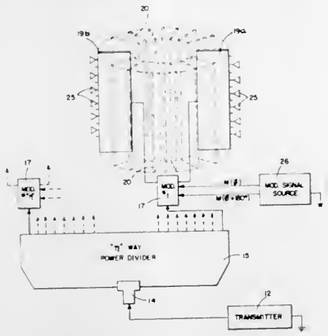
3,797,019
LOW LOSS MODULATION SYSTEM FOR USE WITH ANTENNA ARRAY

Lowell N. Shestag, Woodland Hills, and Donald E. Kreinheder, Granada Hills, both of Calif., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 18, 1972, Ser. No. 298,555

Int. Cl. G01s *1/50*

U.S. Cl. 343—106 R **15 Claims**



An antenna array has paired radiating elements which are modulated in phase opposition. Such modulation is accomplished by means of semiconductor modulator elements, one of such elements being connected to the feed line for each of the paired antenna elements. Modulation signals are fed to the paired semiconductor elements in phase opposition relationship to vary the effective impedance of such elements accordingly, thereby causing the power fed to one of the associated paired antenna elements to increase while that to the associated paired element is decreasing, this in accordance with the modulation signal, the sum of the power radiated by the paired elements remaining constant. Power losses are thereby minimized.

3,797,020
MICROWAVE ANTENNA STRUCTURE WITH APERTURE BLOCKING ELIMINATION

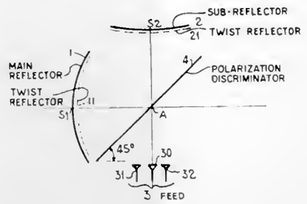
Joseph Roger, and Claude Aubry, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sept. 5, 1972, Ser. No. 286,407

Claims priority, application France, Sept. 22, 1971, 71.34067

Int. Cl. H01q *19/00*

U.S. Cl. 343—756 **10 Claims**



An aplanatic multi-beam antenna free from aperture-blocking effect comprises a convex main reflector and a concave subsidiary reflector whose axes orthogonally intersect at a planar network of parallel wires including an angle of 45° with these axes. The wire network discriminates between waves polarized in two mutually orthogonal planes, passing one type of wave and reflecting the other. Each curved reflector is provided with means for rotating the plane of polarization of an incident wave through 90° upon reflection. The reflectors form a focusing system with a focal plane containing one or more transducers for emitting or receiving radiation of a polarization passing the discriminator before striking the first reflector whence they are directed, via the reflecting discriminator, to the second reflector; upon leaving the latter reflector, they have a direction of polarization enabling them to clear the discriminator once more.

3,797,021
METHOD OF RECORDING A PATTERN IN AN ELECTROSTATIC RECORDING UNIT

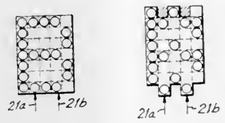
Makoto Hida, and Akira Goto, both of Yokohama, Japan, assignors to Jujitsu Limited, Kawasaki, Japan

Filed July 12, 1971, Ser. No. 161,773

Claims priority, application Japan, July 15, 1970, 45-61514

Int. Cl. G01d *15/06*

U.S. Cl. 346—74 ES **3 Claims**



In a method of recording a pattern in an electrostatic recording unit and the like in which dot patterns are formed by recording needles positioned in zigzag relation and moved toward the direction of feeding of a record medium, pattern signals are read out of a memory unit in which they are stored. The pattern signals are stored to be shifted in correspondence with the zigzag-positioned recording needles, and a pattern overflow area produced by shifting in correspondence with the zigzag-positioned recording needles is stored in the blank portion of the pattern area. The pattern signals read out are converted to the new pattern signals in correspondence with zigzag-positioned recording needles. The new pattern signals are applied to the zigzag-positioned recording needles to store in the record medium a pattern stored in the memory unit.

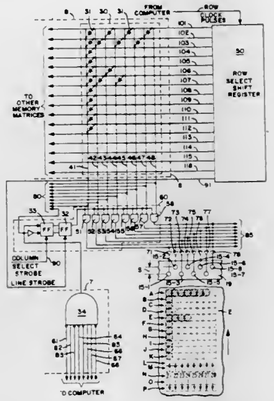
3,797,022
APPARATUS AND METHOD FOR REPRODUCTION OF CHARACTER MATRICES INK JET PRINTER USING READ ONLY MEMORY

Dale Rickard Beam, Dayton, and Edward Raymond Thomas, Kettering, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed July 25, 1972, Ser. No. 274,894

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **1 Claim**



ON/OFF character printing apparatus and a memory device therefor includes a print head with spaced rows of ON/OFF marking elements for placing marks in predetermined cells within a character matrix. A mark receiving web is transported in mark receiving relation to the print head and is printed with selected characters. Delay inherent in movement of the web from one row of marking elements to another is compensated by appropriate programming of read only memory are so interconnected that sequential activation of the input lines produces parallel outputs with the required relative delays.

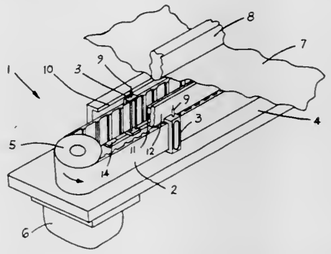
3,797,023
STYLUS ASSEMBLIES

David Shaler, Madison, and John H. Long, Oakland, both of N.J., assignors to Muirhead, Inc., Mountainside, N.J.

Filed Feb. 5, 1973, Ser. No. 329,648

Int. Cl. G01d *15/16, 15/18*

U.S. Cl. 346—139 A **10 Claims**



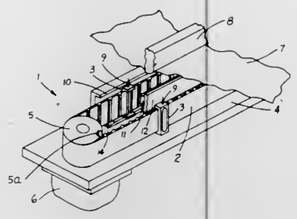
A stylus construction utilizing a spring urged stylus. In one embodiment the stylus is withdrawn until an actuating member contacts a ramp lifting the stylus in operating position. In the other embodiment the stylus is spring urged outwardly and the actuating member contacts the ramp to withdraw the stylus. The construction prevents damage to the recording sheet from the stylus as the stylus approaches the recording sheet to start the recording line.

3,797,024

STYLUS MOUNTING FOR BELT-TYPE FACSIMILE RECORDER

David Shaler, Madison, and John H. Long, Oakland, both of N.J., assignors to Muirhead, Inc., Mountainside, N.J.

Filed Feb. 5, 1973, Ser. No. 329,647
Int. Cl. G01d *15/16, 15/18*
U.S. Cl. 346—139 A 14 Claims



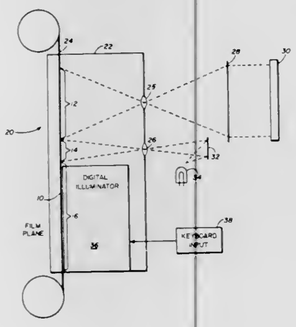
A stylus mounting held in position on a toothed belt by pin members extending into the spaces between adjacent teeth of the belt. In one construction a pair of pin members is used while in the other construction a single pin member is used.

3,797,025

PHOTOGRAPHIC DATA STORAGE METHOD SYSTEM AND MEDIUM

Marvin L. Murphy, Jr., and Albert R. Keyser, Jr., both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 862,692, Oct. 1, 1969. This application Jan. 10, 1972, Ser. No. 216,751
Int. Cl. G03b *17/24*
U.S. Cl. 354—77 9 Claims



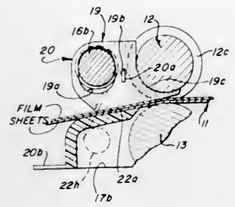
A method, system and storage medium for capturing, storing, and retrieving large inventories of photographic data with high resolution is disclosed. The image to be stored is projected onto a predetermined limited area of a photographic film. Machine readable data identifying the image is projected onto another portion of the photographic film. The film is then developed and cut to the dimensions required by conventional card reading and collating machines so that the photographic data can be mechanically retrieved from storage.

3,797,026

DEVICE FOR USE WITH SELF-DEVELOPING FILM

Israel Nesson, Fair Lawn; Robert G. Palmer, Wayne; Edwin E. Faris, Wyckoff, and Charles J. Hertling, Bloomfield, all of N.J., assignors to Berkey Photo, Inc., Paramus, N.J.

Continuation-in-part of Ser. No. 229,942, Feb. 28, 1972, Pat. No. 3,130,065. This application Dec. 13, 1972, Ser. No. 314,725
Int. Cl. G03b *17/52*
U.S. Cl. 354—85 2 Claims



A device is provided for use in a camera utilizing self-developing film. The film in question comprises a rupturable pod of processing liquid which is sandwiched betwen a pair of photographic sheets. Attached to the exterior of one of the sheets and disposed adjacent the leading end thereof is an elongated removable feeder tab. The device is disposed within the camera and includes a pair of elongated spreader members which are biased towards one another to assume a substantially superposed relation and define an longated predetermined minimum gap through which the photographic sheets and the pod, when in a collapsed state, are caused to move. As the film moves through the gap, the pos is ruptured and the processing liquid uniformly spread between the sheets. Compression means are disposed adjacent the infeed side of the gap and provide uninterrupted pressure on the opposite marginal segments of the film sheets. Compressive pressure is continuously exerted along a wide uninterrupted band on opposite marginal segments of the film from a location substantially upstream of the spreader members into the gap between the spreader members and thereby confining the spread of the processing liquid to between the compressed wide bands formed on the marginal segments. Portions of the compression means extend into the gap and engae the film while the latter is moving therethrough. The device includes a guide means which is disposed adjacent the infeed side of the gap and directs the leading end of the film into the gap. The feeder tab carried by one of the photographic sheets is positioned over the guide member so as to circumvent the gap. The feeder tab projects outwardly from the camera housing and, as it is manually pulled therefrom, the feeder tab will cause the leading ends of the photographic sheets to pass through the gap and extend outwardly from the camera housing whereupon they may be grasped for manual pulling of the remainder of the film through the gap.

3,797,027

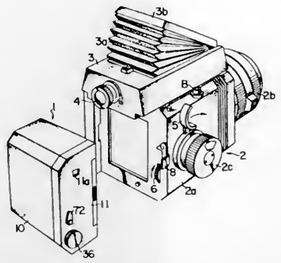
DEVICE FOR ADVANCING FILM IN A CAMERA

Norio Sakagami, Tokyo, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Nov. 5, 1971, Ser. No. 196,065
Claims priority, application Japan, Nov. 11, 1970, 45-99286
Int. Cl. G03b *19/04*
U.S. Cl. 354—203 4 Claims

A device for advancing non-perforated film in roll form from a supply spool to a take-up spool in a film holder attached to a camera includes a film winding lever secured to

the camera which is operatively connected to film advancing members by a gear arrangement. As the film is advanced, the angular rotation of a guide roller for the film is detected so that the film can be moved forwardly a specific amount for



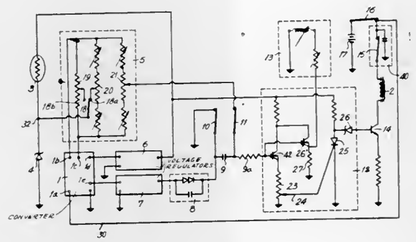
each exposure. Further, as the film is rolled onto the take-up spool the rotation of the guide roller is used for operating a film frame member indicating dial for providing a visible indication of the number of exposures made.

3,797,028

ELECTRIC CAMERA SHUTTER WITH RELATED CONTROLS

Seinan Miyakawa, Tokyo, and Hisawo Tanaka, Fukuoka-machi, both of Japan, assignors to Asahi Kohaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 9, 1972, Ser. No. 251,762
Claims priority, application Japan, May 11, 1971, 46-36974
Int. Cl. G03b *9/62, 7/08*
U.S. Cl. 354—235 3 Claims



A camera having electrical circuitry for automatically determining the extent to which film in the camera is exposed. The circuitry includes an electromagnet for terminating an exposure upon deenergizing of the electromagnet. A DC voltage source is electrically connected to the electromagnet and there is also electrically connected thereto a supply of a rippled direct current having a weak AC component. This latter supply which takes place simultaneously with the supply from the DC voltage source counteracts an electromagnetic attractive force generated due to magnetic hysteresis of the electromagnet when the latter is deenergized.

ERRATUM

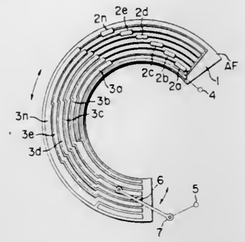
For Class 354—118 see:
Patent No. 3,796,485

3,797,029

VARIABLE RESISTOR FOR A CAMERA

Kanehiro Sorimachi, Yokohama, and Mutsuhide Matsuda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 174,720, Aug. 25, 1971, abandoned. This application Nov. 13, 1972, Ser. No. 306,036
Claims priority, application Japan, Aug. 27, 1970, 45-85289[U]
Int. Cl. G03b *9/62*
U.S. Cl. 354—235 10 Claims



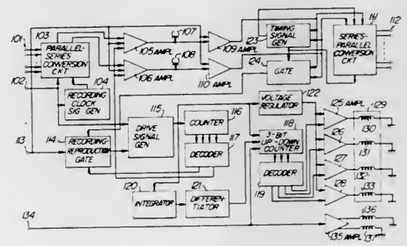
A variable resistor in the exposure control circuit of a camera is set to respond to two or more exposure-determining factors, such as film sensitivity, shutter speed, diaphragm value, distance to the object during flashing, etc. The resistor is composed of a plurality of conductive paths connected to terminals of a resistor and an armature in contact with the conductive paths and shifting from one conductive path to the next. The conductive paths are arranged so that movement in either one of the transverse directions produces a shift in contact between the conductive paths. Camera controls move the armature in the paths relative to each other. The armature and the paths are connected in th control circuit of the camera.

3,797,030

INTERMITTENT TAPE DRIVE TYPE DATA RECORDER

Toshio Katagiri; Tokuji Suga, both of Neyagawa; Shoji Omiya, Shijonawate, and Isamu Matsuda, Yao, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Aug. 31, 1971, Ser. No. 176,509
Claims priority, application Japan, Sept. 3, 1970, 45-77334; Sept. 4, 1970, 45-77665; Dec. 24, 1970, 45-131476; Dec. 24, 1970, 45-131477
Int. Cl. G11b *15/20*
U.S. Cl. 360—52 4 Claims

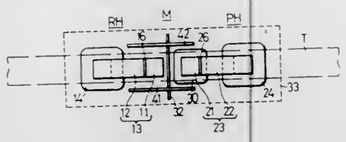


An intermittent tape drive type data recorder using a magnetic tape cassette as magnetic recording medium and employing a step motor for the capstan drive, whereby handling of the recording medium is facilitated and fully satisfactory intermittent magnetic tape drive characteristic can be achieved with a small-size construction to ensure reliable data recording and reproduction.

3,797,031
MAGNETIC HEAD ASSEMBLY WITH SHIELD MEANS FOR CONTROLLED CROSS-TALK FLUX

Yoshinori Hashimoto, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Filed June 1, 1972, Ser. No. 258,525
Claims priority, application Japan, June 5, 1971, 46-39632; June 5, 1971, 46-39633
Int. Cl. G11b *5/26, 5/20*
U.S. Cl. 360—121 3 Claims

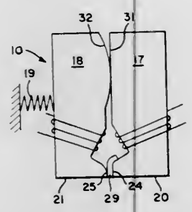


A recording and reproducing magnetic head assembly comprising a recording magnetic head for recording an information signal on a magnetic medium, a reproducing magnetic head for reproducing therefrom the information signal recorded thereon by the recording magnetic head, and at least one magnetic plate, in which each of the recording and reproducing magnetic heads has a magnetic core assembly consisting of I-shaped and C-shaped magnetic core members forming an effective gap therebetween and windings on said members including first and second windings wound on the I-shaped and C-shaped core members respectively of the reproducing head; the recording and reproducing magnetic heads are disposed close to each other with the I-shaped magnetic core member of the recording magnetic head being adjacent the I-shaped magnetic core member of the reproducing magnetic head; the magnetic plate is disposed to extend from the front of the C-shaped magnetic core member of the recording magnetic head to the I-shaped magnetic core member only of the reproducing magnetic head for passing therethrough unnecessary leakage fluxes from the recording magnetic head to the reproducing magnetic head; and the first and second windings of the reproducing magnetic head are connected in series with each other with a polarity and a number of turns such that outputs produced therein based on the information signal recorded on the magnetic medium may be added to each other but that outputs produced therein based on the unnecessary leakage fluxes from the recording magnetic head may be cancelled by each other.

3,797,032
CONSTANT GAP EXTENDED WEAR MAGNETIC TAPE HEAD

Jerry O. Kelley, Grass Valley, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed July 10, 1972, Ser. No. 270,084
Int. Cl. G11b *5/22*
U.S. Cl. 360—119 9 Claims

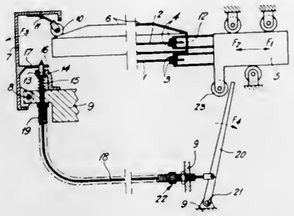


A magnetic transducer for magnetic tape includes a fixed pole member and a movable pole member. The gap surface of the movable pole member is movable toward and away from that of the fixed pole member, and tapers away therefrom at an acute angle. The tape moves along extended surfaces of the pole members to minimize wear adjacent the gap surfaces thereof, and a generally convex surface on the rear of the movable pole member rotates against a surface of the fixed pole member to maintain the gap surfaces in alignment.

3,797,033
SAFETY DEVICE FOR A READ-WRITE APPARATUS OF MAGNETIC DISKS

Lucien Robert Prieur, Ecouen, France, assignor to Societe Industrielle Honeywell Bull, Paris, France

Filed July 14, 1972, Ser. No. 271,885
Claims priority, application France, Apr. 8, 1972, 71.28579
Int. Cl. G11b *1/02*
U.S. Cl. 360—98 12 Claims

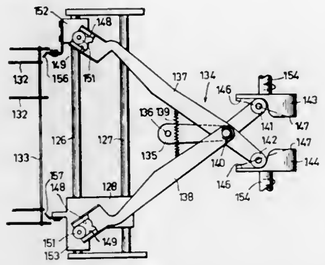


A safety device for a read and write apparatus with at least one removable magnetic disk enclosed in a cartridge with openings for retractable elements moving from the operating position in the cartridge to the rest position outside the cartridge; the above mentioned cartridge is held in place on the apparatus by means of removable attachments located on its outer surface. The device is provided with means for controlling the movement of the above mentioned elements and co-operating with the above mentioned attachments to prevent the possibility of removing the cartridge from the apparatus while said elements are even partially located in the cartridge.

3,797,034
DEVICE FOR SETTING THE TRACK OF RECORDS

Herbert Weldanz, Odenthal-Globusch, and Gerhardt Sandt, Cologne, both of Germany, assignors to Datagraph A.G., Zug, Switzerland

Filed Sept. 29, 1972, Ser. No. 293,801
Claims priority, application Germany, Oct. 16, 1971, 2151595
Int. Cl. G11b *5/48*
U.S. Cl. 360—88 12 Claims

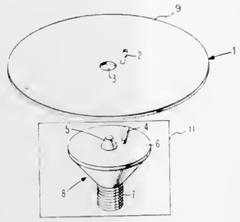


Device for positioning movable reader stations relative to the track of sheet-like records carriers, in which a carrier is brought into a fixed position, track setting slides being provided which are movable between a retracted and a projecting position. In the projecting position the slide indicates a chosen track to be read on the carrier. The reader station moves along a path until it contacts the slide, the reader station being then in the position to read the chosen track.

3,797,035
RECORDING MEDIA ORIENTATION

Ronald E. Hunt, and Larry H. Robbins, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1971, Ser. No. 265,841
Int. Cl. G11b *23/14, 25/04*
U.S. Cl. 274—41.4 9 Claims

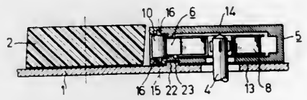


A recording media having orientation means for defining a recording surface. The recording media is a flat circular disc rotatable about a central opening. The orientation means is adjacent the central opening and is made up of at least one opening. When only one opening is used, it must in general be asymmetrical with respect to any radius extending from the central opening. The central opening in the disc cooperates with a spindle on a recording apparatus turntable. Adjacent the spindle on the turntable is a cooperating orientation member which enters the orientation opening(s) only when the disc is properly positioned in the recording apparatus.

3,797,036
RECORDING AND/OR PLAYBACK APPARATUS AND CARTRIDGE FOR SUCH APPARARUS

Walter Eibensteiner, Vienna, Austria, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,322
Claims priority, application Austria, Nov. 13, 1970, 10234/70; Apr. 9, 1971, 3052/71
Int. Cl. G11b *15/66, 23/04*
U.S. Cl. 360—85 4 Claims

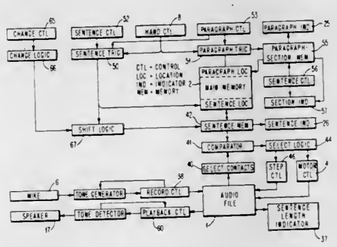


An apparatus for recording and/or playing back signals having a wide frequency spectrum on and/or from a tape-shaped record carrier such as video tape for video recording in combination with a video tape cartridge which accommodates said tape carrier. The apparatus has a deck for supporting the cartridge and a cylindrical drum about which said tape is to be wound so as to be engaged by transducer means associated with said drum. The cartridge is provided with at least one guide roller from which a portion of the tape extends in a straight line between said guide roller and said drum. Cartridge positioning means are provided whereby cooperating positioning elements located on the deck and on the cartridge engage so that the cartridge is positioned in a predetermined location on the deck with respect to the drum so that the position of said roller is accurately determined in order to determine the angle of wrap of said tape about said drum. The positioning means are in the area of the guide roller and may take the form of a pin-and-hole connection coaxially arranged with the axis of the guide roller.

3,797,037
SENTENCE ORIENTED DICTATION SYSTEM FEATURING RANDOM ACCESSING OF INFORMATION IN A PREFERRED SEQUENCE UNDER CONTROL OF STORED CODES

Robert A. Kolpek, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

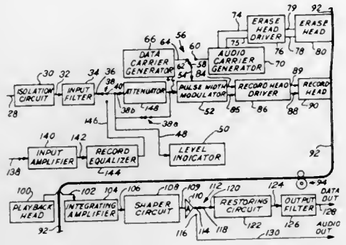
Continuation of Ser. No. 50,683, June 29, 1970, abandoned. This application June 6, 1972, Ser. No. 260,343
Int. Cl. G11b *5/00*
U.S. Cl. 360—72 9 Claims



A system for recording audio signals on a record medium cooperating with a transducer means, with the record medium having a plurality of segment storage areas, such as individual tracks on a belt or card, or the like, and with the storage of information taking place on a sentence, paragraph, or letter (section) basis under dictator control. The system includes means mounting a record medium for transducing operations to record and reproduce signals, a microphone input means having control buttons and a separate control panel with provision for random selection of signal tracks on the media, means for storage of related digital codes indicative of a preferred sequence of accessing of the tracks on the medium and provision for rearranging the stored digital information to revise the preferred sequence of accessing. In a preferred embodiment, the system includes a magnetic belt recording-reproducing console with tracks on the belt arranged to store audio information by sentences and by paragraphs. The unit may also be used for transcription purposes with accessing of the sentences and paragraphs in the final preferred sequence being under control of the stored digital accessing information.

3,797,038
DATA OR AUDIO RECORDING AND PLAYBACK APPARATUS
Richard Brander, Cicero, Ill., assignor to Bettrone Electronics Corporation, Chicago, Ill.
Filed Apr. 29, 1971, Ser. No. 138,494
Int. Cl. G11b *5/44*
U.S. Cl. 360—29 **25 Claims**

Apparatus for recording and playing back either data or audio signals by use of modified pulse width modulation techniques. Triangular-shaped signals produced by a carrier generator are combined with data signals in a modulator to produce width modulated pulses containing data information that are recorded by a record head. Pulses containing audio information are also produced in the foregoing manner. However, the pulses are modified by use of a waveform modifying device that causes the peak value of the current conducted through the record head to vary in proportion to the width of the pulses produced by modulation. Recorded audio signals are picked up by a playback head and passed through an integrating amplifier and a shaper circuit which correct the frequency response characteristic of the record-playback process and reproduce the original audio signals. Recorded pulses containing data information are also played back through the playback head, integrating amplifier and shaper circuit to partially reconstruct the width modulated pulses originally produced for recording purposes. A restoring circuit



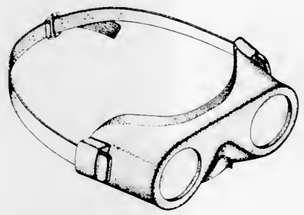
that reduces the transition time of the partially reconstructed pulses is also employed. The pulses produced by the restoring circuit are filtered by a low pass filter to reproduce the original data signals.

DESIGNS

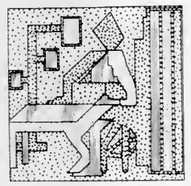
MARCH 12, 1974

230,663
COMBINED CHEST AND NECK PROTECTOR
Ann R. Fowler, 1239 B St., Hayward, Calif. 94541
Filed Feb. 16, 1971, Ser. No. 115,915
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27

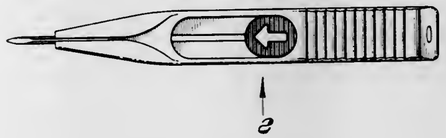
230,664
PAIR OF SWIM WORK-OUT GOGGLES
Aubrey Burer, 1542 La Playa Ave., San Diego, Calif. 92109
Filed Feb. 18, 1972, Ser. No. 227,696
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D2—234



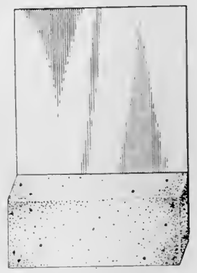
230,665
NEEDLEPOINT CANVAS
Marcia Podell, 233 E. 69th St., New York, N.Y. 10021
Filed July 8, 1971, Ser. No. 160,979
Term of patent 3½ years
Int. Cl. D6—*13*
U.S. Cl. D3—9 D



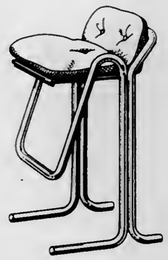
230,666
BUTTON ATTACHER
Bernard R. Lavitch, Encino, and Bernard H. Morry, Westlake Village, Calif., assignors to Products International Co., Compton, Calif.
Filed Dec. 11, 1972, Ser. No. 313,962
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D3—19 A



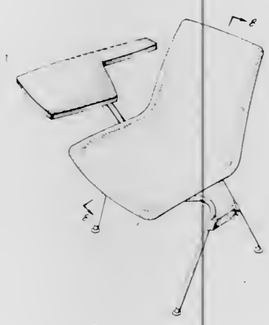
230,667
PAINT BRUSH
Robert P. Finnerty, 891 Prospect Heights, Santa Cruz, Calif. 95060
Filed June 7, 1971, Ser. No. 150,878
Term of patent 14 years
Int. Cl. D4—*04*
U.S. Cl. D4—38



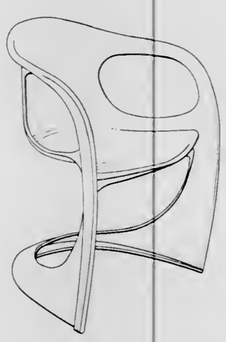
230,668
BAR STOOL
Jerry Johnson, Hiway 94-Rancho Cuerdo, Potrero, Calif. 92063
Filed June 26, 1972, Ser. No. 266,314
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—35



230,669
HINGED TABLET ARM CHAIR
Philip J. Hendrickson and Richard J. Resch, Green Bay, Wis., assignors to Krueger Metal Products, Inc., Green Bay, Wis.
Filed Jan. 27, 1972, Ser. No. 221,488
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—42

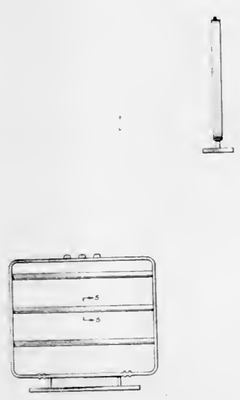


230,670
CHAIR
Alexander Begge, Dudinghausen, Germany, assignor to Casala-Werke Carl Sasse KG, Lavenau, Germany
Filed Aug. 25, 1972, Ser. No. 283,939
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

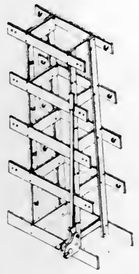


230,671
CHAIR
Jerry Johnson, Hiway 94-Rancho Cuerdo, Potrero, Calif. 92063
Filed June 26, 1972, Ser. No. 266,313
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

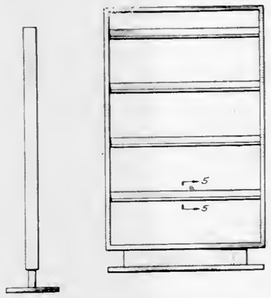
230,672
DISPLAY RACK
Thomas Strasser, New York, N.Y., assignor to Astra Products, Inc., Moonachie, N.J.
Filed June 14, 1972, Ser. No. 262,499
Term of patent 7 years
Int. Cl. D20—*02*
U.S. Cl. D6—85



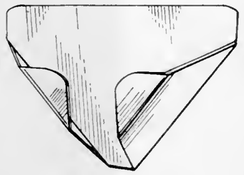
230,673
CHAIN DISPLAY STAND
Boyd A. Blackwell and William F. Dean, Jr., St. Louis, Mo., assignors to Nixdorff-Krein Manufacturing Company, St. Louis, Mo.
Filed Feb. 17, 1972, Ser. No. 227,326
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—85



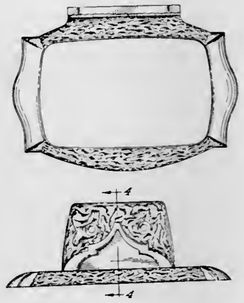
230,674
DISPLAY RACK
Thomas Strasser, New York, N.Y., assignor to Astra Products, Inc., Moonachie, N.J.
Filed June 14, 1972, Ser. No. 262,498
Term of patent 7 years
Int. Cl. D20—*02*
U.S. Cl. D6—85



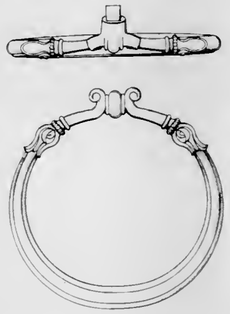
230,675
RAZOR RACK
Sheila S. Wilkins, 3018 Merrell Road, Dallas, Tex. 75229
Filed Jan. 21, 1972, Ser. No. 219,925
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—88



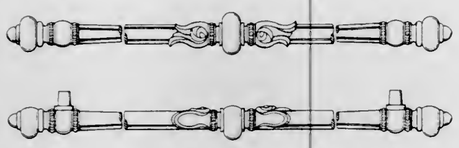
230,676
SOAP DISH HOLDER
Raymond U. H. Tegner, Lodi, Wis. (% Amerock Corporation, 4000 Auburn St., Rockford, Ill. 61101)
Original design application Jan. 10, 1972, Ser. No. 216,892. Divided and this application Mar. 30, 1973, Ser. No. 346,405
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—90



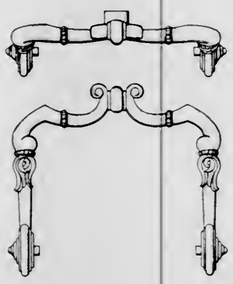
230,677
TOWEL RING
David P. Zagaroli, Hickory, N.C., assignor to Ajax Hardware Corporation, City of Industry, Calif.
Filed Mar. 14, 1973, Ser. No. 341,047
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



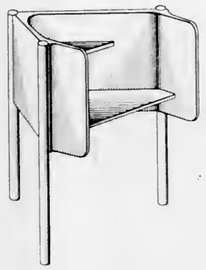
230,678
TOWEL BAR
David P. Zagaroli, Hickory, N.C., assignor to Ajax Hardware Corporation, City of Industry, Calif.
Filed Mar. 14, 1973, Ser. No. 341,048
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



230,679
TISSUE HOLDER
David P. Zagaroli, Hickory, N.C., assignor to Ajax Hardware Corporation, City of Industry, Calif.
Filed Mar. 14, 1973, Ser. No. 341,144
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97



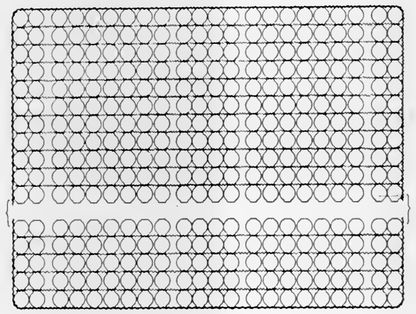
230,680
STUDY CARREL
Warren D. Petersen, St. Charles, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed Aug. 3, 1972, Ser. No. 277,620
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181



230,681
COMBINED FRAME AND DOOR PANEL UNIT FOR A STORAGE LOCKER
Harold P. Lhota and Thomas A. Joseph, North Canton, and Earl P. Leiter, Youngstown, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Feb. 15, 1972, Ser. No. 226,649
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D6—192

230,682
BASE FOR GARDEN UMBRELLA
Peter Stamm, Feld, Germany, assignor to Telesco Brophey Limited, East Montreal, Quebec, Canada
Filed May 30, 1972, Ser. No. 258,190
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—194

230,683
BED SPRING UNIT OR SIMILAR ARTICLE
Richard C. Roe, 226 E. Forest Lane, Palatine, Ill. 62451, and Wilton J. Davis, 108 S. Melville, Rensselear, Ind. 47978
Original design application Apr. 2, 1970, Ser. No. 22,430. Divided and this application Jan. 21, 1972, Ser. No. 219,919
Term of patent 14 years
Int. Cl. D6—*09, 01*
U.S. Cl. D6—201

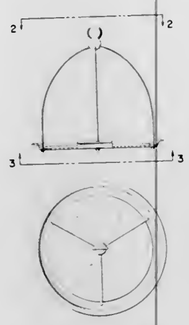


230,684
THROW RUG
Archie E. Warnberg, 3600 NW. 43rd St., Oklahoma City, Okla. 73112
Filed June 18, 1970, Ser. No. 23,554
Term of patent 14 years
Int. Cl. D6—*212*
U.S. Cl. D6—212

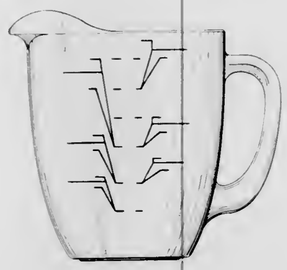
230,685
DRINKING CUP
Lydia Ann Higginson, 764 Paxton Ave., Salt Lake City, Utah 84104
Filed June 12, 1972, Ser. No. 261,672
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9

230,686
BEVERAGE GLASS OR SIMILAR ARTICLE
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Jan. 5, 1973, Ser. No. 321,244
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13

230,687
TRAY
Wilmot H. McCutchen, 2314 Ellsworth St., Berkeley, Calif. 94704
Filed May 8, 1972, Ser. No. 251,556
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—20

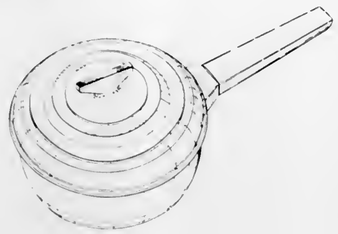


230,688
PITCHER
Ronald R. Cryer, 1620 Magnolia Lane, Fort Wayne, Ind. 46825
Filed Mar. 7, 1973, Ser. No. 338,646
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D7—50



230,689
CRUET
Peter L. Schweizer, Liberty Center, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jan. 15, 1973, Ser. No. 323,888
Term of patent 14 years
Int. Cl. D7—*06*; D9—*01*
U.S. Cl. D7—52

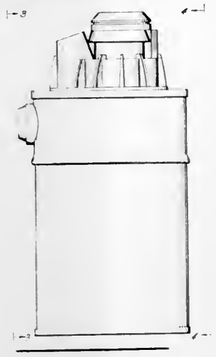
230,690
COMBINED SAUCEPAN AND LID THEREFOR
Graham John Aries, Pedmore, Stourbridge, England, assignor to Tower Housewares Limited, Wombourne, Wolverhampton, Staffordshire, England
Filed Mar. 10, 1972, Ser. No. 233,857
Claims priority, application Great Britain Sept. 10, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



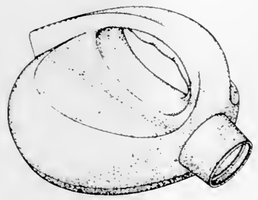
230,691
ADAPTOR TOP FOR A SERVING VESSEL OR THE LIKE
Glen B. Beckman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed June 14, 1972, Ser. No. 262,573
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—131

230,692
ELECTRIC VACUUM CLEANER
Murray G. Wachsman, Forest Hills, N.Y., assignor to Shop-Vac Corporation, Wood-Ridge, N.J.
Filed May 23, 1972, Ser. No. 256,203
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166

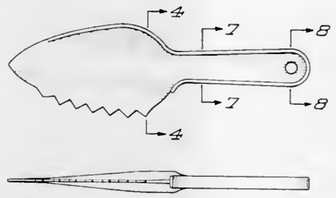
230,693
ELECTRIC VACUUM CLEANER
Murray G. Wachsman, Forest Hills, N.Y., assignor to Shop-Vac Corporation, Wood-Ridge, N.J.
Filed May 23, 1972, Ser. No. 256,202
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—166



230,694
COMBINED FILTER AND DUST CATCHER FOR VACUUM CLEANER SYSTEM
Felix H. Tevis, South Pasadena, Calif., assignor to Tevis Campbell Corporation, South Pasadena, Calif.
Filed Oct. 6, 1971, Ser. No. 187,217
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—170

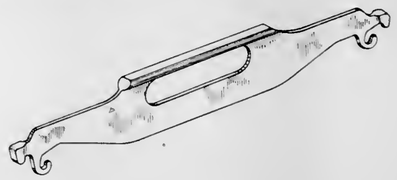


230,695
GARDEN TOOL
Richard O. Bartz, 7017 Mark Terrace Drive, Edina, Minn. 55435
Filed Apr. 25, 1973, Ser. No. 354,326
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—9

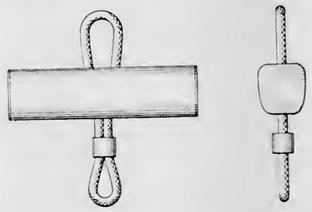


230,696
KNIFE
Torbjorn Evrell, Eskilstuna, and Olle Nordlund, Mjolby, Sweden, assignors to Eskilstuna Knivfabriks Aktiebolag, Eskilstuna, Sweden
Filed Jan. 11, 1973, Ser. No. 322,785
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

230,697
HANDLE FOR CARRYING AND STORING DATA BINDERS
John L. Sullivan, Floral Park, N.Y., assignor to The Mead Corporation, Dayton, Ohio
Filed Jan. 24, 1972, Ser. No. 220,541
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154



230,698
CARRYING HANDLE FOR GARMENT HANGERS
Nat B. Gentry, 12553 W. Alameda, Denver, Colo. 80228
Filed Oct. 12, 1971, Ser. No. 188,657
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154

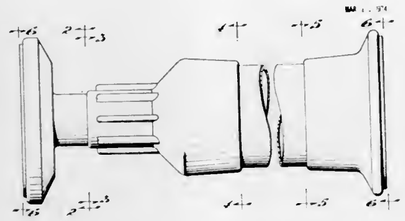


230,699
WALL PLATE OR SIMILAR ARTICLE
Paul E. Rochford, East Greenwich, R.I., and Frances Neuwirth, New York, N.Y., assignors to General Electric Company
Filed June 23, 1972, Ser. No. 265,814
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D8—182

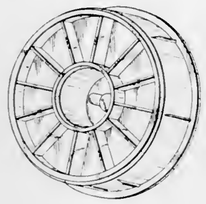
230,700
WALL PLATE OR SIMILAR ARTICLE
Paul E. Rochford, East Greenwich, R.I., and Frances Neuwirth, New York, N.Y., assignors to General Electric Company
Filed June 23, 1972, Ser. No. 265,813
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D8—182

230,701
SECURITY DOOR-POST
Hubert A. Lewis and Joseph W. Davis, Omaha, Nebr., assignors to Jubilee Manufacturing Company, Omaha, Nebr.
Filed Feb. 22, 1972, Ser. No. 228,438
Term of patent 7 years
Int. Cl. D8—*07*
U.S. Cl. D8—203

230,702
COMBINED CURTAIN ROD AND HOLDERS THEREFOR
George G. Jetter, Fort Recovery, Ohio, assignor to Fort Recovery Industries, Inc., Fort Recovery, Ohio
Filed Dec. 9, 1971, Ser. No. 206,596
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—209

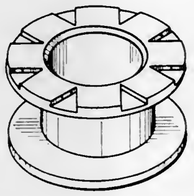


230,703
PAPER ROLL PLUG
Dana Franklin Nelson, Longview, Wash., assignor to Nelson-Ball Paper Products, Inc., Longview, Wash.
Filed Feb. 7, 1973, Ser. No. 330,314
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220

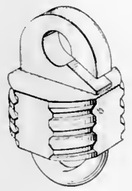


230,704
STANCHION FOR STORING AN ELECTRICAL CORD AND THE LIKE
David Y. Mulkey, 6 Main Place, Arlington, Tex. 76010
Filed Mar. 24, 1972, Ser. No. 238,025
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—220

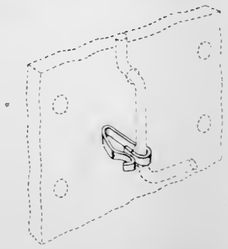
230,705
FISHING LINE RECEIVING ADAPTOR SPOOL
Larry L. Lilland and James T. Rumbaugh, Spirit Lake, Iowa, assignors to Berkley & Company, Inc., Spirit Lake, Iowa
Division of design application Ser. No. 16,979, May 1, 1969, which is a continuation-in-part of design application Ser. No. 11,853, May 9, 1968, and a division of design application Ser. No. 16,982, May 1, 1969, all now abandoned. Divided and this application Feb. 5, 1971, Ser. No. 113,111
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



230,706
HANGER FOR ELECTRIC LIGHT FIXTURES
Isidore Wolar, 290 Collins Ave., Mount Vernon, N.Y. 11152
Filed Sept. 13, 1972, Ser. No. 288,520
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—252



230,707
PEG BOARD HOOK LOCKING DEVICE
Kenneth T. McGowan, 8825 Elgin Place, Minneapolis, Minn. 83927
Filed Sept. 18, 1972, Ser. No. 291,088
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—255



230,708
BOTTLE OR SIMILAR ARTICLE
Wayne R. Hutter, Midland, Mich., and William C. Waterloo, York, Pa., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 1, 1972, Ser. No. 249,467
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

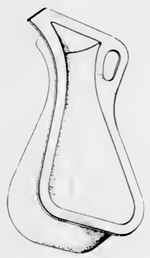
230,709
BOTTLE
James Ingram Cooper, Mississauga, Ontario, Canada, assignor to Twinpak Ltd., Dorval, Quebec, Canada
Filed July 10, 1972, Ser. No. 269,945
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—89

230,710
BOTTLE
Wade Ralph Purcell, South Bend, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Filed May 18, 1972, Ser. No. 254,848
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—118

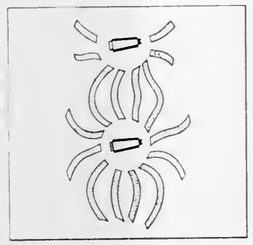
230,711
BOTTLE OR SIMILAR ARTICLE
Livingston C. Douglas, Leonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 21, 1972, Ser. No. 246,517
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—125

230,712
NECKTIE CONTAINER
Irving D. Tiss, 2 Archbridge Lane, Springfield, N.J. 07081
Filed Mar. 31, 1972, Ser. No. 240,340
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—200

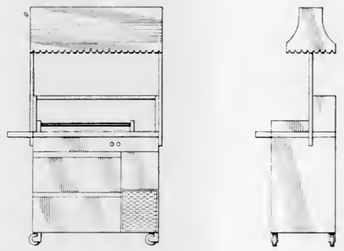
230,713
PACKAGING TRAY
William P. Jacobson, Rockford, Ill., assignor to Anderson Bros. Mfg. Co., Rockford, Ill.
Filed Sept. 16, 1971, Ser. No. 181,291
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242



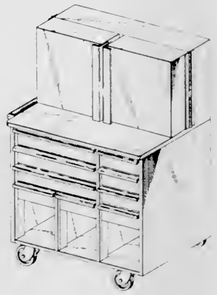
230,714
WRAPPING FOR CONFECTIONARY
Daniel Pearson, Culver City, Calif., assignor to W. R. Grace & Co., New York, N.Y.
Continuation of abandoned design application Ser. No. 166,328, July 26, 1971. This application Nov. 21, 1972, Ser. No. 308,609
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—250



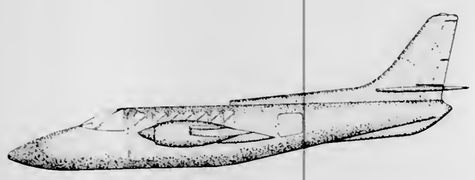
230,715
FOOD SERVICE CART
Ralph W. Horst, Thornton, Colo., assignor to Wyott Corporation, Cheyenne, Wyo.
Filed Mar. 27, 1972, Ser. No. 238,741
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—28



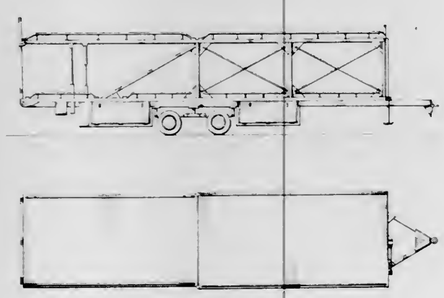
230,716
HOSPITAL EMERGENCY CART OR THE LIKE
Harry N. Ceranowicz, Webster, and Warren P. Ganter, Rochester, N.Y., assignors to Nunn Ceranowicz and Associates, Inc., Rochester, N.Y.
Filed Apr. 11, 1973, Ser. No. 350,039
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—28



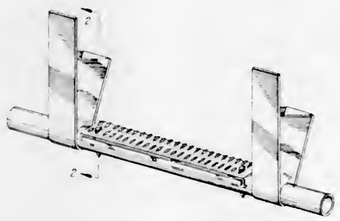
230,717
AIRCRAFT
Theodore R. Smith, Los Angeles, Calif., assignor to Ted R. Smith Associates, Inc., Van Nuys, Calif.
Filed Apr. 7, 1972, Ser. No. 242,272
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—80



230,718
INDUSTRIAL TRAILER ESPECIALLY ADAPTED FOR CARRYING GOLF CARTS AND THE LIKE
Raymond D. Martin, Jr., Centreville, Md., assignor to Centreville Tag-A-Long Trailers, Inc.
Filed Nov. 10, 1971, Ser. No. 197,610
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—94

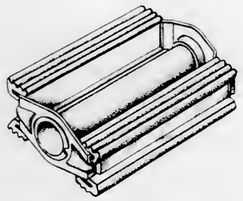


230,719
BUMPER STEP FOR TRAILERS
James Gouch, Youngstown, Ohio, assignor to Dennis L. Evans, Youngstown, Ohio
Filed Oct. 1, 1971, Ser. No. 185,923
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—106

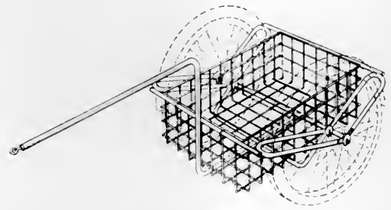


230,720
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Aug. 13, 1971, Ser. No. 171,790
Term of patent 14 years
The portion of the term of the patent subsequent to July 25, 1986, has been disclaimed
Int. Cl. D12—*11*
U.S. Cl. D12—118

230,721
REFLECTIVE VELOCIPEDE PEDAL
Carlton P. Pawsat and Robert F. Humlong, Maysville, Ky., assignors to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Dec. 1, 1971, Ser. No. 203,929
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—125

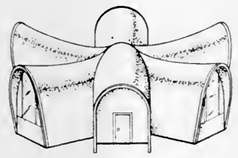


230,722
COMBINED TOWING ARM BASKET AND CARRYING FRAME FOR A BICYCLE TRAILER
Vincent J. Hlavin, 2741 Chesterton Road, Shaker Heights, Ohio 44122
Filed Feb. 4, 1972, Ser. No. 223,803
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158

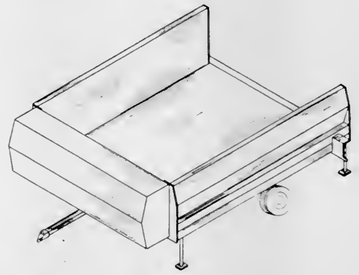


230,723
SHOCK ABSORBER
Arnold A. Cowan, 4600 Conchita Way, Tarzana, Calif. 91356
Filed Oct. 7, 1971, Ser. No. 187,598
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—159

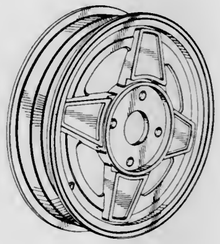
230,724
PREFABRICATED BUILDING
Juan José Díaz Infante, Parral 64–3, Mexico City 11, Mexico
Filed Sept. 4, 1970, Ser. No. 24,846
(Filed under Rule 47(b) and 35 U.S.C. 118)
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 E



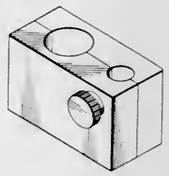
230,725
TRAILER FOR RECEIVING CAMPER UNITS OR THE LIKE
Vernon J. Lundell, Cherokee, Iowa 51012
Filed Mar. 9, 1972, Ser. No. 233,402
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3 F



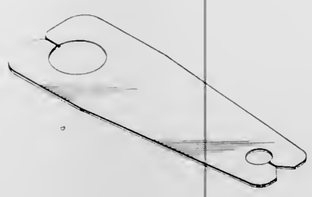
230,726
AUTOMOBILE WHEEL
Phillip Cravits, 545 S. Niagara St., Burbank, Calif. 91505
Continuation-in-part of design applications Ser. No. 241,867, 241,870 and 241,887, all Apr. 6, 1972, all now abandoned. This application Apr. 4, 1973, Ser. No. 347,907
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—30 R



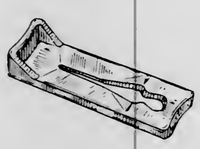
230,727
INTRAVENOUS CLAMP
Keith Stuart Richman, 4444 Libbit, Encino, Calif. 91316
Filed Oct. 16, 1972, Ser. No. 297,857
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D16—1 R



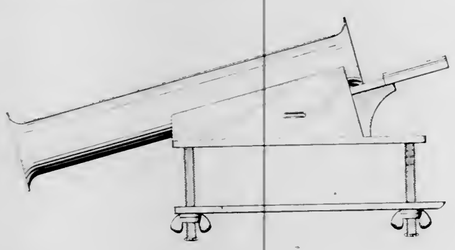
230,728
INTRAVENOUS STAY
Monroe F. Richman, 4444 Libbit, Encino, Calif. 91316
Filed Oct. 16, 1972, Ser. No. 297,858
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D16—1 R



230,729
TUBING SLIDE CLAMP
Armand Al Zeddies, Schaumburg, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Apr. 12, 1973, Ser. No. 350,558
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D16—1 R



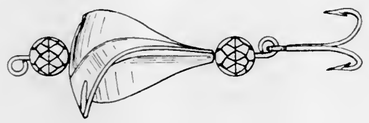
230,730
HOLDER FOR A FISHING ROD AND REEL
Basil D. Ingram, 222 N. Belcher Road, Clearwater, Fla. 33515
Filed Apr. 30, 1973, Ser. No. 355,899
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



230,731
FISHING LURE
Harold Drew Owen, 2605 Woodruff Road, Edmond, Okla. 73034
Filed Aug. 13, 1973, Ser. No. 387,775
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

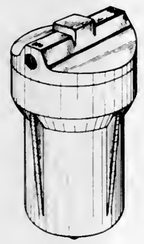
230,732
FISH LURE
Ewell J. Harris, Sunset Mobile Homes, Rte. 3, Box 135A, Adrian, Mich. 49221
Filed June 9, 1972, Ser. No. 263,744
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

230,733
FISHING LURE
Lawrence E. Morrissette, 340 Bd des Ecoles, 83140 Six Fours Plages, France
Filed Aug. 20, 1973, Ser. No. 389,489
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

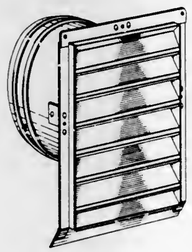


230,734
FISH LURE
Lawrence E. Morrissette, 340 Bd des Ecoles, 83140 Six Fours Plages, France
Filed July 30, 1973, Ser. No. 383,920
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

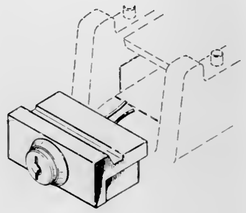
230,735
WATER FILTER
John M. Lents, P.O. Box 329, Lyons, N.Y. 14489
Filed Sept. 14, 1971, Ser. No. 180,543
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

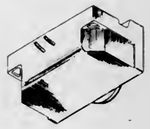


230,736
VERTICAL POWER VENT
Donald L. Rousey, Des Plaines, Ill., assignor to Questor Corporation, Toledo, Ohio
Filed Feb. 15, 1973, Ser. No. 332,623
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155

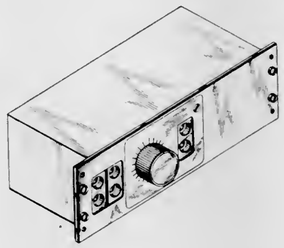


230,737
DEVICE FOR LOCKING TOUCH TONE TELEPHONES
John K. Roof, Sun City, Ariz., assignor to Woodrow T. Morrow, Paradise Valley, Ariz.
Filed Apr. 18, 1972, Ser. No. 245,292
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

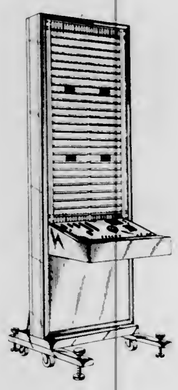




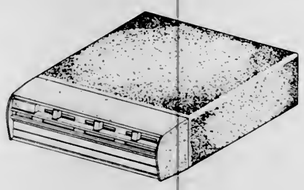
230,738
TELEPHONE TEST AND TALK-LINE MONITORING SWITCH APPARATUS
Paul V. De Luca, Port Washington, and William V. Carney, Valley Stream, N.Y., assignors to Porta Systems Corp., Roslyn, N.Y.
Filed Mar. 29, 1972, Ser. No. 239,402
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



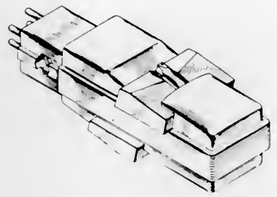
230,739
PORTABLE OUTGOING TRUNK EXTENDER APPARATUS FOR TELEPHONE OFFICE EQUIPMENT
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Roslyn, N.Y.
Filed Jan. 20, 1972, Ser. No. 219,611
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



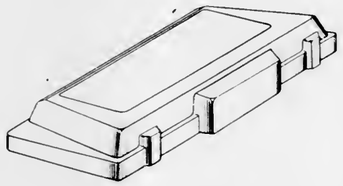
230,740
TAPE PLAYER OR SIMILAR ARTICLE
Marcus M. Artner, Chicago, and Paul D. McGee, Medinah, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 28, 1972, Ser. No. 230,204
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



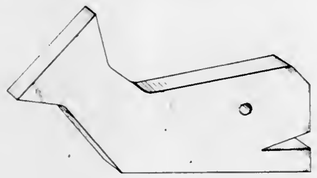
230,741
TWO-SIDED PHONOGRAPH PICKUP CARTRIDGE
Robert M. Kita, Mount Prospect, and Eduard A. Rusch, Hanover Park, Ill., assignors to Shure Brothers Incorporated
Filed Oct. 30, 1972, Ser. No. 301,975
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D26—14 D



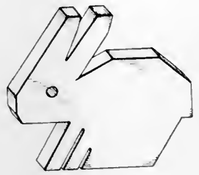
230,742
AQUARIUM TOP
Robert N. Rehlaender, 149 Cervantes Road 94062, and Glenn A. Smith, 1466 Maddux Drive 94061, both of Redwood City, Calif.
Filed July 17, 1972, Ser. No. 272,205
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



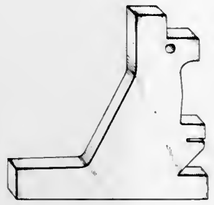
230,743
TOY WHALE FIGURE
Charles B. Root, Morristown, N.J., assignor to Educational Design Associates
Filed May 8, 1972, Ser. No. 251,569
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 C



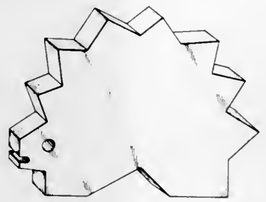
230,744
TOY RABBIT FIGURE
Charles B. Root, Morristown, N.J., assignor to Educational Design Associates
Filed May 8, 1972, Ser. No. 251,571
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 D



230,745
TOY KANGAROO FIGURE
Charles B. Root, Morristown, N.J., assignor to Educational Design Associates
Filed Aug. 23, 1972, Ser. No. 283,072
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

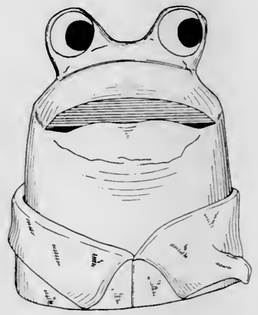


230,746
TOY HEDGEHOG FIGURE
Charles B. Root, Morristown, N.J., assignor to Educational Design Associates
Filed Mar. 23, 1972, Ser. No. 283,071
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

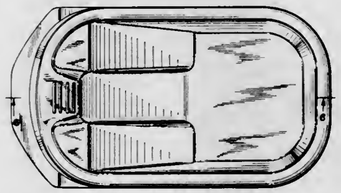


230,747
DOLL
Eloise Dunlap, Valley, Wash. 99181
Filed Sept. 15, 1972, Ser. No. 289,724
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

230,748
TOY FINGER PUPPET
David S. Matteson, Fort Lauderdale, Fla., assignor to The Broward County School Board, Fort Lauderdale, Fla.
Filed Aug. 6, 1971, Ser. No. 122,640
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

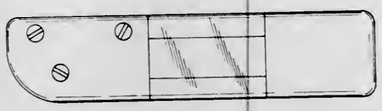


230,749
POOL
Bertram Brooks, Yonkers, N.Y., assignor to Carolina Enterprises, Inc., Tarboro, N.C.
Filed May 17, 1972, Ser. No. 254,343
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—5 F

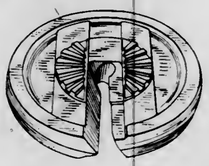


230,750
GOLF PUTTER
James D. Ehrich, 1600 W. 6th St., Mishawaka, Ind. 46544
Filed May 4, 1972, Ser. No. 250,483
Term of patent 7 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GC

230,751
GOLF PUTTER HEAD
Charles W. Simonsen, Denver, Colo. (P.O. Box 161, Sun City, Ariz. 85351)
Filed June 7, 1972, Ser. No. 260,714
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

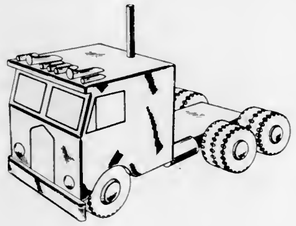


230,752
BARBELL WEIGHT
Henning J. Speyer, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed June 29, 1972, Ser. No. 267,352
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

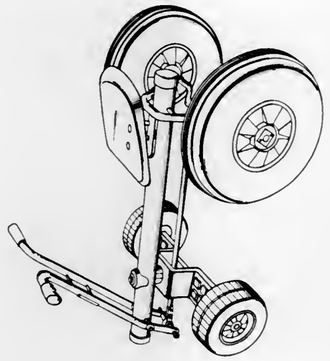


230,753
RACKET
George A. Vaughn and Richard D. Hargrave, Princeton, N.J., assignors to Maark Corporation, Cranbury, N.J.
Filed Aug. 2, 1972, Ser. No. 277,393
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST

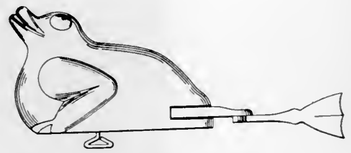
230,754
TOY TRUCK
Albert C. Oberlander, Box 963, or 323 N. Broadway, Linton, N. Dak. 58552
Filed Dec. 4, 1972, Ser. No. 311,754
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



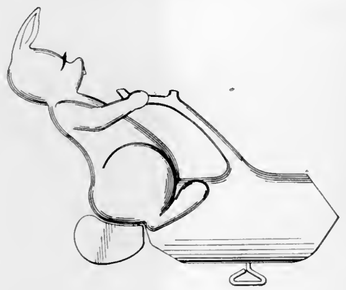
230,755
JUVENILE VEHICLE
Keith E. Brightbill, Nashville, Tenn., assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed July 18, 1972, Ser. No. 272,749
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



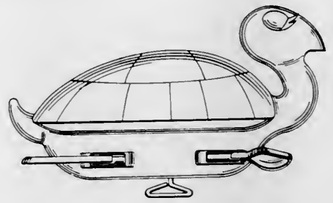
230,756
TOY FROG
Charles K. Grieder, 700 S. Lyon, Santa Ana, Calif. 92701
Filed Sept. 25, 1972, Ser. No. 291,866
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



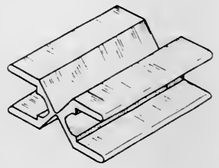
230,757
RABBIT FIGURE ON A LOG TOY
Charles K. Grieder, 700 S. Lyon, Santa Ana, Calif. 92701
Filed Sept. 25, 1972, Ser. No. 292,235
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B



230,758
TOY TURTLE
Charles K. Grieder, 700 S. Lyon, Santa Ana, Calif. 92701
Filed Sept. 25, 1972, Ser. No. 292,043
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B

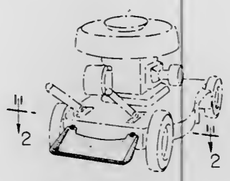


230,759
HINGED CLIP FOR TOY WOODEN BLOCKS
James A. Hummel, 6903 Carey Lane, Osseo, Minn. 55369, and Richard B. Hummel, 1917 Belmar Way, Upland, Calif. 91786
Filed Oct. 5, 1972, Ser. No. 295,140
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG

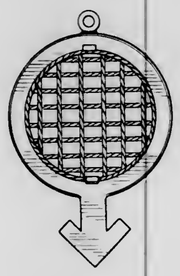


230,760
FLOWER POT
Thomas B. Wilkinson, P.O. Box 25181, Oklahoma City, Okla. 73125
Filed May 3, 1972, Ser. No. 250,113
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

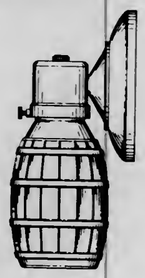
230,761
MOWER REAR GUARD
John M. Cope, Livonia, Mich., assignor to Sturdevant Manufacturing Corporation, Livonia, Mich.
Filed Feb. 28, 1972, Ser. No. 230,177
Term of patent 7 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B



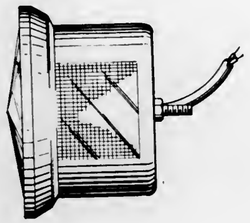
230,762
LOCKET
Michael P. Patterson, Hopkins, Minn. (9201 Nicollet Ave. S., Apt. 111, Bloomington, Minn. 55436)
Original design application Feb. 29, 1972, Ser. No. 230,547, now Patent No. 227,295, dated June 12, 1973. Divided and this application Dec. 15, 1972, Ser. No. 315,327
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—15



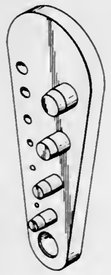
230,763
LAMP FIXTURE
Lloyd H. Hornbostel, Jr., 1638 Emerson, Beloit, Wis. 53511
Filed Aug. 21, 1972, Ser. No. 282,295
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B



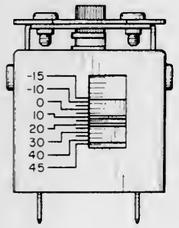
230,764
SUBMERSIBLE TRAILER LIGHT
Paul A. La Violette, 140 Hartley St., North Haven, Conn. 06473
Filed Sept. 28, 1972, Ser. No. 292,865
Term of patent 7 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



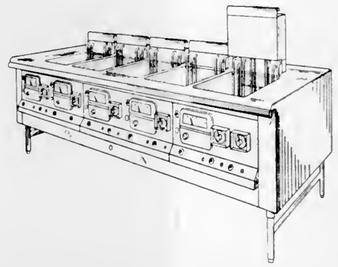
230,765
COMBINED WIRE AND STUD GAUGE
John Richard Filson, Medford, N.J., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 19, 1972, Ser. No. 300,779
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



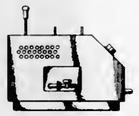
230,766
TEMPERATURE REGULATOR
William Major Polk, Santa Monica, Calif., assignor to Eugene T. McKinnon, Pacific Palisades, and Alvin S. Drutz, Los Angeles, Calif.
Filed Aug. 18, 1972, Ser. No. 281,977
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R



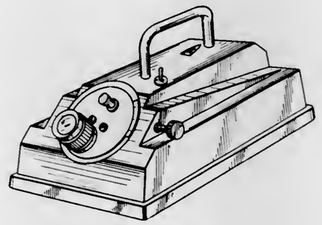
230,767
MULTIPLE UNIT DEEP FAT FRYER
Ronald A. Miller, George W. Church, Jr., and Glenn L. Williams, San Antonio, Tex., assignors to Church's Fried Chicken, Inc.
Filed Feb. 22, 1972, Ser. No. 228,459
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D55—1 E



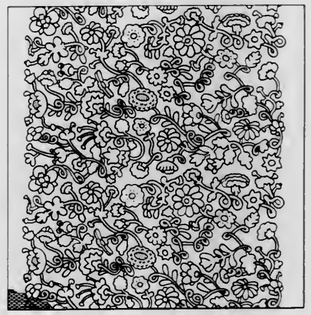
230,768
GRILL
Eiichi Yamada, 3–9 Yotsuya, Shinjuku, Tokyo, Japan
Filed Dec. 16, 1971, Ser. No. 209,011
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D55—1 E



230,769
OPTICAL GAUGE
Leonard Velander, Minneapolis, Minn., assignor to Applied Sales Engineering Company, Hopkins, Minn.
Filed Dec. 8, 1972, Ser. No. 313,575
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



230,770
PAPER TOWELING
Milton Glaser, New York, N.Y., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Sept. 15, 1972, Ser. No. 289,335
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B



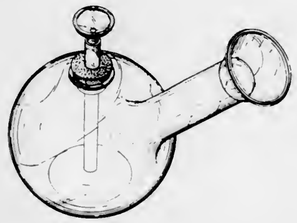
230,771
PAPER TOWELING
Milton Glaser, New York, N.Y., assignor to Fort Howard Paper Company, Green Bay, Wis.
Filed Sept. 15, 1972, Ser. No. 289,336
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 B

230,772
ENVELOPE
Eun-Sook Yong, 219 Sinne-dong, Dongdaemun-ku, Seoul, Korea
Filed Oct. 12, 1972, Ser. No. 297,049
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D59—8

230,773
PHOTO PRINT BOX
James W. Arnold, Haddonfield, N.J., and Grover W. Ayers, Vinton, and John S. Pilot, Roanoke, Va., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Nov. 13, 1972, Ser. No. 306,084
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 P

230,774
MAIL BOX SUPPORT
William R. Stevenson, 2121 N. 158th, Seattle, Wash. 98133
Filed Apr. 27, 1972, Ser. No. 248,351
Term of patent 7 years
Int. Cl. D31—*00*
U.S. Cl. D74—9 R

230,775
WATER PIPE
Charles W. Frost, 12000 Old Georgetown Road, Rockville, Md. 20852
Filed June 14, 1972, Ser. No. 262,484
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 A

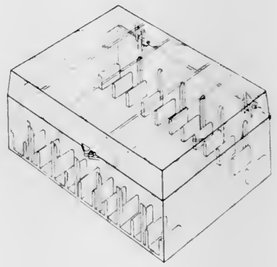


230,776
CIGARETTE HOLDER
Van Missakian, 9222 Olympic Blvd., Pico Rivera, Calif. 90660
Filed July 21, 1972, Ser. No. 274,092
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 B

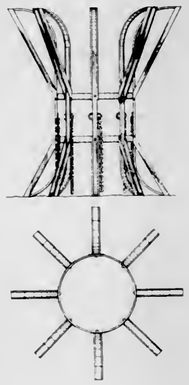
230,777
WIG STAND
Sukeyoshi Imai, 229 Naka Takase, Tomioka, Japan
Filed Dec. 22, 1971, Ser. No. 211,145
Term of patent 3½ years
Int. Cl. D28—*03*
U.S. Cl. D86—10 A

230,778
COMBINED HAIR BRUSH AND DRYER
Evan R. Kahn, 868 NE. 160th Terrace, North Miami, Fla. 33162
Filed Jan. 2, 1973, Ser. No. 320,463
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F

230,779
CASSETTE STORAGE CASE
Karl D. Kryter, Los Altos Hills, Calif., assignor to Acousis Company, Los Altos, Calif.
Filed Apr. 10, 1972, Ser. No. 242,891
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



230,780
BICYCLE STAND
Daniel C. Myers, 6209 Iris Way, Arvada, Colo. 80002
Filed Aug. 30, 1972, Ser. No. 285,088
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—18



230,781
TIRE FOR VEHICLE WHEEL
Eiji Nakazaki, Kakogawa, and Fumio Yumoto and Nobuyuki Sakamoto, Kobe, Japan, assignors to Dunlop Limited, Erdington, Birmingham, England
Filed July 26, 1972, Ser. No. 275,233
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R

230,782
YARN SPINNING STAND
Robert M. Oliver, 5893 Baseline Road, Boulder, Colo. 80303
Filed Mar. 1, 1972, Ser. No. 231,073
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D92—15

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Aepli, Otto T.; and Sorgenfrei, Malachy E., to BASF Wyandotte Corporation. Method for peeling cashew nuts. 3,796,817, Cl. 426-287.000.
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Alex, Christos G.; Dakesian, Sahag R.; Hautzenroeder, Richard D.; and Ivanouskas, Adolph J., to Honeywell Information Systems, Inc. Method of making a micro-gap magnetic recording head. 3,795,954, Cl. 29-603.000.
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Anderson, Benjamin M.; Mullan, William Harrison; and Tempel, Gerhard W., to Armour and Company. Device for closing a bag under vacuum. 3,796,020, Cl. 53-112.00b.
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Ariyan, Zaven S.; Kulka, Marshall; and Harrison, William A., to Uniroyal, Inc. and Uniroyal, Ltd. Anti-inflammatory thiazole compositions and methods for using same. 3,796,800, Cl. 424-270.000.
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Armistead, John M.; and Kosiba, Joseph K., to Gulf Oil Corporation. Method for diminishing pressure drop within a catalyst bed. 3,796,655, Cl. 208-216.000.
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Beckman, Milo H., to ESB Incorporated. Forming and placing tubular battery separator. 3,795,964, Cl. 29-204.000.
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Bloice, John Anthony, to Memco (Electronics), Limited. Movement monitoring apparatus. 3,796,208, Cl. 128-2.00r.
Blondell, Paul Marie Joseph, to Hendrix Fabriken N.V. Cage battery, particularly for table chickens. 3,796,189, Cl. 119-17.000.
Blowsky, Frank C., to Mestre, Luis, Development Corporation. Rotary collator with sheet clamping means. 3,796,422, Cl. 270-58.000.
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Briney, Gary Clark; Lester, John; and Jones, William, to Du Pont de Nemours, E. I., and Company. Process for stripping polymer masks from circuit boards. 3,796,602, Cl. 134-38.000.
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Brooker, Leslie G. S.; deceased (by Lincoln Rochester Trust Company; executor); and Gilman, Paul B., Jr., to Eastman Kodak Company. Multiple-speed photographic emulsion containing an organic compound oxidizable to a spectral-sensitizing dye. 3,796,579, Cl.96-94.00r.
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Burckhardt, Manfred R.; and Schwerdt, Paul, to Daimler-Benz Aktiengesellschaft. Rapidly shifting leakage-proof electromagnetically actuated valve. 3,796,409, Cl. 251-139.000.
Burdick, Robert E.; Huthsing, Henry W.; and Kieding, Robert B., to Rolair System, Inc. Conveyor system. 3,796,162, Cl. 104-23.0fs.
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Calhoun, Donald F., to Hughes Aircraft Company. Repairable multi-level large scale integrated circuit. 3,795,974, Cl. 29-574.000.
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Carlberg, Charles E., to Jackson, Byron, Inc. Hydraulic pipe tong apparatus. 3,796,418, Cl. 269-26.000.
Carlin, Joseph T.; Flournoy, Kenoth H.; and Cardenas, Ricardo L., to Texaco Inc. Surfactant oil recovery process. 3,796,266, Cl. 166-305.00r.
Carlson, Edward Ronald, to Presray Corporation, The. Pneumatically sealable flood panel assembly. 3,796,010, Cl. 49-477.000.
Carlucci, James J. Cultivator. 3,796,269, Cl. 172-149.000.
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Cermak, Robert E., to SCM Corporation. Heat-sensitive condiment-containing fatty particulate. 3,796,814, Cl. 426-98.000.
Chamberlain, Alan Hawker. Starting mechanisms for internal combustion engines. 3,796,102, Cl. 74-8.000.
Chang, Ifay F.; and Pennebaker, William B., to International Business Corporation. Electroluminescent storage display. 3,796,909, Cl. 315-12.000.
Chang, Joseph Juifu: *See—*
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Chang, Richard S.; and Moore, James D., to Mattel, Inc. Simulated jet airplane toy. 3,796,005, Cl. 46-243.0av.
Chang, Tsuan Y.: *See—*
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Chang, Yunger, to Reichhold Chemicals, Inc. Organic peroxides. 3,796,757, Cl. 260-590.000.
Chapman, Alan T., Jr.: *See—*
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Chapman, William A.; and Severinghaus, Nelson. Twin rake mechanical classifier. 3,796,315, Cl. 210-322.000.
Chase, John Donald, to American Cyanamid Company. Colored rutile boules and method of making the same. 3,796,584, Cl. 106-42.000.
Chatourel, Pierre: *See—*
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Chen, Yu-Ssu; Geosic, Joseph Edward; and Nelson, Terence John, to Bell Telephone Laboratories, Incorporated. Single wall domain propagation arrangement. 3,797,001, Cl. 340-174.0tf.
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Chimura, Kazuya; Takashima, Shunichi; and Kawashima, Masao, to Mitsubishi Rayon Company Limited. Polyester condensation catalyzed by organotin, trivalent antimony and pentavalent phosphorus compounds. 3,796,691, Cl. 260-75.00r.

Chivinsky, Joseph A. Method of producing a composite material. 3,795,971, Cl. 29-487.000.

Choay, Jean; and Sakouhi, Mireille, to Choay S.A. Processes for preparing polynucleotides. 3,796,631, Cl. 195-28.00n.

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Chomova, Nina Grigorievna: *See—*
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Christensen, Burton G.; and Leanza, William J., to Merck & Co., Inc. L-N-acyl-O-ethylthreonine. 3,796,747, Cl. 260-501.110.

Chugai Seiyaku Kabushiki Kaisha: *See—*
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Cincinnati Milacron-Heald Corporation: *See—*
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Ciramella, Anthony F.; Jaeger, Ralph R.; and Rogers, Ronald R., to United States of America, Atomic Energy Commission. Method of vapor seal coating plutonium oxide particles with molyledenum. 3,796,589, Cl. 117-71.00r.

Clampitt, Bert H.; Gilbert, Ranold E.; and Jones, Joseph W., Jr., to Gulf Research & Development Company. Coordination bonding in ethylene polymers. 3,796,695, Cl. 260-80.730.

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Clark, Grady W.; Wilson, James C.; Oliver, Bennie F.; and Chapman, Alan T., Jr., to United States of America, Atomic Energy Commission. Method of producing multicomponent metal-metal oxide single crystal. 3,796,673, Cl. 252-515.000.

Cleveland, James D., to Chevron Research Company. N-chlorothioamino triazines. 3,796,712, Cl. 260-249.800.

Clontz, Raeford W., to Celanese Corporation. Automatic yarn feed apparatus. 3,796,032, Cl. 57-22.000.

Closs, Felix Hugo; Mueller, Hans Rudolf; Port, Erich; Rudin, Harry, Jr.; and Wild, Daniel, to International Business Machines Corporation. Switching system for TDM data which includes an asynchronous submultiplex channel. 3,796,835, Cl. 179-15.0by.

Clovis, James S.: *See—*
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Cohen, Ronald A.; and Wheeler, Roy K., to United States of America, National Aeronautics and Space Administration, Administrator. Method and apparatus for stable silicon dioxide layers on silicon grown in silicon nitride ambient. 3,796,592, Cl. 117-95.000.

Cohn, Joseph D. Decorative aquarium heater. 3,796,858, Cl. 219-331.000.

Cole, James N.: *See—*
Berkenblit, Melvin; Cole, James N.; Herrell, Dennis J.; Light, Thomas B.; Park, Kyu C.; and Reisman, Arnold, 3,795,977.

Cole, James N.; Cuomo, Jerome J.; Laibowitz, Robert B.; and Park, Kyu C., to International Business Machines Corporation. Bistable resistance device which does not require forming. 3,796,926, Cl. 317-234.00r.

Coleman, Lester Earl, to Lubrizol Corporation, The. Graft polymers. 3,796,773, Cl. 260-879.000.

Colgate-Polmolive Company: *See—*
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Collette, John Wilfred; Ro, Rolland Shih-Yuan; and Sonnenberg, Fred Max, to Du Pont de Nemours, E. I., and Company. Functionally substituted terpolymers and tetrapolymers of olefins and process for manufacturing functional substituted copolymers. 3,796,687 Cl. 260-47.0ua.

Collier, Susan S.; and Gilman, Paul B., to Eastman Kodak Company. Direct positive process involving uniform exposure of an imagewise exposed internally sensitive silver halide emulsion to high intensity radiation. 3,796,577, Cl. 96-64.000.

Collins & Aikman Corporation: *See—*
Rutledge, James C., 3,796,625.

Collins, Hassel. Help or lost balloon. 3,796,181, Cl. 116-124.00b.

Colombot, Pierre, to Agence Nationale de Valorisation de la Recherche (Anvar). Handrails for passenger conveyors. 3,796,161, Cl. 104-25.000.

Colt Industries Operating Corporation: *See—*
Dreher, James H., 3,796,415.

Comeau, Robert L., to Scott Paper Company. Electrophotographic, contact-printing process employing a dielectric liquid layer. 3,796,570, Cl. 96-1.00r.

Comminications Stallite Corporation: *See—*
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Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
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Conger, Robert L., to United States of America, Navy. Explosive luneberg lens warhead. 3,796,158, Cl. 102-67.000.

Conger, Robert L., to United States of America, Navy. Explosive fisheye lens warhead. 3,796,159, Cl. 102-67.000.

Conner, Frank E., Jr.; Fontalbert, Terry; McFarland, John W.; and Lewis, Don W., to FMC Corporation. Electrolytic cell having self-aligning anodes. 3,796,648, Cl. 204-286.000.

Continental Can Company, Inc.: *See—*
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Control Flow Systems, Inc.: *See—*
Benjamin, John W.; and Holland, Edward Thorne, 3,796,289.

Cook, David E.; and Clapp, John W., Jr., to Eastman Kodak Company. Method and apparatus for continuously detecting abnormal cross-sectional areas in running tow. 3,796,094, Cl. 73-159.000.

Cooksey, John A.: *See—*
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Cordiak, Robert P. Wheel guard. 3,796,465, Cl. 301-37.0sa.

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Cornaro, Louis V.: *See—*
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Cosden Oil & Chemical Company: *See—*
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Couqueti, Jack L.: *See—*
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Cournut, Rene Henri, to Societe Bordelaise de Matieres Plastiques. Process for moulding structures of plastics material. 3,796,784, Cl. 264-255.000.

Courtaulds Limited: *See—*
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Cox, John Ernest; Crafts, Robert Charles; Houlihan, John Brendan; and Lawson, Leslie Edward, to Howson-Algraphy, Limited. Method of removing insolubilized light sensitized poly(vinyl alcohol) from a surface utilizing periodate ions. 3,796,603, Cl. 134-42.00.

Crafts, Robert Charles: *See—*
Cox, John Ernest; Crafts, Robert Charles; Houlihan, John Brendan; and Lawson, Leslie Edward, 3,796,603.

Crandall, Walter E., to Northrop Corporation. Electron storage device with long storage time capability. 3,796,902, Cl. 313-68.00r.

Crane, Edward J., to International Agri-Systems, Inc. Flexible finger support. 3,795,942, Cl. 17-11.10r.

Crepinsek, Alois, to Security Technology Corporation. Slidably removable padlock assembly. 3,796,071, Cl. 70-32.000.

Crescent Hosiery Mills: *See—*
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Cribbens, Alan H.; and Smith, Olive V., to British Railways Board. Vehicle communications. 3,796,838, Cl. 179-82.000.

Cripe, Donald M.: *See—*
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Crook, James E.; Cutler, John F., Jr.; and Khanna, Jai K., to Wallace-Murray Corporation. Engine supercharging air cooling system. 3,796,047, Cl. 60-612.000.

Crosa, Valentin L. Clamping system. 3,796,124, Cl. 85-36.000.

Crovella, Christian. Method and apparatus for modulating a pyrotechnic tracer. 3,796,396, Cl. 244-3.140.

Crudgington, Cleveland B., Jr. Room status system for hotels. 3,797,009, Cl. 340-286.00r.

Cruickshank, John Smith. Dimensional reproductions of an object. 3,796,129, Cl. 90-13.100.

Crutchfield, J. Warren, 20% to Lee, Raymond, Organization, Inc., The. Tractor rig and trailer hitch. 3,796,443, Cl. 280-406.00a.

Cser, Gyula: *See—*
Annus, Imre; Cser, Gyula; Florian, Sandor; Horvath, Gyorgy; and Kocsis, Ferenc, 3,796,048.

Cucheran, John S.; and Pringle, William L., to Robbins, Jim, Seat Belt Company. Quick disconnect seat belt tongue. 3,796,461, Cl. 297-389.000.

Cullen, Donald L.; and Moore, Teddy L., to Autech Corporation. Laser dimension comparator. 3,796,492, Cl. 356-4.000.

Cunningham, Walter F. Index tab position layout. 3,795,982, Cl. 33-111.000.

Cuomo, Jerome J.: *See—*
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Curley, John L.; Franklin, Benjamin S.; Martland, Wallace A.; Donahue, Thomas; and Cornaro, Louis V., to Honeywell Information Systems Inc. Main memory reconfiguration. 3,796,996, Cl. 340-172.500.

Curtis, Ralston: *See—*
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Curtiss-Wright Corporation: *See—*
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Cutler, John F., Jr.: *See—*
Crook, James E.; Cutler, John F., Jr.; and Khanna, Jai K., 3,796,047.

Cuvelier, Michel Charles, to Elphiac. Method and apparatus for heating and cooling moving tubes. 3,796,849, Cl. 219-10.410.

Dada, Abdul G.; and De Hollander, William R., to General Electric Company. Process for producing uranium dioxide rich compositions from uranium hexafluoride. 3,796,672, Cl. 252-301.10r.

Daido Seiko Kabushiki Kaisha: *See—*
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Daigle, Donald J.; Pepperman, Armand B., Jr.; Reeves, Wilson A.; and Drake, George L., Jr., to United States of America, Agriculture. Finishing process incorporating improved catalyst systems to produce durable flameproofed cellulosic textile products withan excellent hand. 3,796,596, Cl. 117-137.000.

Daimer, Wolfgang; Klinischar, Gerfried; and Verdino, Heiner, to Vianova-Kunstharz A.G. Water-soluble coating compositions. 3,796,770, Cl. 260-839.000.

Daimler-Benz Aktiengesellschaft: *See—*
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Eisen, Peter, 3,796,520.
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Alex, Christos G.; Dakesian, Sahag R.; Hautzenroeder, Richard D.; and Ivanouskas, Adolph J., 3,795,954.

Dale, James Thomas. Golf putting practice device. 3,796,435, Cl. 273-183.00c.

D'Alelio, Gaetano F. Unsaturated ester of halogenated alkenes. 3,796,746, Cl. 260-486.00h.

Dalton, Thomas B., to Westran Corporation. Rotary direction flow control valve. 3,796,232, Cl. 137-625.210.

Dane, Robert L. Wire stripping tool. 3,796,115, Cl. 81-95.00b.

Daniels, Clare G., to Philco Ford Corporation. Pneumatic spreading of filaments. 3,795,944, Cl. 19-65.00t.

Danz, George E.; and Wilkinson, Alan F., Jr., to Westinghouse Electric Corporation. Firing circuits for three-phase rectifier employing controlled rectifier elements. 3,796,941, Cl. 321-5.000.

Danziger, William: *See—*
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Darwin, William N., Jr.; and Weldon, Dewayne. Adjustable bass bench. 3,795,927, Cl. 9-7.000.

Datagraph A.G.: *See—*
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Dauer, John J., Jr.: *See—*
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Daunt, John G., to Research Corporation. High field composite superconductive material. 3,796,553, Cl. 29-191.200.

David, Joseph; Thomas, Keith; and Kishore, Nand, to Catomance Limited. Substituted aromatic compounds. 3,796,595, Cl. 117-138.500.

Davis, Charles S.: *See—*
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Davis, Douglas Steward, to Du Pont de Nemours, E. I., and Company. Apparatus for winding a running length of thermoplastic sheeting into a series of rolls. 3,796,388, Cl. 242-56.00a.

Davis, John R., Jr.: *See—*
Heng, Terrence M. S.; Nathanson, Harvey C.; and Davis, John R., Jr., 3,796,976.

Davis, Rachel D. Perineal retractor. 3,796,214, Cl. 128-20.000.

Dawson, Gordon Bertram, to Dowty Meco, Limited. Belt conveyors. 3,796,503, Cl. 403-353.000.

Dawson, James R. Metal strap twisting machine. 3,796,083, Cl. 72-299.000.

De Belder, Maurice Hector; Bollen, Romain Henri; and Natens, Luc Yves, to Agfa-Gevaert N.V. X-ray image viewer. 3,796,916, Cl. 315-151.000.

De Caro, Aristide R.; and Rainone, Nicholas J., to Westinghouse Electric Corporation. Combination fuse-mount support for projection lamps. 3,796,914, Cl. 315-74.000.

De Gouville, Jean-Bernard, to Ets Sourdillon Matricage et Robinetterie de Precision. Gas burners, especially for domestic applicances. 3,796,535, Cl. 431-349.000.

De Hollander, William R.: *See—*
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De Phillips, James V.; and Karka, Ronald O., to Continental Can Company, Inc. Non-detachable tear strip and pull tab structure for easy opening container. 3,796,344, Cl. 220-54.000.

De Putter, Warner Jan, to Industriele Onderneming Wavin N.V. Pipe connecting piece and pipe connection obtained by means thereof. 3,796,447, Cl. 285-235.000.

Deboer, Charles D., to Eastman Kodak Company. Synthesis of novel benzopyran compounds. 3,796,727, Cl. 260-345.200.

Dechenaux, Victor; and Drouet, Francoise, to Saft-Societe des Accumulateurs Fixes et de Traction. Lithium electrochemical generator. 3,796,605, Cl. 136-6.0ln.

Deem, Brian C.: *See—*
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DeForest, Wesley V.; Hull, Bradford N.; and Mc Intosh, Harold A., to Robertshaw Controls Company. Current overload protection system. 3,796,918, Cl. 317-13.00a.

Dehler-Wyhlen-Lagertechnik AG: *See—*
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Dehner, Charles Vincent. Van for transporting compressible material. 3,796,330, Cl. 214-83.300.

Deitemeyer, Robert R., to Pacific Gun Sight Co. Shell reloader with improved sizing die. 3,796,127, Cl. 86-30.000.

Dekan, Howard L.: *See—*
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Delalande S.A.: *See—*
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Delente, Jacques J., to Monsanto Company. Process for the preparation of heat resistant neutral protease enzyme. 3,796,635, Cl. 195-65.000.

Delhommois, Joseph: *See—*
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Demag Aktiengesellschaft: *See—*
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Dempco, Inc.: *See—*
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Denier, Dennis J.; and Garrett, Lee R., to Denier, Howard H. Stabilizer for elevatable platform. 3,796,282, Cl. 182-141.000.

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Denki Onkyo Company, Ltd.: *See—*
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Dento-Dynamic Systems, Inc.: *See—*
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Derieg, Michael Edward; Ian-Fryer, Rodney; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 4-Acetyl-(1,2-a) pyrimido-(1,4)-benzodiazopines. 3,796,713, Cl. 260-256.40f.

Deschamps, Andre; Dezael, Claude; and Renault, Philippe, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for converting hydrogen sulfide and sulfur dioxide to elemental sulfur. 3,796,796, Cl. 423-575.000.

Deszyck, Edward J., to Morris, Philip, Incorporated. Method of making a smoking product from coffee bean hulls. 3,796,222, Cl. 131-2.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Deutsche Texaco Aktiengesellschaft: *See—*
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Dezael, Claude: *See—*
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Di Mascio, Patrick V. Drapery hardware. 3,795,940, Cl. 16-87.200.

Diamond Die & Mold Co.: *See—*
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Diamond Shamrock Corporation: *See—*
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Bungs, Janis A.; and Stillman, Neil W., 3,796,583.
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Dick, Peter. Disposable hypodermic needle destroyer. 3,796,359, Cl. 225-93.000.

Dickopp, Gerhard: *See—*
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Dierichs, Helmut: *See—*
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Dierkes, Hermann, to Rheinstahl Henschel Aktiengesellschaft. Optical device and support in a vehicle. 3,796,478, Cl. 350-85.000.

Dinklage, John B.: *See—*
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Ditcher, John, to A-LOK Corporation. Gasket seal between sewer pipe and manhole opening. 3,796,406, Cl. 249-11.000.

Dixon, Bernard, to Dixon, Bernard, and Partners Limited. Threshold seals. 3,796,006, Cl. 49-493.000.

Dixon, Bernard, and Partners Limited: *See—*
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Djuvik, Carl. Egg beater. 3,796,512, Cl. 416-202.000.
Dobkin, Robert C.: *See—*
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Dolfini, Joseph Edward: *See—*
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Breuer, Hermann; Dolfini, Joseph Edward; and Erickson, Raymond C., 3,796,709.
Dolitzsch, Heinz; and Skirde, Gerhard. Washing apparatus for vehicles, more particularly for motor vehicles. 3,795,928, Cl. 15-21.00e.
Dollfus-Mieg & Cie: *See—*
Bernard, Christian, 3,795,920.
Dom Samen Fehlemann KG: *See—*
Born, Alfons, 3,796,309.
Domanski, Bonifacy; Kleminski, Michal; and Zieba, Zozislaw. Method of welding stiffenings of plates, particularly of shell plates and arrangement for applying said method. 3,795,968, Cl. 29-457.000.
Donahue, Thomas: *See—*
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Donn, John William, to Owens-Corning Fiberglas Corporation. Method and apparatus for guiding feed stock to a longitudinally moving collection surface. 3,796,620, Cl. 156-171.000.
Donoghue, Matthews J.: *See—*
Harper, Robert J., Jr.; Gautreaux, Gloria A.; Bruno, Joseph S.; and Donoghue, Matthews J., 3,796,540.
Donohue, James M.; and Mueller, Daniel L., to Xerox Corporation. Programming control system for printing machine. 3,796,486, Cl. 355-16.000.
Doo, Ven Y.; Ho, Irving T.; and Jen, Teh-Sen, to International Business Machines Corporation. Semiconductor shift register. 3,796,928, Cl. 317-235.00r.
Dorey, Howard Anthony, to Solartron Electronic Group Limited, The. Keyboard having double key detector. 3,796,880, Cl. 250-109.000.
Dorion, Francis W., Jr., to Gillette Company, The. Razor with plastic handle and guard. 3,795,955, Cl. 30-59.000.
Dorman, Isidore; and O'Connor, Mark, to Bell & Howell Company. Cartridge for file cards. 3,796,310, Cl. 209-80.500.
Dort, Robert F.: *See—*
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Dougherty, John J., to APF Corporation. H-pile combination with projecting plate means. 3,796,056, Cl. 61-53.000.
Dougherty, John J., to APF Corporation. Pile splicer with retaining means. 3,796,057, Cl. 61-53.000.
Dowling, Thomas Barrow, Mobill Marine Development Company Limited RFD-GQ Limited. Apparatus for use in escaping from high structures. 3,796,281, Cl. 182-48.000.
Downing, Hugh N. Nailing gun carriage. 3,796,365, Cl. 227-8.000.
Dowty Meco, Limited: *See—*
Dawson, Gordon Bertram, 3,796,503.
Doyle, John F.; Gardner, Gary E.; and Elliot, Raymond S., to TMR Products Co., Inc. Pneumatic service emergency actuators for trucks, buses and trailers. 3,796,138, Cl. 92-63.000.
Doyle, Peter: *See—*
Barker, Alan Charles; Doyle, Peter; Foster, Richard Gregory; and Hadfield, John Roger, 3,796,710.
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Dresser Industries, Inc.: *See—*
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Drewry Photocolor Corporation: *See—*
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Collette, John Wilfred; Ro, Rolland Shih-Yuan; and Sonnenberg, Fred Max, 3,796,687.
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Duffy, William B.; and Fisher, Charles K., to TRW Inc. Sheet metal nut. 3,796,123, Cl. 85-32.00r.
DuFrene, Clement O., 1/3 to Rosenmeier, Gordon. Power transmitting mechanism. 3,796,514, Cl. 416-124.000.
Dukane Corporation: *See—*
Torn, William R., 3,796,839.
Dunham-Bush, Inc.: *See—*
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Duranleau, Roger G.; Kablaoui, Mahmoud S.; and Love, Richard F., to Texaco Inc. Preparation of omega-nitroesters by thermal cleavage and reaction of cyclic alpha nitroketones with alcohols. 3,796,734, Cl. 260-404.000.
Duranleau, Roger G.; Kablaoui, Mahmoud S.; and Love, Richard F., to Texaco Inc. Esters by thermal cleavage and reaction of alpha-nitroketones with alcohols. 3,796,735, Cl. 260-410.600.
Durkee, Gilbert H.; Wareberg, Per G.; and Yoder, Alan C., to Bowmar Instrument Corporation. Calculator keyboard switch with disc spring contact and printed circuit board. 3,796,843, Cl. 200-5.00a.
Durox Equipment Company: *See—*
Smykal, Robert C.; and Koryta, Leonard D., 3,796,507.
Dutton, Glenn L., to Gulf Oil Corporation. Apparatus for mechanically gathering or collecting various commodities, refuse or the like. 3,796,331, Cl. 214-146.500.
Dyer, Lawrence Dean: *See—*
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Dyrschka, Helmut: *See—*
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Eakin, Harold L., to Mobile Vista Industries. Preassembled door. 3,796,008, Cl. 49-380.000.
East, Raymond B., to Crescent Hosiery Mills. Two-ply terry sock and method of forming same. 3,796,067, Cl. 66-178.000.
Eastech, Inc.: *See—*
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Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stan C.; Margerum, Bruce A.; and Jarvi, Antti, 3,796,241.
Ebbighausen, Henry M. Ventilator for engines of small boats. 3,796,180, Cl. 114-211.000.
Ebdon, Ronald William. Continuous wipe-pout clocks. 3,796,043, Cl. 58-127.00r.
Eckrodt, Gunter, to Maschinenfabrik und Apparatebau Gergeth K.G. Apparatus for the continuous opening of bales of fibrous material. 3,795,943, Cl. 19-80.00r.
Edwards Company, Inc.: *See—*
Nuss, Robert F., Jr., 3,796,994.
Edwards, Laroy H., to Chevron Research Company. Piperonyl ethers having juvenile hormone mimetic activity. 3,796,726, Cl. 260-340.500.
Edwards, William Joseph; and Jack, James, to Bakelite Xylonite, Limited. Extrusion processes. 3,796,781, Cl. 264-89.000.
Eggenfelden, Karl Tannert. Thread feeder for textile machines. 3,796,386, Cl. 242-47.120.
Egli, Christian: *See—*
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Eibensteiner, Walter, to U.S. Philips Corporation. Recording and/or playback apparatus and cartridge for such apparatus. 3,797,036, Cl. 360-85.000.
Eickman, Willis Victor. Electrical service mounting. 3,796,822, Cl. 174-48.000.
Eickmeier, James R. Method for producing high hydrogen sulfide content gas wells. 3,796,265, Cl. 166-303.000.
Eilertson, Warren H. In-flight aircraft recovery system. 3,796,398, Cl. 244-139.000.
Eisen, Peter, to Daimler-Benz Aktiengesellschaft. Combined pump and oil tank unit, especially for servo-steering systems. 3,796,520, Cl. 417-310.000.
Eisenreich, William: *See—*
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Eisenwerk-Gesellschaft Maximilianshutte mbH: *See—*
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Elliott, Martin K.; and Levin, Michael A. Temperature controlled transmission line. 3,796,977, Cl. 333-95.00r.
Ellis, Charles D.; and Cawley, Richard E., to Lennox-Industries Inc. Compressor with motor air gap adjustment. 3,796,521, Cl. 417-415.000.
Ellsworth, James P., to Westinghouse Electric Company. Disposable circuit breaker. 3,796,980, Cl. 337-6.000.
Elmore, J. Russell; and Benson, Carl F., to Torrington Company, The. Method of forming outer bearing races. 3,795,960, Cl. 29-148.0ar.
Elphiac: *See—*
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Elwood, Albert A. Method of and system for locating a position. 3,797,015, Cl. 343-112.00d.
Emerson Electric Company: *See—*
Shestag, Lowell N.; and Kreinheder, Donald E., 3,797,019.
Engelke, William A.: *See—*
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Ensor, John W.; and Popodi, Alfred E., to Westinghouse Electric Corporation. Waveform correction for resonant recovery deflection systems. 3,796,911, Cl. 315-27.0ad.
Environment/One Corporation: *See—*
Naydan, Theodore T.; and Aker, Walter W., 3,796,463.
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Espersen, Peter G.: *See—*
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Estes, Clarence F., Jr.: *See—*
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Farkas, Robert C.: *See—*
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Farnam, F. D., Co.: *See—*
Farnam, Robert G.; and Passarella, Michael T., 3,796,623.
Farnam, Robert G.; and Passarella, Michael T., to Farnam, F. D., Co. Method of making insulator gaskets. 3,796,623, Cl. 156-252.000.
Farnsteiner, Irmgard O. M. Spray gun. 3,796,376, Cl. 239-353.000.
Farone, Eugene Richard, to Lubrizol Corporation, The. Method for the preparation of water-insoluble thermosetting compositions of matter from substituted acrylamide and an aldehyde. 3,796,690, Cl. 260-64.000.
Farr Company: *See—*
Mugford, Charles C., 3,796,026.
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Montolivo, Sergio; and Squartini, Giorgio, 3,796,295.
Fauran, Claude P.; Turin, Michel J.; Raynaud, Guy M.; and Thomas, Janine M., to Delalande S.A. Novel acrylamide derivatives of substituted piperazines. 3,796,703, Cl. 260-240.00t.
Faville, Warwick Scott, to Kins Developments, Limited. Rail fastening devices. 3,796,369, Cl. 238-349.000.
Federal Investment Corporation: *See—*
O'Hare, Harry M., 3,796,377.
Federal Paper Board Company, Inc.: *See—*
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Federspiel, Joseph A., to FMC Corporation. Implement lift hitch. 3,796,028, Cl. 56-15.200.
Federspiel, Joseph A., to FMC Corporation. Quick latch coupling. 3,796,502, Cl. 403-106.000.
Feinstat, Jacob Menachem, to Fine-Gen Investment Corporation. Ashtray attachment. 3,796,224, Cl. 131-240.00e.
Feldman, Stanley; and Mellenthin, William J., to Beltone Electronics Corporation. Digital attenuator wherein transistor switch means are biased by rectifier circuit. 3,796,945, Cl. 323-74.000.
Fenne, Ivor, to C.A.V. Limited. Fuel injection nozzle units. 3,796,379, Cl. 239-533.000.
Ferber, Robert R.: *See—*
Roller, Robert F.; Ferber, Robert R.; and Loptus, Wallace D., 3,796,874.
Fernlund, Lars Martin Ingemar, to SKF Industrial Trading and Development Company B.V. Triple ring bearings. 3,796,472, Cl. 308-35.000.
Fessler, Herman S., to Selectivend, Inc., mesne. Dispensing mechanism for articles in two abutting front to back stacks. 3,796,345, Cl. 221-67.000.
Fiat Societa per Azioni: *See—*
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Fiber Industries Inc.: *See—*
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Fibre Glass-Evercoat Company, Inc.: *See—*
Linder, Joseph; Sjostrand, Gerald D.; and Carter, Richard L., 3,796,355.
Field, Nathan D.; Lorenz, Donald H.; Lu, Robert T.; and Schultz, Herman S., to GAF Corporation. Graft copolymer having an alkyl vinyl ether polymer backbone. 3,796,774, Cl. 260-881.000.
Figueras, John, to Eastman Kodak Company. Photographic compositions and processes for the formation of integral color masks. 3,796,574, Cl. 96-9.000.
Fine-Gen Investment Corporation: *See—*
Feinstat, Jacob Menachem, 3,796,224.
Finelli, Anthony F.; and Wert, Richard L., to Goodyear Tire & Rubber Company, The. Polyurethane composition and its use to form polystyrene laminates. 3,796,593, Cl. 117-104.000.
Finger, Hansjorg. Watch case. 3,796,042, Cl. 58-90.00r.
Finke, Eugene W.; and Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Flexible biased selective web printer. 3,796,152, Cl. 101-111.000.
Fischer, Adolf: *See—*
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Fischer, Arthur. Lead supporting housing for electrical component. 3,796,921, Cl. 317-99.000.
Fischer, Georg, Aktiengesellschaft: *See—*
Maurer, Emil, 3,796,412.
Fischer, Nicolas, to Rhone-Progel. Compositions and method for making vinyl resin foam products. 3,796,675, Cl. 260-2.50p.
Fisher, Charles K.: *See—*
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Fisher, Harold P.; McGough, Thomas H.; and Borden, Charles M. Method for making sprockets and/or gears. 3,796,085, Cl. 72-348.000.
Fisher, Harold R.; McGough, Thomas H.; and Borden, Charles M., to Borg-Warner Corporation. Method and apparatus for making sprockets and/or gears. 3,796,106, Cl. 74-243.00r.
Fishman, Morris, to FMC Corporation. Ethyl 4-carmethyoxy-2,2-dimethylthiazolidine-3-thiolocarboxylate. 3,796,721, Cl. 260-306.700.
Fisk, Allan I.; and Harvey, Andrew W. C., to Foster-Miller Associates. High energy rate actuator. 3,796,050, Cl. 60-371.000.
Flaig, Hans; Wolber, Robert; Hettich, Otto; Assmus, Friedrich; and King, Josef, to Gebruder Junghans G.m.b.H. Electric bell for alarm clocks. 3,797,013, Cl. 340-396.000.
Flater, Anders Harold. Adaptors for taps or faucets. 3,796,378, Cl. 239-447.000.
Fleischhauer, Horst: *See—*
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Florian, Berkeley J. Double headed hammer. 3,796,244, Cl. 145-29.00d.
Florian, Sandor: *See—*
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Flouret, George Rogelio, to Abbott Laboratories. Pentapeptide. 3,796,697, Cl. 260-112.500.
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Fohl, Artur. Safety device for the protection of vehicle and airplane passengers. 3,796,441, Cl. 280-150.0ab.
Foldenauer, Ralph M.: *See—*
Foldenauer, Ralph M.; and Neubeck, William H., Jr. (said Neubeck assor. to said), 3,796,144.
Foldenauer, Ralph M.; and Neubeck, William H., Jr., said Neubeck assor. to said Foldenauer, Ralph M. Apparatus for cooking and chilling meat in molds. 3,796,144, Cl. 99-355.000.
Foltz, Ronald J.; and Portus, Bruce W., to Fiber Industries Inc. Polyamide polymerization control. 3,796,692, Cl. 260-78.00r.
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Fontalbert, Terry: *See—*
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Fontana, Ludovico, to Technical Arco Establishment. Electric control system for actuating in a predetermined sequence a plurality of electromagnetic relays. 3,796,924, Cl. 317-140.000.
Ford, Frederick S., Jr., to Woodall Industries Inc. Catamaran. 3,796,175, Cl. 114-39.000.
Ford, Harold: *See—*
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Forster, Hans-Joachim; Katz, Klaus; and Scheuter, Anton, to Daimler-Benz Aktiengesellschaft. Servo steering for vehicles. 3,796,139, Cl. 92-136.000.
Forster, Harry D., Jr., to Holograph Corporation. Optical communication system providing selective image presentations. 3,796,484, Cl. 353-25.000.
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Foster, John R.; and Hunt, Larry R., to Von Duprin, Inc. Switch assembly for electric strike. 3,796,452, Cl. 292-341.160.
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Foster-Pegg, Richard W., to Turbo-Development, Inc. Method and apparatus for increasing power output and/or thermal efficiency of a gas turbine power plant. 3,796,045, Cl. 60-39.020.
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Fox, Duane C.; Ichinose, Richard Y.; and Lewis, Harold F., to American Multiplex Systems Inc. Analog input device for data transmission systems. 3,796,993, Cl. 340-151.000.
Fox, Ralph W., to Philco-Ford Corporation. Document handling apparatus. 3,796,424, Cl. 271-1.000.
Fradkin, Neil E.; and Wolcott, Carl Frederick, said Wolcott, Carl F., assor. said Frandkin, Neil E. Coded electrical locking device. 3,796,889, Cl. 307-10.000.
Fraley, Walter C.; Hendrix, James T.; and Bell, Charles A., to Hydro-Search, Inc. Electronic gaming device simulating the game of blackjack. 3,796,433, Cl. 273-138.00a.
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Freel, John: *See—*
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Freeman, Frank George, to Lucas, Joseph, (Industries) Limited. Hydraulic transmission system. 3,796,052, Cl. 60-450.000.
Freeman, Miller L., 1/2 to Ervin, John W. Radiant energy reflectors. 3,796,886, Cl. 250-493.000.
Fresh-Flo Corporation: *See—*
Winton, Benjamin A., 3,796,414.
Fridberg, Jochanan, to Naan Mechanical Works. Part circle sprinklers. 3,796,374, Cl. 239-232.000.
Fridley, Robert B.; and Mehlschau, James J., to University of California, The Regents of the. Tree shaker. 3,796,031, Cl. 56-328.0ts.
Friez, Carl J., Jr.; Jones, Walton B.; and Junod, John E., to International Paper Company. Automatic handle applying machine. 3,795,966, Cl. 29-208.00b.
Frigidraulic, Inc.: *See—*
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Frizzell, Joseph G.; and Hulme, Jack R., to Halliburton Company. Electronic signal multiplier. 3,796,960, Cl. 328-20.000.
Frommhold, Karl, to Lever Brothers Company. Margarine fat containing interesterified constituents. 3,796,581, Cl. 99-125.0mo.
Frosch, Albert; Jaerisch, Walter; Schmackpfeffer, Arno; and Ziller, Joerg, to International Business Machines Corporation. Method of making totally internally reflected holograms. 3,796,476, Cl. 350-3.500.
Fryer, Rodney Ian; and Walser, Armin, to Hoffmann-La Roche Inc. 1,2-Heterocyclic-1,4-benzodiazepines. 3,796,722, Cl. 260-306.700.
Fuchs, Gundole: *See—*
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Fudemoto, Isao; Sakai, Masakatsu; and Fujisaki, Yozo, to Fujitsu Limited. Block synchronization system of multinary codes. 3,796,956, Cl. 325-38.00a.
Fuhrmann, Robert; Koff, Fred William; and Pisanchyn John D., to Allied Chemical Corporation. Preparation of N-acyl amino alkanoic acids. 3,796,751, Cl. 260-534.00r.
Fuji Photo Film Co., Ltd.: *See—*
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Nakajima, Yosuke; and Ohtani, Katsuhiko, 3,796,090.
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Fujii, Toru, to Olympus Optical Company Limited. Varifocal lens systems. 3,796,481, Cl. 350-184.000.
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Fudemoto, Isao; Sakai, Masakatsu; and Fujisaki, Yozo, 3,796,956.
Fujita, Kinji. Display method for solid state electronic timepiece. 3,796,037, Cl. 58-4.00a.
Fujita, Shigeru; and Tamura, Shinshichi, to Japan Metal Finishing Company Limited. Electrolytic rust and scale removal in alkaline solution. 3,796,645, Cl. 204-141.500.
Fujitsu Limited: *See—*
Fudemoto, Isao; Sakai, Masakatsu; and Fujisaki, Yozo, 3,796,956.
Fujiwara, Katsuji. Air vent. 3,796,227, Cl. 137-202.000.
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Fukumura, Takashi, to Toray Industries, Inc. Process for racemizing α-amino-ε-caprolactam. 3,796,632, Cl. 195-29.000.
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Fuller, Harry V., to United States of America, National Aeronautics and Space Administration. Reefing system. 3,796,473, Cl. 312-1.000.
Fulton, Alan William; and Reed, Ray Allen, to Bell Telephone Laboratories, Incorporated. Transistor logic circuit. 3,796,896, Cl. 307-290.000.
Funston, David Lee, to GTE Sylvania Incorporated. Vertical deflection linearity and temperature compensation circuitry. 3,796,912, Cl. 315-27.00r.
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Fusey, Pierre, to Banque pour l'Expansion Industrielle Banexi. Compositions for the removal of hydrocarbon and industrial waste by biological degradation. 3,796,637, Cl. 195-100.000.
Fussell, Theodore John, Jr., to Eastech, Inc. Bluff body flowmeter utilizing a movable member responsive to vortex shedding. 3,796,095, Cl. 73-194.00b.
G & W Electric Specialty Company: *See—*
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Gabano, Jean-Paul; and Jumel, Yves, to Saft-Societe des Accumulateurs Fixes et de Traction. Lithium base electrochemical generator. 3,796,604, Cl. 136-6.0ln.
Gachot, Jean: *See—*
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Gallacher, Laurence Vincent, to American Cyanamid Company. Method for preparing fibrous polyolefin materials. 3,796,778, Cl. 264-49.000.
Gallagher, Edward L.; and Limacher, Robert W., to A-T-O Inc. Mounting template and installation shield. 3,795,983, Cl. 33-189.000.
Gallagher, John B.; and Van Ness, Laverne W., to Wilson Pharmaceutical & Chemical Corporation. Process for preparing high activity pepsin. 3,796,636, Cl. 195-66.000r.
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Garcia, Emilio C. Apparatus for and method of carrying marine cargo. 3,796,176, Cl. 114-43.500.
Gardner, Gary E.: *See—*
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Garrett, Lee R.: *See—*
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Gartner, Klaus W., to Sargent & Greenleaf, Inc. Key duplicating and vending machine. 3,796,130, Cl. 90-13.050.
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Gatsis, John G., to Universal Oil Products Company. Solvent deasphalting and non-catalytic hydrogenation. 3,796,653, Cl. 208-95.000.
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Geary, Kermit Erwin, to New Jersey Zinc Company, The. Method of conditioning high aluminum content zinc alloys to receive adherent electroplated metal coatings. 3,796,600, Cl. 134-2.000.
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Giachello, Marco, to Fiat Societa per Azioni. Permanent magnet speed detector. 3,796,899, Cl. 310-156.000.
Gibbs, Charles H.; and Martin, William O. Ambient condition responsive visual indicator. 3,797,012, Cl. 340-366.00r.
Giersiepen, Werner; and Rich, Walter, to Elektrotechnische Industrie Gustav Giersiepen. Time-keeping arrangement. 3,796,040, Cl. 58-39.500.
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Glaser, Rudolf; Schmidtchen, Juergen; and Bauer, Peter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Molding compositions having improved environmental stress-crack resistance and low-temperature impact strength. 3,796,775, Cl. 260-897.00b.
Gleim, William K. T., to Universal Oil Products Company. Black oil conversion catalyst. 3,796,671, Cl. 252-432.000.
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Goble, Paul H., to Diamond Shamrock Corporation. Stabilization of chloral. 3,796,758, Cl. 260-601.00h.
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Golob, Theodore B.; Hauck, Sylvester J.; Jasinski, Stan C.; Margerum, Bruce A.; and Jarvi, Antti, to Eaton Yale, Ltd., mesne. Tree harvesting apparatus and method. 3,796,241, Cl. 144-3.00d.
Golub, Seymour, to Electronic Packaging Associates, Inc. Apparatus for shaping a plurality of lead wires of a miniaturized circuit. 3,796,201, Cl. 140-1.000.
Gonzalez, John; and Young, Ronald F., to Lincoln Electric Company, The. Arc welding flux. 3,796,609, Cl. 148-24.000.
Goode, William P., to LTV Aerospace Corporation. Guide following steering apparatus. 3,796,165, Cl. 104-247.000.
Goodrich, B. F., Company, The: *See—*
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Gorman, Anthony Graham, to Amplivox Communications Limited. Headsets. 3,796,841, Cl. 179-156.00a.
Gorzegno, Walter P., to Foster Wheeler Corporation. Circuit arrangement for once through vapor generator. 3,796,195, Cl. 122-406.00s.
Goss, Alan P.; Shepherd, Brian; and Williams, David A., to Smiths Industries Limited. Improvements in or relating to brake control apparatus. 3,796,470, Cl. 303-21.0cg.
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Gray, Robert G., to Athena Communications Corporation. Closed television network with an open television system and a closed television system. 3,796,829, Cl. 179-dig.130.
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Greten, Berndt. Device for the manufacture of fiberboards from binder-interspersed, chip-like and/or fibrous particles. 3,796,529, Cl. 425-224.000.
Grimes, Lillian P. Doggie maid. 3,796,453, Cl. 294-1.00r.
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Grunert, Kurt A.; and Dauer, John J., Jr., to Westinghouse Electric Company. Electromagnetic contactor. 3,796,978, Cl. 335-142.000.
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Guhman, Kenneth James. System and fitting for choke tube repair. 3,796,202, Cl. 123-119.00f.
Guigan, Jean. Device for inoculation of a culture medium. 3,796,638, Cl. 195-127.000.
Guille, Eric L. Dictation mask. 3,796,842, Cl. 179-188.000.
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Gustafsson, Berth Ulrik; and Attebo, Erik Gunnar, to Projectus Industriprodukter Aktiebolag. Method and device for measuring the viscosity of a liquid. 3,796,088, Cl. 73-59.000.
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Hagfors, Norman R. Apparatus for delivering electrical stimulation energy to body-implanted apparatus with signal-receiving means. 3,796,221, Cl. 128-421.000.
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Hall, Trenton O. Air scrubber apparatus with incinerator. 3,796,550, Cl. 23-277.00c.
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Harding, Robert C.; Leslie, Lewis; and Olsen, Edward H., to Seaco Computer Display Incorporated. Dynamic focus waveform generators. 3,796,913, Cl. 315-31.00r.
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Hausermann, Heinrich; and Troxler, Eduard. 1,3-Diayl pyrazole optical brighteners. 3,798,706, Cl. 260-240.100.
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Haynes, Royce; and Walsh, Kenneth A., to United States of America, Health, Education and Welfare, mesne. Insolubilized biologically active enzymes. 3,796,634, Cl. 195-63.000.
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Heissenberger, Otto, to Maschinenfabrik Andritz Aktiengesellschaft. Pressing device for the removal of water from cellulose or the like. 3,796,149, Cl. 100-118.000.
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Henley, Eric D.; Hall, Michael T.; and Toole, Godfrey, to British Railways Board. Electrode boiler. 3,796,857, Cl. 219-285.000.
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Hopkins, Richard G. Grinding and work handling apparatus. 3,796,011, Cl. 51-34.00d.
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Johansson, Gustav Gunnar; Jorgensen, Birger Roat; Mogested, Folke Teodor; and Thysk, Rune Nils Anders, 3,796,923.
Joseph, Craig L., to FMC Corporation. Solid state electronic gauge. 3,796,951, Cl. 324-122.000.
Jujitsu Limited: *See—*
Hida, Makoto; and Goto, Akira, 3,797,021.
Jumel, Yves: *See—*
Gabano, Jean-Paul; and Jumel, Yves, 3,796,604.
Junod, John E.: *See—*
Friez, Carl J., Jr.; Jones, Walton B.; and Junod, John E., 3,795,966.
Kablaoui, Mahmoud S.: *See—*
Duranleau, Roger G.; Kablaoui, Mahmoud S.; and Love, Richard F., 3,796,734.
Duranleau, Roger G.; Kablaoui, Mahmoud S.; and Love, Richard F., 3,796,735.
Kabushiki Kaisha Ricoh: *See—*
Hirata, Shinichi; Mitsugi, Iwao; Ogawa, Toshiya; Suzaki, Masayuki; and Suzuki, Takami, 3,796,861.
Kabushiki Kaisha Watanabe Tekkosho: *See—*
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Kadyrov, Marat Udetovich: *See—*
Tkachenko, Artem Mikhailovich; Mustafin, Karl Batyrbekovich; and Kadyrov, Marat Udetovich, 3,796,401.
Kaelin, Joseph Richard. Aeration apparatus for liquids. 3,796,417, Cl. 261-93.000.
Kahn, Frederic Jay, to Bell Telephone Laboratories, Incorporated. Locally erasable thermo-optic smectic liquid crystal storage displays. 3,796,999, Cl. 340-173.00r.
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche Inc. Cyclodopa derivatives. 3,796,723, Cl. 260-326.110.
Kaiser, Robert, to Avco Corporation. Separation of liquid-liquid multiphase mixtures. 3,796,660, Cl. 210-21.000.
Kakimoto, Morio: *See—*
Shindo, Minoru; Kakimoto, Morio; and Nagano, Hiroyuki, 3,796,754.
Kalen, Stuart E., to Cogsdill Tool Products, Inc. Burnishing tool for an arcuate surface. 3,795,956, Cl. 29-90.000.
Kaminsky, Abraham R. Music processing and purifying apparatus. 3,796,122, Cl. 84-173.000.
Kammerer, Wolfgand: *See—*
Kuhl, Hans, 3,795,998.
Kamp, Heinz, to Schlafhorst, W., & Co. Weft thread inserting means. 3,796,236, Cl. 139-126.000.
Kamphake, Lawrence J., to United States of America, Environmental Protection Agency. Automatic analysis for phosphorous content. 3,796,543, Cl. 23-230.00r.
Kanai, Hiromi: *See—*
Yamazaki, Eiichi; and Kanai, Hiromi, 3,796,903.
Kane, Daniel F. Car pod. 3,796,015, Cl. 52-64.000.
Kanner, Bernard; Prokai, Bela; and Rosemund, Walter R., to Union Carbide Corporation. Organosiliconе polymeric foam stabilizer

composition and polyester urethane foam produced therewith. 3,796,676, Cl. 260-2.5ah.

Kapitan, John R. Method and apparatus for attaching buttons. 3,795,948, Cl. 24-90.0ta.

Kaplrosky, Alfred R., to Midland-Ross Corporation. Hydraulic booster brake mechanism. 3,796,134, Cl. 91-418.000.

Kapranov, Robert Ivanovich: *See—*
Khanovich, Izrail Grigorievich; Raudson, Robert Avgustovich; Portnoi, Mark Saulovich; Yanovsky, Gennady Grigorievich; Konisskaya, Natalia Alexandrovna; Seredinsky, Avraam Vulfovich; Kapranov, Robert Ivanovich; Mulokov, Felix Fomich; Bogachev, Fedor Alexandovich; Sergeev, Jury Grigorievich; Zakharova, Alexandra Fedorovna; Chomova, Nina Grigorievna; Britanishsky, Ruvim Girshevich; Nepomnyaschy, Alexandr Mordukhaevich; Zhuchin, Vladimir Nikiforovich; and Topilin, Valentin Vasilievich, 3,796,974.

Karka, Ronald O.: *See—*
De Phillips, James V.; and Karka, Ronald O., 3,796,344.

Kashio Toshio, to Casio Computer Co., Ltd. Apparatus for automatically processing scores of bowling games. 3,796,865, Cl. 235-92.60a.

Kashiwagi, Kazuo: *See—*
Sone, Yoshiharu; Toda, Takao; and Kashiwagi, Kazuo, 3,796,489.

Kasten, Walter, to Bendix Corporation, The. Absorptive dryer having oil mist eliminating apparatus. 3,796,025, Cl. 55-316.000.

Katagiri, Toshio; Suga, Tokuji; Omiya, Shoji; and Matsuda, Isamu, to Matsushita Electric Industrial Co. Ltd. Intermittent tape drive type data recorder. 3,797,030, Cl. 360-52.000.

Katchka, Jay R., to Robertshaw Controls Company. Diaphragm operated flow control device. 3,796,368, Cl. 236-80.000.

Katchman, Arthur: *See—*
Bennett, James G.; and Katchman, Arthur, 3,796,689.

Katsuda, Yoshio, to Dainippon Jochugiku Kabushiki Kaisha. Can for mosquito coils. 3,796,002, Cl. 43-125.000.

Katsuda, Yushio, to Dainippon Jochugiku Kabushiki Kaisha. Substituted furfurylesters of chrysanthemumic acid. 3,796,730, Cl. 260-347.400.

Katz, Klaus: *See—*
Forster, Hans-Joachim; Katz, Klaus; and Scheuter, Anton, 3,796,139.

Kaul, Pradman Prithvinath; Gaunt, William; and Ford, Harold, to Comminications Stallite Corporation. Variable treshold digital correlator. 3,796,868, Cl. 235-181.000.

Kawamura, Takashi. Cargo handling equipment by gripping and suspending materials. 3,796,332, Cl. 214-147.00g.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Oguni, Hiroshi, 3,796,136.
Shibata, Fukuo, 3,796,278.

Kawashima, Kenichi: *See—*
Oshima, Ryoichiro; Miyamoto, Seigo; and Kawashima, Kenichi, 3,796,522.

Kawashima, Masao: *See—*
Chimura, Kazuya; Takashima, Shunichi; and Kawashima, Masao, 3,796,691.

Kearney & Trecker Corporation: *See—*
Meyer, Ronald E.; Schalk, Frank J.; Sedgwick, Robert K.; and Schluge, John E., 3,796,163.

Kearns, Robert W. Windshield wiper control device. 3,796,936, Cl. 318-443.000.

Keathley, Anthony C.; Oberley, Gene L.; Peace, Roderick J.; and Stewart, Jack D. Processes for extruding a product. 3,795,970, Cl. 29-423.000.

Keefer, George E.; and Qualls, Paul J., to Owens-Illinois, Inc. Method and apparatus for producing hollow glass articles by module immersion technique. 3,796,555, Cl. 65-25.00a.

Kelley, Jerry O., to Arvin Industries, Inc. Constant gap extended wear magnetic tape head. 3,797,032, Cl. 360-119.000.

Kelsey-Hayes Company: *See—*
Birge, William T., 3,796,469.
Kolm, Richard H., 3,796,287.

Kemmetmueller, Roland. Cooling or preheating device for coarse or bulky material with heat recovery equipment. 3,795,987, Cl. 34-168.000.

Kempler, Aurora Constantinesco. Drain plugs. 3,795,924, Cl. 4-287.000.

Kerr, Howard Stewart, to Spar Aerospace Products Limited. Multispactral camera. 3,796,826, Cl. 179-7.200.

Keyser, Albert R., Jr.: *See—*
Murphy, Marvin L., Jr.; and Keyser, Albert R., Jr., 3,797,025.

Khanna, Jai K.: *See—*
Crook, James E.; Cutler, John F., Jr.; and Khanna, Jai K., 3,796,047.

Khanovich, Izrail Grigorievich; Raudson, Robert Avgustovich; Portnoi, Mark Saulovich; Yanovsky, Gennady Grigorievich; Konisskaya, Natalia Alexandrovna; Seredinsky, Avraam Vulfovich; Kapranov, Robert Ivanovich; Mulokov, Felix Fomich; Bogachev, Fedor Alexandovich; Sergeev, Jury Grigorievich; Zakharova, Alexandra Fedorovna; Chomova, Nina Grigorievna; Britanishsky, Ruvim Girshevich; Nepomnyaschy, Alexandr Mordukhaevich; Zhuchin, Vladimir Nikiforovich; and Topilin, Valentin Vasilievich. Electromechanical delay lne. 3,796,974, Cl. 333-30.000.

Kick, Hermann; and Schwyn, Walter, to Maier, Carl & Cie., Schaffahusen. Electrical circuit-breaker. 3,796,860, Cl. 335-21.000.

Kidde, Walter, & Company, Inc.: *See—*
Poitras, Edward J., 3,796,981.

Kieding, Robert B.: *See—*
Burdick, Robert E.; Huthsing, Henry W.; and Kieding, Robert B., 3,796,162.

Kikkoman Shoyu Co., Ltd.: *See—*
Kikuchi, Mamoru; Sakaguchi, Kenji; and Nakano, Eiichi, 3,796,633.

Kikuchi, Kenzo: *See—*
Yoshioka, Yoshio; Marumoto, Ryuji; Honjo, Mikio; and Kikuchi, Kenzo, 3,796,700.

Kikuchi, Mamoru; Sakaguchi, Kenji; and Nakano, Eiichi, to Kikkoman Shoyu Co., Ltd. and Noda Institute for Scientific Research. Peptidoglutaminase. 3,796,633, Cl. 195-62.000.

Kilmer, John B. Energy translation devices. 3,796,525, Cl. 418-61.00r.

Kimberly-Clark Corporation: *See—*
Hanke, David E., 3,796,219.

Kime, Donald L.; and Stogdill, Ronald G., to Chemineer, Inc. Right angle speed reducer. 3,796,108, Cl. 74-417.000.

Kind, Dieter; and Hartel, Hagen, said Hartel assor. to said King, Dieter. Circuit arrangement for the interruption of current. 3,796,891, Cl. 307-135.000.

Kindron, Robert R.; and Yelin, Robert E., to FMC Corporation. Preconorizing treatment for desizing glass fabric. 3,796,601, Cl. 134-2.000.

King, Dieter: *See—*
Kind, Dieter; and Hartel, Hagen (said Hartel assor. to said), 3,796,891.

King, Josef: *See—*
Flaig, Hans; Wolber, Robert; Hettich, Otto; Assmus, Friedrich; and King, Josef, 3,797,013.

King-Seeley Thermos Co.: *See—*
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Kinjo, Kikuo: *See—*
Kondo, Eiichi; Kinjo, Kikuo; and Yamanouchi, Teruo, 3,796,569.

Kinkaid, Robert John; and Asick, John Carl, to AMP Incorporated. Electrical receptacle and connector. 3,796,987, Cl. 339-217.00s.

Kins Developments, Limited: *See—*
Faville, Warwick Scott, 3,796,369.

Kiritani, Masataka; and Matsukawa, Hiroharu, to Fuji Photo Film Co., Ltd. Process for the production of oily liquid-containing microcapsules and the microcapsules produced thereby. 3,796,669, Cl. 252-316.000.

Kirsch, Hans-Rudolf, to Ciba-Geigy AG. Color photographic proofing process. 3,796,575, Cl. 96-14.000.

Kishino, Shigeo: *See—*
Schrader, Gerhard; Eue, Ludwig; Hack, Helmuth; Hirane, Seiichi; Aya, Masahiro; Kishino, Shigeo; and Fukazawa, Nobuo, 3,796,560.

Kishore, Nand: *See—*
David, Joseph; Thomas, Keith; and Kishore, Nand, 3,796,595.

Kito, Masahiro; and Ueda, Aisumi, to Aisin Seiki Kabushiki Kaisha. Hydraulic power brake system. 3,796,467, Cl. 303-13.000.

Klaue, Hans Joachim; and Reisacher, Josef, to Aktiengesellschaft Kuhnle, Kopp & Kausah. Process for detoxicating exhaust gases from otto-combustion engines and apparatus for carrying out such process. 3,796,046, Cl. 60-619.000.

Klaviter, Walter F.: *See—*
Smith, Spencer E.; Marek, Donald C.; and Klaviter, Walter F., 3,796,335.

Klein, Gerald I., to Westinghouse Electric Corporation. . 3,796,973, Cl. 333-22.00f.

Kleinwaechter, Hans. Magnetic type transmission arrangement. 3,796,898, Cl. 310-103.000.

Kleminski, Michal: *See—*
Domanski, Bonifacy; Kleminski, Michal; and Zieba, Zozislaw, 3,795,968.

Kline, Harlan H.: *See—*
McLaughlin, Hugh T.; and Kline, Harlan H., 3,796,449.

Kline, William M., to Medical Evaluation Devices & Instruments Corporation. Use of multi-purpose centrifuge tube in biological analysis. 3,796,542, Cl. 23-230.00b.

Klinger, Friedrich; and Brezina, Jan, to Schenck, Carl, Maschinenfabrik GmbH. Torsion test stand. 3,796,092, Cl. 73-99.000.

Klinischar, Gerfried: *See—*
Daimer, Wolfgang; Klinischar, Gerfried; and Verdino, Heiner, 3,796,770.

Knapp, Heinrich, to Bosch, Robert, G.m.b.H. Fuel injection apparatus. 3,796,199, Cl. 123-32.0ea.

Knapp, Heinrich. Fuel injection apparatus. 3,796,200, Cl. 123-119.00r.

Knapsack Aktiengesellschaft: *See—*
Vogt, Wilhelm; Glaser, Hermann; and Dyrschka, Helmut, 3,796,753.

Knudson, Robert F., to McGraw-Edison Company. Humidifier drum construction. 3,796,416, Cl. 261-92.000.

Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, to Eisenwerk-Gesellschaft Maximilianshutte mbH. Process for producing chrome steels and a converter for carrying out the process. 3,796,421, Cl. 266-35.000.

Kobetz, Paul: *See—*
Mitchell, Lawrence C.; Kobetz, Paul; and Burns, William, 3,796,736.

Koch, Walter T.; and Glinski, Richard A., to FMC Corporation. Protected laminate article and process for its preparation. 3,796,786, Cl. 264-331.000.

Koch, Wilhelm: *See—*

Baumann, Hans G.; and Koch, Wilhelm, 3,796,252.

Koch, Wolfgang: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,796,723.

Kocsis, Ferenc: *See—*
Annus, Imre; Cser, Gyula; Florian, Sandor; Horvath, Gyorgy; and Kocsis, Ferenc, 3,796,048.

Kodama, Tsuneo: *See—*
Ide, Fumio; Kodama, Tsuneo; and Sasak, Isao, 3,796,776.

Koff, Fred William: *See—*
Fuhrmann, Robert; Koff, Fred William; and Pisanchyn John D., 3,796,751.

Kohl, Gerald C., to Medics Research & Development, Inc. Biopsy sampling method and device for the female genital tract. 3,796,211, Cl. 128-2.00b.

Kohl, Vance L.; and Hoenisch, Walter Harold, to King-Seeley Thermos Co. Ice dispensing machine. 3,796,351, Cl. 222-108.000.

Kohlert, Gerhard; and Stawicky, Wolfgang, to Vereinigte Deutsche Metallwerke AG. Process for producing austenitic steels weldable without droplet formation. 3,796,567, Cl. 75-12.000.

Koizume, Kihachiro: *See—*
Yamauchi, Masaaki; Takezawa, Yoshiro; and Koizume, Kihachiro, 3,796,904.

Kolek, Robert L., to Westinghouse Electric Corporation. Castings for reverse osmosis membrane supports. 3,796,314, Cl. 210-321.000.

Kolm, Richard H., to Kelsey-Hayes Company. Surge-actuator for brake system. 3,796,287, Cl. 188-112.000.

Kolpek, Robert A., to International Business Machines Corporation. Sentence oriented dictation system featuring random accessing of information in a preferred sequence under control of stored codes. 3,797,037, Cl. 360-72.000.

Komaki, Saiji. Veneer slicer machine. 3,796,243, Cl. 144-162.00r.

Kondo, Eiichi; Kinjo, Kikuo; and Yamanouchi, Teruo, to Canon Kabushiki Kaisha. Electrophotographic photosensitive material. 3,796,569, Cl. 96-1.600.

Konisskaya, Natalia Alexandrovna: *See—*
Khanovich, Izrail Grigorievich; Raudson, Robert Avgustovich; Portnoi, Mark Saulovich; Yanovsky, Gennady Grigorievich; Konisskaya, Natalia Alexandrovna; Seredinsky, Avraam Vulfovich; Kapranov, Robert Ivanovich; Mulokov, Felix Fomich; Bogachev, Fedor Alexandovich; Sergeev, Jury Grigorievich; Zakharova, Alexandra Fedorovna; Chomova, Nina Grigorievna; Britanishsky, Ruvim Girshevich; Nepomnyaschy, Alexandr Mordukhaevich; Zhuchin, Vladimir Nikiforovich; and Topilin, Valentin Vasilievich, 3,796,974.

Konstant, Anthony N., to Speedrack Inc. Guiderail for storage racks. 3,796,410, Cl. 256-1.000.

Kontz, Robert F.; and Morrette, Richard A., to Owens-Illinois, Inc. Parison engaging, severing and stripping mechanism. 3,796,530, Cl. 425-305.00b.

Korrenn, Heinz; and Markfelder, Gunter, to Kugelfischer Georg Schafer & Co. Shaft mounting for water pumps and the like. 3,796,510, Cl. 415-170.00a.

Koryta, Leonard D.: *See—*
Smykal, Robert C.; and Koryta, Leonard D., 3,796,507.

Kosiba, Joseph K.: *See—*
Armistead, John M.; and Kosiba, Joseph K., 3,796,655.

Kosmala, James M.: *See—*
Wright, James A.; and Kosmala, James M., 3,796,823.

Kosonen, Pentti Einari, to AB Gustavsbergs Fabriker. Apparatus for processing water. 3,796,321, Cl. 210-202.000.

Kovacs, Frank F.: *See—*
Statler, Lowell E., 3,796,069.

Kraftwerk Union Aktiengesellschaft: *See—*
Schwarz, Theodor, 3,796,044.

Kragness, Rodney B. Dolly for the rear wheels of a truck being loaded. 3,796,328, Cl. 214-42.00r.

Krambeck, Robert Harold: *See—*
Amelio, Gilbert Frank; Krambeck, Robert Harold; and Pickar, Kenneth Arnold, 3,796,932.

Kraupa, Werner, to Siemens Aktiengesellschaft. Device for compensating rupture forces in installation components and structures, particularly in nuclear power plants. 3,796,286, Cl. 188-1.00c.

Krause, Franz-Eberhard: *See—*
Redlich, Horst; Dickopp, Gerhard; and Krause, Franz-Eberhard, 3,796,825.

Krause, Rudolf, "Rhewum" Rheinische Werkzeug- und Maschinenfabrik GmbH. Vibratory sifting machine with strikers. 3,796,311, Cl. 209-275.000.

Kreeger, Elsmer W.: *See—*
Sanders, Ellsworth E.; and Kreeger, Elsmer W., 3,796,342.

Kreinheder, Donald E.: *See—*
Shestag, Lowell N.; and Kreinheder, Donald E., 3,797,019.

Krieder, Robert D.: *See—*
Morse, Robert J.; Krieder, Robert D.; and Deem, Brian C., 3,796,468.

Krinninger, Herbert; and Wiesner, Siegfried, to Interatom, Internationale Atomreaktorbau GmbH. Device for non destructively and separately determining concentrations of fissionable material in a test specimen. 3,796,876, Cl. 250-363.000.

Krolopp, Otto C.; and Angstadt, John W., to Blaw-Knox Food and Chemical Equipment, Inc. Air by-pass pressure sifter. 3,796,312, Cl. 209-312.000.

Krueger, Friedrich; Bauer, Lieselotte; and Michel, Walter. Process for producing amino methylene phosphonic acids. 3,796,749, Cl. 260-502.500.

Kruger, Hans: *See—*
Loffler, Erich W.; and Kruger, Hans, 3,796,937.

Krupp, Fried, Gesellschaft mit beschrankter Haftung: *See—*
Wagner, Alfred; and Bruckler, Vladimir, 3,796,819.

Kube, Donald H.: *See—*
Hoffman, Charles Robert; and Kube, Donald H., 3,796,893.

Kuckhermann, Gustav, to Windmoller & Holscher. Method of making bags having folded bases, and bags so made. 3,796,142, Cl. 93-35.00r.

Kudo, Tomoaki: *See—*
Nogi, Sadaharu; Miyamoto, Toshimitsu; Uchida, Tokio; Yasuhara, Hiroto; Kudo, Tomoaki; and Shiki, Ryosuke, 3,796,164.

Kueckcn, Jorn A., to Radionics, Inc. Measurements apparatus. 3,796,950, Cl. 324-61.00r.

Kugelfischer Georg Schafer & Co.: *See—*
Korrenn, Heinz; and Markfelder, Gunter, 3,796,510.

Kuhar, John, Jr., to Bell Telephone Laboratories, Incorporated. Technique and apparatus for testing a time division multiplexed transmission system using selective signal bit extraction. 3,796,834, Cl. 179-15.0bf.

Kuhl, Hans, 50% to Kammerer, Wolfgand. Recoil shock absorber for a shoulder firearm. 3,795,998, Cl. 42-74.000.

Kuhnle, Ernst; and Schwarz, Josef, to Bizerba-Werke Wilhelm Kraut KG. Scale, and method of zero-setting the same. 3,796,274, Cl. 177-1.000.

Kujas, Erich F., to Prodesco, Inc. Adhesive composition. 3,796,679, Cl. 260-29.4ua.

Kulka, Marshall: *See—*
Ariyan, Zaven S.; Kulka, Marshall; and Harrison, William A., 3,796,800.

Kummerman, Henri, to MacGregor-Comarain. Sealing device, in particular for a hatch-cover or the like. 3,796,179, Cl. 114-201.00r.

Kumura, Teruhiko: *See—*
Miyata, Shigeo; Kumura, Teruhiko; and Shimada, Minoru, 3,796,792.

Kuppers, Gerhard: *See—*
Lehming, Gunter; and Kuppers, Gerhard, 3,796,618.

Kurio, Noriyuki; and Minegishi, Hiroshi, to Toyo Kogyo Co., Ltd. and Nippon Piston Ring Co., Ltd. Oil seal device for rotary piston internal combustion engine. 3,796,436, Cl. 277-81.00p.

Kurland, Ronald Ira. Closure cap for a container. 3,796,813, Cl. 426-86.000.

Kuschmierz, Heinz: *See—*
Links, Heinz; and Kuschmierz, Heinz, 3,796,205.

Kuwabara, Takao, to Hitachi, Ltd. Water turbine control means. 3,796,051, Cl. 60-398.000.

Kyowa Chemical Industry Co., Ltd.: *See—*
Miyata, Shigeo; Kumura, Teruhiko; and Shimada, Minoru, 3,796,792.

La Soudure Electrique Autogene: *See—*
Schoumaker, Henry R. P. J., 3,796,591.

Laber, Walter; Gottschalk, Alfred; Schwaab, Josef; Jeckel, Guenther; and Mosthaf, Helmut, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Incorporating rubber into thermoplastics. 3,796,677, Cl. 260-4.000.

Laboratoire Suisse de Recherches Horlogeres: *See—*
Hintermann, Hans E.; and Hanni, Werner, 3,796,588.

Lacey, Edward H. Method and apparatus for cutting nonuniform article into uniform pieces. 3,796,146, Cl. 99-514.000.

Lacey, Edward H. Hose splicing apparatus. 3,796,233, Cl. 138-97.000.

Lado, Ernest A.: *See—*
Nielsen, Baagen Bach; Bonner, Edwin J.; and Lado, Ernest A., 3,796,791.

Ladusaw, William T., to General Electric Company. Suction accumulator. 3,796,064, Cl. 62-503.000.

Lagerwey, Johannes, to Reactor Centrum Nederland. Automatic balancing device. 3,796,109, Cl. 74-573.000.

Laibowitz, Robert B.: *See—*
Cole, James N.; Cuomo, Jerome J.; Laibowitz, Robert B.; and Park, Kyu C., 3,796,926.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes George Claude: *See—*
Simonet, Guy; and Pivard, Claude, 3,796,022.

Lambourg, Michel: *See—*
Stenstrom, Claude; Lambourg, Michel; and Duprez, Robert, 3,796,991.

Lamont, John; and Curtis, Ralston, to Stauffer Chemical Company. Process of manufacturing a pesticidal active wettable powder and products. 3,796,562, Cl. 71-93.000.

Lamont, Lawrence T., Jr.; and Dort, Robert F., to Varian Associates. Coaxial sputtering apparatus. 3,796,649, Cl. 204-298.000.

Lamson & Sessions Co., The: *See—*
Wedler, John F., 3,796,079.

Lancini, Biancarlo; and Thiry, Lise, to Gruppo Lepetit S.p.A. 3-(1-Piperazinyliminomethyl) rifamycin SV Antiviral methods. 3,796,798, Cl. 424-180.000.

Lane, Robert John; and James, Robert Colston, to Lucas, Joseph, (Electrical) Limited. Headlamp cleaning device. 3,795,936, Cl. 15-250.240.

Lange, Joachim: *See—*

Sickl, Horst; Lange, Joachim; Neumann, Heinrich; and Rieder, Alois, 3,796,915.
Lange, Wilfried, to Bukama GmbH. Release stop means for pneumatic nail driving or stapling device. 3,796,270, Cl. 173-15.000.
Lasch, Cecil A., Jr., to Industrial Modular Systems Corporation, mesne. Grooved fluid bearing bar. 3,796,466, Cl. 302-29.000.
Laub, Leonard, to Zenith Radio Corporation. Apparatus and methods for scanning phase profilometry. 3,796,495, Cl. 356-109.000.
Lauri, Giles, to Societe Anonyme dite: Socite-Franco-Hispano-Americaine (Francispam). Gas fuelled lighter. 3,796,537, Cl. 431-131.000.
Laurie, C. Keith: *See—*
Miller, Robert Boothe; and Laurie, C. Keith, 3,796,809.
Lawson, Leslie Edward: *See—*
Cox, John Ernest; Crafts, Robert Charles; Houlihan, John Brendan; and Lawson, Leslie Edward, 3,796,603.
Lazarus, Lewis. Vibrator belt. 3,796,215, Cl. 128-63.000.
Leagus, Charles J., Jr. Bed frame end adjustable height stand. 3,795,925, Cl. 5-328.000.
Leahey, Martin Joseph; and Hartley, John James, to Berger, Jenson & Nicholson, Limited. Zn-rich coatings. 3,796,582, Cl. 106-1.000.
Leanza, William J.: *See—*
Christensen, Burton G.; and Leanza, William J., 3,796,747.
Lear Siegler, Inc.: *See—*
Psenka, Joseph A., 3,795,958.
Leboda, Henry J.: *See—*
Speers, Samuel F.; Stewart, David F.; Leboda, Henry J.; and Quattrochi, Michael E., 3,796,370.
Leboutet, Hubert P.: *See—*
Henry-Bezy, Georges; and Leboutet, Hubert P., 3,796,906.
Ledgett, Lowell A., to Colgate-Polmolive Company. Container fill weight control using nuclear radiation. 3,796,873, Cl. 250-357.000.
Lee, Raymond, Organization, Inc., The: *See—*
Allen, Levi G., 3,796,665.
Crutchfield, J. Warren, 3,796,443.
Lehmann, Gerard; and Delhommois, Joseph, to Saft-Societe des Accumulateurs Fixes et de Traction. Cylindrical electrochemical cell. 3,796,606, Cl. 136-13.000.
Lehming, Gunter; and Kuppers, Gerhard. Method of decorating ceramic wall and floor tiles. 3,796,618, Cl. 156-89.000.
Leifheit, Gunter; and Liebscher, Johannes, to Leifheit International: Leifheit, Gunter, KG. Cleaning apparatus. 3,795,930, Cl. 15-50.00c.
Leifheit International: Leifheit, Gunter, KG: *See—*
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Leimgruber, Willy; and Schenker, Fausto Eugenio, to Hoffmann-La Roche Inc. 8-Alkoxy-3,4-dihydro-isoquinolines. 3,796,715, Cl. 260-289.00r.
Lekarski, Simeon; Hardy, Pierre; and Hardy, Leon, 50% to Gachot, Jean. Pneumatic control device with programmed characteristic, particularly for a vehicle braking device. 3,796,135, Cl. 91-461.000.
Lemonnier, Pierre; Cardozo, Jacques; and Grandgury, Georges, to General Foods Corporation. Process for producing coffee extract. 3,796,805, Cl. 426-388.000.
Lengnick, Guenther Fritz; and Pande, Kailash Chandra, to Stauffer-Wacker Silicone Corporation, mesne. Organo-tin aminocarbanate catalyst for preparation of polyurethane foam. 3,796,674, Cl. 260-2.5ac.
Lennox Industries Inc.: *See—*
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Lennox-Industries-Inc.: *See—*
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Lerman, Frank, to National Distillers and Chemical Corporation. Process for the preparation of polyethylene transparencies for use in photoreproduction. 3,796,571, Cl. 96-1.400.
Leslie, Lewis: *See—*
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Lewis, Harold F.: *See—*
Fox, Duane C.; Ichinose, Richard Y.; and Lewis, Harold F., 3,796,993.
Lewis, Theras Gordon; and O'Neill, John Francis, to Bell Telephone Laboratories, Incorporated. Time division communication system. 3,796,833, Cl. 179-15.0at.
Licentia Patent-Verwaltungs- GmbH: *See—*
Offermann, Bernd Peter; and Barthel, Rolf, 3,796,878.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
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Liebergeld, Rudolf. Apparatus for conveying an elongated workpiece. 3,796,087, Cl. 72-421.000.
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Lincklaen, Herbert; and Rek, Johannes Henricus Maria, to Lever Brothers Company. Pourable emulsion. 3,796,815, Cl. 426-195.000.
Lincoln Electric Company, The: *See—*
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Lindbom, Torsten H., to Unimation, Inc. Air flow actuated overhead pickup device for limp sheet materials. 3,796,455, Cl. 294-64.00b.
Linder, Joseph; Sjostrand, Gerald D.; and Carter, Richard L., to Fibre Glass-Evercoat Company, Inc. Apparatus for dispensing plastic material from a container. 3,796,355, Cl. 222-185.000.
Lindqvist, Bo Rudolf; and Persson, Jan Edvard, to Atlas Copco Aktiebolag. Plants comprising a combustion engine and a compressor driven by said engine. 3,796,515, Cl. 417-23.000.
Liner, Jerome C. Device for preparing elemental carbon enriched in carbon-13. 3,796,545, Cl. 23-259.500.
Linfield, Robert F.: *See—*
Jackson, Edward J.; and Linfield, Robert F., 3,796,957.
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Links, Heinz, to Bosch, Robert, G.m.b.H. Pump-and-nozzle assembly for injecting fuel in internal combustion engines. 3,796,206, Cl. 123-139.00e.
Lippert, Thomas E.; Beristain, Charles D.; and Testa, Michael, to Westinghouse Electric Corporation. System for treating dilute slurries. 3,796,317, Cl. 210-386.000.
List, Hans: *See—*
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Locher, Johannes; Schonart, Edgar; and Adler, Karl-Heinz, to Bosch, Robert, G.m.b.H. Electronic regulator with fuel injection control for diesel engines. 3,796,197, Cl. 123-32.0ca.
Lochridge, Joe C.: *See—*
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Lockheed Aircraft Corporation: *See—*
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Loffler, Erich W.; and Kruger, Hans. Motor-driven line transfer control. 3,796,937, Cl. 318-468.000.
LogEtronics Inc.: *See—*
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Shaler, David; and Long, John H., 3,797,024.
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L'Oreal: *See—*
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Lorenz, Donald H.: *See—*
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Lottermoser, Manfred; Fuchs, Gundole; Meyer-Stoll, Hans-Albrecht; Pirck, Dietrich; and Rauscher, Baldur, to Deutsche Texaco Aktiengesellschaft. Molding composition. 3,796,682, Cl. 260-42.290.
Love, J. E., Company: *See—*
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Lucas, Joseph, (Industries) Limited: *See—*
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Sturmey, Kenelm Gordon Francis, 3,795,963.
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Lucien, Paul Emile. Electric micromotor. 3,796,039, Cl. 58-23.000.
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Luge, John B., to General Electric Company. Flame retardant polymer composition containing in admixture calcium titanate. 3,796,772, Cl. 260-860.000.
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Luscher, Jakob, to Battelle Memoral Institute. Crystal oscillator in airtight enclosure with mobile wall portion forming trimmer condenser. 3,796,968, Cl. 331-67.000.
Lusk, George E., to G & W Electric Specialty Company. High voltage cable termination. 3,796,821, Cl. 174-73.00r.
Lyle, Richard E.; and Foehr, Edward G., to Chevron Research Company. Extended life functional fluid. 3,796,662, Cl. 252-32.70e.
Lyon, Lee R., to Lyon, M., & Co. Apparatus for removing flesh from animal hides. 3,796,070, Cl. 69-44.000.
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MacKenzie, Raymond W.: *See—*
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MacKenzie, Raymond W.; Johnston, Paul M.; and Reeves, John R., to Westinghouse Electric Corporation. Receiver-discriminator circuit. 3,796,959, Cl. 325-345.000.
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Maeda, Kazuo, to Mitsui Shipbuilding & Engineering Co., Ltd. Carriages for transporting heavy articles and controlling positions thereof. 3,796,276, Cl. 180-8.00c.
Maeda, Masanori: *See—*
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Magdo, Ingrid E.; and Magdo, Steven, to International Business Machines Corporation. Method of forming dielectric isolation for high density pedestal semiconductor devices. 3,796,613, Cl. 148-175.000.
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Maier, Carl & Cie., Schaffahusen: *See—*
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Malhotra, Ravi K.; and Castello, Anthony M., to Dunham-Bush, Inc. High capacity finned tube heat exchanger. 3,796,258, Cl. 165-151.000.
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Marcell, Richard L.; and Chang, Tsuan Y., to Halcon International, Inc. Oxidation of hydrocarbon to alcohols via borate esters. 3,796,761, Cl. 260-631.00b.
Marchetti, Gianfranco; and Tronconi, Alterto, to Societa Italiana Telecommunicazioni Siemens S.p.A. Electronic switching system. 3,796,894, Cl. 307-267.000.
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Marinkovich, Cedomir; and Bracken, James T.; deceased (by Bracken, Barbara A.; representative). Line printer with recirculating line store and line print memories. 3,796,156, Cl. 101-93.00c.
Markfelder, Gunter: *See—*
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Martin, Allan E.; and Shirley, Edmund C., to American Standard Inc. Boiler construction. 3,796,193, Cl. 122-225.00r.
Martin, Kirby B., Jr., to Goodrich, B. F., Company, The. Pneumatic tire. 3,796,247, Cl. 152-361.000.
Martin, Raymond G., to Westinghouse Electric Corporation. Digital moving target indicator radar system incorporating modulo-N components. 3,797,016, Cl. 343-7.700.
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Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Resorcinol-aldehyde resin and elastomerglass fiber structures and method for preparation. 3,796,627, Cl. 161-143.000.
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Mathisen, Einar S.; Moore, Robert L.; and Sheiner, Leonard S., to International Business Machines Corporation. Optical alignment method and apparatus. 3,796,497, Cl. 356-152.000.
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Matz, Alexander. Water filtering apparatus. 3,796,316, Cl. 210-332.000.
Mauch, Harald; Rittmannsberger, Norbert; and Scholl, Hermann, to Bosch, Robert, G.m.b.H. Fuel injection arrangement. 3,796,198, Cl. 123-32.0ea.
Mauch, Robert E.; and Sarbacher, Robert I., to Bogue, John C. Battery power supply, maintenance free. 3,796,940, Cl. 320-14.000.
Maurer, Emil, to Fischer, Georg, Aktiengesellschaft. Apparatus and method for controlling moisture content of granular materials. 3,796,412, Cl. 259-149.000.
Mauron, Gerard; and Cognard, Georges, to Automobiles Peugeot and Regie Nationale des Usines Renault. Safety belt device for a vehicle. 3,796,442, Cl. 280-150.0sb.
Maute, Hans-Jurgen, to Licentia Patent-Verwaltungs-G.m.b.H. p-n Junction semiconductor device provided with an insulating layer having two stable, resistance states. 3,796,931, Cl. 317-235.00r.
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McCabe, Francis J. Remotely resettable fire damper. 3,796,248, Cl. 160-1.000.
McCabe, Francis J. Resettable fire damper. 3,796,249, Cl. 160-1.000.
McCarthy, Michael J., to Swift & Company. Fluid shortening manufacture. 3,796,806, Cl. 426-417.000.
McClellan, William Reed, to RCA Corporation. Automatic gain control circuit. 3,796,866, Cl. 235-92.0pk.
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McIntire, Daryl C. Loading chute with retractable landing gear. 3,796,191, Cl. 119-82.000.
McIntosh, Walter L.; and Schmidt, Dale M., to LogEtronics Inc. Copy density reading and exposure control system. 3,796,491, Cl. 355-69.000.
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McLaughlin, Hugh T.; and Kline, Harlan H., to Ameron, Inc. Reinforced flange for plastic pipe. 3,796,449, Cl. 285-405.000.
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McMaster, James E., to FMC Corporation. Self-bonding rayon. 3,796,629, Cl. 162-157.00c.
McMickle, Robert L., to Berkley & Company, Inc. Spinning reel with automatic changeover of operation mode. 3,796,391, Cl. 242-84.21a.
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Melead, James J., to Beloit Corporation. Winding, unwinding and tensioning apparatus. 3,796,390, Cl. 242-75.500.
Mellenthin, William J.: *See—*
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Memco (Electronics), Limited: *See—*
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Menard, George. Potter's wheel drive system. 3,796,105, Cl. 74-209.000.
Merck & Co., Inc.: *See—*
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Meripol, Robert B., to Dresser Industries, Inc. Ball check valve having improved guide assembly. 3,796,230, Cl. 137-533.110.
Merren, Thomas Oliver, to Associated Electrical Industries Limited. Mass spectrometry. 3,796,872, Cl. 250-283.000.
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Metzer, Abraham; Basevi, Ettore; Baniel, Avraham M.; and Gorin, Chanoch, to Israel Mining Industries-Institute for Research and Development. Production of finely divided solid materials. 3,796,793, Cl. 423-263.000.
Metzger, Carl; Meiser, Werner; Buchel, Karl Heinz; and Plempel, Manfred, to Bayer Aktiengesellschaft. Phenyl-imidazoly-alkanyl derivatives. 3,796,704, Cl. 260-240.00k.
Meyer, Gerhard, to Hauni-Werke Korber & Co. KG. Method and arrangement for measuring the moisture content in fibrous material. 3,795,984, Cl. 34-46.000.
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Meyer, Ronald E.; Schalk, Frank J.; Sedgwick, Robert K.; and Schluge, John E., to Kearney & Trecker Corporation. Manufacturing system. 3,796,163, Cl. 104-88.000.
Meyer, Ronald F.; Schalk, Frank J.; Sedgwick, Robert K.; and Schluge, John E. Manufacturing system. 3,796,327, Cl. 214-38.0bb.
Meyer-Stoll, Hans-Albrecht: *See—*
Lottermoser, Manfred; Fuchs, Gundole; Meyer-Stoll, Hans-Albrecht; Pirck, Dietrich; and Rauscher, Baldur, 3,796,682.
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Michaelis, Walfried Friedrich Arthur, to Gesellschaft fur Kernforschung mbH. Method and apparatus for the non-destructive analysis of nuclear fuels. 3,796,875, Cl. 250-363.000.
Michel, Walter: *See—*
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Kaplrosky, Alfred R., 3,796,134.
Mielke, James E.: *See—*
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Mier, Randall. Filter assembly. 3,796,024, Cl. 55-267.000.
Miki, Hideki; and Saikawa, Hiroo, to Takeda Chemical Industries, Ltd. Method for producing pyridoxine and intermediates therefor. 3,796,720, Cl. 260-295.0vb.
Millar, John J., to Scott & Williams, Inc. Method of making a run resistant stocking tab. 3,796,066, Cl. 66-95.000.
Miller, John W.: *See—*
Sielaff, Ulrich; and Miller, John W., 3,796,096.
Miller Printing Machinery Co.: *See—*
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Miller, Robert Boothe; and Laurie, C. Keith, to Canada Cane Equipment, Ltd. Production of livestock feed from sugarcane. 3,796,809, Cl. 426-2.0nd.
Miller, William A., Jr. Closed fueling device with automatic cutoff. 3,796,240, Cl. 141-198.000.
Mills, Don: *See—*
Woonton, Kent; Short, Jeffrey T., III; Mills, Don; and Roach, Kenneth N., 3,796,250.
Minagawa, Shigekazu: *See—*
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Minegishi, Hiroshi: *See—*
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Minini, Katherine. Bowl-shaped automobile. 3,796,458, Cl. 296-35.00r.
Minnesota Mining and Manufacturing Company: *See—*
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Thom, Karl F., 3,796,738.
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Tanaka, Susumu; Enoguchi, Yuji; and Ogawa, Masaya, 3,796,488.
Mitchell, Lawrence C.; Kobetz, Paul; and Burns, William, to Ethyl Corporation. Ester synthesis for preparation of synthetic fats. 3,796,736, Cl. 260-410.700.
Mitsche, Roy T.: *See—*

Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,796,766.
Mitsubishi Rayon Company Limited: *See—*
Chimura, Kazuya; Takashima, Shunichi; and Kawashima, Masao, 3,796,691.
Ide, Fumio; Kodama, Tsuneo; and Sasak, Isao, 3,796,776.
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Maeda, Kazuo, 3,796,276.
Miyabayashi, Yoshiyuki; and Yamaha, Kazuo, to Nissan Motor Company, Limited. Device for locking a lid of a luggage compartment of a motor vehicle. 3,796,076, Cl. 70-240.000.
Miyakawa, Seinan; and Tanaka, Hisawo, to Asahi Kohaku Kogyo Kabushiki Kaisha. Electric camera shutter with related controls. 3,797,028, Cl. 354-235.000.
Miyamoto, Seigo: *See—*
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Miyamoto, Toshimitsu: *See—*
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Miyata, Shigeo; Kumura, Teruhiko; and Shimada, Minoru, to Kyowa Chemical Industry Co., Ltd. Composite metal hydroxides. 3,796,792, Cl. 423-250.000.
Miyazaki, Eiichi: *See—*
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Mizukami, Fukutaro: *See—*
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Moneymaker, John R.; and Forsythe, Curtis J., to Top-Scor Products, Inc. Bakery products with a non-hydrophilic agent, polypropylene glycol. 3,796,810, Cl. 426-19.000.
Monleone, Irene. Device for automatically signalling incoming calls on normal already engaged telephones. 3,796,836, Cl. 179-18.0bg.
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Intille, George M., 3,796,739.
Munch, Ralph H., 3,796,934.
Montolivo, Sergio; and Squartini, Giorgio, to F.A.T.M.E. S.p.A. Electronic metal coin analyser. 3,796,295, Cl. 194-100.00a.
Moore, James D.: *See—*
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Moore, Werton D., to Ross, Marty and Henderson, Danny. Swimming pool cleaning device. 3,796,373, Cl. 239-229.000.
Morane, Bruno, to L'Oreal. Valve for dispensing one or more pressurized fluids. 3,796,352, Cl. 222-135.000.
Moreland, William C., II; McCoy, Robert A.; and Malarkey, Terence D., to Westinghouse Electric Corporation. Pan detector for induction heating cooking unit. 3,796,850, Cl. 219-919.490.
Morgan, Herbert S.; Preston, Jack; and Black, William B. High modulus aromatic poly(amide hydrazide) fibers. 3,796,693, Cl. 260-78.00a.
Mori, Tosio: *See—*
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Morse, Robert J.; Krieder, Robert D.; and Deem, Brian C., to Bendix-Westinghouse Automotive Air Brake Company. Electro-pneumatic control system. 3,796,468, Cl. 303-15.000.
Moss, Jack J.; and Hunt, Archie F. Golf putting practice device. 3,796,434, Cl. 273-179.00a.
Moss, Norman; and Broad, Michael John, to Plessey Handel und Investments A.G. Fuel atomization. 3,796,203, Cl. 123-139.0aw.
Moss, Theron V. Mop with open scrim headband. 3,795,934, Cl. 15-229.00a.
Mosthaf, Helmut: *See—*
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Selinko, George J., 3,796,984.
Moyers, Charles Guthrie, Jr., to Union Carbide Corporation. Process for purification by crystallization. 3,796,060, Cl. 62-58.000.
Mrenna, Stephen A.; and Thomas, Glenn R., to Westinghouse Electric Corporation. Enclosed switchgear with improved insulating support means. 3,796,922, Cl. 317-112.000.
Mueller, Daniel L.: *See—*
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Mueller, Martin, to Owens-Illinois, Inc. Tray and tray opening mechanism. 3,796,141, Cl. 93-53.0bf.
Muenger, James R., to Texaco Inc. Heat exchange apparatus for catalytic system. 3,796,547, Cl. 23-288.00l.
Muessel, Dan O.; Eisenreich, William; and Schieber, Isadore, to Eaton Corporation. Lock tumbler cylinder picking alarm. 3,797,004, Cl. 340-274.000.
Mugford, Charles C., to Farr Company. Liquid-gas separator. 3,796,026, Cl. 55-338.000.
Muirhead, Inc.: *See—*
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Shaler, David; and Long, John H., 3,797,024.
Mukai, Hideo; and Yamaguchi, Toshiaki, to Nishimura Seisakusho Co., Ltd. Apparatus for intermittent processing for web materials. 3,796,117, Cl. 83-210.000.
Mullan, William Harrison: *See—*
Anderson, Benjamin M.; Mullan, William Harrison; and Tempel, Gerhard W., 3,796,020.
Muller, Jakob. Method and apparatus for anchoring a floating yarn portion in a woven fabric. 3,796,234, Cl. 139-46.000.
Muller, Jakob. Harness arrangement for a loom. 3,796,235, Cl. 139-79.000.
Muller, Wilhelm: *See—*
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Munch, Ralph H., to Monsanto Company. Capacitor with non-halogenated impregnant. 3,796,934, Cl. 317-259.000.
Munchbach, Curt, to Ungerer, Irma. Combined stretch-type straightening apparatus for metal strips. 3,796,080, Cl. 72-160.000.
Murphy, Marvin L., Jr.; and Keyser, Albert R., Jr., to Texas Instruments, Incorporated. Photographic data storage method system and medium. 3,797,025, Cl. 95-1.00t.
Musschoot, Albert, to General Kinematics Corporation. Vibratory material handling device with variable force application. 3,796,299, Cl. 198-220.0db.
Mustafin, Karl Batyrbekovich: *See—*
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Naegeli, Werner, to Pavena AG. Apparatus for guiding and loading a weighting roll on spinning machines. 3,795,945, Cl. 19-282.000.
Nagano, Hiroyuki: *See—*
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Naito, Takayuki; Nakagawa, Susumu; and Abe, Yoshio, to Bristol-Myers Company. Antibiotic derivatives of gentamicin C_{1a}. 3,796,699, Cl. 260-210.0ab.
Naito, Takayuki; and Okumura, Jon, to Bristol-Myers Company. Production of o-aminophenyl-acetic acid lactam. 3,796,716, Cl. 260-289.00r.
Naito, Takayuku; Nakagawa, Susumu; and Abe, Yoshio, to Bristol-Myers Company. Antibiotic derivatives of gentamicin C_2. 3,796,698, Cl. 260-210.0ab.
Nakagawa, Susumu: *See—*
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Naito, Takayuku; Nakagawa, Susumu; and Abe, Yoshio, 3,796,698.
Nakajima, Yosuke; and Ohtani, Katsuhiko, to Fuji Photo Film Co., Ltd. Device for measuring swelling of material. 3,796,090, Cl. 73-73.000.
Nakamura, Hideo; Takasugi, Kazuo; and Inose, Fumiyuki, to Hitachi, Ltd. Priority level discriminating apparatus. 3,796,992, Cl. 340-147.0lp.
Nakano, Eiichi: *See—*
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Nara, Kaoru: *See—*
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Narayanan, Venkatachala L., to Squibb, E. R., & Sons, Inc. Tetrahydro-cyclopropa(B)naph. 3,796,760, Cl. 260-612.00r.
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Naydan, Theodore T.; and Aker, Walter W., to Environment/One Corporation. Process and apparatus for mining by hydroelectric pulsed liquid jets. 3,796,463, Cl. 299-14.000.
Neal, Archie E.; and Gradwohl, Donald R., to Love, J. E., Company. Bat and tine construction for a harvester reel. 3,796,030, Cl. 56-220.000.
Needleman, Mark. Apparatus for contour molding of extruded material. 3,796,532, Cl. 425-325.000.
Nelson, Allen C.: *See—*
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Nelson, Carl T.; and Dobkin, Robert C., to National Semiconductor Corporation. Current limiting circuit. 3,796,943, Cl. 323-9.000.
Nelson, Terence John: *See—*
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Nesson, Israel; Palmer, Robert G.; and Faris, Edwin E., to Berkey Photo, Inc. Device for use with self-developing film. 3,797,026, Cl. 95-13.000.
Netting, David I., to Philadelphia Quartz Company. Method of making hollow spheres by spray drying. 3,796,777, Cl. 264-13.000.
Neubeck, William H., Jr.: *See—*
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Neumann, Heinrich: *See—*
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Yamamoto, Yasuhiko; Shiemada, Sugao; and Matsumo, Suguru, 3,796,475.
Nicholas, Keith Harlow; Ford, Ronald Alfred; and Beale, Julian Robert Anthony. Junction isolated intergrated curcuit resistor with crystal damage near isolation junction. 3,796,929, Cl. 317-235.00r.
Nichols Engineering & Research Corporation: *See—*
Nielsen, Baagen Bach; Bonner, Edwin J.; and Lado, Ernest A., 3,796,791.
Nickl, Franklyn George; and Schanne, Joseph Francis, to RCA Corporation. Optical scanning arrangement and article useful therewith. 3,796,863, Cl. 235-61.11e.
Nickly, Jean, to Automobiles M. Berliet. Bolting assembly. 3,796,437, Cl. 277-166.000.
Nielsen, Baagen Bach; Bonner, Edwin J.; and Lado, Ernest A., to Nichols Engineering & Research Corporation. Process for reclaiming limestone mud. 3,796,791, Cl. 423-177.000.
Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Oil Company, Limited: *See—*
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Nishimura Seisakusho Co., Ltd.: *See—*
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Nishiyori, Kyutaro; and Tateishi, Junichiro, to Kabushiki Kaisha Watanabe Tekkosho. Winding apparatus for thin band plates. 3,796,389, Cl. 242-67.10r.
Nissan Motor Company, Limited: *See—*
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Nogi, Sadaharu; Miyamoto, Toshimitsu; Uchida, Tokio; Yasuhara, Hiroto; Kudo, Tomoaki; and Shiki, Ryosuke, to Japanese National Railways. Spacing control method for running bodies operated in a tubular transport system. 3,796,164, Cl. 104-138.00r.
Noneman, Thomas S.; Smith, Thomas R.; and Stokes, John B., to Tomco Plastic Inc. Molded plastic drawer. 3,796,474, Cl. 312-333.000.
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Albrecht, Clifford C.; and Brown, Howard G., 3,796,523.
Nuss, Robert F., Jr., to Edwards Company, Inc. Code communication system for remote stations. 3,796,994, Cl. 340-163.000.
Nutter, Benjamin P., to Schlumberger Technology Corporation. Releasable connection for pressure controlled test valve systems. 3,796,261, Cl. 166-237.000.
Nye, Norman H. Depth control device for fish lure. 3,796,000, Cl. 43-43.130.
Oberhansli, Peter, to Givaudan Corporation. Process for preparing cycloalkenone esters. 3,796,742, Cl. 260-468.00k.
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O'Brien, John J. Solder flux. 3,796,611, Cl. 148-23.000.
Obrycki, Raymond F., to Searle, G.D., & Co. Automated multiple sample processing for well type radioactivity counters. 3,796,879, Cl. 250-362.000.
Obser, Werner G., to Sick, Erwin. Method and arrangement for adjusting optical devices. 3,796,500, Cl. 356-237.000.
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Offermann, Bernd Peter; and Barthel, Rolf, to Licentia Patent-Verwaltungs- GmbH. Rotary support for radiation treatment apparatus. 3,796,878, Cl. 250-445.000.
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Oguni, Hiroshi, to Kawasaki Jukogyo Kabushiki Kaisha. Fluid pump or fluid motor. 3,796,136, Cl. 91-485.000.
O'Hare, Harry M., to Federal Investment Corporation. Combination aerator and shower nozzle. 3,796,377, Cl. 239-428.500.
Ohlschlager, Hans; and Riester, Oskar, to Agfa-Gevaert Aktiengesellschaft. Spectrally sensitized light sensitive silver halide material. 3,796,580, Cl. 96-127.000.
Ohta, Kazuko, to Victor Company of Japan, Ltd. 4-Channel headphone. 3,796,840, Cl. 179-156.00r.
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O'Shea, Ronald J.; Haase, Bernd W.; and Hawkins, Albert W., to Union Carbide Corporation. Packaging machine. 3,796,428, Cl. 271-210.000.

Oshima, Ryoichiro; Miyamoto, Seigo; and Kawashima, Kenichi, to Hitachi, Ltd. Compressor. 3,796,522, Cl. 418-15.000.
Osika, Thomas F., to McGill Manufacturing Company, Inc. Multiple curcuit control switch assembly with momentary action interlocking means. 3,796,844, Cl. 200-5.00e.
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Ouska, Ralph C., to FMC Corporation. Clamp mechanism for rotary car dumper. 3,796,329, Cl. 214-55.000.
Outhouse, James V., to Productions Specialties, Inc. Apparatus for installing and removing flow valves. 3,796,259, Cl. 166-117.500.
Owens, Frederick H.; and Clovis, James S., to Rohm & Haas Company. Acrylic modifiers for polycarbonamides. 3,796,771, Cl. 260-857.00g.
Owens-Corning Fiberglas Corporation: *See—*
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Palombella, Dominick P., to Palmer Industries, Ltd. Wire retention terminal and transistor socket. 3,796,988, Cl. 339-258.00r.
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Panissidi, Hugo A., to International Business Machines Corporation. Cocked damping mechanism. 3,796,132, Cl. 91-167.000.
Parish, Roger C.; and Trei, John E., to Smithkline Corporation. Molasses chloral feed composition for improving feed utilization of ruminants. 3,796,797, Cl. 424-180.000.
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Pearce, Jai K., to Pennsylvania Engineering Corporation. Steel conversion apparatus. 3,796,420, Cl. 266-35.000.
Pearlman, Martin B. Surface treatment. 3,796,608, Cl. 148-6.140.
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Petty, William D.; and Liddle, David L., to Owens-Illinois, Inc. Operation of gaseous discharge display/memory panels. 3,797,011, Cl. 340-324.00m.
Pettyjohn, William J., Jr., to Westinghouse Electric Corporation. Recessed square fluorescent luminaire. 3,796,870, Cl. 240-51.11r.
Pfafe, Alan R., Jr., to Bernal Rotary Systems, Inc., mesne. Apparatus for making cylindrical dies. 3,796,851, Cl. 219-69.00v.
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Piccagli, Ugo. Method for the construction of impermeable walls. 3,796,054, Cl. 61-35.000.
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Pieters, William Johan Meindert; Freel, John; and Anderson, Robert Bernard, to Grace, W. R., & Co. Method of regenerating an aged raney nickel catalyst with carboxylic acid and base treatment. 3,796,670, Cl. 252-413.000.
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Post, Daniel. Position measuring through the use of moire fringe multiplication. 3,796,498, Cl. 356-169.000.
Potchen, Peter F. Bicycle saddle mount. 3,796,460, Cl. 297-211.000.
Poullot, Bernard, to Automobiles Peugeot and Regie Nationale des Usines Renault. Exhaust gas purifying system for an internal combustion engine. 3,796,546, Cl. 23-288.00f.
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Pretorius, Victor; and Hahn, Hans Helmut. Apparatus for distribution separation processes, their manufacture and use. 3,796,657, Cl. 210-31.00c.
Prieur, Lucien Robert, to Societe Industrielle Honeywell Bull. Safety device for read-write apparatus of magnetic disks. 3,797,033, Cl. 360-98.000.
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Quesinberry, Arden L.; and Espersen, Peter G., to Westinghouse Electric Corporation. Voltage droop compensation circuit for traveling wave tubes. 3,796,965, Cl. 330-43.000.
Raab, Andrew F., to Indak, Manufacturing Corporation. Miniature push-button electrical switch with insertable stationary contact mounting means. 3,796,847, Cl. 200-159.00r.
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Rao, Durvasula V.; Ulrich, Henri; Stuber, Fred A.; and Sayigh, Adnan A. R., to Upjohn Company, The. Acryloyloxyalkyl alkyloxysilibenecarbamates. 3,796,744, Cl. 260-471.00c.
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Ratcliff, Ralph A. Grab hook construction with clevis. 3,795,951, Cl. 24-230.5cr.
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Rest, Wilhelm; and Huff, Karl, to Bayer Aktiengesellschaft. Method of stretching a thermoplastic sheet using a shortened stretching zone. 3,796,785, Cl. 264-288.000.
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Russell, John D. Method and apparatus for conveying material. 3,796,298, Cl. 198-139.000.
Rutledge, James C., to Collins & Aikman Corporation. Butt splicing thermoplastic sheeting. 3,796,625, Cl. 156-502.000.
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Salvati, John G.; and Skalka, Paul, to Westinghouse Electric Corporation. Circuit interrupter protective device. 3,797,007, Cl. 335-176.000.
Sampey, Harry R., to Pentron Industries, Inc. Vehicle separation measuring system. 3,796,864, Cl. 235-92.0ev.
Sanders, Ellsworth E.; and Kreeger, Elsmer W., to Pinckney Molded Plastics, Inc. Collapsible container. 3,796,342, Cl. 220-6.000.
Sanders, Grady H., to Deering Milliken Research Corporation. Drafting apparatus. 3,795,946, Cl. 19-255.000.
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Savoca, Joseph Peter, to American Cyanamid Company. Process for manufacturing dibenzo(A,H) pyrene-7,14-dione. 3,796,733, Cl. 260-362.000.
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Schubel, Hans; Janssen, Paul; and Ratz, Heinz, to Dynamit Nobel Aktiengesellschaft. Process for the manufacture of pure L-N-B enzoyl-4-dihydroxyphenylalanine. 3,796,750, Cl. 260-519.000.
Schug, Helmut, to Mannesmann Aktiengesellschaft. Method and equipment for desalination of liquids. 3,796,320, Cl. 210-189.000.
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Schultz, Jerald, to Eaton Corporation. Door holder with electrical control. 3,796,451, Cl. 292-263.000.
Schulz, Donald A. Security chain. 3,796,450, Cl. 292-264.000.
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Schuster, Wilhelm; Hampel, Hans-Joachim; and Wittekind, Jurgen, to Ipsen Industries International Gesellschaft mit beschrankter Haftung. Method and apparatus for measuring the contents in low boiling components in a liquid. 3,796,089, Cl. 73-61.10r.
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Schwarz, Theodor, to Kraftwerk Union Aktiengesellschaft. Gas turbine air storage system. 3,796,044, Cl. 60-39.290.
Schwarze, Werner; Westlinning, Herman; Wolfe, Siegfried; and Fleischhauer, Horst, to Deutsche Gold- und Silber-Scheideanstalt

vormals Roessler. Vulcanization of natural and synthetic rubbers from halogen free dienes. 3,796,683, Cl. 260-42.330.
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Seiden, Myron A., to Polaroid Corporation. Twin lens camera system having sequential simultaneous lens operation. 3,796,485, Cl. 95-18.000.
Seiriki, Matsuzo, to White Sewing Machine Company. Sewing machine. 3,796,172, Cl. 112-210.000.
Selectivend, Inc., mesne: *See—*
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Selinko, George J., to Motorola Inc. Electrical and mechanical connector for two part portable electronic device. 3,796,984, Cl. 339-88.00r.
Sen, Biswanath, to Cariboo Pulp and Paper Company. Method for reducing sulfide odors from kraft mill lime kiln stacks. 3,796,628, Cl. 162-51.000.
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Seufert, George E. Multi-purpose cleaning implement. 3,795,933, Cl. 15-114.000.
Seufert, George E. Utility container assembly for use with sponge applicator. 3,795,939, Cl. 15-261.000.
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Shephard, Donald L. Cut-off blade with insert. 3,795,959, Cl. 29-96.000.
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Shibata, Fukuo, to Kawasaki Jukogyo Kabushiki Kaisha. Electric control system for driving an electric vehicle. 3,796,278, Cl. 180-65.000.
Shields, Charles J., to States Steamship Company. Apparatus for alternatively securing irregular cargo and standard shipping containers. 3,796,404, Cl. 248-361.00r.
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Siegrist, Adolf Emil; and Garmatter, Jacques, to Ciba-Geigy AG. Dibenzofuryl-benzoxazolyl-styrenes. 3,796,707, Cl. 260-240.00d.
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Singer, Malcolm Scott, to Chevron Research Company. 1,3-Disubstituted-2-trichloromethyl-5-imino-1,3-imidazolidinones as herbicides. 3,796,561, Cl. 71-92.000.
Sinyard, James R. Exercising device containing rotatable weights. 3,796,431, Cl. 272-84.000.
Sirianni, Aurelio F.; and Puddington, Ira L., to Canadian Patents and Development, Limited. Process for recovering concentrated phosphoric acid. 3,796,790, Cl. 423-166.000.
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Smith, Donald M.; and Nelson, Allen C. Method for monitoring gravel packed wells. 3,796,882, Cl. 250-260.000.
Smith, George Elwood: *See—*
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Smith, John K.: *See—*
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Smith, John Lynn, to International Business Machines Corporation. Recirculating block cipher cryptographic system. 3,796,830, Cl. 178-22.000.
Smith, Joseph E., to Wolverine-Pentronix, Inc. Boat steering and reversing system. 3,796,178, Cl. 114-144.00r.
Smith, Olive V.: *See—*
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Smith, Richard Root; and Cheney, Lee Cannon, to Bristol-Myers Company. Production of o-aminomethylphenyl acetic acid lactam. 3,796,717, Cl. 260-289.00r.
Smith, Spencer E.; Marek, Donald C.; and Klaviter, Walter F., to International Harvester Company. Bucket position indicator. 3,796,335, Cl. 214-761.000.
Smith, Thomas R.: *See—*
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Goss, Alan P.; Shepherd, Brian; and Williams, David A., 3,796,470.
Smrt, Thomas J. Sprayer with wind screen and adjustable wheels. 3,796,353, Cl. 222-176.000.
Smykal, Robert C.; and Koryta, Leonard D., to Durox Equipment Company. Water pump. 3,796,507, Cl. 415-111.000.
Snedkerud, Ole, to Patelhold Patentverwertungs & Elektro-Holding AG. Simulated antenna. 3,796,972, Cl. 333-22.00r.
Snell, William Walter, Jr., to Bell Telephone Laboratories, Incorporated. Orthogonal resonant filter for planar transmission lines. 3,796,970, Cl. 333-16.000.
Snowman, David R.: *See—*
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Boris, Michel, 3,796,375.
Sohr, Hans-Ulrich. Concealed slide fastener. 3,795,950, Cl. 24-205.10c.
Solartron Electronic Group Limited, The: *See—*
Dorey, Howard Anthony, 3,796,880.
Sondermeyer, Jack C., to RCA Corporation. Amplifier protection circuit. 3,796,967, Cl. 330-207.00p.
Sone, Yoshiharu; Toda, Takao; and Kashiwagi, Kazuo, to Canon Kabushiki Kaisha. Microfiche camera. 3,796,489, Cl. 355-54.000.
Sonnenberg, Fred Max: *See—*
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Southworth, Hamilton, Jr., to Bell Telephones Laboratories, Incorporated. Pin connector switch. 3,796,848, Cl. 200-175.000.
Souza, Augustine A., to Polygon Concepts, Inc. Cassette. 3,796,394, Cl. 242-199.000.
S.p.A. Giuseppe Ratti Industria Ottica: *See—*
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Spar Aerospace Products Limited: *See—*
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Speers, Samuel F.; Stewart, David F.; Leboda, Henry J.; and Quattrochi, Michael E., said Speers assor. to Hasbro Industries, Incorporated. Combination drinking straw and wheel spoke cover. 3,796,370, Cl. 239-33.000.
Spiller, Lester L. Electrostatic spraying of thermosetting acrylic solution coating compositions modified to include thixotropic agent. 3,796,590, Cl. 117-93.40r.
Sponseller, Harold P., to Owens-Illinois, Inc. Precision glass pressing mold and method of molding glass. 3,796,557, Cl. 65-77.000.
Sprague Electric Company: *See—*
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Staley, A. E., Manufacturing Company: *See—*
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States Steamship Company: *See—*
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Stauffer Chemical Company: *See—*
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Steinke, Charles W. Self-unloading box with transverse discharge opening including a continuous spiral auger with cutting means. 3,796,354, Cl. 222-178.000.
Stenstrom, Claude; Lambourg, Michel; and Duprez, Robert, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Error-correcting device for the transmission of data. 3,796,991, Cl. 340-146.1ab.
Stephan, Elmer F.: *See—*
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Steusloff, Adalbert; deceased (by Steusloff, Herta; heiress). Apparatus for boring and burnishing internal cylindrical surfaces of metallic workpieces. 3,795,957, Cl. 29-90.000.
Steusloff, Herta: *See—*
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Stewart, Robert S., to Westinghouse Electric Corporation. Dual function low pressure cutout for refrigeration system. 3,796,062, Cl. 62-203.000.
Stewart, Robert S., to Westinghouse Electric Corporation. Timed shutdown control circuit for electric refrigeration and air conditioning systems. 3,796,892, Cl. 307-141.400.
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Stoll, Howard B. Hog feeder. 3,796,190, Cl. 119-63.000.
Stone, Wilfred Schafer. Self-illuminated case. 3,796,869, Cl. 240-2.250.
Stooksberry, Franklin D.; and Schneider, Frank H., to United States of America, Army. Temperature control conductive device. 3,796,254, Cl. 165-47.000.
Streitz, Federico E. Heat transfer unit. 3,796,255, Cl. 165-52.000.
Strong, Jerry Glenn, to Mobil Oil Corporation. 3,3-Dimethyl-2-norbornane derivatives used as fungicides. 3,796,803, Cl. 424-316.000.
Strott, Fred R., to Rimrock Enterprises, Inc. Pipe saddle. 3,796,445, Cl. 285-4.000.
Strouny, Lawrence J., to Johnson Service Company. Remote coded dual state controller apparatus. 3,796,995, Cl. 340-163.000.
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Sturmey, Kenelm Gordon Francis, to Lucas, Joseph, (Industries) Limited. Apparatus for use in the manufacture of electric storage batteries. 3,795,963, Cl. 29-204.000.
Sudo, Kunio, to Century Products, Inc. Collapsible baby walker with protective covers for leg joints thereof. 3,796,430, Cl. 272-70.300.
Suga, Tokuji: *See—*
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Suggitt, Robert M.; and Carter, Norman D., to Texaco Inc. Hydrogenation of benezene to cyclohexane. 3,796,764, Cl. 260-667.000.
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Sundermann, Erich, to Zytan Thermochemische Verfahrenstechnik, Firma. Apparatus for manufacturing ceramically bonded shaped bodies from granulates of inflatable mineral material. 3,796,539, Cl. 432-96.000.
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Sutherland, David T.; and Scharf, Harold, to Cenco Medical/Health Supply Corporation. Modular compartment sublimator. 3,795,986, Cl. 34-92.000.
Suzaki, Masayuki: *See—*
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Swenson, Paul F., to Great Lakes Sports Mfg. Co. Metal forming method and apparatus. 3,796,077, Cl. 72-57.000.
Swezey, Edwin Whitney, to Union Camp Corporation. Process and apparatus for forming display packages. 3,796,019, Cl. 53-3.000.
Swezey, Edwin Whitney, to Union Camp Corporation. Display package. 3,796,306, Cl. 206-462.000.
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Szekely, Andrew Geza; and Wrampe, Peter, to Union Carbide Corporation. Flame smelting and refining of copper. 3,796,568, Cl. 75-74.000.
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Tabita, Yoshikatsu. Insecticidal incense and method for the manufacture thereof. 3,795,999, Cl. 43-727.000.
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Takabayashi, Hitoshi, to Anritsu Electric Co., Ltd. Apparatus for interferometric measurement of displacements. 3,796,494, Cl. 356-106.000.
Takahashi, Kentaro; Hasegawa, Minoru; and Nara, Kaoru, to Nippon Piston Ring, Co., Ltd. Thermal and abrasion resistant sintered alloy. 3,795,961, Cl. 29-182.000.
Takase, Sinji: *See—*
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Takushima, Shunichi: *See—*
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Tamburro, Peter James, to Bell Telephone Laboratories, Incorporated. Interconnection system for reusable gang-type connections between flexible printed circuitry and the like. 3,796,986, Cl. 339-92.00m.
Tamura, Shinshichi: *See—*
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Tanabe, Masato, to Schering Corporation. Steroidal derivatives, methods for their manufacture, and compounds produced thereby. 3,796,728, Cl. 260-345.900.
Tanaka, Hisawo: *See—*
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Tanimura, Yoshihisa: *See—*
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Taylor, John W., Jr., to Westinghouse Electric Corporation. Digital MTI radar system. 3,797,017, Cl. 343-7.700.
Taylor, Kenneth M.; and Palicka, Richard J., to Carborundum Company, The. Dense carbide composite bodies and method of making same. 3,796,564, Cl. 75-203.000.
Taylor, Malcolm A.: *See—*
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Taylor, Nicholas Simon Hall; Lundovist, Bo Claes Ingmar; Meyer, Olaf; and Noren, Carl Anders, to Atlas Copco Aktiebolag. Jet piercing device. 3,796,371, Cl. 239-101.000.
Te Velde, Ties Siebolt, to U.S. Philips Corporation, mesne. Method of manufacturing electronic devices, in particular semiconductor devices. 3,796,782, Cl. 264-104.000.
Teac Corporation: *See—*
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Teagan, William Peter, to Thermo Electron Corporation. Lubricant separation system. 3,796,053, Cl. 60-670.000.
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Thettu, Raghulinga R., to Xerox Corporation. Free floating pressure biasing apparatus for cleaning roll fuser. 3,796,183, Cl. 118-70.000.
Thien, Gerhard; Fachbach, Heinz; and Skatsche, Othmar, to List, Hans. Internal combustion engine with sound-proofing casing. 3,796,280, Cl. 181-33.00k.
Thigpen, Arnold B., Jr., to Texaco Inc. Permeability improvement technique. 3,796,264, Cl. 166-302.000.
Thiry, Lisc: *See—*
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Thom, Karl F., to Minnesota Mining and Manufacturing Company. Rare earth fluoroaliphatic sulfonates. 3,796,738, Cl. 260-429.00r.
Thoma, Jean Ulrich, 1/2 to Galdabini, Renzo. Rotary hydraulic machines. 3,796,137, Cl. 91-489.000.
Thomae, Frederick W., Jr.; and Geating, John A., to General Electric Company. Stain coated slides for differentially staining blood. 3,796,594, Cl. 117-124.00d.
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Thompson, David A., to International Business Machines Corporation. Magnetic ink recording system to both magnetize and read ink. 3,796,859, Cl. 235-61.11d.
Thompson, Francis T.; and Wavre, Andre, to Westinghouse Electric Corporation. Power regulation system. 3,796,890, Cl. 307-24.000.
Thompson, Lowell V., to United States of America, Navy. Means for enhancing the target detection capability of a radar receiver. 3,797,018, Cl. 343-17.10r.
Thompson, Peter James. Clamping device for adjustable length means. 3,795,947, Cl. 24-73.00r.
Thompson, William H., to Trans-Clean, Inc., mesne. Vehicle washing apparatus. 3,795,929, Cl. 15-21.00e.
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Tkachenko, Artem Mikhailovich; Mustafin, Karl Batyrbekovich; and Kadyrov, Marat Udetovich. Self-propelled drilling rings for boring blastholes and small-diameter wells. 3,796,401, Cl. 248-2.000.
TMR Products Co., Inc.: *See—*
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Tomii, Kaoro; Miyazaki, Eiichi; and Maeda, Horuo, to Matsushita Electric Industrial Company. Cathode-ray tube having prism-shaped fibre optics faceplate. 3,796,905, Cl. 313-92.01f.
Tompkins, Birnam R.; and Smith, John K., to Texas Instruments, Incorporated. Automatic radar target detection and scan conversion system. 3,797,014, Cl. 343-5.0dp.
Ton That, Thuan, to Boussois Souchon Neuvesel. Tank furnace for glass-making. 3,796,558, Cl. 65-206.000.
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Top-Scor Products, Inc.: *See—*
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Topilin, Valentin Vasilievich: *See—*
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Torrey, Bert E. Mobile home positioner. 3,796,334, Cl. 214-730.000.
Torrington Company, The: *See—*
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Wright, John W., to Robertshaw-Controls Company. Dual valve actuator assembly. 3,796,229, Cl. 137-495.000.
Wu, Steve W. H., to Cascade Corporation. Extensible material handling boom. 3,796,016, Cl. 52-118.000.
Wulke, William L.; and Rabaska, Reinhart J. Ice cube making device. 3,796,063, Cl. 62-340.000.
Wuskell, Joseph P.: *See—*
Brindell, Gordon D.; and Wuskell, Joseph P., 3,796,685.
Wysocki, Lawrence Eugene: *See—*
Vincent, Arthur Leonard; Wysocki, Lawrence Eugene; and Abrams, Herman B., 3,796,887.
Xerox Corporation: *See—*
Donohue, James M.; and Mueller, Daniel L., 3,796,486.
Thettu, Raghulinga R., 3,796,183.
Xomox Corporation: *See—*
Geraci, James Leonard, 3,796,477.
Yale, Harry Louis; and Bernstein, Jack, to Squibb, E. R., & Sons, Inc. N-Oxides of 5-(aminoalkyl)-5,11-dihydrodibenzoxazepines and 5,11-dihydrodibenzthiazepines. 3,796,725, Cl. 260-333.000.
Yamada, Takeo: *See—*
Shimotsuma, Teruo; and Yamada, Takeo, 3,796,099.
Yamaguchi, Toshiaki: *See—*
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Yamaha, Kazuo: *See—*
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Yamamoto, Akira; Yoshimoto, Isamu; and Tanimura, Yoshihisa, to Tokyo Institute of Technology. Apparatus for measuring pitch of precision lead-screw by light-wave interference. 3,796,493, Cl. 356-106.000.
Yamamoto, Yasuhiko; Shiemada, Sugao; and Matsumo, Suguru, to New Nippon Electric Company, Ltd. Apparatus for manufacturing discharge lamps. 3,796,475, Cl. 316-27.000.
Yamanouchi, Teruo: *See—*
Kondo, Eiichi; Kinjo, Kikuo; and Yamanouchi, Teruo, 3,796,569.
Yamauchi, Masaaki; Takezawa, Yoshiro; and Koizume, Kihachiro, to Hitachi, Ltd. Colour picture tubes. 3,796,904, Cl. 313-92.00b.
Yamazaki, Eiichi; and Kanai, Hiromi, to Hitachi, Ltd. Connecting member in post focusing type colour picture tubes. 3,796,903, Cl. 313-85.00s.
Yanovsky, Gennady Grigorievich: *See—*
Khanovich, Izrail Grigorievich; Raudson, Robert Avgustovich; Portnoi, Mark Saulovich; Yanovsky, Gennady Grigorievich; Konisskaya, Natalia Alexandrovna; Seredinsky, Avraam Vulfovich; Kapranov, Robert Ivanovich; Mulokov, Felix Fomich; Bogachev, Fedor Alexandovich; Sergeev, Jury Grigorievich; Zakharova, Alexandra Fedorovna; Chomova, Nina Grigorievna; Britanishsky, Ruvim Girshevich; Nepomnyaschy, Alexandr Mordukhaevich; Zhuchin, Vladimir Nikiforovich; and Topilin, Valentin Vasilievich, 3,796,974.
Yasuhara, Hiroto: *See—*
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Yelin, Robert E.: *See—*
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Yoder, Alan C.: *See—*
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Yoshimoto, Isamu: *See—*
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Yoshioka, Yoshio; Marumoto, Ryuji; Honjo, Mikio; and Kikuchi, Kenzo, to Takeda Chemical Industries, Ltd. Adenosine derivatives and the production thereof. 3,796,700, Cl. 260-211.50r.
Yoshioka, Yoshitomo. Oil rectifying apparatus. 3,796,145, Cl. 99-408.000.
Young, Edward G., to Beatrice Foods Co. Versatile flow-through foam carpet cleaning apparatus. 3,795,932, Cl. 15-98.000.
Young, Ronald F.: *See—*
Gonzalez, John; and Young, Ronald F., 3,796,609.
Yuasa, Hayami, to Nittan Company Limited. Fire detecting system. 3,797,008, Cl. 340-227.000.
Yuasa, Iwao; and Nonoyama, Seiji, to Daido Seiko Kabushiki Kaisha. Electrode connecting apparatus for furnaces. 3,796,818, Cl. 13-18.000.
Yuen, Yung Kwong. Umbrella, sunshade or the like. 3,796,226, Cl. 135-24.000.
Zakharova, Alexandra Fedorovna: *See—*
Khanovich, Izrail Grigorievich; Raudson, Robert Avgustovich; Portnoi, Mark Saulovich; Yanovsky, Gennady Grigorievich; Konisskaya, Natalia Alexandrovna; Seredinsky, Avraam Vulfovich; Kapranov, Robert Ivanovich; Mulokov, Felix Fomich; Bogachev, Fedor Alexandovich; Sergeev, Jury Grigorievich; Zakharova, Alexandra Fedorovna; Chomova, Nina Grigorievna; Britanishsky, Ruvim Girshevich; Nepomnyaschy, Alexandr Mordukhaevich; Zhuchin, Vladimir Nikiforovich; and Topilin, Valentin Vasilievich, 3,796,974.
Zambon, Giacomo R., to Udylite Corporation, The. Work rack agitation device. 3,796,646, Cl. 204-222.000.
Zauft, Karl-Heinz; Bogl, Manfred; Isensee, Klaus-Steffen; and Rohlfs, Helmut, to Siemens Aktiengesellschaft. Device for collecting, transporting and dividing test carrying containers. 3,796,544, Cl. 23-259.000.
Zawistowski, Ronald J.: *See—*
Zeigner, Willard L.; Popitt, Gordon J.; Sargeant, John E.; and Zawistowski, Ronald J., 3,796,284.
Zeigner, Willard L.; Popitt, Gordon J.; Sargeant, John E.; and Zawistowski, Ronald J., to Mattel Inc. Starting mechanism for toy with phonograph. 3,796,284, Cl. 185-39.000.
Zeller, Robert G., to Rockwell International Corporation. Railroad hopper car hatch cover assembly. 3,796,168, Cl. 105-377.000.
Zenith Radio Corporation: *See—*
Baker, Roy F., 3,796,824.
Laub, Leonard, 3,796,495.

Zepell, Nathan A. Writing instrument with transversely movable clip. 3,796,501, Cl. 401-106.000.
Zeyher, Fritz, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Recoilless discharge device. 3,796,128, Cl. 89-1.701.
Zhuchin, Vladimir Nikiforovich: *See*—
Khanovich, Izrail Grigorievich; Raudson, Robert Avgustovich; Portnoi, Mark Saulovich; Yanovsky, Gennady Grigorievich; Konisskaya, Natalia Alexandrovna; Seredinsky, Avraam Vulfovich; Kapranov, Robert Ivanovich; Mulokov, Felix Fomich; Bogachev, Fedor Alexandovich; Sergeev, Jury Grigorievich; Zakharova, Alexandra Fedorovna; Chomova, Nina Grigorievna; Britanishsky, Ruvim Girshevich; Nepomnyaschy, Alexandr Mordukhaevich; Zhuchin, Vladimir Nikiforovich; and Topilin, Valentin Vasilievich, 3,796,974.
Zieba, Zozislaw: *See*—
Domanski, Bonifacy; Kleminski, Michal; and Zieba, Zozislaw, 3,795,968.
Zielinski, Richard Joseph: *See*—
Hasman, John Michael; and Zielinski, Richard Joseph, 3,796,816.
Zielke, Darrell W., to Superscope, Inc. Hub-platform assembly for continuous-loop tapes. 3,796,387, Cl. 242-55.19a.
Ziller, Joerg: *See*—
Frosch, Albert; Jaerisch, Walter; Schmackpfeffer, Arno; and Ziller, Joerg, 3,796,476.
Zimmet, Arthur L. Runaway binding assembly for skis. 3,796,438, Cl. 280-11.35n.
Zindler, Jerrold; and Rolfe, Norman F. F. J., to Instrumentation Laboratory, Inc. Dispenser system. 3,796,239, Cl. 141-83.000.
Zinser - Textilmaschinen GmbH: *See*—
Grau, Gerhard, 3,796,034.
Zipper, Walter J. Liquid metering and counting and dispensing means. 3,796,348, Cl. 222-38.000.
Zisa, William J.; and McClelland, Theodore M., III, to Westinghouse Electric Corporation. Solid state potential indicator for watthour meters. 3,796,953, Cl. 324-137.000.
Zoecon Corporation: *See*—
Siddall, John B.; and Calame, Jean Pierre, 3,796,731.
Zucker, Samuel. Breast prosthesis and brassiere for same. 3,795,921, Cl. 3-36.000.
Zytan Thermochemische Verfahrenstechnik, Firma: *See*—
Sundermann, Erich, 3,796,539.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF MARCH, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bauer, Peter, to Bowles Fluidics Corp. Oscillator and shower head for use therewith. Re. 27,938, 3-12-74, Cl. 239—102.
Bowles Fluidics Corp.: *See*—
Bauer, Peter. Re. 27,938.
Dr. Plate GmbH Chemische Fabrik: *See*—
Raabe, Fritz. Re. 27,939.
Esso Research and Engineering Co.: *See*—
Langer, Arthur W., Jr., and Tornqvist. Re. 27,940.
Langer, Arthur W., Jr., and E. Tornqvist, to Esso Research and Engineering Co. Polymer catalysts. Re. 27,940, 3-12-74, Cl. 260—93.7.
Raabe, Fritz, to Dr. Plate GmbH Chemische Fabrik. Laurolactam copolyamide shaped articles having highly adhesive surfaces. Re. 27,939, 3-12-74, Cl. 260—78.1.
Tornqvist, Erik.: *See*—
Langer, Arthur W., Jr., and Tornqvist. Re. 27,940.

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African violet: *See*—
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Armstrong Nurseries, Inc.: *See*—
Ellis, Arnold W., and Swim. 3,518.
Delbard, Georges. 3,519.
Conrad-Pyle Co., The: *See*—
Meserve, Kathleen K. 3,517.
Delbard, Georges, to Armstrong Nurseries, Inc. Rose plant. 3,519, 3-12-74, Cl. 22.
Ellis, Arnold W., and H. C. Swim, to Armstrong Nurseries, Inc. Rose plant. 3,518, 3-12-74, Cl. 24.
Holtkamp, Hermann. African violet. 3,511, 3-12-74, Cl. 69.
Holtkamp, Hermann. African violet. 3,512, 3-12-74, Cl. 69.
Holtkamp, Hermann. African violet. 3,513, 3-12-74, Cl. 69.
Holtkamp, Hermann. African violet. 3,514, 3-12-74, Cl. 69.
Holtkamp, Hermann. African violet. 3,515, 3-12-74, Cl. 69.
Holtkamp, Hermann. African violet. 3,516, 3-12-74, Cl. 69.
Meserve, Kathleen K., to The Conrad-Pyle Co. Ilex plant (blue prince). 3,517, 3-12-74, Cl. 65.
Swim, Herbert C.: *See*—
Ellis, Arnold W., and Swim. 3,518.
Wileman, Leonard K. Pomegranate tree. 3,520, 3-12-74, Cl. 33.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Zeddies, Armand A. 230,729.
Achenbach, Walter B., to Owens-Illinois, Inc. Beverage glass or similar article. 230,686, 3-12-74, Cl. D7—13.
Acousis Co.: *See*—
Kryter, Karl D. 230,779.
Ajax Hardware Corp.: *See*—
Zagaroli, David P. 230,677.
Zagaroli, David P. 230,678.
Zagaroli, David P. 230,679.
Anderson Bros. Mfg. Co.: *See*—
Jacobson, William P. 230,713.
Applied Sales Engineering Co.: *See*—
Velander, Leonard. 230,769.
Aries, Graham J., to Tower Housewares Ltd. Saucepan. 230,690, 3-12-74, Cl. D7—95.
Arnold, James W., G. W. Ayers, and J. S. Pilot, to Eli Lilly and Co. Photo print box. 230,773, 3-12-74, Cl. D61—1.
Artner, Marcus M., and P. D. McGee, to Motorola, Inc. Tape player or similar article. 230,740, 3-12-74, Cl. D26—14.
Astra Products, Inc.: *See*—
Strasser, Thomas. 230,672.
Strasser, Thomas. 230,674.
Ayers, Grover W.: *See*—
Arnold, James W., Ayers, and Pilot. 230,773.
Bartz, Richard O. Garden tool. 230,695, 3-12-74, Cl. D8—9.
Beckman, Glen B., to Corning Glass Works. Adaptor top for a serving vessel or the like. 230,691, 3-12-74, Cl. D7—131.
Begge, Alexandria, to Casala-Werke Carl Sasse KG. Chair. 230,670, 3-12-74, Cl. D6—56.
Berkley and Co., Inc.: *See*—
Lilland, Larry L., and Rumbaugh. 230,705.
Blackwell, Boyd A., and W. F. Dean, Jr., to Nixdorff-Krein Mfg. Co. Chain display stand. 230,673, 3-12-74, Cl. D6—85.
Brightbill, Keith E., to The Murray Ohio Mfg. Co. Juvenile vehicle. 230,755, 3-12-74, Cl. D34—15.
Brooks, Bertram, to Carolina Enterprises, Inc. Pool. 230,749, 3-12-74, Cl. D34—5.
Broward County School Board, The: *See*—
Matteson, David S. 230,748.
Burer, Aubrey. Pair of swim work-out goggles. 230,664, 3-12-74, Cl. D2—234.
Carney, William V.: *See*—
De Luca, Paul V., and Carney. 230,738.
Carolina Enterprises, Inc.: *See*—
Brooks, Bertram. 230,749.
Casala-Werke Carl Sasse KG: *See*—
Begge, Alexander. 230,670.
Centerville Tag-A-Long Trailers, Inc.: *See*—
Martin, Raymond D., Jr. 230,718.
Ceranowicz, Harry N., and W. P. Ganter, to Ceranowicz, Nunn and Associates, Inc. Hospital emergency cart. 230,716, 3-12-74, Cl. D12—28.
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Miller, Ronald A., Church, and Williams. 230,767.
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Douglas, Livingston C. 230,711.
Cooper, James I., to Twinpak Ltd. Bottle. 230,709, 3-12-74, Cl. D9—89.
Cope, John M., to Sturdevant Mfg. Corp. Mower rear guard. 230,761, 3-12-74, Cl. D40—1.
Corning Glass Works: *See*—
Beckman, Glen B. 230,691.
Cowan, Arnold A. Shock absorber. 230,723, 3-12-74, Cl. D12—159.
Cravits, Phillip. Automobile wheel. 230,726, 3-12-74, Cl. D14—30.
Cryer, Ronald R. Pitcher. 230,688, 3-12-74. Cl. D7—50.
Davis, Joseph W.: *See*—
Lewis, Hubert A., and Davis. 230,701.
Davis, Wilton J.: *See*—
Roe, Richard C., and Davis. 230,683.
Dean, William F., Jr.: *See*—
Blackwell, Boyd A., and Dean. 230,673.
De Luca, Paul V., and W. V. Carney, to Porta Systems Corp. Telephone test and talk-line monitoring switch apparatus. 230,738, 3-12-74, Cl. D26—14.
De Luca, Paul V., to Porta Systems Corp. Portable outgoing trunk extender apparatus for telephone office equipment. 230,739, 3-12-74, Cl. D26—14.
Diaz Infante, Juan Jose. Building composed of prefabricatable modules. 230,724, 3-12-74, Cl. D13—1.
Douglas, Livingston C., to Colgate-Palmolive Co. Bottle or similar article. 230,711, 3-12-74, Cl. D9—125.
Dow Chemical Co., The: *See*—
Hutter, Wayne R., and Waterloo. 230,708.
Dunlap, Eloise. Doll. 230,747, 3-12-74, Cl. D34—2.
Dunlop Ltd.: *See*—
Nakazaki, Eiji, Yumoto and Sakamoto. 230,781.
Educational Design Associates: *See*—
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Ehrich, James D. Golf putter. 230,750, 3-12-74, Cl. D34—5.
Eli Lilly and Co.: *See*—
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Evrell, Torbjorn, and O. Nordlund, to Eskilstuna Knivfabriks Aktiebolag. Knife. 230,696, 3-12-74, Cl. D8—99.
Evans, Dennis L.: *See*—
Gouch, James. 230,719.
Filson, John R., to Minnesota Mining and Mfg. Co. Combined wire and stud gauge. 230,765, 3-12-74, Cl. D52—6.
Finnerty, Robert P. Paint brushes. 230,667, 3-12-74, Cl. D4—38.
Fort Howard Paper Co.: *See*—
Glaser, Milton. 230,770.
Glaser, Milton. 230,771.

Fort Recovery Industries, Inc.: *See*—
Jetter, George G. 230,702.
Fowler, Ann R. Combined chest and neck protector. 230,663, 3–12–74, Cl. D2—27.
Frost, Charles W. Water pipe. 230,775, 3–12–74, Cl. D85—8.
Ganter, Warren P.: *See*—
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Rochford, Paul E., and Neuwirth. 230,699.
Rochford, Paul E., and Neuwirth. 230,700.
Gentry, Nat B. Carrying handle for garment hangers. 230,698, 3–12–74, Cl. D8—154.
Glaser, Milton, to Fort Howard Paper Co. Paper toweling. 230,770, 3–12–74, Cl. D59—2.
Glaser, Milton, to Fort Howard Paper Co. Paper toweling. 230,771, 3–12–74, Cl. D59—2.
Gouch, James, to Dennis L. Evans. Bumper step for trailers. 230,719, 3–12–74, Cl. D12—106.
Grace, W. R., & Co.: *See*—
Pearson, Daniel. 230,714.
Grieder, Charles K. Toy frog. 230,756, 3–12–74. Cl. D34—15.
Grieder, Charles K. Rabbit figure on a log toy. 230,757, 3–12–74, Cl. D34—15.
Grieder, Charles K. Toy turtle. 230,758, 3–12–74, Cl. D34—15.
Hargrave, Richard D.: *See*—
Vaughn, George A., and Hargrave. 230,753.
Harris, Ewell J. Fish lure. 230,732, 3–12–74, Cl. D22—29.
Hendrickson, Philip J., and R. J. Resch, to Krueger Metal Products, Inc. Hinged tablet arm chair. 230,669, 3–12–74, Cl. D6—42.
Higginson, Lydia A. Drinking cup. 230,685, 3–12–74, Cl. D7—9.
Hlavin, Vincent J. Combined towing arm basket and carrying frame for a bicycle trailer. 230,722, 3–12–74, Cl. D12—158.
Hornbostel, Lloyd H., Jr. Lamp fixture. 230,763, 3–12–74. Cl. D48—4.
Horst, Ralph W., to Wyott Corp. Food service cart. 230,715, 3–12–74, Cl. D12—28.
Humlong, Robert F.: *See*—
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Hummel, James A., and R. B. Hinged clip for toy wooden blocks. 230,759, 3–12–74, Cl. D34—15.
Hummel, Richard B.: *See*—
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Hutter, Wayne R., and W. C. Waterloo, to The Dow Chemical Co. Bottle or similar article. 230,708, 3–12–74, Cl. D9—40.
Imai, Sukeyoshi. Wig stand. 230,777, 3–12–74, Cl. D86—10.
Ingram, Basil D. Holder for a fishing rod and reel. 230,730, 3–12–74, Cl. D22—22.
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Jacobson, William P., to Anderson Bros. Mfg. Co. Packaging tray. 230,713, 3–12–74, Cl. D9—242.
Jetter, George G., to Fort Recovery Industries, Inc. Combined curtain rod and holders therefor. 230,702, 3–12–74, Cl. D8—209.
Johnson, Jerry. Bar stool. 230,668, 3–12–74, Cl. D6—35.
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Kita, Robert M., and E. A. Rusch, to Shure Brothers Inc. Two-sided phonograph pickup cartridge. 230,741, 3–12–74, Cl. D26—14.
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Kryter, Karl D., to Acousis Co. Cassette storage case. 230,779, 3–12–74, Cl. D87—1.
Laviolette, Paul A. Submersible trailer light. 230,764, 3–12–74, Cl. D48—32.
Lavitch, Bernard R., and B. H. Morry, to Products International Co. Button attacher. 230,666, 3–12–74, Cl. D3—19.
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Lewis, Hubert A., and J. W. Davis, to Jubilee Mfg. Co. Security door-post. 230,701, 3–12–74, Cl. D8—203.
Lhota, Harold P., T. A. Joseph, and E. P. Leiter, to Republic Steel Corp. Combined frame and door panel unit for a storage locker. 230,681, 3–12–74, Cl. D6—192.
Lilland, Larry L., and J. T. Rumbaugh, to Berkley and Co., Inc. Fishing line receiving adaptor spool. 230,705, 3–12–74, Cl. D8—220.
Lundell, Vernon J. Trailer for receiving camper units or the like. 230,725, 3–12–74, Cl. D14—3.
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Vaughn, George A., and Hargrave. 230,753.
Martin, Raymond D., Jr., to Centreville Tag-A-Long Trailers Inc. Industrial trailer especially adapted for carrying golf carts and the like. 230,718, 3–12–74, Cl. D12—94.
Matteson, David S., to The Broward County School Board. Toy finger puppet. 230,748, 3–12–74, Cl. D34—2.
McCutchen, Wilmot H. Tray. 230,687, 3–12–74, Cl. D7—20.
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McGowan, Kenneth T. Peg board hook locking device. 230,707, 3–12–74, Cl. D8—255.
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Mead Corp., The: *See*—
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Miller, Ronald A., G. W. Church, Jr., and G. L. Williams, to Church's Fried Chicken, Inc. Deep fat fryer. 230,767. 3–12–74, Cl. D55—1.
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Morrisette, Lawrence E. Fishing lure. 230,733, 3–12–74. Cl. D22—29.
Morrissette, Lawrence E. Fish lure. 230,734, 3–12–74, Cl. D22—29.
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Myers, Daniel C. Bicycle stand. 230,780, 3–12–74, Cl. D9—18.
Nakazaki, Eiji, F. Yumoto, and N. Sakamoto, to Dunlop Ltd. Tire for vehicle wheel. 230,781, 3–12–74, Cl. D90—20.
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Oliver, Robert M. Yarn spinning stand. 230,782, 3–12–74, Cl. D92—15.
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Pawsat, Carlton P., and R. F. Humlong, to Wald Mfg. Co., Inc. Reflective velocipede pedal. 230,721, 3–12–74, Cl. D12—125.
Pearson, Daniel, to W. R. Grace, & Co. Wrapping for confectionary. 230,714, 3–12–74, Cl. D9—250.
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Podell, Marcia. Needle point canvas. 230,665, 3–12–74, Cl. D3—9.
Polk, William M., to McKinnon, Eugene T., and Alvin S. Drutz, Temperature regulator. 230,766, Cl. D52—7.
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De Luca, Paul V. 230,739.
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PATENT OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,704,346, E. J. Schaefer, MOTOR CONTROL FOR SUBMERSIBLE SUMP PUMP, **filed** Apr. 6, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c849, *Franklin Electric Co. v. Universal Electric Supply Co. and Universal Electric Co.* By stipulation, case dismissed, Dec. 29, 1972.

2,796,098, R. C. Dreier, HAND-SAW CONSTRUCTION, **filed** Aug. 24, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2109, *Raymond C. Dreier & Dreier Brothers, Inc. v. Mathias Klein and Sons, Inc.* Case dismissed, judgment entered on pleadings, June 15, 1973.

2,910,365, M. Olliver, PECTIN PREPARATION AND METHOD OF MAKING A TABLE JELLY, **filed** Oct. 12, 1973, D.C. Maine (Portland), Doc. 14–95, *General Foods Corporation v. Libby, McNeill & Libby.*

2,956,114, Ginsburg, Henderson, Dolby and Anderson, BROAD BAND MAGNETIC TAPE SYSTEM AND METHOD, **filed** Aug. 4, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1929, *Ampex Corp. v. Arco Corp. et al.* Complaint dismissed by stipulation, without prejudice, Mar. 8, 1973. **Same, filed** Sept. 11, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2345, *Ampex Corporation v. Bell & Howell Company et al.*

2,978,291, V. T. Fahringer, PROCESS AND APPARATUS FOR TREATING TEXTILE MATERIALS WITH A LIQUID, **filed** Nov. 21, 1973, D.C., M.D. Pa. (Scranton), Doc. 73–662, *Burlington Industries Inc. v. United Piece Dye Works.*

2,996,363, R. F. Ruyak, AUTOCLAVE, **filed** Nov. 21, 1973, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 73–2640, *Autoclave Engineers, Inc. v. The Duriron Company, Inc.*

3,024,301, K. R. Walch, WIRING GRILLE, **filed** May 22, 1973, U.S. Court of Appeals, Ohio (Cincinnati), Doc. 72–1479 and 72–2032, *Panduit Corporation v. Stahlin Bros. Fibre Works, Inc.* Decision, claims of defendant are without merit, judgment of the District Court is affirmed May 22, 1973.

3,091,360, B. Edwards, NESTABLE CUP; **3,139,213,** same, **filed** Mar. 6, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c480, *Illinois Tool Works Inc. v. Solo Cup Company, Inc.* Enter findings of fact and conclusions of law, June 29, 1973.

3,103,736, C. E. Ortman, Jr., CUTTING TOOL AND MILLING HEAD INSERT THEREFOR, **filed** Aug. 26, 1965, D.C., N.D. Ill. (Chicago), Doc. 65c1430, *Charles E. Ortman, Jr. v. Standard Railway Equipment Manufacturing Company, Division of Stanray Corporation.* Case dismissed, Jan. 7, 1972.

3,107,991, F. Taussig, SCREEN, **filed** Dec. 11, 1973, D.C., W.D. Ky. (Louisville), Doc. 7910–B, *Arundale Manufacturers, Inc. v. General Electric Company.*

3,139,213. (See 3,091,360.)

3,163,299, J. C. Settles, IMPACT ENERGY ABSORBING MECHANISM FOR RAILWAY VEHICLES, **filed** Nov. 28, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3009, *Buckeye Steel Castings Co. v. Evans Products Company et al.*

3,184,872, F. L. Way, MOVING PATTERN SIMULATOR, **filed** Nov. 21, 1973, D.C. Conn. (Bridgeport), Doc. B–930, *Mechtronics Corporation and Display Art, Inc. v. UMC Electroptics, Inc.*

3,236,390, H. F. J. Sprengel, SHIP'S CARGO BOOM WITH PENDULUM PURCHASE BLOCK FITTING, **filed** Oct. 9, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–2274, *Blohm & Voss AG and Macgregor-Comarain, Inc. v. Sun Shipbuilding & Dry Dock Co.*

3,250,205, R. R. Lambert, STRIP-TYPE AIR DIFFUSER; **3,406,623,** same, PLENUM AIR DIFFUSER ASSEMBLY, **filed** Mar. 23, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73–C–169, *Air Factors, Inc. v. Tempmaster Corp. and Edward Filkins, Inc.* Decision and order granting defendant's motion to dismiss, judgment entered, Nov. 14, 1973.

3,250,662, N. R. Seaman, COATED FABRIC, **filed** Aug. 25, 1971, D.C., N.D. Ohio (Cleveland), Doc. C–71–830, *Shelter-Lite Inc. v. Reeves Brothers, Inc.* Case dismissed with prejudice as being moot, filed Nov. 30, 1973.

3,268,798, L. J. G. Burski, ADJUSTABLE VOLTAGE CONTROL CIRCUIT, **filed** May 5, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1060, *Superior Electric Co. v. Major Corp.* Enter consent judgment, Oct. 20, 1972.

3,297,153, L. A. Fattori, SHOCK RESISTANT PLASTIC CONTAINERS WITH SELF-CONTAINED LOCKING MEANS, **filed** July 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1600, *Plastic Reel Corporation of America v. Film Editing Equipment Corp., also known as Hollywood Film Company.* Cause removed from active calendar June 28, 1972, consent judgment entered, Aug. 14, 1972.

3,306,864, Lang, Grazen and Less, PHENOL FORMALDEHYDE-UREA RESIN COMPONENT BINDER, **filed** Aug. 31, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2120, *Hooker Chemical Corporation v. International Minerals & Chemical Corp.* by stipulation, case dismissed, Aug. 3, 1972.

3,349,285, N. L. Belkin, SURGICAL GOWN WITH STATIC ELECTRICITY DISCHARGE MEANS, **filed** Oct. 13, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2579, *Angelica Corp. v. Opelika Manufacturing Corp.* Enter order dismissing complaint by stipulation, May 10, 1973.

3,351,368, R. K. Sweet, MAGNETIC CATCH, **filed** May 11, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1109, *Richard K. Sweet v. Marvel Metal Products and International Components Corp.* Judgment entered for the defendants, June 30, 1971.

3,406,623. (See 3,250,205.)

3,452,368, J. R. Couper, PORTABLE WASTE DISPOSER; **3,536,192,** same, CONTAINER FOR INCREMENTAL WITHDRAW OF TUBULAR PLASTIC, **filed** Nov. 2, 1973, D.C. Colo. (Denver), Doc. C–5502, *John R. Couper v. Sanimatic Corporation.*

3,507,495, Tucker, Fracalossi, Crawford and Sollers, LACROSSE STICK, **filed** Dec. 3, 1973, D.C. Md. (Baltimore), Doc. 73–1173–B. *Wm. T. Burnett & Company, Inc. v. Triangle Sporting Goods Company, Inc.*

3,528,866, L. D. Stevens, METHOD OF MAKING LAMINATED PADDED ARTICLE, **filed** Nov. 26, 1973, D.C., S.D. Fla. (Miami), Doc. 72–1699–C–NCR, *Arvin Industries, Inc. v. Anodyne, Inc.* Plaintiff owner of patent and patent is valid and has been infringed by defendant. Defendant hereby enjoined and counterclaim dismissed with prejudice, Nov. 26, 1973.

3,536,192. (See 3,452,368.)

3,567,080, M. S. Johnston, TAPPING DEVICE FOR BEER KEGS AND THE LIKE, **filed** Apr. 12, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–150, *Draft Systems, Inc. v. The Perlick Company, Inc.* Stipulation an order dismissing action without prejudice, Oct. 16, 1973.

3,593,550, I. L. Berkowitz, REFRIGERATOR DOOR HANDLE WITH CYLINDER DOOR LOCK UNIT ON THE HANDLE, **filed** Dec. 3, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73c1777, *Kason Hardware Corporation v. Instrument Systems Corporation and Buildex Incorporated.*

3,633,325, G. A. Bartoli, BUILDING STRUCTURE CANTILEVERED FROM VERTICAL CENTRAL SUPPORT, **filed** Nov. 23, 1973, D.C., M.D.N.C. (Greensboro), Doc. C–390–G–73, *Enterprises, Inc. v. International Second Home Corp. et al.*

3,698,677, R. Looker, PALLET FOR MOVING AND SECURING CARGO, **filed** Nov. 29, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2774–RJK, *Satco, Inc. v. Seaboard World Airlines.*

3,732,913, W. A. Wrono, ROLL-UP SLATTED SHADE ASSEMBLY, **filed** Nov. 21, 1973, D.C., S.D. Fla. (Fort Lauderdale), Doc. 73–155–C–JE, *Wrono Enterprise Corporation v. Sandor-Tapco, Inc.*

3,774,693, H. K. Orthman, AGRICULTURAL IMPLEMENT, **filed** Nov. 27, 1973, D.C., S.D. Ill. (Rock Island), Doc. RI–C–73–34, *Orthman Manufacturing, Inc. v. Deere & Company and Sampson Implement Company.*

Re. 25,536, D. T. Thompson, APPARATUS FOR MAKING AN ANNULUS, **filed** July 7, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1669, *Thompson Bagel Machine Mfg. Corp. v. Atwood Corp.* By stipulation, case dismissed, June 18, 1973.

Re. 26,492, Caveney and Moody, BINDER STRAP TOOL, **filed** Sept. 8, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2210, *Panduit Corp. v. Burndy Corporation et al.* Judgment order entered; case dismissed, Sept. 11, 1973.

Re. 26,871, Morkoski, Clendenin and Corwith, MATERIAL CHOPPING AND COMMINUTING DEVICE, **filed** July 14, 1971, D.C., E.D. Wis. (Milwaukee), Doc. 71–C–365, *International Harvester Company v. Gehl Company.* Stipulation and order dismissing action without prejudice, Sept. 13, 1973.

D. 219,118, Baker and Plecia, BOAT, **filed** Nov. 14, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2669–LTL, *Sidewinder Marine, Inc. v. Glen-Coe Boat Mfg., Inc.*

D. 224,608, Okuhara and Okuhara, MIRRORED COSMETIC CONTAINER, **filed** Sept. 11, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2249, *Hideno N. Okuhara et al. v. Creative Concepts Corp. et al.* Summary judgment in favor of defendants. Suit dismissed with prejudice, Feb. 2, 1973.

D. 226,375, Wells, and Krusinski, AUTOMOBILE FLOOR MAT, **filed** Nov. 19, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2941, *Pretty Products Incorporated v. American Biltrite Incorporated.*

2,962,844, Martin and Spound, AUTOMATICALLY PROJECTIBLE HEADREST, **filed** Feb. 4, 1974, D.C.N.J. (Newark), Doc. 74–158, *Acme Battery Corporation v. Bright Star Industries, Inc.*

2,993,638, Hall, Helmer and Jepsen, ELECTRICAL VACUUM PUMP APPARATUS AND METHOD, **filed** Jan. 25, 1974, D.C., N.D. Calif. (San Francisco), Doc. C–74–198–WTS, *Varian Associates v. Ion Equipment Corp.*

3,156,788, W. Kuskin, DAMPED MAGNETIC TELEPHONE RECEIVER, **filed** Jan. 24, 1974, Court of Claims (District of Columbia), Doc. 37–74, *T. H. Egley v. The United States.*

3,117,470, A. Galopin, CHARACTER SENSING SYSTEM; **3,423,594,** same, PHOTOELECTRIC SEMICONDUCTOR DEVICE WITH OPTICAL FIBER MEANS COUPLING INPUT SIGNALS TO BASE, **filed** Aug. 10, 1973, D.C., S.D. Iowa (Des Moines), Doc. C–73–154–1, *Anthony G. Galopin v. United States of America.*

3,183,529, G. Beuchat, SWIMMER'S FOOT-FIN WITH THRUST-ACCELERATING DEVICE; **3,603,306,** R. J. Bonin, Jr., SNORKEL, **filed** July 3, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1261–LTL, *U.S. Divers Company v. Under Sea Industries.* Filed plaintiff's notice of dismissal with prejudice, entered Dec. 5, 1973.

3,231,154, M. S. Johnston, SIPHON DEVICE FOR BEER KEGS AND THE LIKE; **3,353,724,** same, BEER TAPPING DEVICE; **3,435,997,** same; **3,497,114,** same, **filed** Aug. 14, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–1813–DWW, *The Perlick Co., Inc. v. Republic Corporation.* Filed stipulation dismissing complaint and counterclaims with prejudice, entered Dec. 10, 1973.

3,257,190, Q. F. Soper, METHOD OF ELIMINATING WEED GRASSES AND BROADLEAF WEEDS, **filed** Oct. 15, 1973, D.C., E.D. Mich. (Detroit), Doc. 74–70491, *Eli Lilly and Company v. Badasche Anilin- & Soda-Fabrik A.G.*

3,298,338, J. S. Clark, Sr., MEANS FOR REGULATING THE HEIGHT OF FUEL MOUNDS WITHIN A FURNACE, **filed** Jan. 29, 1974, D.C. Oreg. (Portland), Doc. C–74–71, *Joseph A. Clark, Sr. v. Edward Hines Lumber Company.*

3,353,724. (See 3,231,154.)

3,423,594. (See 3,177,470.)

3,435,997. (See 3,231,154.)

3,497,114. (See 3,231,154.)

3,512,221, R. J. Schoerner, ALUMINUM ALLOY WIRE; **3,670,401,** same, METHOD OF FABRICATING ALUMINUM ALLOY ROD, **filed** Feb. 14, 1973, D.C., E.D. Tex. (Tyler), Doc. S–73–CA–6, *Southwire Company v. Capital Wire & Cable Corp. and U.S. Industries, Inc.* Case dismissed, Oct. 29, 1973.

3,589,660, B. P. Dunckel, LIGHTING FIXTURE HANGER, **filed** Aug. 10, 1972, D.C., N.D. Miss. (Clarksdale), Doc. DC 72–54–S, *National Service Industries, Inc. v. Keene Corporation.* Final judgment on consent, parties compromised and settled differences by defendant continuing the sale of fixtures under the terms of a Patent License Agreement Jan. 28, 1974.

3,603,306. (See 3,183,529.)

3,627,177, Marcus and King, DISPENSER COMBINED WITH HANGING CLIP FOR INVERTED SUPPORT, **filed** Jan. 14, 1974, D.C., S.D.N.Y., Doc. 74–C–219, *Knomark Inc. v. W. Braun Company, Inc.*

3,663,343, H. G. Buck, COMPOSITE PRESSURE SENSITIVE ADHESIVE SHEET STRUCTURE AND PROCESS OF MAKING THE SAME, **filed** Jan. 25, 1974, D.C., S.D.N.Y., Doc. 74–C–431, *Webtek Corporation v. Tapemakers Sales Co. Inc.*

3,670,401. (See 3,512,221.)

3,732,913, W. A. Wrono, ROLL-UP SLATTED SHADE ASSEMBLY, **filed** Jan. 30, 1974, D.C., S.D. Fla. (Fort Lauderdale), Doc. (FL)–74–36–C–JE, *Wrono Enterprise Corporation v. Armor Shield Aluminum Products, Inc. and Armor Shield Products Company.*

Re. 24,017, J. A. Henricks, METHOD OF COATING AND DRAWING METAL AND COMPOSITION THEREFOR, **filed** May 21, 1968, D.C. Del. (Wilmington), Doc. 3545, *Devex Corporation and Technograph Inc. et al. v. General Motors Corporation.* Stipulation and order dismissing C.A. 3545 transferring all documents to Civil Action 3058 which continues, Jan. 29, 1974.

Re. 26,475, L. A. Cohen, COMPOSITE SPACE VEHICLE, **filed** Dec. 27, 1968, Court of Claims, (District of Columbia), Doc. 380–68, *Leonard A. Cohen v. The United States.* Only claim 8 alleged to be infringed. Held that, because of intervening rights under 350 USC 252, defendant's accused device did not infringe and that defendant could repair and use that device. Judgment for defendant, plaintiff's petition dismissed, Nov. 14, 1973.

Re. 26,667, S. G. Sarbo, FOOT COVER AND METHOD OF MANUFACTURING THE SAME, **filed** Feb. 5, 1974, D.C., E.D. Pa. (Philadelphia), Doc. 74–288, *Wayne-Gossard Corporation v. Sondra Manufacturing Co.*

D. 203,251, A. L. Barber, CONTOUR PILLOW OR THE LIKE, **filed** Jan. 28, 1974, D.C., W.D. Okla. (Oklahoma City), Doc. 74–111–C, *A & B Instrument Company, Inc. and Mid-America Sales and Marketing, Inc. v. Sears, Roebuck & Company.*

Certificates of Correction for the Week of Mar. 19, 1974

D. 225,129	3,711,428	3,750,189	3,758,811
D. 228,789	3,712,950	3,750,545	3,759,031
Re. 27,730	3,715,278	3,751,365	3,759,224
3,492,248	3,715,333	3,751,434	3,759,266
3,527,739	3,715,359	3,751,461	3,759,831
3,547,732	3,716,046	3,751,504	3,759,903
3,597,196	3,717,973	3,751,512	3,760,489
3,607,215	3,720,120	3,751,617	3,760,515
3,617,168	3,721,696	3,751,682	3,760,781
3,617,220	3,723,102	3,752,579	3,761,180
3,641,234	3,724,383	3,752,855	3,761,660
3,641,235	3,725,372	3,753,386	3,761,982
3,645,065	3,725,437	3,753,530	3,762,043
3,646,007	3,725,508	3,753,554	3,762,317
3,650,803	3,727,777	3,753,576	3,762,532
3,652,562	3,729,017	3,753,604	3,762,604
3,653,432	3,729,032	3,753,686	3,762,856
3,655,817	3,729,254	3,753,990	3,763,118
3,656,503	3,729,576	3,754,088	3,763,365
3,661,538	3,731,108	3,754,451	3,763,399
3,662,106	3,733,409	3,754,466	3,763,442
3,662,122	3,734,652	3,754,473	3,763,548
3,663,161	3,735,557	3,754,516	3,764,108
3,663,528	3,736,575	3,754,568	3,764,318
3,664,519	3,736,725	3,754,698	3,764,448
3,668,156	3,736,785	3,754,811	3,764,462
3,669,103	3,737,534	3,755,063	3,764,572
3,669,591	3,737,719	3,755,166	3,764,609
3,670,135	3,738,276	3,755,261	3,764,792
3,691,810	3,738,736	3,755,501	3,764,902
3,691,840	3,739,883	3,755,788	3,764,983
3,693,564	3,740,292	3,755,805	3,765,224
3,692,006	3,740,980	3,755,833	3,766,066
3,670,901	3,742,805	3,755,883	3,766,093
3,674,415	3,743,005	3,756,005	3,766,687
3,676,344	3,743,092	3,756,361	3,766,766
3,681,502	3,743,172	3,756,709	3,767,013
3,683,128	3,743,352	3,756,852	3,767,100
3,685,539	3,743,475	3,756,945	3,767,158
3,686,321	3,743,659	3,757,036	3,767,339
3,689,473	3,745,035	3,757,156	3,767,720
3,694,232	3,745,813	3,757,375	3,768,282
3,694,420	3,746,219	3,757,699	3,769,367
3,695,902	3,747,212	3,757,715	3,769,799
3,697,287	3,747,387	3,757,765	3,769,836
3,701,433	3,747,710	3,757,965	3,769,963
3,702,010	3,747,983	3,758,095	3,771,428
3,703,524	3,748,643	3,758,150	3,772,602
3,704,214	3,749,579	3,758,558	
3,705,153	3,749,807	3,758,691	
3,710,282	3,750,160	3,758,737	

Disclaimer

3,741,958.—*Peter Wolfgang Henniger,* Leiden, Netherlands. 6-AMINOPENICILLANIC ACID DERIVATIVES AND PROCESS FOR PRODUCING. Patent dated June 26, 1973. Disclaimer filed Sept. 26, 1973, by the assignee, *American Home Products Corporation.*

Hereby enters this disclaimer to claim 10 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 327,982. Formaldehyde Based Disinfectants. Filed Jan. 30, 1973. PC $3/MF $1.45.

Patent application 388,305. Solder Leveling. Filed Aug. 14, 1973. PC $3/MF $1.45.

Patent 3,742,720. Quantitative Recovery of Krypton From Gas Mixtures Mainly Comprising Carbon Dioxide. Filed July 25, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,742,757. Cell for Measuring Stresses in Prestressed Concrete. Filed Oct. 18, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,743,569. Armor of Cermet With Metal Therein Increasing With Depth. Filed Apr. 2, 1970. Patented July 3, 1973. Not available NTIS.

Patent 3,743,696. Separation of Americium and Curium. Filed Feb. 4, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,743,986. Improved Resistive Envelope for a Multifilament Superconductor Wire. Filed Feb. 8, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,744,975. Rotor for Multistation Photometric Analyzer. Filed Dec. 9, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,401. Filament Support Structure for Large Electron Guns. Filed Feb. 15, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,745,481. Electrodes for Obtaining Uniform Discharges in Electrically Pumped Gas Lasers. Filed June 13, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,746,175. Compact Dialyzer. Filed Sept. 14, 1971. Patented July 17, 1973. Not available NTIS.

Patent 3,746,616. Stabilized Uranium or Uranium-Plutonium Nitride Fuel. Filed July 20, 1971. Patented July 17, 1973. Not available NTIS.

Patent 3,746,859. High Intensity Neutron Source. Filed Apr. 22, 1970. Patented July 17, 1973. Not available NTIS.

Patent 3,747,001. Pulse Processing System. Filed Feb. 17, 1972. Patented July 17, 1973. Not available NTIS.

Patent 3,747,410. Indium-Sesquioxide Vacuum Gauge. Filed July 5, 1972. Patented July 24, 1973. Not available NTIS.

Patent 3,749,915. Solid State Radiation Detector. Filed Apr. 11, 1972. Patented July 31, 1973. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch,
Federal Building, General Services Division,
Agricultural Research Service, Hyattsville, Md. 20782

Patent application 276,064. Method for Reducing Pulp Chip Deterioration With Aqueous Solutions of Sodium N-Methyldithiocarbamate. Filed July 28, 1972. PC $4/MF $1.45.

Patent 3,717,067. Underlayment Fastening Device. Filed Jan. 7, 1971. Patented Feb. 20, 1973. Not available NTIS.

Patent 3,718,262. Two Cable Tension-Controlled Carriage. Filed Feb. 24, 1971. Patented Feb. 27, 1973. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent 3,776,909. 4,6-Diamono-1(p-Benzyloxyphenyl-1,2-Dihydro-2,2-Dimethyl-s-Triazines. Filed Apr. 19, 1972. Patented Dec. 4, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent application 407,389. Non-Plugging Pressure Tap. Filed Oct. 17, 1973. PC $3/MF $1.45.

Patent application 414,832. MHD Power Generation. Filed Nov. 12, 1973. PC $3/MF $1.45.

Patent 3,320,591. Metering System Responsive to Interrogations From a Central Station. Filed Dec. 13, 1962. Patented May 16, 1967. Not available NTIS.

Patent 3,327,396. Extensometer. Filed Mar. 10, 1965. Patented June 27, 1967. Not available NTIS.

Patent 3,347,370. Proces for Washing and Removing Organic Heavy Liquids From Mineral Particles. Filed Oct. 31, 1963. Patented Oct. 17, 1967. Not available NTIS.

Patent 3,412,184. Process for the Preparation of Cellulosic Ester Reverse Osmosis Membranes. Filed Feb. 17, 1966. Patented Nov. 19, 1968. Not available NTIS.

Patent 3,500,934. Fly Ash Injection Method and Apparatus. Filed Sept. 9, 1968. Patented Mar. 17, 1970. Not available NTIS.

Patent 3,508,431. System for Calibration of a Differential Pressure Transducer. Filed Sept. 5, 1968. Patented Apr. 28, 1970. Not available NTIS.

Patent 3,509,325. Bidirectional Counter Apparatus With Separate Detectors. Filed Nov. 15, 1966. Patented Apr. 28, 1970. Not available NTIS.

Patent 3,513,813. Dilute Phase Particulate Matter Reactor-Heat Exchanger. Filed Dec. 31, 1968. Patented May 26, 1970. Not available NTIS.

Patent 3,525,589. Production of Boron Carbide Whiskers. Filed May 17, 1968. Patented Aug. 25, 1970. Not available NTIS.

Patent 3,532,330. Seal and Trommel for a Rotary Kiln. Filed Dec. 20, 1968. Patented Oct. 6, 1970. Not available NTIS.

Patent 3,733,779. Method for Smelting Low-Sulfur Copper Ores. Filed May 28, 1968. Patented Oct. 13, 1970. Not available NTIS.

Patent 3,542,908. Method of Manufacturing a Reverse Osmosis Membrane. Filed Mar. 22, 1968. Patented Nov. 24, 1970. Not available NTIS.

Patent 3,565,766. Copyrolysis of Coal and Heavy Carbonaceous Residue. Filed Jan. 24, 1969. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,567,412. Gasification of Carbonaceous Fuels. Filed Aug. 12, 1968. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,567,427. Chemical Disaggregation of Rock. Filed Nov. 7, 1968. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,573,182. Process for Separating Zinc and Copper. Filed Jan. 11, 1968. Patented Mar. 30, 1971. Not available NTIS.

Patent 3,594,329. Regeneration of Zinc Chloride Catalyst. Filed July 23, 1969. Patented July 20, 1971. Not available NTIS.

Patent 3,594,860. Method for Shucking and Eviscerating Bivalve Mollusks. Filed Nov. 12, 1969. Patented July 27, 1971. Not available NTIS.

Patent 3,632,990. Data Readout and Recording Apparatus. Filed Feb. 18, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,639,810. Power System Monitoring Relay. Filed Feb. 18, 1971. Patented Feb. 1, 1972. Not available NTIS.

Patent 3,650,931. Purification of Reactive Metals. Filed June 5, 1969. Patented Mar. 21, 1972. Not available NTIS.

Patent 3,656,048. Non-Linear Exciter Controller for Power Systems Damping. Filed July 16, 1970. Patented Apr. 11, 1972. Not available NTIS.

Patent 2,775,308. Method for Preparation of Composite Semipermeable Membrane. Filed May 18, 1972. Patented Nov. 27, 1973. Not available NTIS.

Patent 3,776,718. Recovery of Copper and Steel From Scrap. Filed July 13, 1973. Patented Dec. 4, 1973. Not available NTIS.

DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research,
Code 302, Arlington, Va. 22217

Patent 3,561,346. Blast Actuated Module Valve. Filed Feb. 26, 1969. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,562,451. Microphone and Headset for Underwater Swimmer. Filed June 11, 1968. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,563,499. Mechanism To Transfer Engine Torque and Control Motion Across Helicopter Rotor Vibration Isolator. Filed Jan. 15, 1969. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,563,858. Aeration and Foam Control in Sparged Fermentation. Filed Sept. 27, 1967. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,564,304. Electrode Configuration for Tubular Piezoelectric High-Strain Driver. Filed Sept. 22, 1969. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,564,445. Circuit for Eliminating Crossover Distortion in Solid State Amplifiers. Filed Oct. 9, 1968. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,564,481. Electrical Connector. Filed Jan. 13, 1969. Patented Feb. 16, 1971. Not available NTIS.

Patent 3,565,060. Biopotential Sensor Employing Integrated Circuitry. Filed Aug. 21, 1968. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,565,516. Extended Range Underwater Optics System. Filed July 25, 1969. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,565,700. Method for Preparing and Purifying Pure Dry Fluoride Materials. Filed Dec. 10, 1968. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,566,068. Apparatus for Aligning and Arc-Removing Turbine Nozzle Vanes. Filed Aug. 29, 1968. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,566,106. Nonmicrophonic Infrared Gas Analyzer. Filed Jan. 2, 1969. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,566,118. An Axially Aligned Gamma Ray-Neutron Detector. Filed Nov. 14, 1968. Patented Feb. 23, 1971. Not available NTIS.

Patent 3,567,698. Thermally Stable Silarylene-1,3,4-Oxadiazole Polymers Soluble in Organic Solvents. Filed Sept. 2, 1969. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,568,079. Acoustic Signal Amplifier. Filed Apr. 24, 1969. Patented Mar. 2, 1971. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—
Code GP-2, Washington, D.C. 20546

Patent application 412,379. Anti-Multipath Digital Signal Detector. Filed Nov. 2, 1973. PC $3/MF $1.45.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 2, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-30-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-17-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-15-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-02-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-04-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-25-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-28-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-25-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-15-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	4-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-23-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-05-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-18-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-08-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-11-73

Expiration of patents: The patents within the range of numbers indicated below expire during March 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,783,468 to 2,786,999, inclusive
Plant Patents..... Numbers 1,575 to 1,585, inclusive

REISSUES

MARCH 19, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

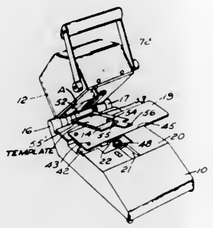
27,941
DATA PUNCHING MACHINE

John H. Edwards, Attleboro, Mass., assignor to The Entwistle Co.

Original No. 3,633,817, dated Jan. 11, 1972, Ser. No. 888,237, Dec. 29, 1969. Application for reissue July 12, 1972, Ser. No. 270,940

Int. Cl. G06k *1/08*

U.S. Cl. 234—77 **3 Claims**



This invention relates to a machine which will punch a form in a particular code pattern under the control of a template. It will also imprint letters that are raised from the surface of the template. This is accomplished by providing two portions which are hinged together and which have a template holding plate therebetween. One of the portions carries a plurality of individually movable plungers that are adapted to enter perforations provided in the template held on the template support and pass through the template and into a form held by the other portion when the two portions are brought together by an operating handle. Means are provided on the template support plate to properly orient the template relative to the two portions and the punches are operated by the handle being coupled thereto through a linkage arrangement. Additionally coupled to the handle is a printing pressure roller which passes across the raised lettering that is provided on the template so that an imprinting action will occur simultaneous with the punching of the form.

27,942
AUTOMOBILE PARTITION APPARATUS PIVOTED ON GUARDPLATE

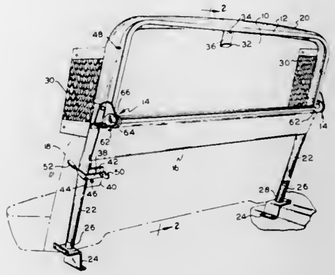
John R. Setina, Rte. 5, Box 522, Olympia, Wash. 98501

Original No. 3,510,164, dated May 5, 1970, Ser. No. 758,947, Sept. 11, 1968. Application for reissue Dec. 13, 1971, Ser. No. 207,582

Int. Cl. B62d *33/04*

U.S. Cl. 296—24 R **10 Claims**

An automobile partition apparatus for shielding the front seat area is described in which the partition is pivotally mounted on a guard plate member secured between the leg portions of a roll bar and extending across the width of the automobile along the rear of the front seat backrest. The partition apparatus includes a spring biased pivot mechanism which, when a latch is released, automatically pivots the partition from a lowered position behind the backrest to a raised position between the top of such backrest and the roof of the automobile The guardplate member extends downward substantially parallel to the front seat backrest a sufficient distance to enable the partition apparatus to be employed in auto-



mobiles of different seat backrest heights and allows back and forth seat adjustments while still protecting the driver of a police car, taxicab or other vehicle from passengers riding in the rear seat.

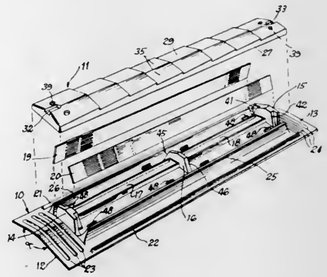
27,943
ROOF RIDGE VENTILATOR

Lester L. Smith, Peoria, Ill., assignor to H. C. Products Co., Princeville, Ill.

Original No. 3,625,134, dated Dec. 7, 1971, Ser. No. 16, Jan. 2, 1970. Application for reissue June 16, 1972, Ser. No. 263,701

Int. Cl. F24p *7/02*

U.S. Cl. 98—42 **11 Claims**



A roof ridge ventilator made of molded plastic parts except for louvered metal sheets closing the open sides of the ventilator, the design providing a low silhouette with a large air flow area through the louvered sheets by sloping the louvered sheets. Stiffness is built into the thin flashing forming part of the ventilator by molding beads into the flashing to inhibit buckling, particularly under extremes of temperature. The ventilator is formed from two molded parts to one of which the louvered sheets which, when fastened together, form a unit which may be installed in multiples to cover any desired length of roof ridge vent opening.

PLANT PATENTS

GRANTED MARCH 19, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,521
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Aug. 10, 1971, Ser. No. 170,669
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—79 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Streamer by its bronze color, approximately 3" more vigor when grown under comparable conditions, two to three days later response, foliage ¼" to ½" shorter in length, its petals which comprise straighter tubes with a narrower diameter and less incurving of the petal tips, by its flowers which are approximately ½" larger in diameter, and by its greater seasonal variation in flower form and petal count than the parent.

3,522
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Nov. 28, 1972, Ser. No. 310,030
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous growth, suitability as a greenhouse cut flower variety, nonfading and nonblueing Currant Red flower color, its characteristic three leaflet leaves on the upper several nodes, and its relatively high degree of resistance to rose powdery mildew.

3,523
CHRYSANTHEMUM PLANT

Ralph Bond, 647 Camellia Drive, Fort Myers, Fla. 33902, and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio; said Jessel and Duffett assignors to said Bond

Filed Aug. 4, 1972, Ser. No. 277,866
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Dazzler by its more intense red-bronze flower color and better color retention in high light, high temperature periods.

3,524
ROSE PLANT

Samuel McGredy, % S. McGredy & Sons, Portadown, Northern Ireland

Filed Sept. 25, 1972, Ser. No. 291,574
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose of the Floribunda class primarily characterized by its dense, compact habit of growth with short internodes and profuse branching essentially hiding the canes from view; its tendency to produce flowering laterals one half to two thirds the length of the basal canes; its shiny, leathery, dark green, highly disease resistant large foliage which frequently carry seven leaflets, its perfectly spiralled petals of great substance which form its high centered, durable, semi-double flowers and by its color tones which range from soft Azalea Pink to rich Indian Orange which in turn mutate in aging from the more orange, darker color tones to the softer pink colors and which age and finish gracefully under all conditions and which clean before the petals spoil.

3,525
ROSE PLANT

Walter E. Lammerts, Watsonville, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Nov. 17, 1972, Ser. No. 307,425
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—22 **1 Claim**

A small, bushy, upright-spreading rose plant of the floribunda class, having a vigorous habit of growth and producing, practically throughout the season, very numerous blooms of bright pinkish-orange color, these being borne in irregular clusters of usually three or more to a stem. The blooms have a moderate spicy fragrance and range from 2¼" to 2⅝" in diameter. They average about 85 pistils, with 20 to 30 petals and 10 to 18 petaloids. The foliage, which is abundant, is dark green and semi-glossy. It has more than average resistance to mildew.

3,526
CHRYSANTHEMUM PLANT

Keith D. Butters, Littlehampton, England, assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Apr. 3, 1972, Ser. No. 240,859
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of daisy form chrysanthemum characterized particularly as to its uniqueness when compared to the parent cultivar Bronze Marble by its darker, more intense bronze color.

3,527
CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed June 19, 1972, Ser. No. 264,305
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Icecap by its longer recommended period of flowering and its less thermo-negative nature; its ten week response as compared to the twelve week response of Icecap; flowers approximately one-quarter to one-half inch smaller in diameter; approximately two more flowers per stem; a more green coloration in the center of the flowers; a flower form which is more decorative and less formal than Icecap, and by its foliage which is more coarse in texture.

3,528
CHRYSANTHEMUM PLANT

Barrie John Machin, Arundel, England, assignor to Frampton's Nurseries Limited, Chichester, Sussex, England

Filed July 28, 1972, Ser. No. 275,980
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a wiry, upright plant with incurving pale yellow flowers having 250 to 280 ray petals, about ten percent or less disc petals, and an average diameter of about 15 cm.

3,529
STRAWBERRY PLANT

Harold A. Johnson, Jr., Watsonville, Calif., assignor to Driscoll Strawberry Associates, Inc., Watsonville, Calif.

Filed June 7, 1972, Ser. No. 260,694
Int. Cl. A01h *5/03*

U.S. Cl. Plt.—49 **1 Claim**

1. A new and distinct variety of strawberry plant herein described and illustrated, and identified by the characteristics enumerated above.

3,530
CHRYSANTHEMUM PLANT

Grace H. Mack, 108 Wahackne Road, New Canaan, Conn. 06840, and Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio; said Jessel and Duffett assignors to said Mack

Filed July 10, 1972, Ser. No. 269,943
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—74 **1 Claim**

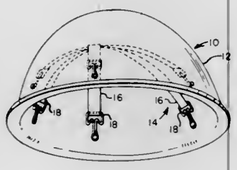
1. A new and distinct cultivar of chrysanthemum characterized particularly as to its uniqueness when compared to the cultivar Tango by its flowers which are approximately ¾" smaller in diameter; its daisy or single form rather than an anemone form; lighter foliage color; an earlier natural season flowering date, flowering from approximately Sept. 25 compared to approximately Oct. 8 for Tango, and by its more compact habit with approximately three inches less vigor; and characterized particularly as to its uniqueness when compared to the cultivar Mischief by its flowers which are approximately ¼" larger in diameter; an earlier natural season date, flowering approximately Sept. 25 as compared to approximately Oct. 12 for Mischief; its much lighter pink color with better color retention; a smaller disc providing perfect florets; approximately 3" shorter habit; lighter foliage color; less prominent stipules, and its approximately 3–4 days longer keeping quality.

PATENTS

GRANTED MARCH 19, 1974

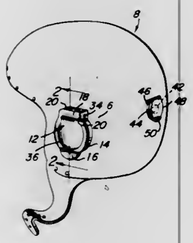
GENERAL AND MECHANICAL

3,797,039
SAFETY HELMET
Harvey Larry Penberthy, 631 S. 96th St., Seattle, Wash.
Filed Apr. 10, 1972, Ser. No. 242,440
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **10 Claims**



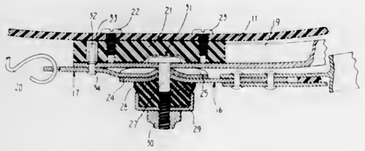
A safety helmet is provided with a crown suspension comprised of relatively inelastic crown straps secured to the helmet shell with energy-absorbing links. The links incorporate an energy-absorbing midsection designed to deform and elongate under substantially constant transmitted force conditions to a predetermined point and to thereafter rapidly transmit higher impact forces with only slight further elongation.

3,797,040
HELMET CONSTRUCTION
Jack N. Caldwell, 1500 Holly Ave., Merritt Island, Fla.
Filed Apr. 20, 1972, Ser. No. 245,845
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **7 Claims**



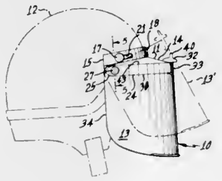
A protective-type helmet expressly for use by a motorcyclist and unique in that a pair of manually controlled spring-loaded door-like lids or ear flaps are hingedly installed for coaction with hearing holes located in line with the user's ears. When fully open, the ear flaps stay put until intentionally closed by the wearer. Being spring-biased and correctly aligned and pivotally mounted they stay normally closed. Each door or flap embodies a suitable rubber gasket inside to provide and to insure a reliable airtight seal while the motorcycle is in motion. A smaller but similar spring-loaded pivoted door or flap is mounted on the median lower portion of the helmet's rear wall to permit an appropriate normally spring-loaded door to be used in a convenient manner to fasten and anchor the helmet on a part of the motorcycle which is not being ridden. All three doors may be basically alike in construction and general manner of use.

3,797,041
FACE SHIELD BRACKET MOUNT FOR HELMETS
Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed Mar. 16, 1972, Ser. No. 235,224
Int. Cl. A61f *9/06*
U.S. Cl. 2—8 **3 Claims**



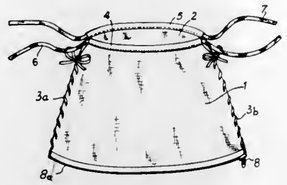
An assembly for mounting a face shield on a protective hard hat. The assembly has an arcuate support member which defines channel portions at least in the region of its two ends. A correspondingly shaped arcuate frame member is pivotally mounted with respect to the support member. The frame member is adapted to secure a depending face shield therefrom. The frame member and face shield are mounted on a hard hat by the support member with a pair of elongate blocks which are insertable within the channel portions of the support member. The elongate blocks are fastened to opposed exterior sidewalls of the hard hat. Also included are releasable retainer means at a fixed location therealong when the blocks are fastened to the hat.

3,797,042
VISOR AND FACE SHIELD HELMET ATTACHMENT
Lawrence J. Gager, Jr., 3355 Dorthea Rd., Jacksonville, Fla.
Filed July 14, 1972, Ser. No. 271,984
Int. Cl. A41d *13/00*
U.S. Cl. 2—10 **6 Claims**



A visor releasably attached to a helmet with a flexible face shield pivotally mounted to the visor, the shield including a pair of spaced shoulders which engage the visor and automatically lock the shield in the vertical position covering the face. A hand hold is provided on the shield to permit temporary outward deformation of the shield and to exert an upward force for pivoting the shield. Adjustable friction means are associated with each pivot so that the shield may be positioned and maintained in a multiplicity of positions.

3,797,043
SKIRT CONVERTIBLE INTO A TOTE BAG
Max Brument, Paris, France, assignor to Herve et Fils Papeteries du Sentier (Societe Anonyme), Paris, France
Filed Dec. 30, 1971, Ser. No. 213,876
Claims priority, application France, Aug. 6, 1971, 71.28944
Int. Cl. A41d *15/04, 1/14*
U.S. Cl. 2—69.5 **3 Claims**



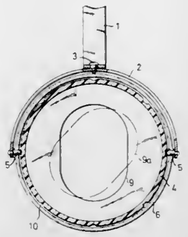
A skirt adapted to be converted into a tote bag, having laterally and longitudinally united front and back panels, means attached to the waist of the skirt to serve as manually engageable carrying devices and closable means attached to the lower edge of the skirt for closing the lower opening thereof thus converting the skirt into a bag.

3,797,044
TIE MARKER
Ho Chow, 31 Coles Ct., River Edge, N.J.
Filed Aug. 11, 1972, Ser. No. 279,996
Int. Cl. A41d *25/06*
U.S. Cl. 2—146 **6 Claims**

A Tie Marker affixed to a tie at a specific location to start a knot for tieing the tie around a person's neck or any object to assure a certain desirable tie length at each tieing time.

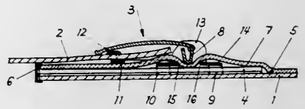
3,797,045
TURNING DEVICE FOR THE BAIL OF AN EAR PROTECTOR
Yrjo Aho, Kuninkaantie, Westend, Finland
Filed Aug. 11, 1972, Ser. No. 280,042
Claims priority, application Finland, Aug. 12, 1971, 2253/71
Int. Cl. H04r *1/10*
U.S. Cl. 2—209 **3 Claims**

An ear piece having a bail joined to ear piece through fork-like members and connecting means at the end of said fork-like members on the outer circle of the ear piece and near to the packing level of said ear pieces turning means for said bail ring-shaped means carrying said connecting means, bearing means in said ear pieces supporting said ring-shaped means so that when the user wants to turn the bail over the top of his head on his neck or into another position of use, the ring



means rotates in its slot with the bail and the fork-like member, while the ear pieces remain in position.

3,797,046
WAISTBAND FOR TROUSERS AND SLIDE FASTENER THEREFOR
Fritz Hoch, Techniker, Pforzheim, Germany, assignor to Gutos Metallschliebenfabrik Bader & Hoch K.G., Pforzheim, Germany
Filed June 4, 1973, Ser. No. 366,622
Claims priority, application Germany, July 22, 1972, 7227209
Int. Cl. A41f *9/00*
U.S. Cl. 2—237 **12 Claims**



The slide fastener serves to adjustably connect a first waistband section and a second waistband section, which overlaps said first waistband section on the outside thereof. A plastics material guide rail is adapted to be secured to said first waistband section. A slide buckle is adapted to be secured to said second waistband section and comprises a base part in guided engagement with and slidable along said guide rail and an eccentric clamping member disposed on the outside of and pivoted to said base part. A fabric strip overlies said rail on the outside thereof throughout its length and extends between said base part and said eccentric clamping member and has opposite ends adapted to be sewn to said second waistband section. Said eccentric clamping member is operable to releasably clamp said strip against said base part in any desired position thereof along said rail.

3,797,047
ARTIFICIAL TENDON
Jean Pillet, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed Apr. 28, 1972, Ser. No. 248,692
Claims priority, application France, Apr. 30, 1971, 71.15544
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **6 Claims**

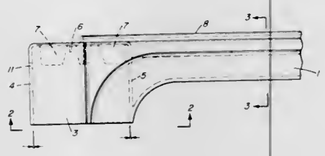
A tendon of artificial materials which are tolerated by the organism and of which the ends, which can be stitched, show good properties of adhesion to the tissues whilst the middle portion remains non-adherent.

The artificial tendon, which is inextensible and is of a length which can be adjusted according to the needs of the surgeon,

comprises a suturable textile strip which is such as to permit fibroblastic infiltration and which is sheathed at its longitu-

dinal central portion in a flexible tube which is non-adherent to tissue.

3,797,048
INTEGRALLY MOLDED HEADER AND CURTAIN RAIL
James Edwards Chisholm, Safety Harbor, Fla., and Anthony Buonaura, Baldwinsville, N.Y., assignors to Formica Corporation, Cincinnati, Ohio
Filed Apr. 24, 1972, Ser. No. 246,619
Int. Cl. A47k *3/23*
U.S. Cl. 4—146 **8 Claims**

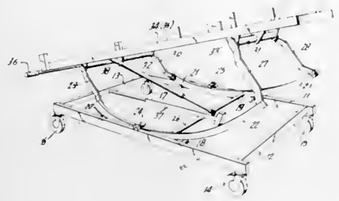


A header unit adapted to form the uppermost portion of a shower stall entranceway comprising an elongated section of "V" shaped cross-section, stile receiving members attached to both ends thereof, knob-like members at the bottom interior of said stile receiving members and a shower curtain rail positioned lengthwise along the rear portion of said section.

3,797,049
MODULAR PORTABLE SKATING RINK
Maurice De Santo, Reading, Mass., assignor to DeSanto, Dulong and Welsh, Burlington, Mass.
Filed Nov. 9, 1972, Ser. No. 305,187
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.19 **11 Claims**

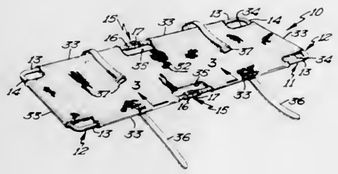
A modular portable skating rink or wading pool having preformed side elements and clamping means to secure a plastic liner material in place to the sides. In the preferred embodiment the clamp is maintained in place partially by the pressure of the water or ice within the structure.

3,797,050
SHOCK AND DRAINAGE MECHANISM
Roland A. Benolt, Danielson, and Richard H. Duprey, Dayville, both of Conn., assignors to Interroyal Corporation, New York, N.Y.
Filed Aug. 10, 1972, Ser. No. 279,676
Int. Cl. A61g *7/10, 7/06*
U.S. Cl. 5—62 **9 Claims**



A novel mechanism for positioning a hospital bed in a plurality of shock and drainage positions utilized means for rotating the base of a support parallelogram in an arc. The rotating means are a pair of roller supported arc segments with the lower pivoting points of the support parallelogram positioned at the lower extremities of the arc segments. A crank mechanism positioned on the bed frame moves the rocker arms such that the desired shock or drainage position is attained and the bed may be raised or lowered while in any shock or drainage position.

3,797,051
FOLDABLE COT
Jack R. Evans, No. 2 Fairway Dr., Tuscaloosa, Ala.
Filed Feb. 10, 1972, Ser. No. 225,106
Int. Cl. A61g *1/00, 7/10*
U.S. Cl. 5—82 **5 Claims**

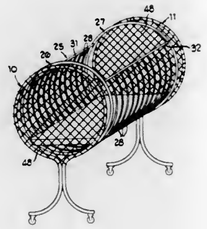


A foldable stretcher includes a pair of U-shaped frame members hingedly connected together to permit folding of the stretcher between a normal extended position and a folded position. A flexible support panel is secured to the U-shaped frame sections and is provided with recesses or cutouts adjacent the corners and hinge connections of the stretcher to facilitate carrying thereof. A pair of lock bolts are provided, each being positioned within the leg of one U-shaped frame section and being urged by a coil spring into the leg of the other U-shaped frame section when the stretcher is in the extended position. A pair of retaining cam elements are provided for retaining the lock bolts in a retracted position when the stretcher is in the folded position.

3,797,052
TRENDELENBERG MECHANISM
Charles Licina, Thornton, Ill.; Robert E. Miller, Dyer, and Nathaniel H. Taylor, Highland, both of Ind., assignors to Simmons Company, New York, N.Y.
Filed Mar. 6, 1972, Ser. No. 231,916
Int. Cl. A61g *7/10;* **A47c** *3/32*
U.S. Cl. 5—63 **5 Claims**

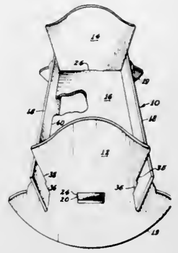
A Trendelenberg mechanism for variable height beds of the kind having legs telescopically extensible from and retractable into the corner posts thereof by means of flexible cables extending from the legs to a cable-hauling mechanism, in which the cables are connected to the cable-hauling mechanism in pairs each respectively associated with one of the ends of the bed, and in which one of the cable pairs is disconnectible from the cableehauling mechanism at either of the fully raised or fully lowered positions of the bed and retained at such position while the cable-hauling mechanism is operated to lower or raise the other end of the bed, respectively, thereby to tilt the bed longitudinally in either direction, i.e., to place the occupant in the "head-down" or Trendelenberg position, or in the "head-up" or reverse Trendelenberg position.

3,797,053
ADJUSTABLE CRIB WITH VARIABLE DEGREES OF CONFINEMENT AND ACCESSIBILITY
Anthony C. Mamo, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Apr. 10, 1972, Ser. No. 242,454
Int. Cl. A47c *27/08, 17/14*
U.S. Cl. 5—97 **15 Claims**



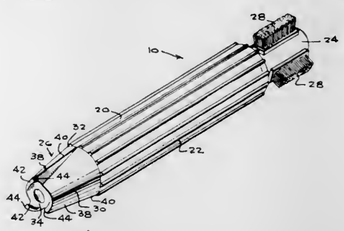
A rigid, open-ended enclosure, essentially defining a split or interrupted cylinder, is mounted for rotation around a fixed mattress support which extends between and is held by head and foot leg structures. A pair of end walls, fixed relative to the rotatable enclosure, terminate the enclosure at its ends. The split or interruption provides an access opening and by rotating the enclosure through 360° to different predetermined positions the accessibility to a child in the crib may be varied and at the same time the extent to which that child is confined or retained may be varied. In one of the positions, the access opening lies below the mattress support thereby maximizing the confinement effected by the enclosure and, of course, minimizing the accessibility.

3,797,054
BED CONSTRUCTION
Marlo R. Sly, 7100 Grandview Ave., Arvada, Colo.
Filed Feb. 7, 1972, Ser. No. 223,833
Int. Cl. A47d *9/00*
U.S. Cl. 5—101 **3 Claims**



A bed or crib which is readily and conveniently assembled and dis-assembled, without tools, in which releasable support is achieved by the interengagement of notches respectively provided by the side rails and the end frames.

3,797,055
TOOL FOR REMOVING LIGHTBULB BASES AND CLEANING LIGHTBULB SOCKETS
William H. Greene, 2114 Oakland St., Savannah, Ga.
Filed Dec. 12, 1972, Ser. No. 314,436
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 G **11 Claims**

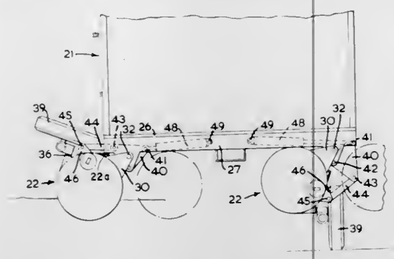


A hand tool comprising an elongated metal member is disclosed with a central portion comprising a handle, one end of said tool being for cleaning a lightbulb socket and having radially extending brushes with abrasive means on the end of the member adjacent the brushes for cleaning the base contact of a socket while the brush means cleans the threaded side walls of the socket and the other end of the tool comprising a lightbulb base removal tool including a tapered conical member with radial flanges and end flanges insertable in a lightbulb base for gripping and removing the base from a socket.

3,797,056
AMPHIBIOUS VEHICLE
William Jackson Brady, R. R. No. 3, Thunder Bay, Ontario, Canada
Filed Oct. 25, 1972, Ser. No. 300,610
Claims priority, application Canada, June 2, 1972, 143713
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T **1 Claim**

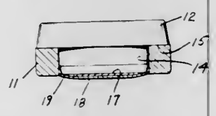
An amphibious vehicle includes a body and a pontoon/road wheel assembly on each side pivotally connected to the body for angular movement about an axis parallel to the length of the body between a land travelling position in which the wheels are engageable with the ground and the pontoons are in a laterally inner position, and a water travelling position in which the pontoons are in a laterally outer position. Each pon-

toon/road wheel assembly includes a transverse bulkhead member with pontoon portions extending forwardly and rearwardly therefrom, and each bulkhead member carries a road wheel assembly externally of the pontoon. A fluid pressure



jack is connected between the body and each bulkhead member for effecting movement of each pontoon/road wheel assembly between land travelling and water travelling positions.

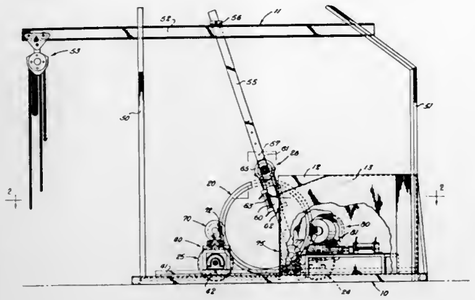
3,797,057
SLIDEABLE PUCK
Stanley Smelden, 240 W. Victoria St., Gardenia, Calif.
Filed Mar. 21, 1973, Ser. No. 343,344
Int. Cl. A63b *71/00*
U.S. Cl. 273—128 R **9 Claims**



A slideable puck of novel design for use with a shuffleboard table. The puck is constructed of a substantially solid aluminum base member having a stud portion which defines a shoulder on the base. An annular ring portion constructed of steel has an inside diameter defining an interference fit with the diameter of the stud member for permanently nesting the steel ring on the shoulder portion of the aluminum base member. The thickness of the ring is greater than the height of the stud portion for defining a recess portion. A disc of fabric material, preferably felt, is located in the recess. The puck is propelled on the felt material, which places the heavier steel portion closest to the table. The steel ring has an outside diameter greater that the outside diameter of the aluminum base member for absorbing impact damage resulting from contacting other objects.

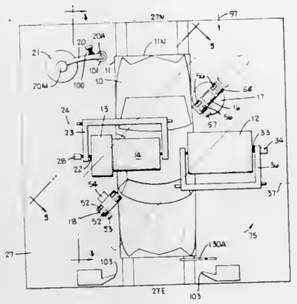
3,797,058
APPARATUS FOR CLEANING LARGE RINGS
Robert D. Neal, 1902 Kirkwood Cir., Carrollton, Tex.
Filed Dec. 11, 1972, Ser. No. 313,772
Int. Cl. A46b *13/02*
U.S. Cl. 15—21 D **11 Claims**

For cleaning die pallet rings which may range in diameter from 18 in. to over 6 ft., and which consist of a generally cylindrical rim portion, an outer flange, and an inner flange, the cleaning apparatus includes support means consisting of a base carrying two rotatable support wheels for supporting and guiding the ring, and an adjustable guide wheel on a standard for guiding the upper periphery of the ring and supporting the ring in a vertical plane. One of the base support wheels is adjustable to accommodate rings of different size. A powered radial brush for cleaning the rim surface of the ring, is adjustably mounted on the frame to position the brush relative to a particular size of ring, and is also movable by a power cylinder into and out of engagement with the surface to be cleaned during operation. Two powered cup brushes are mounted on the frame to engage side surfaces of the ring, each of these being mounted for reciprocating movement into and out of engagement with the ring during operation by a power



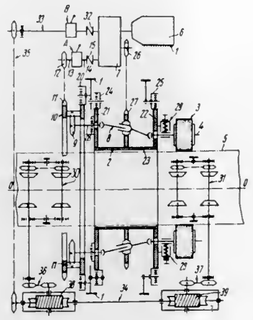
cylinder. The brush units may be mounted on suitable carriages for movement parallel to the plane of the supported ring, to accommodate rings of different size. An overhead frame supports a track and hoist for loading and unloading rings from the apparatus.

3,797,059
TURNTABLE CAR WASH
Judson L. Smith, 3340 S. Butte, Apt. 9, Tempe, Ariz.
Filed Oct. 12, 1971, Ser. No. 188,292
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **14 Claims**



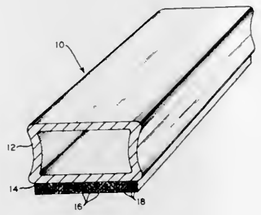
A power driven turntable has a conveyor thereon for moving a car onto the turntable while the turntable is held at rest. A control then locks the coneyor to hold the car in place on the turntable as it is rotated by a motor therefor. Means are provided by which individual components such as a wheel scrubbing brush can operate on said turntable. Brushes are mounted on horizontal axes mounted on arms hinged from above, and engageable with upwardly facing surfaces of the car as the turntable is rotated. Brushes are also mounted on carriages movable toward and away from the center of rotation, for scrubbing vertical surfaces of the car as the turntable turns. Tire soaking troughs for a caustic solution are provided near the entrance. Controls are employed to move the brushes in response to changes in pressure of engagement of the brushes against the surfaces as the car is turned.

3,797,060
SELF-PROPELLED MACHINE FOR CLEANING EXTERNAL SURFACES OF PIPELINES
Viktor Samsonovich Salukvadze, 5 Parkovaya, 42, kv. 53; Igor Filippovich Koshman, ulitsa Bratskaya, 23, korpus 1, kv. 176, both of Moscow, and Leonid Borisovich Doktorov, ulitsa Kraskovsky obryv, 11, Moskovskaya oblast, all of U.S.S.R.
Filed Mar. 22, 1972, Ser. No. 236,813
Int. Cl. B08b *9/02*
U.S. Cl. 15—88 **3 Claims**



A self-propelled machine for cleaning external surfaces of pipelines in which the rotor encompassing the pipeline carries cleaning tools rotating together with the rotor and about their own axes parallel to the axis of rotation of the rotor, the tools being kinematically connected with the common drive of the machine through the drive of the rotor and, in addition, having a self-contained kinematic coupling with this drive adapted for changing the speed of rotation of the cleaning tools about their axes at a constant speed of the rotor.

3,797,061
BLACKBOARD ERASER
Lowell E. Statler, Box 115, Belleview, Ohio
Filed Feb. 2, 1972, Ser. No. 222,895
Int. Cl. B43l *21/00*
U.S. Cl. 15—223 **4 Claims**

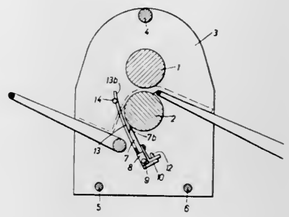


A blackboard eraser having a body adapted to be held in the hand, the body carrying an operative layer of leather formed with needle-like penetrations lying substantially parallel to the operative face of the layer of leather.

3,797,062
PAINT BRUSH WITH A BRUSHING ELEMENT OF A FOAMED PLASTIC
Vincent R. LoCicero, 136 Old Westford, Chelmsford, Mass., and Joseph D'Entremont, 88 Concord Rd., Billerica, Mass.
Filed June 8, 1972, Ser. No. 261,078
Int. Cl. A46b *15/00;* **B44d** *3/28*
U.S. Cl. 15—244 R **10 Claims**

Paint brush constructions are disclosed utilizing brushing elements of foamed plastic materials. Each brush has a spring steel spade within its brushing element and extending into the ferrule. The brushing element, the spade and the handle are locked together within the ferrule with an epoxy.

3,797,063
SCRAPER HOLDER DEVICE FOR A DOUGH PROCESSING MACHINE
Karl Schrauf, Vorarlberg, Austria, assignor to Seewer AG Maschinenfabrik, Burgdorf, Switzerland
Filed Nov. 2, 1972, Ser. No. 303,036
Claims priority, application Germany, Nov. 6, 1971, 7141948[U]
Int. Cl. A21c *3/02*
U.S. Cl. 15—256.51 **5 Claims**



A scraper holder device for use with a dough processing machine having a pair of rollers mounted at their ends in bearing housings. A scraper or stripper element having a scraper edge bears by means of such scraper edge, under the action of spring pressure, against one of the rollers, for instance the lower roller. The scraper holder device embodies a carrier or support member for the scraper element, rotatably mounted at the bearing housings about an axis parallel to the axes of the rollers and provided at least at one of its ends with a resilient bar which, after flexing or bending same, causes the scraper edge of the scraper element to contact against the roller. This resilient bar can be introduced at its free end behind a supporting element, such as a brace or support pin provided at the neighboring bearing housing.

3,797,064

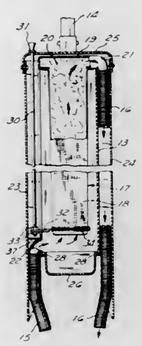
FILTER BAG CLEANING MEANS

Charles H. MacFarland, Rocky River, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed Oct. 20, 1972, Ser. No. 299,217

Int. Cl. A47l *5/34*

U.S. Cl. 15—351 **3 Claims**



A hardbox upright vacuum cleaner having a filter bag cleaning brush within the box which is operable by a handle projecting from the box. The filter bag is enclosed within the box and is filled with a stiffening material, such as short fibers. Dirt-laden air is drawn against the outside surface of the bag so that the dirt is collected on the bag surface. The collected dirt is scraped from the bag surface by the bag cleaning brush. A removable dirt collecting box is provided beneath the bag for disposal of the dirt.

3,797,065

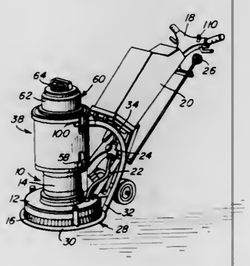
INTEGRATED FOAM EXTRACTING AND ROTARY SCRUBBING MACHINE

Robert R. Hughes, Lutherville, Md., assignor to Chemical Specialties Manufacturing Corp., Baltimore, Md.

Filed Oct. 29, 1971, Ser. No. 193,788

Int. Cl. A47l *9/18*

U.S. Cl. 15—353 **11 Claims**



A rotary scrubber of the type including a tubular frame member supported from the body of the scrubber and extending about and closely embracing a major portion of the lower periphery of the scrubbing member with the tubular frame member provided with underside air inlet openings and supported from the body of the rotary scrubber for floating gimbaled movement. The body of the rotary scrubber includes an upwardly projecting drive motor upon whose top or upper end a wet vacuum assembly is supported and the suction inlet for the wet vacuum is communicated with the interior of the tubular member in order that suds generated during a scrubbing action may be substantially immediately vacuumed from the surface of the article being scrubbed as the scrubber is orbited over that surface.

3,797,066

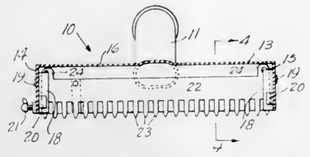
SHAG RUG VACUUM HEAD

Joseph P. Zaidan, 1234 S. Broad St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 94,235, Dec. 1, 1970, abandoned. This application Sept. 5, 1972, Ser. No. 286,209

Int. Cl. A47l *9/06*

U.S. Cl. 15—369 **4 Claims**



A head for a vacuum shag rug cleaner in which a comb or brush is mounted in the head on a transverse pivot to swing the comb or brush from a position upright and projecting from the bottom of the head to be effective in combing, to a position with the comb or brush swung to one side with the teeth nearly encompassed in the head. As the vacuum head is moved across a shag rug the teeth will comb the shag rug in one direction and will slide thereover when moved in the opposite direction on the return stroke so that all of the combing is in a single direction to give the surface of the rug a uniform appearance. The comb or brush is spring biased to its upright position and is moved to its non-effective position by action of movement of the comb across the rug in a direction to compress the springs therein.

3,797,067

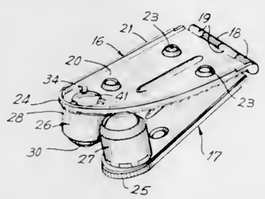
HINGE FOR LUGGAGE AND LUGGAGE DEVICE

Ralph Rodgers, 333 Ridgeway, White Plains, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,077

Int. Cl. B60b *33/08*; **E05d** *11/00*

U.S. Cl. 16—137 **2 Claims**



An improved luggage hinge is disclosed comprising a pair of leaves adapted to be secured to the halves of a piece of luggage or like apparatus, the hinge being characterized by an anti-friction roller element depending from each hinge leaf, the roller elements being offset with respect to the folding axis of the hinge. A piece of luggage having a pair of such hinges appended thereto may be fully opened without interference of the roller elements of the hinges. In the closed position, the luggage may be readily transported by being translated along a horizontal surface on the anti-friction rollers.

3,797,068

FOWL AGITATING AND WETTING SYSTEM

Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.

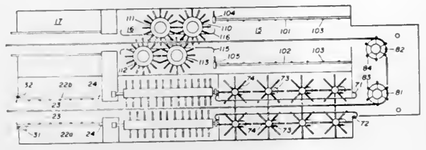
Filed Apr. 6, 1972, Ser. No. 241,773

Int. Cl. A22b *3/08*

U.S. Cl. 17—11 **11 Claims**

The specification discloses a fowl agitating and wetting system including a pair of generally horizontally disposed wetting drums rotatably mounted on opposite sides of a path defined within a housing for passage of fowl therethrough.

Each drum is hollow and rotatably connected to a source of hot fluid which is delivered to the interior of the drum. A plurality of flexible agitating fingers extend from the surface of each drum. Some of the fingers are solid and some are hollow and in communication with the fluid within the drum. The hollow fingers include transverse ridges having slits through the



surface thereof which are closed when the finger is straight and open when the finger is bent. When the drums are rotated about their axes the fingers strike the carcasses of fowl transported therebetween so that the feathers are pulled away from the body and, at the same time, the bent hollow fingers dispense scalding fluid onto the skin of the fowl to efficiently loosen the feathers.

3,797,069

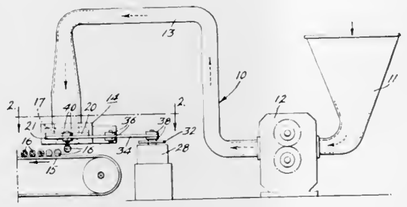
APPARATUS FOR EXTRUDING SPHERICALLY-SHAPED FOOD PRODUCTS

Wolf A. Von Lersner, and Harry H. Singer, both of Cherry Hill, N.J., assignors to Campbell Soup Company, Camden, N.J.

Filed Jan. 19, 1972, Ser. No. 218,929

Int. Cl. A22c *7/00*

U.S. Cl. 17—32 **7 Claims**



Spherically shaped food products such as meatballs, dumplings, and the like are extruded onto a moving conveyor from horizontally elongated extrusion apparatus which overlies and extends transversely of the conveyor. The apparatus comprises a chamber for containing an extrudable quantity of the food product, a pair of superimposed apertured plates mounted in the bottom of the chamber for reciprocation lengthwise of the chamber, and means for reciprocating the plates. In one embodiment, the apertures in the upper plate are circular, the apertures in the lower plate are oblate, and the apertures are arranged with respect to one another so that during each cycle the apertures in the upper plate register twice with the apertures in the lower plate. As a result, extrusion is substantially continuous and pressure fluctuations in the chamber are avoided to effect greater control over the shape of the product. In another embodiment, the apertures in the plates are circular, and the apertures register with one another only once each cycle. In this embodiment, the plates are reciprocated by means of cams which control the acceleration of the plates and hence the positions of the apertures during extrusion to control the shape of the extruded products.

3,797,070

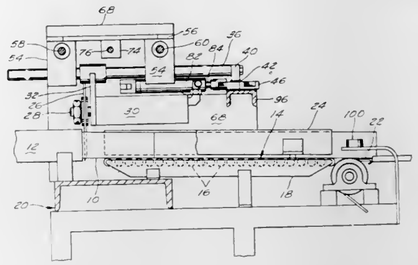
METHOD AND APPARATUS FOR SEGMENTING EXTRUDED PRODUCT

Ernest Bonami, Western Springs, and Ogden A. Clemens, Chicago, both of Ill., assignors to Swift & Company, Chicago, Ill.

Filed May 1, 1972, Ser. No. 249,160

Int. Cl. A22c *7/00*

U.S. Cl. 17—32 **16 Claims**



Extruded product is uniformly segmented by severing with a rotating knife blade which is moved in transverse reciprocating strokes across the stream of product while simultaneously moved longitudinally in the direction of extrusion and wherein the direction of rotation of the knife blade is reversed for each transverse stroke.

3,797,071

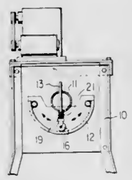
SHRIMP PEELING WHEEL SUPPORT ALIGNMENT LOCKING DEVICE

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Filed Sept. 25, 1972, Ser. No. 292,113

Int. Cl. A22c *29/00*

U.S. Cl. 17—73 **5 Claims**



The present disclosure is directed to maintaining horizontal alignment of peeling and cleaning rolls in a shrimp peeler and cleaner by restricting rotary movement of the posts without inhibiting up and down movement of adjacent posts at the base of which are journalled the peeling rolls. This is accomplished by molding flat walled projections at the base of the posts over which are received a locking member having a plurality of openings therethrough the walls of which are complemental to the flat walls of the projections in one direction and which are slightly greater in the other direction to permit relative vertical movement between adjacent posts.

3,797,072

FIBER-MIXING DEVICE

Georg Goldammer, Friedrichshofen, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed June 16, 1972, Ser. No. 263,545

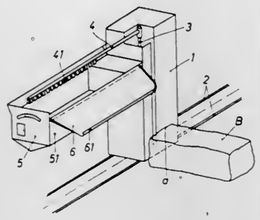
Claims priority, application Germany, June 19, 1971, 2130497

Int. Cl. D01g *9/00*

U.S. Cl. 19—81 **1 Claim**

A carriage includes an upright post to which one end of a horizontal arm is attached for sliding along the post and swing-

ing through a 90° arc about such post. The arm carries a row of opposed claws and normally extends perpendicular to the carriage track to lift a layer of fiber from a bale disposed beside the track. The arm is then lifted to the post top portion, swung 90 degrees, and the fiber is deposited into an elongated container mounted in cantilever fashion from the carriage. Such container has a wing along one side pivotable between a lower position to catch any fiber which may fall from the fiber



layer as the arm is swung over it toward the container, and an upper position to dump the fallen fiber into the container. A return bent wing margin catches fiber at the free wing edge. In another form of the device, fiber may be stripped from a bale bottom into a container beneath the bale by toothed stripping rollers. Such container has a wing on each of two opposite container sides, such wings flaring upwardly and outwardly to confine fibers and direct them into the container.

3,797,073

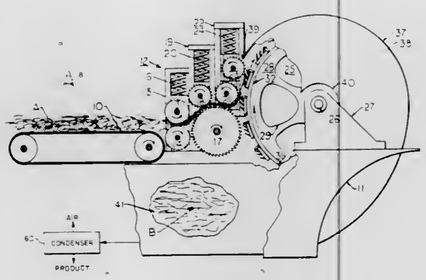
CONVERSION METHOD FOR TEXTILE FILAMENTS

Hugh J. Fairfield, Galt, Ontario, Canada, assignor to Du Pont of Canada Limited, Montreal, Quebec, Canada

Division of Ser. No. 874,589, Nov. 6, 1969, Pat. No. 3,676,991, which is a continuation-in-part of Ser. No. 751,272, Aug. 8, 1968, abandoned, which is a continuation-in-part of Ser. No. 597,263, Nov. 28, 1966, abandoned. This application May 1, 1972, Ser. No. 249,708

Int. Cl. D01b *9/00*

U.S. Cl. 19—83 **7 Claims**



A method of converting a mass of textile filaments in the form of textile material waste, tangled thread waste or cold-drawable continuous filaments of a synthetic polymer to a useful product by forwarding the mass at a low speed under a restrained condition while withdrawing the mass at a high speed to separate, randomly stretch, break and cool the filaments. The resulting discontinuous filaments are then collected.

3,797,074

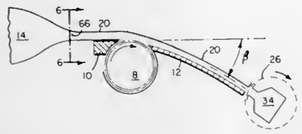
AIR-LAYING PROCESS FOR FORMING A WEB OF TEXTILE FIBERS

Dimitri P. Zafiroglu, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. Nos. 241,924, April 7, 1972, and Ser. No. 135,735, April 20, 1971, said Ser. No. 241,924, is a continuation-in-part of Ser. No. 135,734, April 20, 1971, abandoned. This application Jan. 11, 1973, Ser. No. 322,757

Int. Cl. D01g *25/00*

U.S. Cl. 19—156.3 **9 Claims**



A process is disclosed for high speed production of uniform webs by air-laydown of textile fibers. A feed batt of staple fibers is fed to a toothed disperser roll that projects the fibers at high velocity and low angle into an airstream of high uniform velocity and low turbulence to form a thin fiber stream from which the fibers are subsequently separated in the form of a web. The webs are suitable for producing high quality nonwoven fabrics by known fiber-interlocking or bonding treatments.

3,797,075

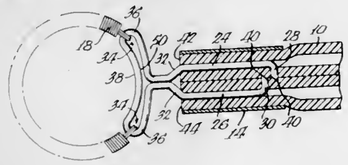
LANYARD CONSTRUCTION

Suren M. Seron, 254 Republic Ave., Joliet, Ill.

Filed Oct. 19, 1972, Ser. No. 299,109

Int. Cl. A44b *21/00*; **A45f** *5/00*

U.S. Cl. 24—73 R **4 Claims**



A lanyard for holding instruments having external annular grooves as, for example, duck calls. The lanyard includes a flexible loop adapted to be received around the neck of a wearer terminating in a clip having oppositely extending ears and a concave portion intermediate the ears adapted to be received in the annular groove. A spring interconnects the ears and with the concave portion defines a resilient loop of closed configuration which is sized to expand to be passed about the instrument for snug reception in the annular groove.

3,797,076

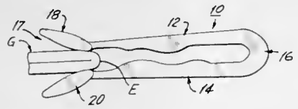
SPRING CLIP FOR FOLDED GARMENTS AND THE LIKE

Theodore Watkin, Stamford, Conn., assignor to Theodore Watkin, Stamford, Conn.; Maurice Friedman and Alfred S. Friedman, both of Woodmere, N.Y.

Continuation-in-part of Ser. No. 53,409, July 9, 1970. This application July 1, 1971, Ser. No. 158,771

Int. Cl. A44b *21/00*

U.S. Cl. 24—255 GP **13 Claims**



A spring clip is provided which is adapted to be placed over the edge of a folded article of wearing apparel in order to

retain the same in folded condition. The clip includes a pair of elongated co-extensive arms which are joined by a spring yoke to form an internal chamber in the clip. The clip has an open mouth defined by a pair of lips, with each lip of the mouth being carried by one of the arms. The lips extend transversely beyond the width of the arms. The clip may be thrust directly against the edge of an article, whereupon the lips of its mouth cam the arms open and the article's edge passes into the clip's chamber. The clip is also adapted for automatic mechanical feeding by an appropriate apparatus onto such folded wearing apparel.

3,797,077

METAL CLAMP BAND

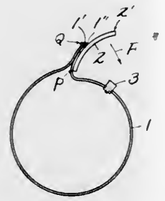
Kunihide Omori, Kuwana, and Hiromi Nagayoshi, Chino, both of Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan

Filed Oct. 24, 1972, Ser. No. 300,391

Claims priority, application Japan, Oct. 27, 1971, 46-85728

Int. Cl. B65d *63/02*

U.S. Cl. 24—273 **2 Claims**



Clamp band for hose, dust cover of universal joint and the like provided with a lever secured thereto to exert a powerful tightening force through a lever-action so that said band is securely locked against expansion. Collar means may maintain the locked condition.

3,797,078

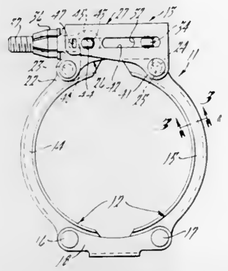
LATCH AND V BAND COUPLER

Thomas A. LaPointe, Jerome, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Sept. 1, 1972, Ser. No. 285,640

Int. Cl. B65d *63/06*; **F16l** *17/06*

U.S. Cl. 24—279 **19 Claims**



A latch usable as a closing and/or opening mechanism and shown in conjunction with a coupler having segments drawn together to connect V band flanges. In a first embodiment, the latch comprises telescoping inverted U-shaped sections pivoted to the segments at their outer ends. One section carries a bolt which passes through the end of the other section so that tightening of a nut will create tension in the bolt as the sections are drawn together. Guide slots in each section receive a cross pin carried by the other section so that no bending loads are transmitted to the coupler. A safety feature is provided in the form of rupturable portions of one latch section, the cross pin which ruptures these portions remaining captive to prevent complete opening of the coupler. In a second embodiment, the latch sections are so constructed that the bolt is placed in compression instead of tension when the latch sections are drawn together.

3,797,079

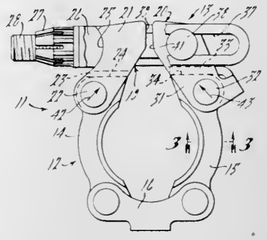
LATCH AND V BAND COUPLER

Larry R. Nixon, Michigan Center, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Sept. 11, 1972, Ser. No. 287,765

Int. Cl. B65d *63/02*

U.S. Cl. 24—285 **7 Claims**



A "V" band coupler having arcuate segments pivoted to a bottom hinge with a latch mechanism connecting the upper segment ends. The latch mechanism comprises two sections each having a web and a pair of flanges pivoted to the upper ends of the coupler segments. The head of a bolt is pivoted to one latch section and extends through the web of the other, a nut on the bolt drawing the latch sections together when tightened. Bridges on the latch sections initially engage the segments so as to create angular closing forces thereon. However, the latch sections have facing edges which contact above the bolt centerline, changing the pulling angle on the segments until it is parallel to the bolt axis. Any overtorque is taken up in the latch, protecting the segments.

3,797,080

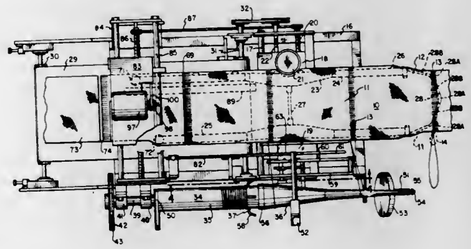
APPARATUS AND METHOD FOR SEPARATING FABRIC SECTIONS

Murray L. Rockman, Plainview, and Andrew P. Cecere, Valley Stream, both of N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,050

Int. Cl. D04b *19/00*

U.S. Cl. 28—17 **10 Claims**



The invention relates to apparatus for separating connected-together sections of tubular knitted fabric, such as sweater bodies, for example. The apparatus includes a spreading frame, which engages the tubular fabric internally and arranges it in flat form. The tubular fabric is advanced by belts engaging the internal side edges of the frame. As the fabric sections are conveyed along the spreader frame, a draw thread

or connecting thread is partially withdrawn and engaged by a rotating mandrel which serves forcibly to withdraw the connecting thread from the moving fabric, thus substantially separating a pair of adjacent fabric sections. The construction of this mandrel, to provide for high production, semi-automatic operation, is one of the features of the invention.

After withdrawal of the connecting thread, adjacent fabric sections are connected together only by a "cord" of yarns, and a novel and improved arrangement is provided for severing this yarn cord on an automatic, high-speed basis. A new cutting means includes automatically fluctuated fingers which engage the yarn cord and carry it to a high-speed cutter.

An additional feature of the invention is the method by which the successive fabric sections are handled and conveyed to assure proper location of the yarn cord for the automatic cutting operation.

3,797,081

MACHINE FOR THE AUTOMATIC HIGH-SPEED, HIGH PRECISION MACHINING OF SMALL PARTS, EVEN THOSE HAVING A COMPLICATED FORM

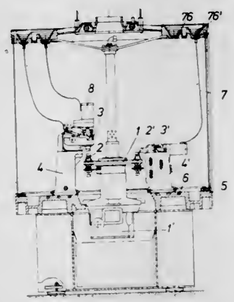
Ugo Buzzl, Agno, Switzerland, assignor to Albe S.A., Lugano, Switzerland

Filed Dec. 22, 1971, Ser. No. 210,808

Claims priority, application Switzerland, Sept. 30, 1971, 14281/71

Int. Cl. B23p *23/00*

U.S. Cl. 29—38 C **2 Claims**



A machine for automatic, high-speed, high precision machining of small parts comprising a piece holding turntable having an intermittent rotary movement for transporting each piece from one work station to the next and a plurality of interchangeable work units having at least one drive motor to advance the tool and at least one motor for the rotation of the work movement of the tool, each unit being placed in correspondence with a work station and being able to carry out different machining operations simultaneously as the pieces arrive at the station.

3,797,082

SUPPORTING ROLLER FOR BELT AND ROLLER CONVEYORS

Tons Jean Brunes, Attemosevej 8, 2840 Holte, Denmark

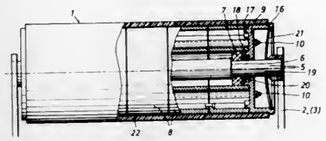
Filed June 23, 1972, Ser. No. 265,702

Claims priority, application Denmark, June 29, 1971, 3198/71

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 R **3 Claims**

A supporting roller for belt and roller conveyors which comprises a cylindrical body mounted on a shaft having smooth running bearings which are arranged at each end of the shaft and are placed against a shoulder or similar stop arrangement. The supporting roller includes a plurality of substantially identical cylinder elements of plastic or similar material, and two uniform end discs with a bearing back stop and with a mantle of rubber or rubber-like material covering



the cylinder elements. These cylinder elements and the end discs are held together by clamping devices.

3,797,083

SHEET METAL CAGE PRODUCTION

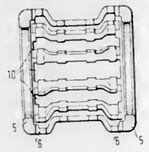
Georg Schaeffler, and Gerhard Sakowski, both of Herzogenaurach, Germany, assignors to Industriewerk Schaeffler OHG, Herzogenaurach, Germany

Filed Sept. 15, 1972, Ser. No. 289,303

Claims priority, application Germany, Sept. 22, 1971, 2147170

Int. Cl. B21d *53/12*

U.S. Cl. 29—148.4 C **3 Claims**



A novel process for the production of sheet metal cages for cylindrical rollers comprising two end rings shaped as radially directed flanges and cross-bars connecting the end rings having several axis parallel sections at different distances from the cage axis comprising

a. shaping without cutting a sheet metal strip having a uniform thickness over its entire area to provide two lateral areas having a greater thickness than the central region,

b. shaping the central area of the sheet metal strip according to the final cross-bars and in the two lateral areas to form radially directed end rings such that the greater thickness of the lateral areas lie after shaping in the area of the end rings and the adjacent cross-bar ends,

c. punching out the central area to form the cross-bars forming the pockets to accommodate the rollers and

d. bending the sheet metal strip into a cylindrical and joing the abutting ends of the end rings, steps b and c can be in any desired sequence.

3,797,084

METHOD OF MAKING A FINE DISPERSION ALUMINUM BASE BEARING

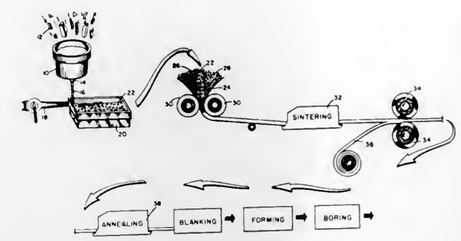
Robert J. Fedor, Westlake, Ohio, and Walter E. Smith, Hingham, Mass., assignors to Gould, Inc., Chicago, Ill.

Division of Ser. No. 98,233, Dec. 15, 1970, abandoned, and a continuation-in-part of Ser. No. 704,678, Feb. 12, 1968, abandoned. This application Dec. 18, 1972, Ser. No. 315,819

Int. Cl. B21d *53/10;* **B23p** *11/00*

U.S. Cl. 29—149.5 PM **11 Claims**

A mixture of metals composed predominantly of aluminum and the balance bearing phase materials are heated to a molten state, ejected through an orifice and atomized by impinging a stream of cold water against the molten metal to effect a rapid drop in temperature as well as solidification. A layer of the resulting pre-alloyed particles are roll compacted simultaneously with a sacrificial surface layer and a bottom bonding



layer, both being composed of aluminum base particulate materials. The bottom layer is devoid of bearing phase materials. The tri-layer strip is sintered, roll clad onto a backing member and post-annealed, blanked and formed into a bearing which is bored to remove the sacrificial layer.

3,797,085

METHOD OF REPAIRING A PART HAVING ERODED OR DAMAGED GUIDE VANES

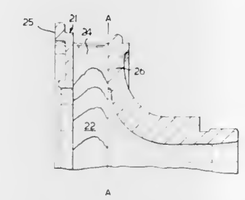
John M. Aartman, Beaconsfield, Quebec, Canada, assignor to Air Canada, Montreal, Quebec, Canada

Filed Oct. 10, 1972, Ser. No. 295,891

Claims priority, application Canada, Aug. 22, 1972, 149934

Int. Cl. B23p *7/00*

U.S. Cl. 29—156.8 R **4 Claims**



A method of repairing a guide vane part such as used in a turbine or a compressor, and having a series of peripheral openings defined by a series of guide vanes extending between two axially spaced housing portions. The method includes cutting the housing into two pieces along a radial plane extending through the junctions of the ends of the vanes with one housing portion, discarding the other housing portion, and providing a replacement housing portion with vanes and with at least some of the vanes having extensions. A series of apertures as provided in the remaining housing portion corresponding in size and position to the vane extensions, and the vane extensions are inserted into the apertures in the remaining housing portion from one side thereof to cause the free ends of the vane extensions to project through the apertures on the opposite side of the remaining housing portion. The projecting ends of the vane extensions are then secured to the remaining housing portion.

3,797,086

METHOD OF CLOSING OFF A HEAT PIPE

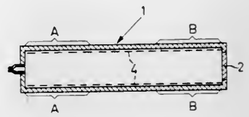
George Albert Apolonia Asselman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1972, Ser. No. 308,765

Claims priority, application Netherlands, Dec. 3, 1971, 7116620

Int. Cl. 165 *105;* **B21d** *53/02;* **B23p** *15/26*

U.S. Cl. 29—157.3 R **6 Claims**



A method of closing off a heat pipe of hydrogen-permeable material subsequent to evacuation of undesirable gases, the heat pipe is filled with hydrogen, is then sealed, and finally the hydrogen is removed by diffusion through the wall of the pipe.

3,797,087

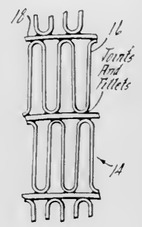
METHOD OF PREPARING OXIDATION-RESISTANT BRAZED REGENERATOR CORES

Gordon E. Allardyce, Dearborn Heights; Amedee Roy, and Claude Belleau, both of Troy, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 18, 1972, Ser. No. 316,145

Int. Cl. B21d *53/02;* **B23p** *15/26*

U.S. Cl. 29—157.3 R **7 Claims**



Diffusion-alloying of aluminum into copper brazed joints and structures, particularly for turbine engine regenerator cores.

3,797,088

METHOD OF MANUFACTURING CYLINDRICAL BLANKS

Christian H. Stettler, Northbrook; Hans R. Luedi, Highland Park, and Albert Roze, Chicago, all of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.

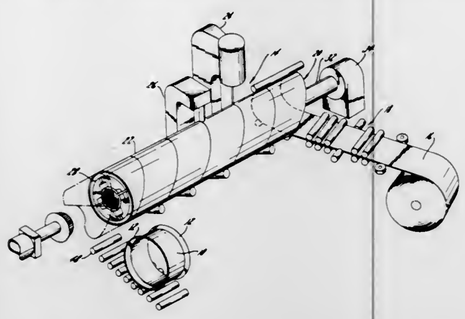
Filed Sept. 8, 1972, Ser. No. 287,561

Int. Cl. B21h *1/10;* **B21k** *1/38*

U.S. Cl. 29—159.1 **2 Claims**

The method of forming cylindrical shells such as the type used for the production of automobile wheel rims, wherein a strip of sheet metal material is spirally wound into an elongated pipe, the abutting edges of the wound strip are welded

and trimmed, and the free-end of the pipe is cut into the cylindrical shells of predetermined width as the pipe advances lon-



gitudinally with the spiral formation taking place at the opposite end.

3,797,089

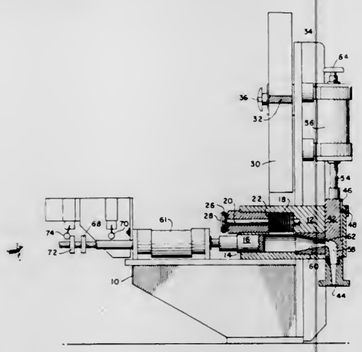
MACHINE FOR MAKING AND INJECTING LUBRICANT-IMPREGNATED WICKING MATERIAL

Martin L. Abel, 25235 Canterbury, Franklin, Mich.

Filed Oct. 17, 1972, Ser. No. 298,425

Int. Cl. B23p *19/00, 17/00*

U.S. Cl. 29—200 B **23 Claims**



A machine for making lubricant-impregnated wicking material and injecting it into the well of a bearing element. The machine includes a chamber and means for making a charge of the lubricant-impregnated wicking material and depositing it into the chamber. A piston is movable in the chamber between first and second positions, the charge of wicking material being deposited in the path of the piston when it is in the first position. Flow path means is provided between the chamber and the bearing element so that when the piston moves toward the second position the wicking material will flow along the path and into the well of the bearing element.

3,797,090

TERMINAL INSERTION APPARATUS

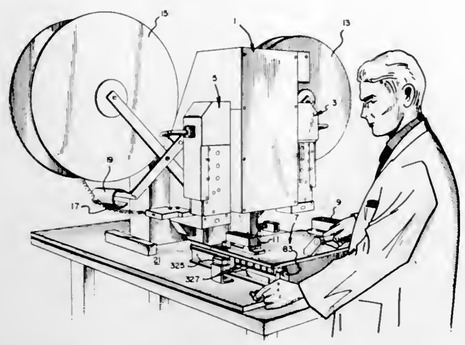
Andrew Graham Boutcher, Dauphin, and William LeRoy Busler, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1972, Ser. No. 226,893

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 B **14 Claims**

A string of side-by-side connected terminals and a housing having terminal receiving compartments are stepped toward a station at which the connection between adjacent terminals or selectively between and *n* th and an *n* th + 1 terminal is



severed, and the one or plurality of terminals severed from the string inserted by one operation into the respective housing compartment.

3,797,091

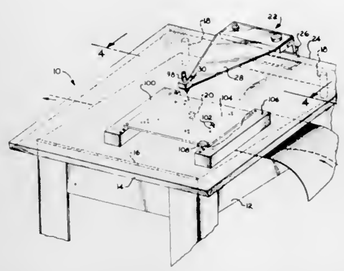
TERMINAL APPLICATOR

John H. Gavin, Lancaster, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1972, Ser. No. 253,426

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 B **13 Claims**



A terminal applicator having an extendable ram for severing a terminal from a carrier strip and mounting the terminal on a circuit board. An elongate feed arm extends generally parallel to the ram and is pivoted in a plane parallel to the carrier strip in response to extension of the ram so that the feed pawl sweeps back and forth across the carrier strip feed path in a shallow arc to index the lead terminal on the strip to a pick-up position.

3,797,092

DUAL IN LINE PACKAGE HANDLING TOOL

Norman S. Einarson, Burlington, Mass., assignor to Solder Removal Company, Covina, Calif.

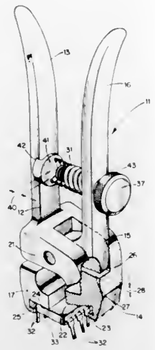
Filed Oct. 25, 1972, Ser. No. 300,769

Int. Cl. H05k *13/04*

U.S. Cl. 29—203 H **13 Claims**

A tool for grasping and holding a dual in line electronic circuit package for insertion into a printed circuit board or connector. The tool engages the normally slightly diverging contact leads of the circuit package and bends them inwardly. The tool employs an adjustable stop to positively limit the amount of bending of the contact pins. An extraction tool is formed by

a minor modification to the insertion tool, wherein the jaws are formed with teeth which pass between the contact leads



and positively engage the body of the electronic package to facilitate removal of the package from its mounting.

3,797,093

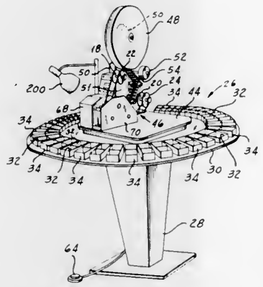
IMPROVED SEMI-AUTOMATIC COMPONENT SEQUENCING MACHINE

John G. Grafford, Dorr, and Lloyd D. Herring, Jenison, both of Mich., assignors to Rowe International Inc., Whippany, N.J.

Filed Oct. 30, 1972, Ser. No. 302,050

Int. Cl. H05k *13/04;* **B23p** *19/04*

U.S. Cl. 29—203 P **19 Claims**



An improved semi-automatic component sequencing machine for facilitating the formation of a string of electrical components in a predetermined sequence with the leads of the components held between pairs of tapes, in which, in the course of an operator-initiated sequence, a pair of resilient centering fingers move in to engage the body of the leading one of a plurality of components supported by their leads between notched feed wheels and in which hammers drive the leads of the centered component away from the fingers and into engagement with the upper pressure sensitive tapes supported on spaced upper pressure wheels and into notches on spacer wheels associated with the upper pressure wheels and in which notched lower pressure wheels subsequently apply the lower tapes to the leads. The machine makes provision modifying its operation to change the inter-lead spacing.

3,797,094

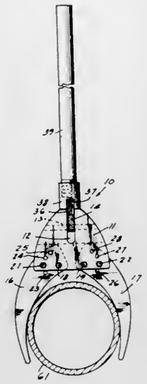
ASSEMBLY TOOL

Cassius C. Combs, Rt. No. 2, Box 62, and Arthur D. Hulet, Box 173, both of Wisconsin Dells, Wis.

Filed Apr. 26, 1972, Ser. No. 247,777

Int. Cl. B23p *19/04;* **B21d** *39/04*

U.S. Cl. 29—237 **8 Claims**



A tool for joining transite and soil pipe which utilizes a neoprene gasket in which the female member has a flange and the male member is received into the flange and gasket comprising a bifurcated handle which fits behind the flange for joining and has an arm which is attachable to the male member so as to apply pressure to join the members together. The tool may also be used for separating pipes to force them apart in response to movement of the handle.

3,797,095

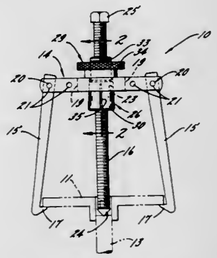
BEARING PULLER

David E. Benson, 615 W. Sixth St., Belvidere, Ill.

Filed June 1, 1972, Ser. No. 258,755

Int. Cl. B23p *19/04*

U.S. Cl. 29—261 **3 Claims**



A bearing puller having a threaded rod which is normally held in a given vertical position on a crossbar by a collet having spring fingers which may be loosened by turning a nut on the upper end of the collet.

3,797,096

METHOD OF PROVIDING METAL MOUNTINGS OR THE LIKE ON MEMBERS OF WOOD OR SIMILAR MATERIAL

Maths S. I. Nilsson, Hestra, Sweden, assignor to Nilssons Industriemballage AG, Hestra, Sweden

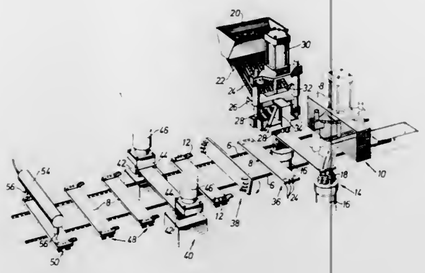
Filed Nov. 24, 1971, Ser. No. 201,726

Int. Cl. B23p *19/00*

U.S. Cl. 29—429 **13 Claims**

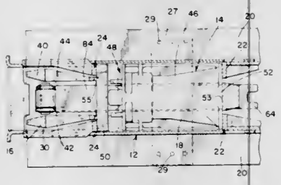
A method of securing metal mountings to wooden members with rivets is disclosed. The wooden members are drilled to a

slightly smaller diameter than the rivets. The rivets are inserted through the holes at the conclusion of the drilling operation, and are frictionally held in place by the wooden member. The metal mountings are then mounted on the member and the assembly is passed to a rivet upsetting station.



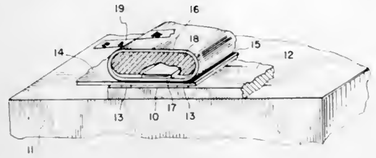
The rivets are softened by electrical current as the upsetting pressure is applied. The specification discloses several configurations of electrodes that provide simultaneous heating and pressure. After upsetting, the rivets are sprayed with a colored powder or protective coating. The heat retained in the upset rivet is used to melt the powder and spread the coating.

3,797,097
METHOD FOR REMOVING DRAFT GEAR
Bertil E. Peterson, Chicago, Ill., assignor to Cardwell Westinghouse Company, Chicago, Ill.
Division of Ser. No. 141,150, May 7, 1971, Pat. No. 3,744,116. This application July 24, 1972, Ser. No. 274,215
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 **2 Claims**



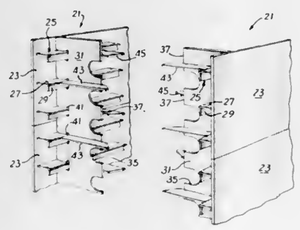
A method and device for removing railroad car draft gear-yoke assemblies in which the yoke is broken or cracked, wherein the device comprises a frame including a rigid elongate base having a pair of upstanding arms, one of which is rigid with the base and the other of which is swingably mounted to move its upstanding end toward the rigid arm under the action of the hydraulic ram carried by the base. After the draft gear carrier iron, coupler, and its key or keying pin are removed, the device is lifted up against the draft gear-yoke assembly, with the rigid arm positioned against the yoke inner end and the swingable arm adjacent a block of metal disposed in the yoke outer open end adjacent the draft gear front follower. The ram is then acutated to compress the draft gear between the block and yoke inner ends so as to free it from the draft gear pocket front stops, after which the draft gear and yoke may be lowered from the draft gear pocket as a unit.

3,797,098
TOTALLY CONFINED EXPLOSIVE WELDING
Laurence J. Bement, Newport News, Va., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.
Filed Sept. 14, 1972, Ser. No. 289,048
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **5 Claims**



A simple means for eliminating the noise and debris of explosive welding techniques by totally enclosing and applying the explosive pressure through the wall of the enclosure.

3,797,099
METHOD FOR FORMING A SHIP HULL SECTION
Richard Adams Myers, Rolling Hills Estates, Calif., assignor to General Dynamics Corporation, St. Louis, Mo.
Filed Jan. 4, 1972, Ser. No. 215,365
Int. Cl. B23k *31/00*
U.S. Cl. 29—471.3 **7 Claims**



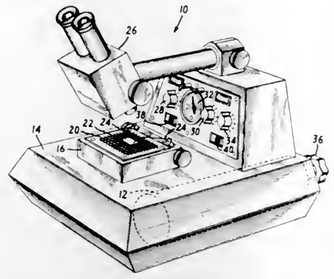
A method and structure for forming a portion of a ship hull using prefabricated hull sections.

Plates having parallel stiffeners are moved relative to apertured cross-stiffeners which are then welded thereto to form a panel. Two such panels are welded together in back-to-back relation.

3,797,100
SOLDERING METHOD AND APPARATUS FOR CERAMIC CIRCUITS
Lawrence T. Browne, 1120 Coast Village Cir., Santa Barbara, Calif.
Filed Apr. 12, 1971, Ser. No. 133,315
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.1 **13 Claims**

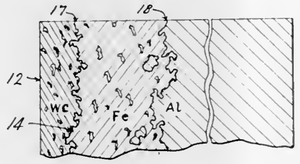
Disclosed herein is a method and apparatus for soldering electronic components to conductor pads on a ceramic substrate, wherein the source of heat for melting the solder is applied in a localized manner to the underside of the substrate. In the apparatus, a miniature hydrogen torch is disposed adjacent the underside of the substrate, in alignment with a component to be soldered to the upperside thereof, and the flame of the torch is electronically controlled by an ignition and valving system. The ignition system comprises a heating filament, disposed adjacent the discharge orifice of the torch, for being heated to ignite a valve-released jet of hydrogen, after

which the filament is deenergized and the resultant flame is maintained for a predetermined period sufficient to effect a



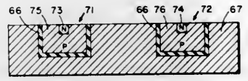
satisfactory soldered connection between the component and the substrate.

3,797,101
METHOD OF MAKING DIE CASTINGS HAVING MULTI-LAYER COATED SURFACES
Alfred F. Bauer, Toledo, Ohio, assignor to NL Industries, Inc., New York, N.Y.
Filed Nov. 27, 1972, Ser. No. 309,753
Int. Cl. B22d *19/08*
U.S. Cl. 29—527.3 **7 Claims**



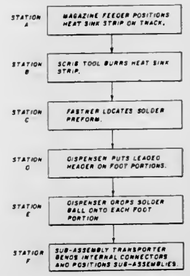
This invention relates to a method for producing coated die castings, for example, die cast cylinders or housings for rotary or reciprocating internal combustion engines. The method is particularly directed to the production of a casting having a multiple layer coating wherein the layer exposed to the working surface of the cylinder or housing is of a material which will provide a very hard, wear resistant layer, and the underlayer, between the die casting and the wear resistant layer is of a softer, less expensive, highly adherent and physically strong material.

3,797,102
METHOD OF MAKING SEMICONDUCTOR DEVICES
Tommie R. Huffman, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Division of Ser. No. 440,421, March 17, 1965, Pat. No. 3,393,349, which is a division of Ser. No. 363,802, April 30, 1964, abandoned. This application Jan. 7, 1966, Ser. No. 519,227
Int. Cl. B01j *17/00*
U.S. Cl. 29—577 **8 Claims**



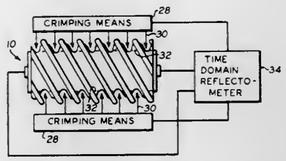
A monolithic integrated circuit structure is fabricated having a plurality of discrete single crystal semiconductor islands supported by and intimately bonded to a common substrate, including an insulating material to isolate the monocrystalline islands. The method of fabrication includes the steps of removing semiconductor material from selected areas of one side of a monocrystalline semiconductor body, replacing the removed material with an insulating layer and a support member, and then removing single crystal material from the opposite side of the wafer to expose portions of said insulating layer thereby providing monocrystalline islands for the fabrication therein of semiconductor devices.

3,797,103
MACHINE AND PROCESS FOR SEMICONDUCTOR DEVICE ASSEMBLY
Richard J. Desmond, North Syracuse; Edward J. Fronczek, Auburn, and John J. McCarthy, Port Byron, all of N.Y., assignors to General Elecric Company, Syracuse, N.Y.
Division of Ser. No. 34,042, May 4, 1970, Pat. No. 3,669,478. This application Nov. 10, 1971, Ser. No. 197,535
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 **3 Claims**



A machine and process are disclosed for assembling a plurality of semiconductor devices having heat sinks initially united in a common strip. A track is provided for allowing a heat sink strip to be sequentially transported through a plurality of assembly stations. A magazine is provided for dispensing heat sink strips to the track. The strip is advanced by fingers engaging regularly recurring apertures in the strip. The heat sink strip is first burred and then a solder preform is stamped onto the strip at spaced intervals overlying the burrs. Lead carrying headers are fed into association with spaced foot portions of the strip. A dispenser feeds a solder ball to a window in each header. A forming and pick up mechanism positions sub-assemblies including semiconductive elements and internal connectors on the heat sink strip overlying the solder preforms.

3,797,104
FLEXIBLE COAXIAL CABLE AND METHOD OF MAKING SAME
William T. Pote, 41 Moraine Rd., Morris Plains, N.J.
Filed July 13, 1972, Ser. No. 271,607
Int. Cl. G05f *1/00*
U.S. Cl. 29—593 **16 Claims**



A flexible coaxial cable having an inner conductor to which a dielectric is secured such as by fusion and a convoluted outer conductor formed from a strip helically wound conductor secured, such as by soldering, to a corrugated conductive

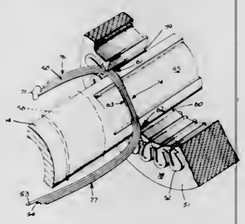
member, with the helically wound portion being secured to the peaks of the corrugations. The outer conductor is locked to the dielectric by crimping solely in the valleys between the helically wound convolutions. The crimping is accomplished under controlled conditions to provide a predetermined characteristic impedance, such as 50 ohms, for the coaxial cable by means of the mechanical crimping. The crimped cable is temperature cycled in a temperature chamber so as to provide thermal stability for the coaxial cable.

3,797,105

METHOD AND APPARATUS FOR DEVELOPING ELECTRICAL COILS

Richard B. Arnold, Fort Wayne, Ind., assignor to General Electric Company, Ft. Wayne, Ind.

Filed Mar. 24, 1972, Ser. No. 237,829
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 **7 Claims**



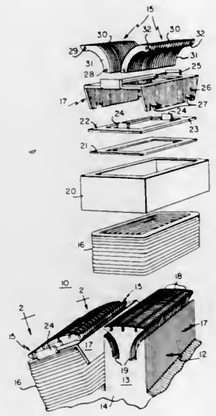
Method and apparatus for axially developing electrical coils in selected slots of a stator core for a dynamoelectric machine. In the exemplified approach, two strands of wire are wound in hand, i.e., wound simultaneously, to generate one or more electrical coils having two or more turns each. Coils are transferred axially into slots of stator core firmly supported in a predetermined position relative to the coil generation means. Transfer and insertion is done in known manner. Indexing means may also be provided and used to either re-orient the stator core relative to the coil placing means for receipt of other coils or core may be positioned and oriented in a predetermined position relative to a second winding and/or placing means spaced from the first coil placing means. Two or more strands of wire are substantially simultaneously dispensed by flyer means moving in a substantially constant and fixed path about arbor or coil form means that establish a predetermined desired shape for the turns of each coil. As the flyer means moves, the multiple strands of wire tend to twist one upon another. However, along at least two predetermined portions of each coil being developed, the wire strands are prevented from twisting or crossing one upon another. Arbor means have predetermined "no twist" locales adjacent which are located those portions of the coils that are to enter restricted core slot entrances. In the case of generally arcuate divider blades or plates, a recessed or relieved area is provided along a preselected central region of at least selected ones of the divider blades to encourage and accommodate twisting of wire strands while being placed against the divider blades. Recess preferably is of a depth at least equal to twice the diameter of a maximum strand size to be flyer wound. The recess or undercut in each divider blade has a divider blade no-twist locale at each side thereof. The arcuate length of each no twist locale is not critical and may be made to be, for example, about one quarter of an inch. The axial extent of the recessed surface is preferably at least approximately as great as the axial length, i.e., stack height of a core with which the apparatus is to be used. As the wire is pulled across a no-twist locale, relatively high wire tension, i.e., relatively high pressure between the wire and arbor means rather than simple strand tension, occurs and is believed to contribute to the advantageous results. Since the wire strands preferably do not contact undercut regions of the arbor means, no pressure will be exerted therebetween.

3,797,106

METHOD OF MAKING A SALIENT POLE ROTOR CONSTRUCTION WITH REMOVABLE POLE TIPS

Charles Albert Costello, Erie, Pa., assignor to General Electric Company, Wilmington, Mass.

Division of Ser. No. 186,349, Oct. 4, 1971, Pat. No. 3,728,566. This application Oct. 18, 1972, Ser. No. 298,621
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 **2 Claims**



A salient pole rotor construction which has removable pole tips to facilitate assembly and disassembly of the rotor. The removable pole tip is so constructed that centrifugal forces produced during rotation act to seat the pole tip more firmly to the rotor pole. The rotor pole bodies have an arcuate pole tip retaining slot extending along the length of the pole body. The removable pole tip consists of the pole tip portion having a surface which mates with that of the pole surface and an arcuate retaining stem which has the same curvature as the retaining slot in the pole shoe. The rotor is assembled by positioning a pre-formed field coil over the rotor core and then attaching the salient pole tips by inserting the arcuate stem in the retaining slot to lock the coil in place and retain it in position. By virtue of the arcuate configuration, the centrifugal forces generated by rotation force the arcuate stem of the pole tips firmly against the side of the slots thereby utilizing the centrifugal force to seat the salient pole tips firmly. By virtue of this construction, pre-formed field coils may be used simplifying the assembly of the rotor. Assembly time is reduced, while at the same time, scrap and rework losses are cut down producing highly desirable cost savings.

3,797,107

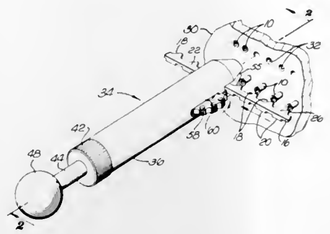
BACKPLANE MANUFACTURE

John W. Anhalt, La Crescenta, and David S. Goodman, Orange, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 312,812
Int. Cl. H05k *13/04*; **B23q** *7/10*
U.S. Cl. 29—625 **5 Claims**

A method is described for manufacturing a backplane in which plugs are inserted into apertures in the backplane to

mask the surfaces of the apertures. A nonconductive coating is formed on the backplane while the plugs are positioned in



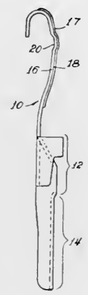
such apertures. Thereafter, electrical contacts are inserted into the apertures to remove the plugs therefrom.

3,797,108

METHOD FOR FABRICATING SELECTIVELY PLATED ELECTRICAL CONTACTS

Robert M. Healy, Warrenville, and Ralph J. Hovey, Glen Ellyn, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 815,609, April 14, 1969, abandoned. This application Jan. 10, 1972, Ser. No. 216,854
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 C **1 Claim**



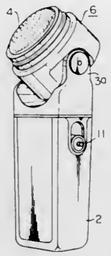
A method and apparatus for making electrical contact members from a continuous sheet or tape of electrically conductive material, the members being provided with precisely located plated wear areas adapted to establish electrical connection with a mating contact. Apparatus is provided for indexing the tape with longitudinally spaced apart locating pilots, and for coating the tape with a resist material in a manner to define precisely located non-coated areas thereon, the non-coated areas corresponding to the wear areas of the contacts. Thereafter, the tape is subject to a selective plating process which plates only the non-coated wear areas with a layer of noble metal. Cleaning apparatus is provided for removing the resist material from the tape, and apparatus is provided for punching and forming the contacts from the tape, the apparatus being operative to precisely fixed the plated wear areas of the contacts with respect to the indexing pilots. In this manner, each of the contacts formed is provided with a precisely located plated wear area.

3,797,109

ELECTRIC SHAVER WITH ROCKABLE SHAVING HEAD

Norio Yamada; Yoji Iguchi; Yoshimasa Tanaka; Tatsuke Oho, and Yoritaka Ikejima, all of Hikone, Japan, assignors to Matsushita Electric Works Ltd., Osaka, Japan

Filed Jan. 30, 1973, Ser. No. 327,935
Claims priority, application Japan, Feb. 1, 1972, 47/11947
Int. Cl. B26b *19/14*
U.S. Cl. 30—43.1 **5 Claims**



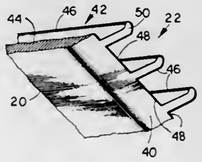
A battery powered electric shaver with rockable shaving head which including shaving cutter blades and motor for driving movable cutter blade. The shaving head is separately provided from shaver body which including the battery and is rockably supported between a pair of arms extending from the shaver body. Electric connection between the head and the body is performed by a metal fitting exposed out of the head adjacent supporting axis for the head as connected to the motor and a conductive member disposed in the pair of arms as slidably butted at a resilient end against the metal fitting of the head and connected at the other end to the battery, so that the connection can be retained throughout rocking movement of the head. Between the metal fitting and the conductive member, there may be provided a clicking means to lock the head at predetermined rocked angles. Provision of a discontinuity in the metal fitting for interrupting butting connection of the conductive member at a predetermined angular position of the head allows normal ON-OFF switching means to be omitted.

3,797,110

RAZOR WITH GUARDED RAZOR EDGE

Gunnar P. Michelson, 505 Sea Ranch Dr., Santa Barbara, Calif.

Filed Apr. 21, 1972, Ser. No. 246,172
Int. Cl. B26b *21/16, 21/54*
U.S. Cl. 30—82 **9 Claims**



A razor has a guarded razor edge which includes a substantially flat flank and a profiled flank. The profiled flank comprises a multiplicity of alternating relatively narrow panels separated by much narrower guard ribs spaced along the razor edge. The panels converge with the flat flank to form short, spaced apart sharp cutting edges between the guard ribs. The guard ribs protrude above the plane of the panels and forward of the cutting edges, and are integral portions of the razor body.

3,797,111

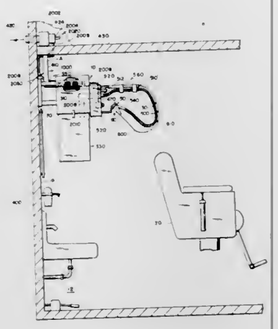
MANUALLY REGULATED VACUUM ASSEMBLY FOR HAIR CLIPPER

Thomas P. Keane, Council Bluffs, Iowa

Continuation-in-part of Ser. No. 12,287, Feb. 18, 1970, Pat. No. 3,613,237. This application Oct. 14, 1971, Ser. No. 189,404

Int. Cl. B26b *19/44*

U.S. Cl. 30—133 11 Claims



A manually regulated vacuum assembly for barber's hair clippers comprising a vacuum air-intake attachment attached to a clipper body and connected to a hair-catching device by a hose, a blower pulling air from the hair-catching device and means for manually regulating the rate of air flow through said attachment while continuing said air flow, such manual regulation being by degrees so that any one of many amounts of air flow can be selected.

3,797,112

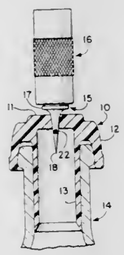
GAS RELIEVING DEVICE FOR BOTTLES

Robert C. Paulson, 310 Valhalla Cir., Crystal Lake, Ill.

Filed June 13, 1972, Ser. No. 262,351

Int. Cl. B67b *7/24*

U.S. Cl. 30—366 6 Claims



A gas relieving device for beverage bottles having the contents thereof under a gas pressure and in which the bottles are sealed by a plastic stopper or closure. The device comprises a lower lance section for piercing a plastic stopper. The lance section is threaded to receive a cap section which with the lance section provides an adjustable valve arrangement.

3,797,113

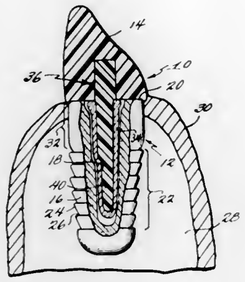
DENTAL IMPLANT

Herbert Brainin, Los Angeles, Calif., assignor to Vitredent Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 42,069, June 1, 1970, Pat. No. 3,717,932. This application Feb. 24, 1972, Ser. No. 228,843

Int. Cl. A61c *13/00*

U.S. Cl. 32—10 A 7 Claims



A dental implant member formed of substantially nonporous, isotropic carbon having a textured and dentated lower portion. The implant member is provided with means for attaching an a artificial crown section thereto.

3,797,114

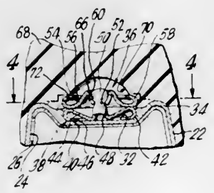
DETACHABLE MOUNT FOR A DENTAL CAP AND PROSTHODONTIC PROCEDURE UTILIZING THE SAME

Lawrence Wiland, 144-15 41st Ave., Flushing, N.Y.

Filed Sept. 21, 1972, Ser. No. 290,858

Int. Cl. A61c *5/08*

U.S. Cl. 32—12 8 Claims



A dental cap, which may be an individual cap, or an end or intermediate cap of a bridge, is detachably secured by a fastener to a coping cemented on a prepared tooth. The fastener has one-half thereof mounted on the undersurface of the cap and the other half, through the medium of the coping, on the upper surface of the prepared tooth. A "prepared" tooth constitutes that part of a tooth which, in accordance with conventional dental practices, has had some or all of the enamel removed but which has a substantial residual bulk extending for a considerable distance above the gingival margin. A prepared tooth usually is vital, that is to say, alive, so that the present invention maintains a large part of the integrity of a tooth structure and does not tend, as has been the case with previous detachable caps, to leave only the root of a tooth which is highly susceptible to various forms of attack and stress damage and is not as inherently strong as a prepared tooth.

3,797,115

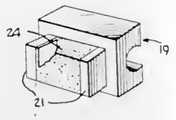
ORTHODONTIC ELEMENT

Elliott Silverman, 4829 Atlantic Ave., Ventnor, N.J., and Morton Cohen, 1201 Wrack Rd., Meadowbrook, Pa.

Filed June 7, 1972, Ser. No. 260,489

Int. Cl. A61c *7/00*

U.S. Cl. 32—14 A 6 Claims



This invention relates to an orthodontic element to be applied directly to the tooth without the use of a conventional band. The elements described are constructed of metal and are of a shape particularly adapted to be affixed directly to the teeth by use of an adhesive compound.

3,797,116

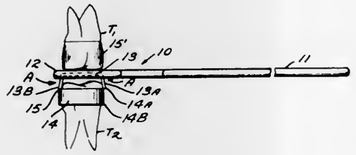
DUAL POST BAND SEATER

James E. Meeks, Jr., 505 N. Seminary St., Florence, Ala.

Filed Oct. 13, 1972, Ser. No. 297,391

Int. Cl. A61c *7/00*

U.S. Cl. 32—66 5 Claims



A dental tool is used for applying dental bands to the teeth of the human patient for tooth straightening purposes. An elongated member has a handle portion at one end and an operative flattened portion at the other end, the area of one side of the flattened portion is at least co-extensive with that of the area of the working surface of the tooth opposed to that for which the tool will be used. Dual post means extend from the other side of the flattened portion at substantially the same angle relative thereto and engage at opposite sides of the outer edge of the dental band. The inner edge of the band initially engages about the outer edge of the working surface of the tooth, and the one side of the flattened portion is adapted to engage with the working surface of the opposing tooth. The dual post means is adapted to guide and push the band into circumferential engagement about the side of the tooth, on biting engagement with the flattened portion, thereby seating the band about the tooth.

3,797,117

COMPASS BALLPOINT PEN

Fernando Sanz Gimenez, Juan de Urbieta St., Madrid, Spain

Filed Aug. 2, 1972, Ser. No. 277,385

Int. Cl. B43l *9/02*

U.S. Cl. 33—27 B 3 Claims

A compass ballpoint pen combination comprising a case having curved surfaces and defining an asymmetric compartment for receiving therein a ballpoint pen cartridge. The case forms a longitudinal depression following the curved surfaces

and opening towards the outside. A compass point arm is pivotally housed and received in the depression.

3,797,118

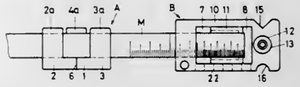
DOUBLE-TYPE CONTINUOUS CURVE DRAWING TOOL

Kazuko Yamamoto, No. 5-4, 3-chome, Gohongi Meguro-ku, Tokyo, Japan

Filed June 15, 1972, Ser. No. 262,986

Int. Cl. B43l *9/04*

U.S. Cl. 33—27 C 10 Claims



A double-type continuous curve drawing tool comprising two parts, i.e., a supporter A capable of clipping a tape measure at any given point and also having a pivotal pin serving as the center for swinging movement and a fixer B provided on the end of said measure and having a writing tool inserting portion, characterized by said fixer B comprising a rectangular-shaped plate frame fitted with an elastic piece 9 for clipping the measure at the aft end of the back of a plate frame 10 and having in the central portion of the fixer, a right-angled triangular structure 11 with its two sides elevated and with its hypotenuse lying as the base between the right- and left-hand measure passing holes 7 and 8, said fixer B further having a writing tool inserting portion 13 with a taper hole 12 provided at a position which agrees with the central axis of the tape measure M passed through said holes near their fore end.

3,797,119

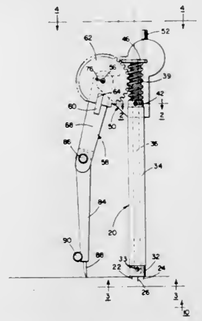
DRAWING INSTRUMENT

Ronald McDow, 10100 La Placita Dr., Rancho Cordova, Calif.

Filed May 24, 1973, Ser. No. 363,585

Int. Cl. B43l *13/24*; G01b *3/16*

U.S. Cl. 33—27 M 14 Claims



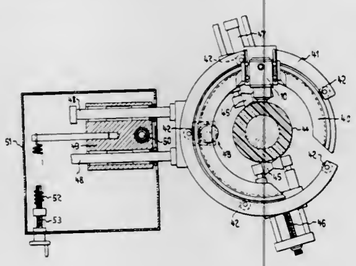
A drawing compass-like instrument for producing spiral-like curves in which a worm is positioned on one leg of the in-

strument and a worm gear is positioned on the other leg of the instrument, the worm gear meshing with the worm. The worm is prevented from turning as the instrument is swung, whereby the gear swings around the major axis of the worm, causing the gear and the leg to which it is attached to increase or decrease the radius of the instrument as a function of the angle through which the instrument is swung.

3,797,120
SEWING TAPE
Zachary Paul Byne, Brooklyn, N.Y., assignor to Emerson Labeltape Corp., Brooklyn, N.Y.
Filed Apr. 17, 1972, Ser. No. 244,562
Int. Cl. G01b *3/10*
U.S. Cl. 33—137 R **2 Claims**

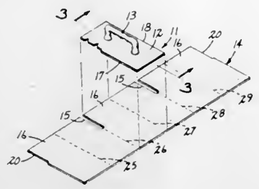
A sewing tape especially adapted to provide a measured sewing guide line when using a sewing machine. The tape is in the form of a strip provided with cuts or serrations for separating the tape into ribbons of predetermined thickness and has suitable guide lines printed thereon some of which coincide with the cuts or serrations.

3,797,121
DEVICE FOR MEASURING THE POSITION OF A CONDUCTOR IN A CABLE
Mathias Brunner, Magglingen/be, Switzerland, assignor to Zumbach Electronic Automatic, Berne, Switzerland
Filed Apr. 21, 1970, Ser. No. 30,544
Int. Cl. G01b *5/10*
U.S. Cl. 33—174 Q **7 Claims**



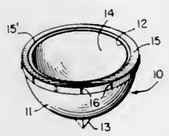
A device for measuring the position of a conductor in a cable, insulated wire or the like, wherein at least one measuring head for measurement of the thickness of the insulation is turned to different measuring positions round the cable or wire, wherein said measuring head is mounted on a split ring rotatably mounted, the gap of said ring allowing insertion of the cable or wire into its measuring position in the axis of the ring at any time during production of the cable or wire.

3,797,122
SHINGLE CUTTING GUIDE
Gerald P. Smith, Rt. No. 5, Bemidji, Minn.
Filed Feb. 4, 1971, Ser. No. 112,702
Int. Cl. G11b *5/16*
U.S. Cl. 33—174 G **7 Claims**



The disclosure is directed to a roofer's cutting guide for use in trimming tab asphalt shingles to a predetermined length. The guide consists of a plate of predetermine width and having a pair of parallel edges for guiding a shingle cutting tool. One of the edges is partially cut away to form a third parallel edge which also conforms in part to the shape of a slot lying between and defining the shingle tabs. The width of the plate is chosen so that upon alignment of the third edge with the shingle slot, the shingle can be trimmed lengthwise either at the slot or along a transverse line lying mid-way between two slots.

3,797,123
PORTABLE PRECISION GOLF BALL SPHERICITY GAUGE
Thomas E. Fraley, 993 Nicklaus Dr., Rockledge, Fla.
Filed Jan. 22, 1973, Ser. No. 325,341
Int. Cl. G01b *3/14, 5/22*
U.S. Cl. 33—178 B **5 Claims**

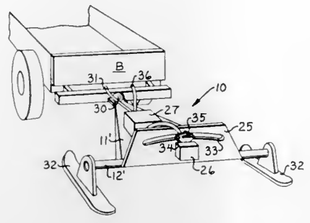


A portable golf ball sphericity gauge comprising a hemispherical cup defining a hemispherical cavity corresponding to the shape of a hemispherical portion of a normally spherical standard size golf ball and being of slightly larger diameter than the diameter of the standard size golf ball.

3,797,124
GROUND PROFILE READER
Gene B. Easterling; Russell D. Page, both of Decatur; Rolland D. Scholl, Peoria, and William R. Tillman, Monticello, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 21, 1972, Ser. No. 246,401
Int. Cl. G01c *7/04*
U.S. Cl. 33—331 **6 Claims**

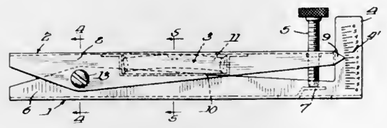
An elongated beam having spaced apart ground engaging members supporting it on a monitored surface includes transport system for moving it normal to its longitudinal axis whereby a level transducer centrally attached to the beam and connected by powered electrical circuits to an indicator will continuously reflect the displacement (slope) of its ground engaging members on the monitored surface normal to the path transversed by the beam. The transport system may include a device for measuring the distance traversed and the indicator

may include a strip chart recorder whereby a chart profile of the monitored surface can be obtained. Special marking



devices can be operated by the circuits to physically mark or paint areas where the monitored surface is cut outside the prescribed tolerances with respect to slope.

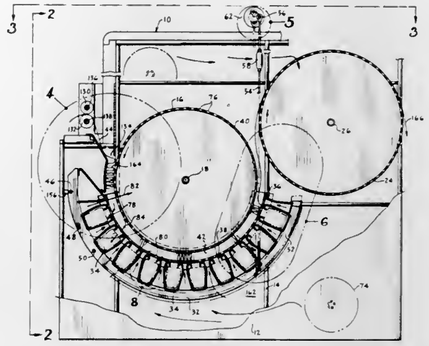
3,797,125
LEVELS AND LEVEL DETERMINING DEVICES
Harry G. Yetter, Colchester, Ill.
Continuation of Ser. No. 884,943, Dec. 15, 1969, abandoned. This application Sept. 2, 1971, Ser. No. 177,505
Int. Cl. G01c *9/28*
U.S. Cl. 33—387 **1 Claim**



An elogated base provided with upstanding side flanges or walls throughout its length pivotally mounting thereon a substantially correspondingly formed and sized body in parallel relation thereto having a right angularly and normally vertically disposed adjusting screw threadedly engaged with and through one free end portion bearing on an adjacent portion of the base bottom, a pointer-finger on and extended from one end of the pivotal body cooperable with a calibrated upstanding panel on the corresponding end portion of the base, and a spirit level vial fixedly seated on and disposed longitudinally of said body.

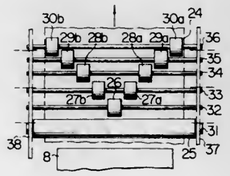
3,797,126
DRUM DRYER
Ralph C. Parkes, Hancock & Lehigh Ave., Philadelphia, Pa.
Filed Aug. 25, 1972, Ser. No. 283,812
Int. Cl. F26b *11/02*
U.S. Cl. 34—114 **14 Claims**

A drum dryer incorporating a rotary drum which is peripherally perforated to receive heated air therethrough. A plurality of air nozzles are defined between a plurality of transverse return air ducts and are positioned to direct air toward the drum. The transverse air ducts are carried upon an arcuate arm which is peripherally positioned relative to the rotary drum. The return air ducts and the rotary drum define an arcuate annular space to receive textile materials therein for drying and stitch adjustment purposes. The arcuate arm is pivotally affixed at one end thereof to the dryer machine frame and has its other end vibrated for textile treatment purposes during the drying operation. The air ducts are provided with dampers which function to closely control the volume of air passing therethrough, so that the quantities of air passing



through the textile materials and into the rotary drum can be regulated.

3,797,127
CIRCUITOUS PASSAGEWAY FOR DRYING COPY SHEETS
Hiroshi Yamada, Ichikawa, and Hiroshi Hirose, Tokyo, both of Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan
Filed Sept. 21, 1972, Ser. No. 290,800
Claims priority, application Japan, Sept. 22, 1971, 46-86426; Dec. 10, 1971, 46-116661
Int. Cl. G03g *5/00*
U.S. Cl. 34—123 **9 Claims**



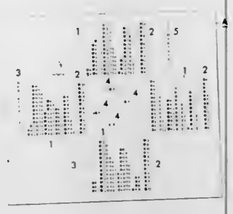
Apparatus forming a circuitous passageway in a copying device comprising a large diameter squeeze roller and a plurality of smaller diameter squeeze rollers of a smaller width pressing against the large diameter squeeze roller. Copy sheets released from the developing liquid tank are introduced one after another into this circuitous passageway to squeeze out the developing liquid from the copy sheets for drying the same and to change the direction of movement of the sheets. The small diameter squeeze rollers are arranged such that one of them or a center squeeze roller is disposed on the center peripheral line of the large diameter squeeze roller near the inlet of the circuitous passageway and the remainder are disposed in two rows symmetrical with respect to the center peripheral line of the large diameter squeeze roller, the two rows of rollers being spaced apart a greater distance toward the opposite edges of the periphery of the large diameter squeeze roller in going from the center squeeze roller in the direction of movement of the copy sheets along the circuitous passageway.

3,797,128

PRACTICE BOARD FOR CONTRACT BRIDGE GAMES

Kozo Amano, No. 480, Sasaya-machi, Fuyacho-Takeyamachi Sagaru Nakagyo-ku, Kyoto, Japan

Filed Aug. 7, 1972, Ser. No. 278,458
Int. Cl. G09b *19/22*
U.S. Cl. 35—8 B 6 Claims



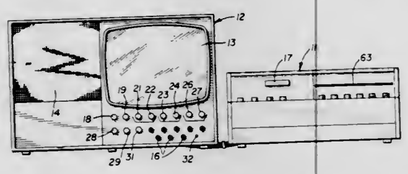
A practice board for contract bridge games comprising a sheet having indicia showing hands, cards to play, numbers of tricks won, bids, etc. of respective players thereon and arranged in accordance with a predetermined contract bridge game and a cover member overlying the sheet and having apertures formed therein corresponding to said indicia on the sheet and through which the indicia on each single trick can be seen. The predetermined or celebrated contract bridge game can be practiced by sliding the sheet downward relative to the cover member trick by trick to show the indicia on the succeeding trick until all the thirteen tricks are over. The lids are mounted over required apertures so that a user can see only his hand and the dummy, a card played by each player in turn and bids at each round of bidding. The practice board according to the invention is handy, simple in structure and may be manufactured at low cost.

3,797,129

HEART SOUNDS TEACHING AND DISPLAY APPARATUS

Abe Ravin, 45 S. Dahlia St., Denver, Colo., and Gerald L. Schlatter, Boulder, Colo., assignors to said Ravin, by said Schlatter

Filed Nov. 10, 1972, Ser. No. 305,633
Int. Cl. G09b *23/28*
U.S. Cl. 35—17 30 Claims



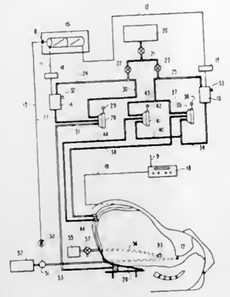
A heart sound simulator for the teaching of cardiac auscultation and diagnosis procedures which utilizes a plurality of separate bands of sound related signals for combination in cyclic and timed sequence to simulate heart pulse cycles or arrhythmic combinations thereof. A program element having instructional and indexing material thereon for visual observation is placed in fixed position as a signal gating element to selectively and/or periodically intercept circuits inclusive of photosensitive elements for the control of said circuits as necessary to duplicate various normal and abnormal heart conditions. Some elements of said circuits are movable and at variable rates whereby various pulse cycles are simulated as the light transmission or signal gating patterns are correspondingly varied. Sound output, sound and electrocardiogram display means and recording and play-back components are provided. Patient derived heart sounds, phonocardiograms and electrocardiograms may be displayed and/or recorded for sound and visual comparisons.

3,797,130

DYNAMIC CHILDBIRTH SIMULATOR FOR TEACHING MATERNITY PATIENT CARE

Charles F. Knapp, and George S. Eades, both of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Nov. 21, 1972, Ser. No. 308,542
Int. Cl. G09b *23/32*
U.S. Cl. 35—17 16 Claims



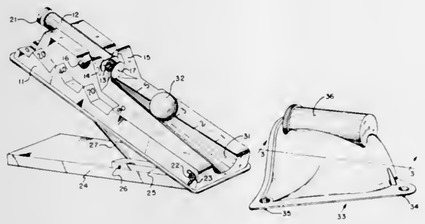
A programmable patient simulator for teaching maternity patient care includes a life size manikin with a pelvis, vaginal canal, uterus, placenta, umbilical cord, and a fetal doll from which heart sounds are emitted. A programmable electro-pneumatic system controls the simulated uterine contractions, position of the uterus, rupture of membranes, expulsion of fetal doll, and fetal heart rate during labor and delivery sequence.

3,797,131

KINEMATICS EDUCATING

John B. Orfei, North Revere, and John Walters, Lexington, both of Mass., assignors to American Science & Engineering, Inc., Cambridge, Mass.

Filed May 19, 1972, Ser. No. 255,103
Int. Cl. G09b *23/10*
U.S. Cl. 35—19 R 10 Claims



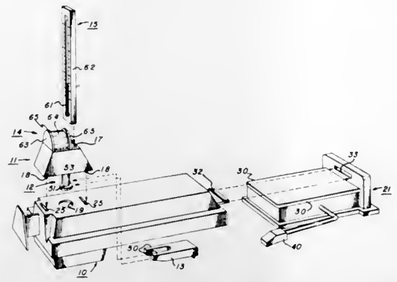
An adjustable inclined plane is formed with recesses for accommodating a modified hypodermic syringe that may accommodate a stopper in place of the needle assembly. A student may conveniently rapidly advance the plunger to expel the stopper and observe its trajectory as a function of the inclined plane angle. The inclined plane is also formed with a trough for guiding a rolling ball toward a sled that rests of three points, is formed with a recess for accommodating a vial for carrying different weight and receives the rolling ball at its forward end so that the student may observe how the kinetic energy of the rolling ball moves the sled a distance related to the angle of the inclined plane and the weight in the vial.

3,797,132

EDUCATIONAL DEVICE

John E. Lawlor, Tappan, N.Y., and John Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 22, 1972, Ser. No. 308,864
Int. Cl. G09b *23/16*
U.S. Cl. 35—19 R 12 Claims



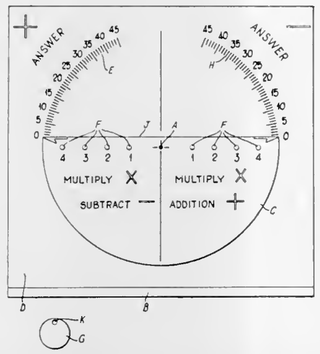
A simple, durable, inexpensive educational device for demonstrating the variables affecting heat production especially adapted for use by educational institutions below the college level is described. The device comprises a base member, a chamber for containing a supply of a liquid, means for securing the chamber to the base member, a thermally conductive metal insert and a thermometer. Included are means on the chamber for holding the metal insert and the thermometer in contact with a supply of liquid. Means are included for rubbing the metal insert.

3,797,133

CALCULATORS

Walter Douglass, 30 Grovewood Close, Chorleywood, and Paul John Murgatroyd, 1 Gullbrook, Boxmoor, Hemel Hempstead, England

Filed Oct. 3, 1972, Ser. No. 294,593
Int. Cl. G09b *19/02*
U.S. Cl. 35—34 8 Claims



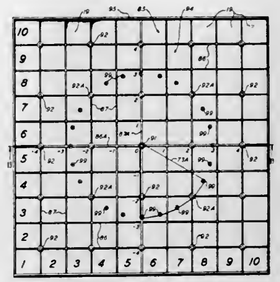
Calculating apparatus for teaching simple arithmetic comprises a support with a horizontally pivoted operating member in the form of a circular disc from which a segment has been removed to form a plate defined by a circular arc of more than 180° in extent and a straight line between the ends of the arc. The member is pivoted at the centre of the arc to rest in stable equilibrium with the straight edge horizontal. A scale behind the member indicates tilt, the straight edge providing pointers. Pins spaced on either side of the pivot may be loaded with discs having weights proportionate to integral values, the spacing of the pins being in arithmetical progression for multiplication, addition, and subtraction calculations and in geometrical progression for division.

3,797,134

ARITHMETIC CONCEPTS DISPLAY BOARD

Eldon S. Wingerd, 12108 Deerwood Ln., Sunnymead, Calif.

Continuation-in-part of Ser. No. 58,217, July 27, 1970, abandoned. This application May 15, 1972, Ser. No. 253,337
Int. Cl. G09b *23/04*
U.S. Cl. 35—34 2 Claims



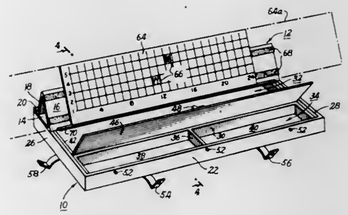
A display board has a grid portion of equal squares, with pegs rising from every other gridline intersection on every other grid line. The grids are defined by ridges or grooves. Adjacent borders of the board bear a number for each row of squares, advancing serially from the common corner square. Bands or plates define circle segments of various proportions within a circle defined by lines or pegs about the intersection of numbered X and Y axes. Elastic bands adapted to fit about two or more pegs show varied geometric shapes, and rods equal to a multiple of the circle radius may move on the board, as may cubes the size of a grid square, the cube faces having arithmetic symbols to indicate problems to be solved in accordance with the cube placement on the board grid with respect to the marginal numbers.

3,797,135

SHELF DISPLAY PLANNING KIT

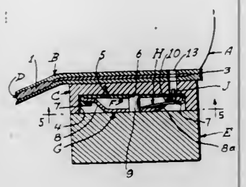
Edward A. Linker, Summit, N.J., and Clarence M. Lepeer, New York, N.Y., assignors to The Chartmakers, Incorporated, New York, N.Y.

Filed July 3, 1972, Ser. No. 268,686
Int. Cl. G09b *25/00*
U.S. Cl. 35—53 1 Claim



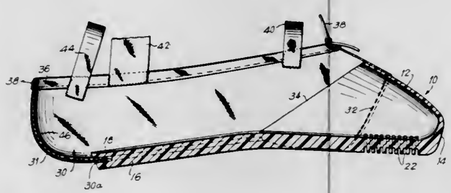
A shelf display planning kit for retail stores providing a compact means for showing simulated shelving and minaturized reproductions of articles thereon and, at the same time providing a storage compartment for such productions, a planning board bearing a shelf arrangement, and associated articles. The entire kit is easily transportable, being light and compact.

3,797,136
SHOE WITH FLEXIBLE HEIGHT ADJUSTMENT SOLE AND ASSORTED HEIGHTS INTERCHANGEABLE HEELS
Richard A. Soleri, 675 Hampshire Rd., Apt. 27, Westlake, Calif.
Filed June 25, 1973, Ser. No. 373,123
Int. Cl. A43b *21/35*
U.S. Cl. 36—42 **3 Claims**



A shoe with a flexible height adjustment sole and assorted heights interchangeable heels in which the flexible height adjustment sole is provided with a metal sole supporting brace that has a thicker mid-portion with thinner more flexible ends one of which is secured to the heel portion of the shoe and the other is secured to the ball portion of the shoe so as to permit a flexing of these two portions as the different heel heights are attached to the shoe. Novel means is also used for releasably securing a heel of a desired height to the sub heel of the shoe.

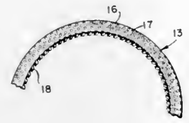
3,797,137
BALLET SLIPPER
Rebekah Harkness, New York, N.Y., assignor to Pirvoette Projects, Inc., New York, N.Y.
Filed Nov. 13, 1972, Ser. No. 305,737
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AE **10 Claims**



There is disclosed a ballet slipper consisting of two main parts — a fabric upper and a plastic foot support. The plastic foot support is substituted for the conventional last and serves the additional function of replacing the stiffening material which is usually provided in the toe of a ballet slipper. If the plastic has the same color as the upper, there is no need to cover the toe of the slipper with fabric; in such a case, the ballet slipper can have an extraordinarily long life.

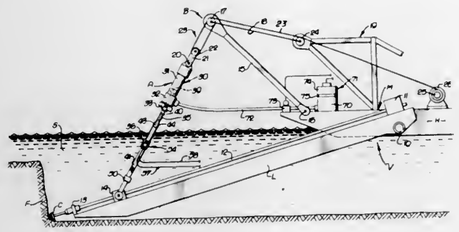
3,797,138
FOAMED SHEET FOR MAKING STIFFENING ELEMENTS
Addison W. Closson, Jr., 30 Coolidge Ave., Cambridge, Mass.
Continuation of Ser. No. 847,724, Aug. 5, 1969, abandoned. This application Mar. 2, 1973, Ser. No. 337,298
Int. Cl. A43b *13/42*
U.S. Cl. 36—68 **16 Claims**

This invention relates to a novel shaped shoe counter article formed of a thermoplastic cellular foam material, a so-called stiffener used to maintain the dimensional integrity of the shoe to conform generally with the heel of a wearer as classified in Class 36, subclass 68; the novel article is formed of an



elastomeric thermoplastic foam and is particularly valuable for use in a process for making molded shoes.

3,797,139
FLOATING DREDGE MOTION COMPENSATOR
Edward Larralde, Santa Barbara, Calif., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.
Filed Aug. 24, 1972, Ser. No. 283,473
Int. Cl. E02f *3/90*
U.S. Cl. 37—67 **16 Claims**

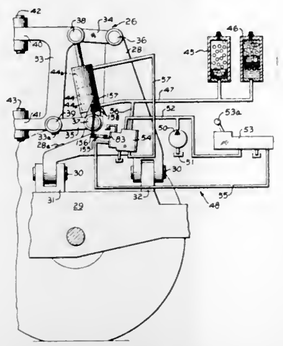


Apparatus automatically compensating for relative vertical movement between a dredging vessel and its cutter, or other formation removing mechanism, to maintain a predetermined vertical position of the cutter mechanism despite vertical motion of the floating dredge vessel caused by sea conditions. The compensating apparatus includes a cylinder and piston device containing a hydraulic fluid under pressure exerting a preselected lifting force on the cutter mechanism and automatically extensible and contractable to permit the vessel to move without effecting movement of the cutter mechanism and the force that such mechanism exerts on the formation.

3,797,140
FLUID SUSPENSION SYSTEM
Orcenith D. McWilliams, Morris, and Roger A. Rice, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Sept. 5, 1972, Ser. No. 286,025
Int. Cl. B60d *1/00*
U.S. Cl. 37—129 **22 Claims**

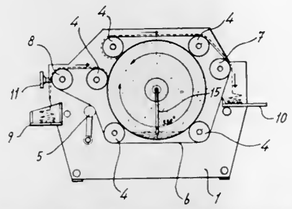
A fluid suspension system for a sprung mass includes a fluid motor having a cushioning end and an opposite end disposed in elevational supporting relation between the sprung mass and an unsprung mass. A resiliently biased fluid pressure system is in constant communication with the cushioning end of the fluid motor normally to resiliently support the sprung mass at substantially a predetermined elevated cushioning position relative to the unsprung mass. A lockout valve affords

selective communication of the opposite end of the fluid motor with the fluid pressure system to equalize pressure in



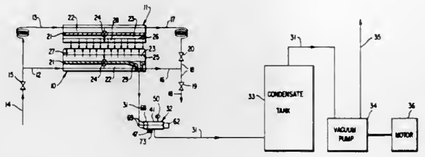
both ends of the motor and permit the sprung mass temporarily to move to a lower predetermined fixed position.

3,797,141
MACHINE FOR DRYING AND IRONING FABRICS
Pedro Pere Parera, Calle Alba Nr. 3, Barcelona, Spain
Filed Dec. 20, 1972, Ser. No. 316,703
Claims priority, application Spain, Dec. 29, 1971, 398,428; Nov. 23, 1972, 408,922.
Int. Cl. D06f *69/02*
U.S. Cl. 38—11 **7 Claims**



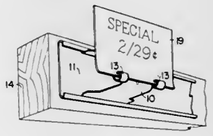
A machine for drying and ironing fabrics having a central heating cylinder and a plurality of pressure rollers disposed around the central cylinder. An endless canvas belt accompanies the fabric to be treated, which belt is guided by the pressure rollers around the central cylinder whereby contact is established with the hot periphery of the cylinder over an arc of at least 330°.

3,797,142
STEAM CONTROL METHOD AND APPARATUS FOR FABRIC PRESSING MACHINE
John T. Gerod, 312 N. Lincoln Ave., Scranton, Pa.
Division of Ser. No. 73,775, Sept. 21, 1970, Pat. No. 3,738,385. This application Nov. 30, 1972, Ser. No. 310,903
Int. Cl. D06f *71/34*
U.S. Cl. 38—15 **2 Claims**



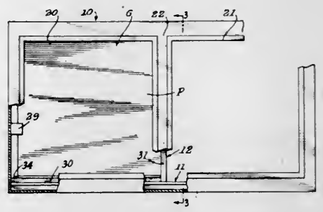
A method for selectively varying the vacuum pressure applied to the buck of a buck and swingable head type fabric pressing machine to establish the optimum vacuum pressure in accord with the weight and drying characteristics of the fabric to be pressed to assure effective drying and setting of the press in the fabric and a vacuum valve for presetting the vacuum pressure to the optimum value by adjustably venting the valve to the atmosphere. The valve is characterized by a vacuum line coupling means that may be removed from the valve without breaking the line connection to gain access to the valve biasing spring means, the valve, and valve seat for the purpose of servicing and replacement.

3,797,143
MARKER DISPLAY DEVICE
Russell S. Miller, 144 S. Rossmore Ave., Los Angeles, Calif.
Filed June 22, 1971, Ser. No. 155,473
Int. Cl. G09f *3/18*
U.S. Cl. 40—10 R **1 Claim**



A one-piece clip device for displaying price tags or other markers relating to the sale of merchandise, where the marker is retained by spring tabs which are formed from the panels of the clip and which dig into the surface of the marker with sufficient force to secure the marker. The marker may be inserted with ease but may be pulled out only by exerting considerable effort.

3,797,144
DISPLAY-TYPE PICTURE VIEWER
John H. Weggeland, Lehigh Acres, Fla., assignor to WML Incorporated, Santa Ana, Calif.
Filed Sept. 7, 1972, Ser. No. 287,102
Int. Cl. G09f *11/30*
U.S. Cl. 40—36 **7 Claims**

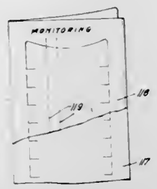


A display-type viewer particularly adapted for use in commercial areas, such as retail shops, marts, and other populous areas, and in elevated, easily viewable locations, the same including continuously operable means for successively shifting the front picture or sign of a vertical pack of such item and successively and continuously exposing them to the view of the people in the locale.

3,797,145
DATA DISPLAY SYSTEM

Edward J. Rapoza, Butler; Maxwell E. Siegel, Sussex, both of N.J.; Weems E. Estelle, Southport, Conn.; Pasquale M. Petrucci, Orange, Conn.; Joseph S. Linarducci, Wilton, Conn.; John Hamma, Milford, Conn., and John Montgomery, Trumbull, Conn., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

Division of Ser. No. 15,469, March 2, 1970, Pat. No. 3,706,499. This application Aug. 18, 1972, Ser. No. 281,756
Int. Cl. G09f *7/02*
U.S. Cl. 40—63 R **3 Claims**

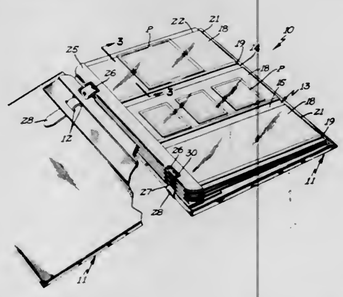


A data display system for use with a blood testing system. The blood testing system includes a colorimeter for observing the light transmission characteristics of a reacted blood sample to determine the concentration of a particular component. Part of the blood testing system is a module including a printed scale which is designed to be positioned immediately adjacent the meter needle when the module is operatively connected to the colorimeter, the units of the scale being correlated to the particular blood determination of the module such that the scale reads directly in the units of the test being conducted. A patient record card is provided which is adapted to overlie and be temporarily affixed to the module. The card includes a scale which overlies the scale of the module and is adapted to be marked to serve as a permanent record of the test determination. A removable tear-off tab is associated with the card which may be utilized to identify a blood sample by patient number and test. A number of marked cards, obtained over a period of time for a particular test, is adapted to be placed in overlapping relationship whereby the test results will be displayed as a graph plotted against time. A folder is provided to retain the cards in such overlapping relationship, the folder having a clear plastic overlay with indicia thereon to indicate the normal range of the test results.

3,797,146
ALBUM HAVING POCKETED ALBUM PAGES

William W. Holes, St. Cloud, Minn., assignor to The Holes-Webway Co., St. Cloud, Minn.

Filed Oct. 14, 1971, Ser. No. 189,168
Int. Cl. B42f *13/06*
U.S. Cl. 40—104.18 **1 Claim**

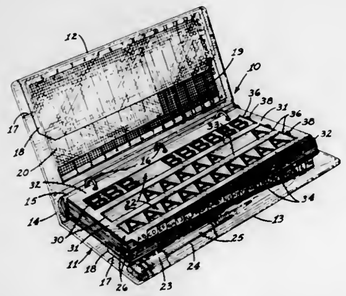


An album comprises front and rear covers hingedly connected to a plurality of album pages by suitable flexible straps. In one form of the album page structure each album page is formed from a single rectangular sheet of paper material folded upon itself to form front and rear laminae which are secured together by a suitable adhesive such as glue. A plurality of elongate rectangular transparent strips formed of a suitable flexible plastic are applied to one surface of the sheet prior to folding the sheet, and each of these strips are secured to the sheet along its lower longitudinal edge. When the sheet is folded, the strips form upwardly opening pockets on the front and rear sides of each page. In another form of the album page, transverse strips of plastic are applied to both surfaces of the sheet and are secured thereto by heat sealing or glue also to form upwardly opening pockets on the front and rear sides of the sheet. These pockets very nicely accommodate photographs and the like therein and permit them to be removed and reinserted as desired.

3,797,147
MULTI-PURPOSE PRESSURE SENSITIVE FONT LETTERING SYSTEM

Jack Lemberg, 3442 N. 29th Ave., Phoenix, Ariz.

Filed Feb. 1, 1972, Ser. No. 222,588
Int. Cl. G09f *3/00*
U.S. Cl. 40—104.19 **1 Claim**

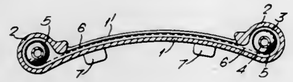


A multi-purpose pressure sensitive font lettering system, which includes an indexed symbol storage album containing all the letters, numbers, symbols and apparatus required for making signs and preparing copy for art work and the like.

3,797,148
ARRANGEMENT IN OR RELATING TO YEAR CALENDAR

Nils Joergen Ivengsberg, Olav Trygvasonsvei 7f, Sofiemyr, and Ivar Henry Andersen, Enerstien 10, Kraakeroy, both of Norway

Filed Feb. 15, 1973, Ser. No. 332,715
Claims priority, application Norway, Nov. 22, 1972, 4282/72.
Int. Cl. G09d *3/06*
U.S. Cl. 40—117 **3 Claims**



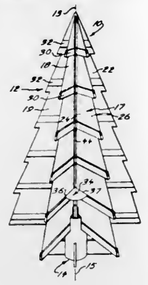
A calendar display mechanism adapted to be mounted on the wrist band of a watch or similar device comprising a unitary casing having a curvature on the undersurface adapted to conform to the curvature of the wrist band, the upper surface of the casing providing in its intermediate portion a display area over which a flexible calendar may pass. At opposite ends of the display area a hollow cylindrical portion is provided to house the opposite ends of the calendar strip and spindles are mounted coaxially therein to store and afford displacement of the strip to thereby enable display of the different portions of

the strip containing different months. The spindles are provided with exterior knobs at one end and are journaled in the endwalls of the hollow cylindrical portions of the casing.

3,797,149
GREETING CARD DISPLAY DEVICE

Alexander Robert Morrison, 358 E. 63rd Ave., Vancouver, British Columbia, Canada

Filed Mar. 5, 1973, Ser. No. 337,938
Int. Cl. G09f *1/10*
U.S. Cl. 40—124.2 **10 Claims**

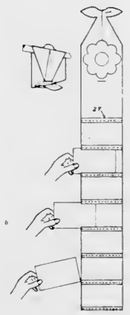


Greeting card display device that simulates Christmas tree when extended, and can be folded generally flat for storage. Device has crown portion having hinged card holders extending radially therefrom, pockets on card holders to accept cards for display. Cylindrical trunk portion has upper end with axial slots to accept card holders, and lower end with axial slots to accept leg portions. Card holders are hinged together by staggered integral hinges or are secured together by spring clip passing through card holder slots in register with each other. Leg portions are flat sheet members with compatible slots, or bent wire members having fingers to grip crown portion and legs to contact ground.

3,797,150
DISPLAY APPARATUS

Sandrajeanne Bushell Hinckley, 11711 E. Florence Ave. Apt. 27, Santa Fe Springs, Calif.

Filed Mar. 9, 1970, Ser. No. 7,178
Int. Cl. G09f *1/10*
U.S. Cl. 40—124.4 **7 Claims**



A display apparatus for greeting cards or snapshots consisting of a strip of material, preferably felt, containing partitions which enable the cards or snapshots to be exhibited while the display apparatus is hung in a vertical position. The display apparatus, upon which can also be buttons pinned and ribbons attached, is suspended by its own versatile loops from a wide variety of supporting structures.

3,797,151
STRANDED MOTORISTS' SIGN

Halton B. Dexter, 2632 S. Third St., Louisville, Ky.

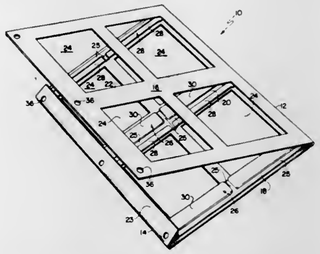
Filed Dec. 6, 1971, Ser. No. 204,960
Int. Cl. G09f *7/00*
U.S. Cl. 40—129 C **3 Claims**

Discloses a stranded motorists' distress sign for use by motorists stranded on the interstate highway system. The sign comprises a board carrying a visible distress legend which is supported by a base member. A magnetized mounting means is utilized for mounting the sign to the metallic top of an automotive vehicle, so as to be visible to passing motorists, who can send help to the location.

3,797,152
PHOTOGRAPH ALBUM PAGE

Edison R. Brandt, Cohasset, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 23, 1971, Ser. No. 211,252
Int. Cl. G09f *1/10*
U.S. Cl. 40—158 R **4 Claims**



An album page for photographs formed of a single folded plastic sheet containing a plurality of picture cut-outs on either side. Photographs are inserted on the inside of the page behind the respective cut-outs which conform to the size of the film format. The photographs are releasably retained in pockets formed above and below each cutout on the interior of the page. The page is folded in half and, in a preferred embodiment, may be held closed by tucking the front of the page underneath a folded portion of the back of the page with the mounted photographs facing outwardly.

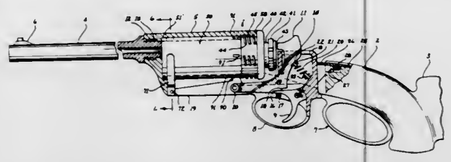
3,797,153
ROTARY SHELL CHAMBER

Edward A. Hagan, 617 LaVilla Pl., Tucson, Ariz.

Filed Dec. 18, 1972, Ser. No. 316,119
Int. Cl. F41c *1, 11/00, 7/00*
U.S. Cl. 42—27 **8 Claims**

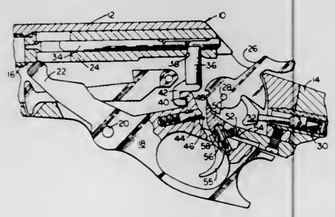
A rotary shell chamber for use in firearms is disclosed. The rotary shell chamber housing loaded shells is secured within a rifle, such as a lever action rifle, by a breech plug. The breech plug, through a plurality of locking lugs, locks the chamber and the shells disposed therein within the receiver of the rifle to effect a positive lock up as strong as conventional bolt ac-

tion rifles. The breech plug is rotatable to disengage from the receiver and is laterally pivotable to permit rearward extrac-



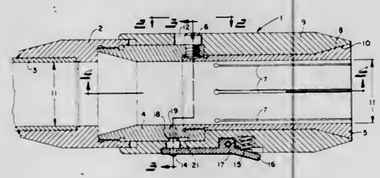
tion and reloading of the chamber. The lever action, acting through a pawl arrangement, rotates the chamber to position an unfired shell in alignment with the barrel.

3,797,154
SEAR-DISCONNECTOR FOR LEVER-ACTION FIREARMS
Louis W. Seecamp, New Haven, Conn., assignor to O. F. Mossberg & Sons, Inc., North Haven, Conn.
Filed Mar. 26, 1973, Ser. No. 344,936
Int. Cl. F41c *19/00*
U.S. Cl. 42—69 B **4 Claims**



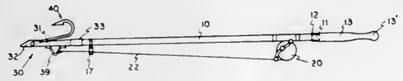
A sear-disconnector for lever-action firearms for preventing accidental discharge of the firearm when the finger-lever is manipulated in order to load the chamber and cock the hammer, wherein the trigger is mounted on the finger-lever and is provided with a plunger which is normally located in an actuating position to disengage the sear from the hammer, but which resiliently engages an abutment surface on the sear if the trigger is retracted as the finger-lever is being closed, thereby preventing the plunger from moving into its actuating position until the trigger is released.

3,797,155
AUTOMATIC SHOTGUN CHOKE
Jessop Smith, Gates Mills, and Thomas R. Kocis, Streetsboro, both of Ohio, assignors to Triple-S Development Co., Inc., Wickliffe, Ohio
Filed Nov. 22, 1972, Ser. No. 308,831
Int. Cl. F41c *21/00*
U.S. Cl. 42—79 **6 Claims**



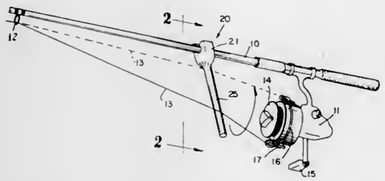
An automatic shotgun choke characterized in the provision of a choke member adapted to be secured to the muzzle end of a shotgun barrel; a recoil and spring actuated choke operating sleeve around said choke member; and a gas pressure actuated latch on said choke sleeve engaged in a first recess in the choke member which retains said sleeve and choke member with the latter in open bore condition until after the initial shot is fired, at which time, the latch is actuated by the gas pressure of the initial shot to automatically release the sleeve and choke member for relative spring and recoil actuation to full choke position. In the full choke position, the latch engages a second recess in the choke member so that the second and succeeding shots will be fired under full choke conditions. Whenever desired, the latch may be disengaged from the second (full choke) recess and the choke sleeve moved against spring pressure to open bore position at which it is latched and exposed to gas pressure when the next shot is fired. The automatic shotgun choke herein is further characterized in that the choke sleeve may, upon disengagement of the latch from the first (open bore) recess, be rotated to open bore position and whereat the latch engages a third recess in the choke member but is not exposed to gas pressure and hence the choke assembly will remain in open bore position for any number of shots until such time that the choke sleeve is manually shifted to automatic choke position with the latch engaged in the first (open choke) recess.

3,797,156
FLYING FISH GAFF
Michael Telech, Beaufort, S.C., assignor to James H. Moss, Beaufort, S.C., a part interest
Filed June 9, 1972, Ser. No. 261,359
Int. Cl. A01k *97/14*
U.S. Cl. 43—5 **10 Claims**



An improved flying fish gaff comprising an elongated, hand held rod with a tip removably secured to one end thereof. Hook means is pivotally secured to the tip and is normally disposed parallel to the tip where a barbed point is exposed for implanting same in a fish body. A flexible retrieval means is secured at one end to the tip and at an opposite end to a reel means mounted on the rod. Once a fish is impaled on the hook means, the hook means pivots around the tip and extends therefrom; the tip is pulled from the rod and the retrieval means plays out from the reel means. Thereafter the fish may be landed by proper manipulation of the reel means.

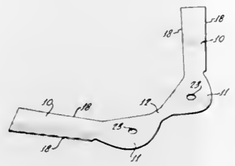
3,797,157
JIGGING ATTACHMENT FOR FISHING RODS
Joseph Semich, 2640 Parkwood Dr., Speedway, Ind.
Filed Oct. 13, 1972, Ser. No. 297,271
Int. Cl. A01k *87/00*
U.S. Cl. 43—19.2 **6 Claims**



A jigging attachment for a fishing rod equipped with a spinning reel consisting of a head formed with a longitudinal bore opening radially through a longitudinal slot, the head being resilient so that the rod may be snapped through the slot into and out of the bore where it may be frictionally gripped, and an integral stem substantially perpendicular to the head

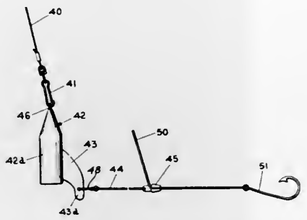
bore so that the stem may be adjustably positioned on the rod near the reel to extend at a selected angle away from the plane which is common to the rod and the spindle of the reel to divert the line during retrieval thereof onto the reel spindle.

3,797,158
ROLLER TIP FOR FISHING RODS
Otto Immenroth, La Habra, and Robert C. Eschbach, Newport Beach, both of Calif., assignors to Axelson Fishing Tackle Mfg. Co., Newport Beach, Calif.
Continuation of Ser. No. 44,085, June 8, 1970, abandoned. This application Aug. 21, 1972, Ser. No. 282,124
Int. Cl. A01k *87/04*
U.S. Cl. 43—24 **7 Claims**



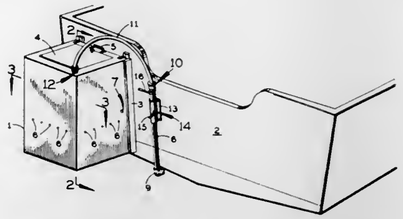
A roller tip comprising a single piece of sheet metal formed and bent into parallel frame sides which are flanged to prevent wear on the line. Each frame side is integral with a semitubular sleeve side portion, and such side portions are connected to each other at upper and lower seams in order to form a sleeve adapted to receive the tip of a fishing rod. A roller is rotatably mounted between the frame sides, by means of axle means extending perpendicularly to such sides. The frame sides are integral with opposite ends of a bridge disposed above the roller and preventing the line from leaving the roller tip, such bridge being so constructed that the portion thereof lying in a medial plane between said frame sides is generally parallel to a tangent to the roller, such tangent intersecting an extended axis of the sleeve on the opposite side of the axle means from such sleeve.

3,797,159
APPARATUS FOR CONTROL DEPTH FISHING
James E. Rieth, 2315 Okemos Dr., S.E., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 20,934, March 19, 1970, Pat. No. 3,614,016. This application Feb. 16, 1971, Ser. No. 115,297
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.12 **9 Claims**



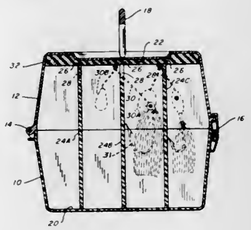
A reel of large diameter and having a handle is mounted on a base. A steel control line is wound onto the reel. Secured to the end of this line is a heavy weight having a stabilizing fin projecting therefrom. A release or clip line having a clip secured thereto is fastened to an aperture in the stabilizer fin. The clip is fastened to a line having a lure thereon which is actually used for fishing.

3,797,160
SELF FLUSHING LIVE BAIT CONTAINER FOR POWER BOATS
Edgar R. Lewis, Jr., 6690 S.W. 98 St., Miami, Fla.
Filed Sept. 5, 1972, Ser. No. 286,616
Int. Cl. A01k *97/04*
U.S. Cl. 43—55 **3 Claims**



This invention comprehends a container for holding live bait in near normal environment slidably secured to a power boat for manually lowering the container for natural circulation of water therethrough when the boat is not moving. The container may be manually raised above the water and is supplied with a flow of water by a manually controlled water scoop when the boat is underway. The water scoop is separately mounted, and is vertically movable by camming means.

3,797,161
STORAGE BOX FOR FISHING LURES
Ross H. Smallwood, 2935 S. Peoria, Tulsa, Okla.
Filed Nov. 10, 1972, Ser. No. 305,278
Int. Cl. A01k *97/06*
U.S. Cl. 43—57.5 R **2 Claims**

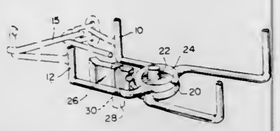


A tackle box for housing fishing lures including a box lower portion, a hinged upper portion, and a plurality of vertical panels spaced apart and parallel from each other positioned in the bottom box portion, the upper edge of each of the panels having a plurality of vertical spaced apart slots of sufficient width to receive the wire or hook portion of a fishing lure.

3,797,162
RELEASABLE MOUNT MEANS FOR ANIMAL TRAP
Frank Ralph Conlbear, 2170 Evergreen Pl., Victoria, British Columbia, Canada
Filed Apr. 24, 1972, Ser. No. 246,526
Int. Cl. A01n *23/28*
U.S. Cl. 43—90 **10 Claims**

An improved pivot means for a rotating frame animal trap wherein at least one of the sockets or apertures in which the pivot pins are rotatively seated are substantially enlarged to allow limited translatory, as well as rotative, motion of the pins therein when the trap is fired. This feature permits the trap frames to adjust relative to one another in response to an obstruction in one of the pairs of jaws, so that the other pair of jaws closes more tightly than otherwise would have been

possible. Additionally, to facilitate its mounting, a bearing surface is fixed to such a trap or a known rotating frame trap, when the trap has an actuator associated with just the upper pair of adjacent frame ends. The bearing surface is fixed to one of the lower frame ends and adapted to cooperate with the other spaced apart lower frame end when the trap is in set



position, to clamp about a mounting post, and thereby firmly hold the trap in upright position until the trap is fired. Notch-like means are formed in either the bearing surface or the corresponding portion of the other lower frame end to facilitate clamping of the post therebetween. When the trap is fired, the mounting post is no longer so clamped and the trap can fall free of it.

3,797,163

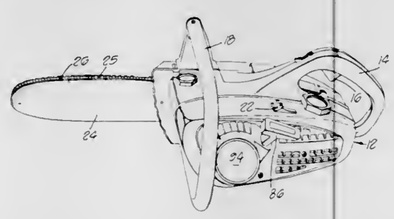
TOY CHAIN SAW WITH SOUNDERS FOR SIMULATING IDLING AND CHAIN SAW DRIVING NOISES

Leonard H. McRoskey; John W. McRoskey, both of Los Angeles, and Delbert D. Swartz, Torrance, all of Calif., assignors to Republic Tool & Manufacturing Corp., Los Angeles, Calif.

Filed Mar. 31, 1972, Ser. No. 240,062

Int. Cl. A63h *33/30*

U.S. Cl. 46—39 **15 Claims**



A miniaturized toy chain which closely simulates the appearance, operation and running sounds of a full sized chain saw, but which is completely safe having a harmless ball chain running in a groove within the periphery of an elongated blade which protrudes forwardly from a housing or body portion. The operational sequences, including starting the small electric motor which powers the toy by pulling a pull cord, initiating the rotation of the ball chain by squeezing a trigger on a handle provided on the housing and stopping the motor by operating an on-off switch, realistically simulate the operational sequence of a conventional chain saw. A sound emitter is provided within the housing to appropriately simulate both the idling and running sounds of an internal combustion engine of the type generally used in conventional chain saws.

3,797,164

TOY VEHICLE LAUNCHING STATION

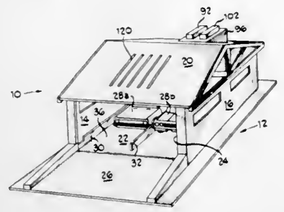
Marvin I. Glass, Chicago; Robert McKay, Morton Grove, and Jeffrey Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 27, 1972, Ser. No. 292,649

Int. Cl. A63h *17/44*

U.S. Cl. 46—232 **8 Claims**

A toy vehicle launching station configured to simulate a garage and having a pair of launching plungers movable between a retracted, cocked state and a released, extended state and a sound producing means in the form of a siren and associated with trigger means for activating the siren and



releasing the plungers from a cocked state to launch a vehicle thereby.

3,797,165

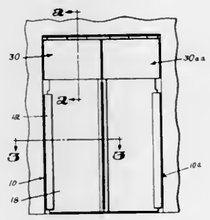
DOOR IN COMBINATION WITH A TRANSOM CLOSURE FLAP

August James Kochis, Concord, Mass., assignor to Eckel Industries, Inc., Cambridge, Mass.

Filed May 10, 1972, Ser. No. 251,942

Int. Cl. E01f *13/00*

U.S. Cl. 49—9 **3 Claims**



A resilient door is used in combination with a flexible closure flap to close a transom space, and that is mounted on a header or adjoining structure above the door. Said flap normally rests on or is closely adjacent, the upper edge of the door to close off a room, and has a projecting tongue that is held by two retaining sheets that are cemented thereto, and cemented to each other above said tongue.

3,797,166

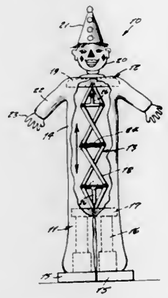
SPRY SPRINGY SPROUTING CLOWN

Adele Murray, 4480 Turney, Cleveland, Ohio

Filed Dec. 29, 1971, Ser. No. 213,347

Int. Cl. A63h *11/00*

U.S. Cl. 46—119 **1 Claim**



A toy in the form of a doll that maybe designed to represent a clown, the doll being readily expandable in height from a

contracted short size, the device comprising an upper and lower portion of a doll having an intermediate portion there between consisting of a lazy tong construction fitted with a spring, the outer side of the doll being fitted with a clothes fabric having sufficient slack around the intermediate portion so to permit the doll to expand into its elongated condition when a child simply depresses a front button for activating the lazy tong spring.

3,797,167

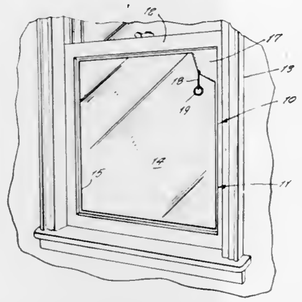
FIRE ESCAPE WINDOW

Franz Gomboc, 675 Valour Rd., Winnipeg 10, Manitoba, Canada

Filed Mar. 7, 1972, Ser. No. 232,429

Int. Cl. E06b *3/32*

U.S. Cl. 49—141 **1 Claim**



An improved window pane for a house or building so to permit a person to quickly escape outward therethrough without need to raise the window sash in case of a fire; the window pane consisting of a transparent clear plastic panel molded within a rigid rubber frame that fits into the window sash, the edge of the panel being scored or perforated, and one corner of the panel being secured to one end of a pull cord which at its other end is attached to a ring for being conveniently pulled by a person to rip out the transparent panel from the frame so to quickly make an access opening through which he can escape out of the house or building.

3,797,168

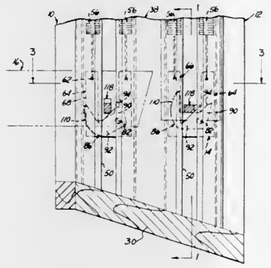
AUTOMATICALLY-LOCKING POSITIVELY-UNLOCKED SASH BALANCE

Donald M. Trout, 15750 Meyers Rd., Detroit, Mich.

Filed Oct. 21, 1971, Ser. No. 191,378

Int. Cl. E05d *15/22, 13/12*

U.S. Cl. 49—181 **10 Claims**



A double-hung tiltable sliding sash window installation has elongated sash guides mounted on opposite sides of its window frame, the sash guides on at least one side of the window frame having elongated longitudinally-slotted spring casings associated therewith. Secured to the upper end of each spring casing is an elongated sash balancing spring, the lower end of which is connected to a locking device therefor including an elongated slide body having an elongated longitudinal opening therein. Pivotally mounted on a pivot element offset laterally from the central axis of the slide body is an approximately J-shaped bent locking lever having on one side of said pivot element a bent locking arm with an arcuate externally-serrated locking portion at its outer end disposed excentrically to said pivot element and having on the opposite side of said pivot element a cam arm inclined at an obtuse angle to said locking arm. The serrations on the excentric arcuate outer edge of the bent locking arm are adapted to be pulled forcibly into locking engagement with the adjacent side wall of the balancing spring casing by the sash-balancing spring in response to the tiliting of the sash and the consequent tilting of a flat-sided trunnion key secured thereto. This trunnion key is insertable through the elongated slot in the sash balancing spring casing and through the opening in the slide body into engagement either with the cam arm or with the bent locking arm of the locking lever.

When the sash and its trunnion keys are swung away from the plane of its sash guides into a tilted position, the trunnion key within the balancing spring casing rotates and operatively engages the contact arm of the locking lever so as to forcibly swing its serrated excentric arcuate locking portion into locking engagement with the adjacent side wall of the spring casing. Swinging of the sash back into the plane of the sash guides and the consequent swinging of the trunnion key causes the trunnion key within the sash balancing spring casing to rotate in the reverse direction and engage the inclined cam arm of the locking lever whereupon a downward push on the sash forcibly swings the locking portion of the locking arm of the locking lever out of locking engagement with the adjacent side wall of the spring casing, thereby releasing the thus-unlocked sash to move freely upward or downward. This locking and unlocking action occurs whether or not the sash is completely removed from the window frame as for repair purposes or is only tilted relatively thereto for cleaning.

3,797,169

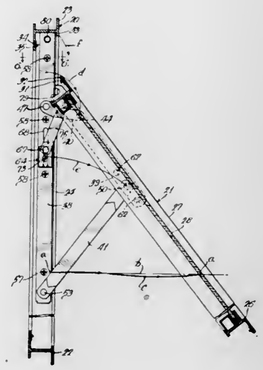
WINDOW HINGE

Henry P. Armstrong, Etobicoke, Ontario, Canada, assignor to Truth Incorporated, Owatonna, Minn.

Filed Oct. 19, 1972, Ser. No. 299,107

Int. Cl. E05d *15/40*

U.S. Cl. 49—248 **1 Claim**



A hinge for pivotally supporting a window sash for angular opening and closing movement relative to a window frame, including first and second links pivotally mounted on the window frame and pivotally connected to the window sash, a friction device slidably mounted on the window frame indepen-

dent of the pivotal mounting of the first and second links on the window frame, a third link pivotally connected to the friction device and pivotally connected to one of the first and second links so that the friction device retards movement of the sash, and coacting cam means including a roller mounted on the window frame and a cam yoke on the window sash operable to hold the sash closed and also arrest inward movement of the sash as it is swung toward open position. A pair of hinges are required along opposite edges of a sash.

3,797,170

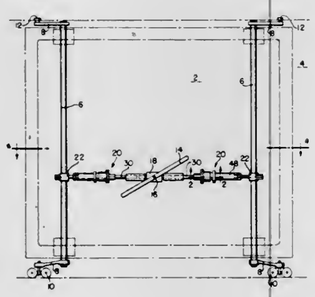
LOCKING ASSEMBLY FOR SLIDING PLUG DOORS

Lucien W. Lemon, Renton, Wash., assignor to Paccar Inc., Bellevue, Wash.

Continuation-in-part of Ser. No. 250,781, May 8, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,730, Sept. 20, 1971, abandoned. This application Oct. 12, 1972, Ser. No. 296,788

Int. Cl. E05d *15/10*

U.S. Cl. 49—220 **2 Claims**



A locking assembly for sliding plug doors including a pair of vertical door supporting members mounted to lever arms allowing movement of the door in a direction perpendicular to the side of the car into and out of a tapered framework. The locking mechanism includes a pair of elongatable or extensible members which cause the lever arms to pivot about their axis, thus securing the door in the door opening. The members, through the use of a screw and ball nut, are capable of exerting sufficient outward force upon the closing lever mechanism to minimize the necessity for a secondary locking means, and considerably reduce the external force required by the operator to close and open the door. In the event that security demands a secondary locking means, vertically spaced locking bars may be provided. The secondary locking bars will be operated by the same screw and ball nut mechanism which operates the locking assembly, thus combining the two operations. Safety hangers are provided to prevent dislodgment of the door in the event the crank arms become disengaged or are broken.

3,797,171

GARAGE DOOR OPENER

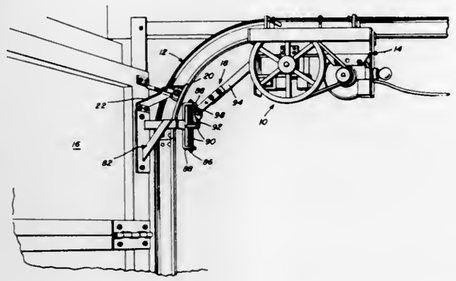
Richard L. Farmer, Rt. 2, Box 357-14, Tacoma, Wash.

Filed Aug. 25, 1972, Ser. No. 283,764

Int. Cl. E05f *15/16*

U.S. Cl. 49—360 **14 Claims**

A door operating device having two identical sets of rollers spaced from one another along a guide rail. Each set of rollers has a roller engaging a surface of the guide rail, and another, opposed roller engaging another surface of the same guide rail. A frame supported by the rollers for movement therewith has mounted thereon a reversible motor and a drive train for transmitting power from the motor to a roller of each of the roller sets. A bar connected to the frame is attached to a shock absorbing arrangement mounted on a door to be opened and closed by the device. A control system including limit switches



on the frame and triggering members associated with the rail limits and reverses movement of the device along the rail.

3,797,172

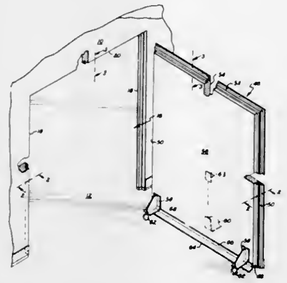
ARRANGEMENT FOR PROVIDING ACCESS TO A SEALED INCUBATOR SYSTEM

Robert W. Cannon, 6565 Joseph St. S.E., Salem, Oreg.

Filed July 24, 1972, Ser. No. 274,621

Int. Cl. E06b *3/32*

U.S. Cl. 49—463 **10 Claims**



A door releasably mounted to a wall forming a part of an enclosure of a chamber of a sealed incubator system. The door is supported on a floor on casters so as to enable the door, in its entirety, to be moved on the floor into and out of a door opening in the wall. The door opening has jambs, and the door has sides and a top. Gaskets mounted to the door sides and the door top bear against the door sides and the door top bears against the door jambs when the door is located in the door opening to seal the sides and the top of the door in the door opening, and permanent magnets embedded in the gaskets are magnetically attracted to the door sides and the door top to releasably retain the door in the door opening. A resilient strip mounted to the bottom of the door bears against the floor to seal the bottom of the door in the door opening. The casters are mounted on brackets that are attached to the door opening. The door and the brackets are assembled by mounting the brackets to the door while the door is propped in the door opening with the sides and the top of the door bearing against the door jambs, and the bottom of the door spaced from the floor in such a manner that the casters are supported on the floor.

3,797,173

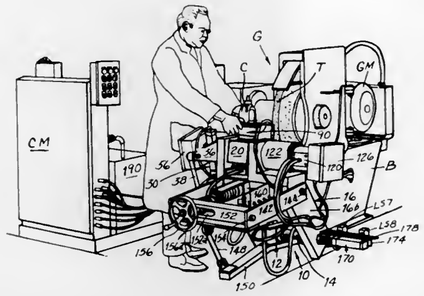
WORK HOLDING, POSITIONING, AND FEEDING MECHANISM

George H. Pettee, Sterling, and Edward R. Blake, Worcester, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation of Ser. No. 59,433, July 30, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,578

Int. Cl. B24b *7/00*

U.S. Cl. 51—3 **22 Claims**



A semi-automatic programmed cam controlled fluid actuated mechanism which holds, sequencially positions and pressure feeds various portions of rough workpieces such as, foundry castings, and forgings into a multi-pointed cutting tool of a machine tool for snagging gates, risers, sprues and other unwanted material therefrom. The mechanism is adapted to be fixed adjacent the cutting tool of a machine and can move the workpiece in a number of different directions about a plurality of axes to perform the necessary operations in any desired preselected programmed sequence. Workholders designed for each specific casting can be interchangeably mounted on the work support. Control means comprising programmable stepping switches, with numerous contacts and easily adjustable cams actuating fixed limit switches are provided to actuate various fluid directional valves, fluid motors, and movable components in the proper sequence and directions to produce the desired motions.

3,797,174

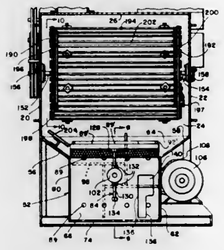
SHOT CLEANING MACHINE

Ronald D. Hazlewood, Lindsborg, Kans., assignor to Vacu-Blast Corporation, Belmont, Calif.

Filed Dec. 15, 1971, Ser. No. 208,185

Int. Cl. B24c *3/14*

U.S. Cl. 51—9 **14 Claims**



A shot cleaning machine of the type wherein shot is cyclically impelled by a rotary impeller to impinge upon the contents of a rotatable reticulated basket, with spent shot being returned to the impeller, with the machine being specially provided with rotary means coupled to the impeller for automatically regulating the rate of return of spent shot to the impeller to be largely a function of the rate of rotation of the impeller so that when the latter is decelerated and stopped the rate of shot fed thereinto is reduced so that the latter does not become so loaded with shot as to become difficult or impossible to restart.

3,797,175

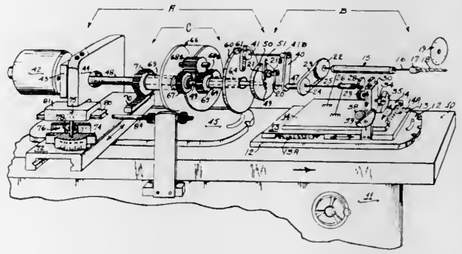
SPIRAL AND RADIAL RELIEF GRINDING FIXTURES WITH COAXIAL PLANETARY DIFFERENTIAL DRIVE

Frank G. Nicolaus, and Charles T. Breitenstein, both of Chicago, Ill., assignors to Spiral Step Tool Company, Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 182,757, Sept. 22, 1971, abandoned. This application Sept. 20, 1972, Ser. No. 290,742

Int. Cl. B24b *3/24*

U.S. Cl. 51—95 LH **14 Claims**



Cooperative driving and driven grinding and form-relieving fixtures are disclosed suitable for selective spiral grinding with both radial and end relief on spiral or straight-fluted tools such as drills, reamers, end mills, counter bores, and the like. The driving fixture embodies a differential modulating system including a single power shaft completely traversing the rotative axis of the carrier or housing of a novel differential gear unit which is coupled to the relieving fixture by concentric independently separable coupling cranks, one of which transmits the differentially modulated motor driving torque to a work spindle, and the other of which transmits a constant motor shaft torque to a sine-bar cam system on the relieving fixture for simultaneously reciprocating two cross slide tables which mount the work spindle and impart simultaneously longitudinal and lateral or radial motions to the work spindle while the latter is being rotated through the differential drive system. The concentric crank means can be selectively decoupled and/or the differential modulation can be adjusted to procure a variety of complex or simple motions of the work spindle.

3,797,176

DUAL-CYCLE CAM GRINDING MACHINE WITH ELECTRICAL PULSE OPERATED WHEEL FEED

George E. Wespi, Holden, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

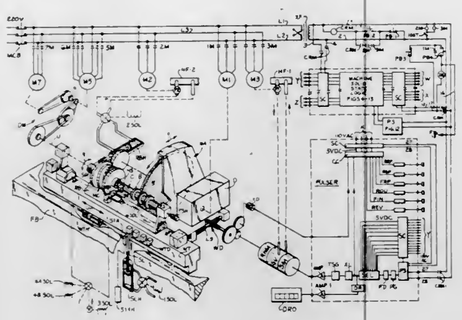
Continuation-in-part of Ser. No. 60,288, Aug. 3, 1970, Pat. No. 3,701,220. This application Jan. 17, 1972, Ser. No. 218,359

Int. Cl. B24b *19/12*

U.S. Cl. 51—101 R **11 Claims**

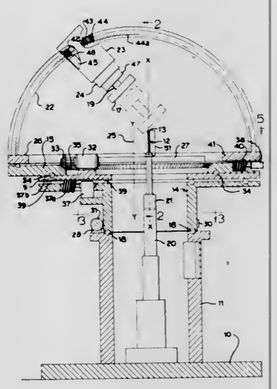
Improved dual-cycle camshaft grinding machine, method of operation thereof, and improved wheel feed control sub-assembly therefor with a grinding wheel feed driven by an electro-hydraulic pulse motor regulated by open loop numerical control. Solid state machine logic regulates the initiation of

open loop wheel feeding steps and controls related machine functions. Hand control for purposes of calibration setup is ac-



complished through the automatic controls eliminating the redundant handwheel and like manual controls of the art.

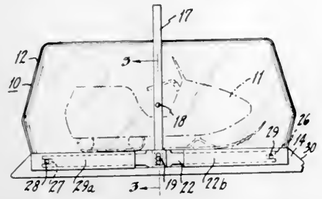
3,797,177
GEM FACETING APPARATUS
Douglas L. Hoffman, W. 3507 La Crosse, Spokane, Wash.
Filed Feb. 2, 1972, Ser. No. 222,731
Int. Cl. B24b *9/16*
U.S. Cl. 51—120 **17 Claims**



A faceting apparatus capable of automatically cutting a predetermined pattern of facets on rough gems. The machine basically includes a gem holder and an angularly adjustable and movable grinding surface. The gem is held at a stationary location while the grinding surface is movable in orientation for cutting a series of pre-selected angular facets. The gem itself might also be angularly indexed and axially located relative to the grinding surface to control depth of cut during a grinding step.

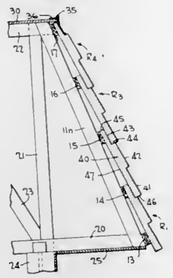
3,797,178
VEHICLE SHELTER EMPLOYING A DUAL OPERATING SELECTIVE HINGE APPARATUS
James Mule, 35 Lopatcong Dr., Trenton, N.J.
Filed Feb. 12, 1973, Ser. No. 331,650
Int. Cl. E04b *7/16*
U.S. Cl. 52—66 **10 Claims**

There is disclosed a portable vehicle shelter for snowmobiles and similar vehicles which comprises a cover member pivotally mounted on a frame assembly operated by means of a lever controlled assembly which can selectively form a hinge with first and second pin assemblies mounted on the frame to



enable opening of said cover member from either a first or second side of said shelter.

3,797,179
MANSARD ROOF STRUCTURE
Norman G. Jackson, 2609 N.W. 19th St., Fort Lauderdale, Fla.
Filed June 25, 1971, Ser. No. 156,653
Int. Cl. E04b *7/02;* **E04d** *1/36*
U.S. Cl. 52—90 **5 Claims**

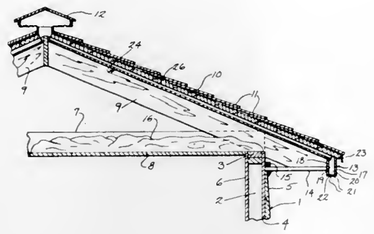


Disclosed is an improved mansard type roof and a method of installing same. Roofing panels, made of expanded clay, foam, waterproofing, and wire mesh are provided in a form and shape that permits the panels to be assembled in horizontal rows with the upper and lower edges of adjacent panels overlapping to provide a watertight joint. Special vertical connection members are provided to assure watertight sealing between the vertical edges of adjacent panels and special means are provided to join the top row of roofing panels to the flat portion of the roof that overlies the majority of the building or house. The construction and installation of the roofing panels according to the disclosed method eliminates the need for separate waterproofing membranes and insulating layers and provides a fire resistant, waterproof roof of any desired color and surface configuration.

3,797,180
VENTILATED ROOF CONSTRUCTION
Howard L. Grange, P. O. Box E, Darlington, Wis.
Filed July 17, 1972, Ser. No. 272,380
Int. Cl. E04b *7/18;* **E04d** *13/06*
U.S. Cl. 52—95 **8 Claims**

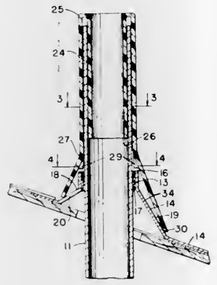
A roof construction employs a continuous corrugated baffle between adjacent parallel spaced roof members which is secured between the roof deck and the roof members. The baffle may extend from the facia to the ridge or any intermediate area therebetween and provides at least one channel between adjacent roof members for conducting air from the facia to a vent at the ridge to prevent the formation of ice dams on the roof in the winter as well as providing an interior flashing for collecting and removing water which incidentally

seeps through the roof deck. A second embodiment employs a continuous sheet as a baffle while a third embodiment em-



ploys a continuous sheet having spacing fins for forming the channels.

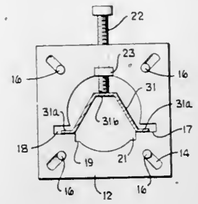
3,797,181
ROOF VENT PIPE SHIELD
Frank J. Nievelt, Troy, Mich., assignor to Zelda Nievelt, Royal Oak, Mich.
Continuation-in-part of Ser. No. 490,382, Sept. 27, 1965, abandoned. This application Oct. 10, 1966, Ser. No. 585,412
Int. Cl. E04d *13/08*
U.S. Cl. 52—105 **10 Claims**



A shield for protecting a roof vent pipe has an outer cylindrical sheath extending downwardly for a substantial distance with a substantially uniform outer diameter and terminating at the bottom in a flaring portion adapted to contact with the sealing base of the vent pipe. The upper end is inturned to form an inner cylinder extending downwardly for a distance substantially greater than the outer diameter of the outer cylinder. The vent pipe is thereby enclosed between the outer and inner portions of the shield. The shield is preferably molded from a non-metallic material such as polypropylene plastic.

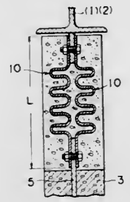
3,797,182
POST ANCHOR
Edward C. Eichstaedt, 31 New Britain Ave., Ormond Beach, Fla.
Filed Oct. 30, 1972, Ser. No. 302,055
Int. Cl. E02d *5/74*
U.S. Cl. 52—156 **3 Claims**

Disclosed is an anchor or stabilizer for fence posts, or the like, which is provided with an aperture to receive the post, the aperture having a configuration such that the anchor can



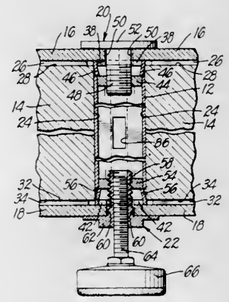
universally be used on posts of round, rectangular or channel-shaped cross-section.

3,797,183
BEARING WALLS AND CONNECTING MEMBERS THEREFOR
Shoichi Kobayashi; Ikuo Yamaguchi, and Katuyoshi Konami, all of Tokyo, Japan, assignors to Takenaka Komuten Company, Ltd., Osaka-shi, Osaka-fu, Japan
Filed Dec. 1, 1971, Ser. No. 203,635
Int. Cl. E04b *1/98*
U.S. Cl. 52—167 **6 Claims**



Reinforced bearing walls wherein the reinforcing is at least two steel sheets which have been previously bent, but when mounted are symmetrical along a center line in the bearing wall, and provisions for connecting the bearing walls to other structural members.

3,797,184
PARTITION ASSEMBLY
Richard Thompson, 538 Ridgeway Rd., Lake Oswego, Oreg.
Filed Nov. 29, 1972, Ser. No. 310,216
Int. Cl. E04b *2/76*
U.S. Cl. 52—239 **8 Claims**



A partition assembly including a tubular post, panels respectively having vertical edges engaging opposite sides of

the post, top stringers respectively overlying the upper edges of the panels and respectively having ends interlocked with the tubular upper end of the post, bottom stringers respectively underlying the lower edges of the panels and respectively having ends interlocked with the lower tubular end of the post, an upper screw threaded into a nut in the upper tubular end of the post and clamping the ends of the top stringers to the upper tubular end of the post, and a bottom screw threaded into a nut in the lower tubular end of the post and clamping the ends of the bottom stringers to the lower tubular end of the post. The vertical edges of the panels are spaced apart to provide a gap therebetween and the post is provided with vertically spaced openings accessible through the gap, various shelf or bin units, or the like, carrying hangers which extend through the gap into desired ones of such openings. The hangers are laterally offset from the units so that they can be inserted into the same openings in the post so that the units can be at the same level.

3,797,185

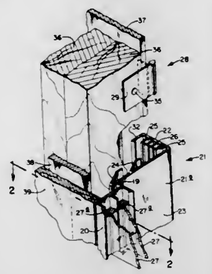
LINER FOR COVERING INTERSECTING SURFACES

Joseph N. La Borde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 22, 1971, Ser. No. 191,871

Int. Cl. E04f *19/02*

U.S. Cl. 52—288 **8 Claims**



A liner for covering one of two intersecting surfaces. The liner includes a face for attaching to a wall, a return connected to the face, and a spring connected to the return or to the face.

3,797,186

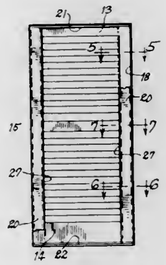
FABRICATED PLASTIC PANELS

Lester L. Smith, Peoria, Ill., assignor to H C Products Co., Princeville, Ill.

Filed Feb. 24, 1970, Ser. No. 13,387

Int. Cl. E06b *7/08*

U.S. Cl. 52—314 **2 Claims**



A panel fabricated from sheet plastic to resemble a wooden louvered shutter or door, one side and the four edges being made as a single sheet. Special box-like plastic extrusions disposed along the sides, in the case of the shutter, and along the sides, top and bottom, in the case of the door, are adhered to the plastic sheet to give rigidity to the sheet and finished panel. The box-like extrusions have a hollow rectangular cross section, with one or more integral webs extending across the section.

3,797,187

DEVICE FOR FIXING PIECES OF JOINERY TO CONCRETE PANELS

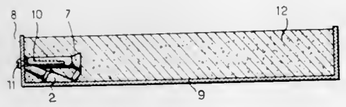
Giuseppe Cennerelli, 8 Cite Jean Gremillon, 93 Bobigny, France

Filed Jan. 6, 1972, Ser. No. 215,840

Claims priority, application France, Jan. 6, 1971, 71.00231

Int. Cl. E04b *1/41*

U.S. Cl. 52—375 **6 Claims**



A device for fixing pieces of joinery to concrete panels, including a tubular member adapted for being embedded in the panel and having two bevelled opening ends, one of said ends opening on the face of the pannel, which supports the piece of joinery, whereas other end opens on the side face of the panel, and an anchoring member at right angles with the said supporting face. The tubular member lodges a securing screw.

3,797,188

BRACKET STRUCTURE FOR ELASTIC EXPANSION GAP SEALING DEVICES

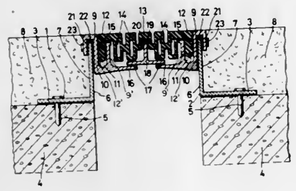
Hans Mansfeld, Heilingenhaus, Germany, assignor to Firma Migua Mitteldeutsche Gummi-und Asbestgesellschaft Hammerschmidt & Co., Heiligenhaus, Germany

Filed Mar. 23, 1972, Ser. No. 237,289

Claims priority, application Germany, Mar. 27, 1971, 2114956

Int. Cl. E04f *15/14;* **E01c** *11/10*

U.S. Cl. 52—396 **5 Claims**



The present bracket means are constructed for supporting an elastic sealing body in an expansion gap, for example, in a floor. Angular sections are preferably attached to the walls of gap forming floor members. Sectional members are attached to the angular sections so that channel forming legs thereof point toward the open face of the gap while a lateral extension of each sectional member points towards the center of the gap. The lateral extension provides a gliding bearing for a support member connected to the sealing body.

3,797,189

LIGHT-WEIGHT ROOFING AND SIMILAR STRUCTURES

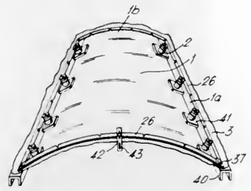
Fritz Schnebel, Post Frasdorf, D 8207 Greimelberg 75a, Germany

Filed Jan. 11, 1973, Ser. No. 322,652

Claims priority, application Germany, Jan. 11, 1972, 2201011

Int. Cl. E04b *1/38*

U.S. Cl. 52—479 **12 Claims**



A light-weight roofing or similar structure, particularly for roofing sports grounds, exhibition halls and other large areas, has a generally planar supporting net or network, cover sheets each having a barrel-like curvature, anti-vibration devices securing the straight edges of the cover sheets to the net or network, and sealing strips sealing mutually adjacent curved edges to one another and mutually adjacent straight edges to one another.

3,797,190

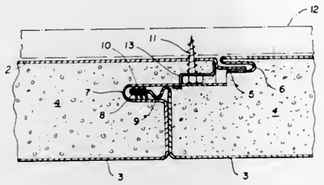
PREFABRICATED, INSULATED, METAL WALL PANEL

R. Donald Widdowson, Pittsburgh, Pa., assignor to Elwin G. Smith Division-Cyclops Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1972, Ser. No. 279,469

Int. Cl. E04c *2/13, 2/26*

U.S. Cl. 52—595 **1 Claim**



A prefabricated, insulated, metal wall panel of foamed polyurethane or the like having an exterior metal wall panel portion laterally offset from an interior metal wall portion and so constructed that when identical panels are joined side-by-side by two pairs of male and female detachable fasteners, said panels will remain in spaced insulating relationship, whereby cold or hot outside temperatures will not be conducted from the exterior panels to the interior panels.

3,797,191

WALL CONSTRUCTION

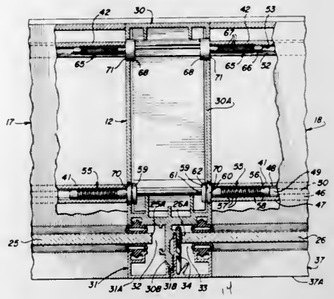
Ronald D. Sukolics, Elkhart, Ind., assignor to American Metal Climax, Inc., New York, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,386

Int. Cl. E04b *2/88*

U.S. Cl. 52—664 **4 Claims**

There is provided an improved wall construction including a vertical mullion assembly and a horizontal member assembly. Both assemblies are formed of interlocking gutter and face sections defining opposed glazing channels. The horizontal member assembly is provided with a pair of longitudinally extending screw splines. The assemblies may be joined in accordance with an improved shear pin system wherein the vertical mullion assembly is prepared for attachment of a horizontal member by drilling holes to receive the head of a shear pin and a dowel pin. The horizontal members are prepared by the insertion of a shear pin into one of the screw splines formed in the horizontal member and by the insertion



of a dowel pin into the other of the screw splines formed in the horizontal member assembly. The horizontal member is then attached to the vertical by intalling the heads of the shear pin and the dowel pin into the holes previously drilled for them.

3,797,192

GRID CEILING

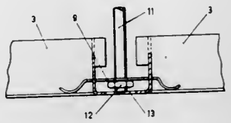
Martinus Catrinus DeJonge, Hoffemalaan 17, Bilthoven, Netherlands

Filed Mar. 9, 1972, Ser. No. 233,220

Claims priority, application Netherlands, Mar. 31, 1971, 7104323

Int. Cl. E04b *5/52*

U.S. Cl. 52—665 **5 Claims**



A grid ceiling comprising section beams and grids having relatively small dimensions with regard to the dimensions of said grid ceiling, said grids being supported by said section beams which extend in longitudinal and transverse direction and are arranged staggered relative to one another and are suspended in their centre to a stationary support, the section beams which are arranged in one direction having ends supported by beams which are arranged in the other direction and vice versa.

3,797,193

CONCRETE REINFORCEMENT AND METHOD OF AN APPARATUS FOR MAKING SAME

Hans Haller, and Erwin Wendl, both of Graz, Austria

Continuation of Ser. No. 887,110, Dec. 22, 1969, abandoned. This application July 7, 1972, Ser. No. 269,744

Int. Cl. E04c *5/01*

U.S. Cl. 52—669 **3 Claims**

A succession of concrete-reinforcing rods are fed one by one into an attaching station to which are fed several base strips. The rods are positioned across the base strips and a holding strip is laid over the rod opposite each base strip, and

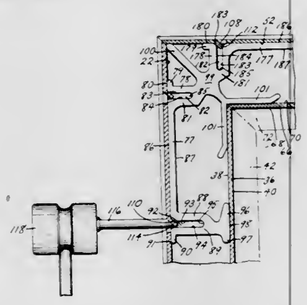
this holding strip is welded in a loop to the base strip. Thence the strips, with the rod attached, are rolled up, and another rod is connected between them as above. The mat thus formed has a changeable shape since the rods remain slidable between the strips so that they can be longitudinally displaced or wholly removed to fit the mat to virtually any configuration. The strips can be made of metal, synthetic resin, textile, rubber, or the like and the holding strips can be applied as a plurality of separate ties, clips or straps to the base strips over the rods.

3,797,194

FRAME CONSTRUCTION

Chaim Henry Ekstein, Teaneck, N.J., assignor to Remington Aluminum Window Corporation, Garden City, N.Y.

Filed Aug. 16, 1971, Ser. No. 171,889
Int. Cl. F16b *7/00*
U.S. Cl. 52—758 H **7 Claims**



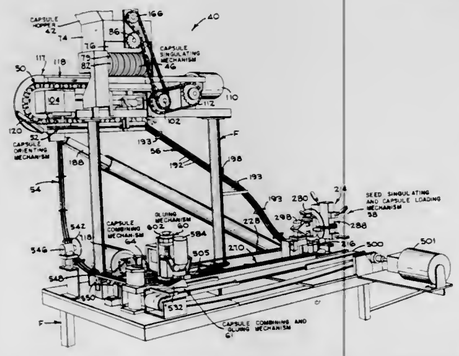
An improved construction for a frame composed of hollow members, anchored at the corners by means of interior spring members, similar to a gusset. The frame is fastened by pressing one or more lanced lips inwardly from the outer wall of each member of the frame against the spring member and thereby "spring loading" it. The interior forces within the spring tend to return it to its original shape, pressing it against the lanced lip and fastening the corner, insuring a strong permanent joinder.

3,797,195

CAPSULE ASSEMBLY METHOD AND MACHINE

Edwin H. Brink, San Jose, and Robert K. Houston, Santa Clara, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Apr. 17, 1972, Ser. No. 244,484
Int. Cl. B65b *5/04, 57/00*
U.S. Cl. 53—37 **26 Claims**



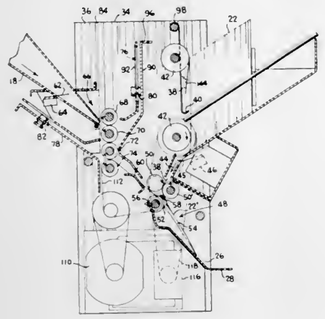
Apparatus for assembling seed capsule halves formed of compressed vermiculite with cavities in each half cooperating to receive a seed before the halves are joined. The apparatus includes a roller and hopper assembly for providing a feed row of capsule halves that are randomly oriented. The feed row passes by a rotating probe that pushes capsules whose cavities face away from the probe into a row that forms capsule covers and allows capsule halves whose cavities face the probe to continue on to form a row of capsule bottoms. A vacuum drum singulator deposits seeds individually into the cavities of the capsule bottoms and the latter approach an assembly station that also receives the capsule covers with their cavities face down. At the assembly station a glue pump deposits drops of liquids on the capsule bottoms whereupon the capsule covers are superposed thereon and cam operated pressers squeeze the two parts together to complete the capsule. The conveyor that brings the capsule bottoms to the assembly station operates at a speed higher than that required to match the rate of cover input and means are provided to reject any excess of capsules before they reach that conveyor. The same conveyor also rejects broken capsule bottoms.

3,797,196

LETTER FOLDER AND ENVELOPE INSERTER

Charles H. Harbison, Birmingham, Ala., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Dec. 4, 1972, Ser. No. 311,826
Int. Cl. B65b *57/06, 63/04, 43/22*
U.S. Cl. 53—55 **20 Claims**



A letter folder and envelope inserter is described in a compact housing assembly. Envelopes are automatically removed from a stack and fed to an envelope stuffing station where a rotating roller operative against the upper edge of the envelope pocket opens the pocket. A paper enclosure such as a letter or invoice is automatically folded by passage through pairs of folding rollers and delivered over the pocket opening roller into the envelope pocket. A compact assembly and control system is described for operation of the folder-inserter.

3,797,197

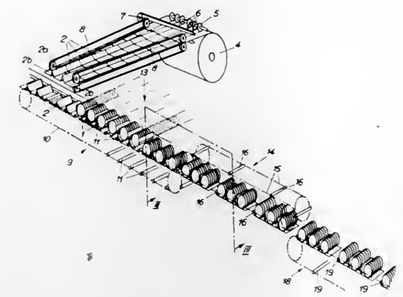
APPARATUS FOR PRODUCING A PACKAGE FOR GROUPS OF FLAT OBJECTS

Rene Fluck, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft Industrieplatz, Neuhausen am Rheinfall, Switzerland

Filed Jan. 16, 1973, Ser. No. 324,121
Claims priority, application Switzerland, Jan. 28, 1972, 1245/72
Int. Cl. B65b *5/06, 35/30*
U.S. Cl. 53—156 **6 Claims**

Apparatus for producing a series of package inserts, each insert supporting several rows of crackers, or objects of similar form, and being formed for this purpose to have upstanding dividing walls which delimit chambers holding the individual rows of crackers. The apparatus is composed of a series of

conveyors which sequentially support the insert while maintaining the dividing walls in their desired configuration, permit



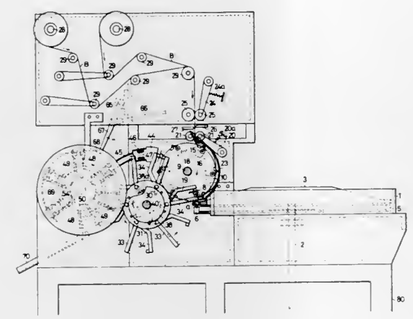
rows of crackers to be deposited in the chambers, and move the chambers of each insert close together for final packaging.

3,797,198

AUTOMATIC TWIST WRAPPING APPARATUS

Hiroaki Fukuzaki, Matsubara, Japan, assignor to Tenchi Kikai Kabushiki Kaisha, Sakai, Osaka Prefecture, Japan

Filed Oct. 24, 1972, Ser. No. 300,340
Claims priority, application Japan, Nov. 9, 1971, 46-89262
Int. Cl. B65b *11/28*
U.S. Cl. 53—209 **6 Claims**



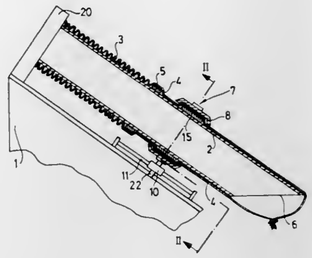
An apparatus comprising a first carrier for carrying articles to be wrapped to a predetermined position individually at a regular spacing in a horizontal direction, means for supplying wrappers to the articles brought to the predetermined position so as to position each article approximately at the center of the wrapper, a second carrier adapted to traverse the first carrier horizontally thereof in synchronism therewith to grip the wrappers and articles together and transfer the same to an intermediate path of travel, means disposed in the path of advance of the second carrier for bending the wrappers at the projecting ends thereof other than one end thereof to be twisted, a third carrier having grippers for transferring the wrapped articles gripped by the second carrier from the terminal end of the wrapper bending means to a final path of travel, and means for folding the wrappers and twisting the projecting open ends thereof in the path of advance of the third carrier.

3,797,199

APPARATUS FOR PACKING FRUIT

Wolfgang Seifert, Bommersheimerstrasse 7, 6370 Oberursel, Germany

Filed Dec. 11, 1972, Ser. No. 313,743
Claims priority, application Germany, Dec. 16, 1971, 2162545
Int. Cl. B65b *9/16*
U.S. Cl. 53—255 **5 Claims**



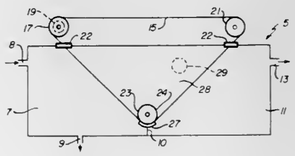
Fruit is automatically packed in successive sections of a continuous flexible tube which is mounted on a downwardly inclined supply and guide pipe, the tube having an upper, stored section remote from the lower open end of the pipe. Selectively operable brake shoes are mounted between the stored tube section and the open pipe end for gripping successive tube sections and for moving them in the direction of the open pipe end whereby these sections are drawn from the stored tube section, the brake shoes being selectively operable to engage these sections and to brake them.

3,797,200

SEPARATION OF METHANE AND NITROGEN MIXTURES UNDER NON-STEADYSTATE CONDITIONS

Donald L. Klass, Barrington, and Carl D. Landahl, Chicago, both of Ill., assignors to Northern Natural Gas Company, Omaha, Nebr.

Continuation-in-part of Ser. No. 135,124, April 20, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,828
Int. Cl. B01d *53/22*
U.S. Cl. 55—16 **5 Claims**



A gas mixture of methane and nitrogen is separated into enriched components under non-steady state conditions wherein nitrogen in the mixture is picked up more favorably by a membrane which is a homopolymer of acrylonitrile, such nitrogen being picked up before the concentration composition of the permeated or absorbed gases reach substantially constant levels.

3,797,201
ABSORPTION PROCESS FOR GAS SEPARATION

Takaai Tamura, No. 5-7, 2-chome Kitano, Mitaka-shi, Tokyo, Japan

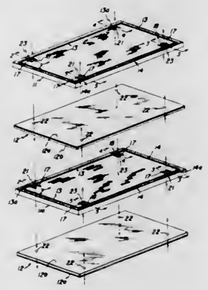
Filed Mar. 17, 1972, Ser. No. 235,487
Claims priority, application Japan, Mar. 27, 1971, 46-17619
Int. Cl. B01d *53/04*
U.S. Cl. 55—62 6 Claims

In a process of separating a readily adsorbable gas and a less readily adsorbable gas separately from a mixture of these gases by introducing the gas mixture into an adsorption column containing an adsorbent to adsorb thereon the readily adsorbable gas and then recovering the adsorbed gas by desorbing it under a reduced pressure, the purity of the readily adsorbable gas thus recovered is greatly increased by purging the adsorption column prior to the desorption step with a pure gas having almost the same composition as the adsorbed gas at an almost same pressure as that in the adsorption step. Also, by introducing into the column a pure gas having the same composition as the less readily adsorbable gas prior to the introduction of the gas mixture, the less readily absorable gas is recovered in a high pure state in the above gas recovery process.

3,797,202
MICROPOROUS/NON-POROUS COMPOSITE MEMBRANES

Charles K. Neulander, and William J. Ward, III, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,670
Int. Cl. B01d *53/22*
U.S. Cl. 55—158 5 Claims

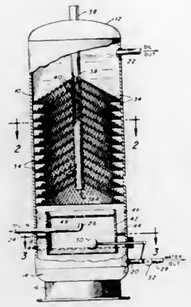


A microporous/non-porous membrane laminate construction is described for incorporation in membrane package construction. One or both sides of the non-porous membrane is covered with a microporous membrane to form a membrane assembly. An exemplary membrane package construction employing the membrane assembly is described.

3,797,203
MEANS FOR SEPARATING HEAVIER FROM LIGHTER COMPONENTS OF COMINGLED FLUID

Forrest Lee Murdock, Sr., Tulsa, Okla., assignor to Fishmaster Products, Inc., Tulsa, Okla.

Filed Oct. 10, 1972, Ser. No. 296,343
Int. Cl. B01d *19/00*
U.S. Cl. 55—176 8 Claims

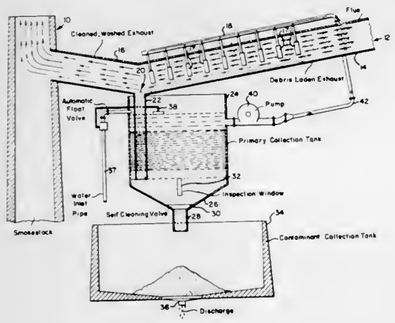


Means for separating heavier from lighter, components comingled in fluid including an upright vessel and a plurality of spaced conical separator screens vertically stacked within the vessel arranged such that lighter fluid components flowing through the vessel flow through the screens, each screen being a conically shaped foraminous reticulum of integrally formed relatively small width and small thickness strands, all of which are longitudinally downwardly inclined providing a multiplicity of continuous uninterrupted downwardly inclined paths on which heavier components may travel.

3,797,204
SMOKE WASHER APPARATUS

Dominic Cavatassi, 362 Main St., Follansbee, W. Va.

Filed Nov. 11, 1971, Ser. No. 197,860
Int. Cl. B01d *47/06*
U.S. Cl. 55—227 5 Claims

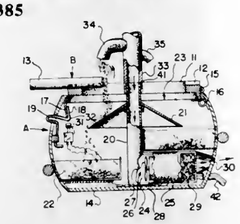


Smoke washer apparatus which includes a smokestack having an exhaust flue in communication therewith. A series of sprinkler heads is located in the exhaust flue for spraying a curtain of water generally in the direction of the smokestack as that as exhaust passes through the flue, the curtain of water removes particulate and those gases soluble in water. The contaminant-laden water gravitates to a collection tank and the cleaned smoke is directed to the smokestack for emission to the atmosphere. The contaminant is removed from the collection tank and the water recycled to the sprinkler heads.

3,797,205
ASH TRAY SMOKE REMOVER

Isaac Weisskopf, 863 44th St., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 179,692, Sept. 13, 1971, abandoned, which is a continuation-in-part of Ser. No. 24,649, April 1, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 231,896
Int. Cl. B01d *50/00*
U.S. Cl. 55—385 8 Claims

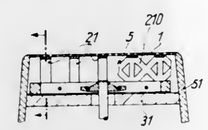


An ash tray is combined with an optionally actuable smoking air filter system and ducts adjustable to be moved to the smoke source for sucking in the smoking air.

3,797,206
BINDING DRY SHAVED HAIR SHAVINGS

Otta Anna, Niederhochstadt, and Albert Luberichs, Cologne, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Continuation of Ser. No. 27,793, April 18, 1970, abandoned. This application Aug. 31, 1972, Ser. No. 282,593
Claims priority, application Germany, Jan. 14, 1969, 57777
Int. Cl. B03c *3/45*
U.S. Cl. 55—385 3 Claims



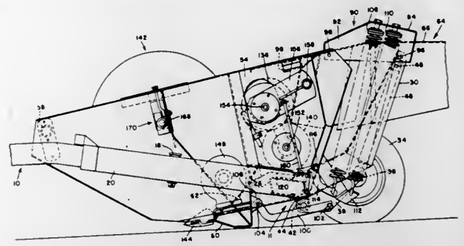
A d.c. voltage source is connected between the hair dust collecting electrode and the outer grooved or perforated cutting member of the shearing head of a dry shaver. The hair protruding through the grooves of the outer cutting member is polarized into an electric dipole; the projecting hair portion which has opposite polarity than the collecting electrode is subsequently cut off by the movable inner cutting member and is transferred by electrical forces of the field to the collecting electrode. This electrode may be provided with an exchangeable coating of an adhesive.

3,797,207
CROP HARVESTING MACHINE

Bobby Gene Sawyer, and J. Clark Fickle, both of Wapello, Iowa, assignors to Deere & Company, Moline, Ill.

Filed July 5, 1972, Ser. No. 268,976
Int. Cl. A01d *43/00*
U.S. Cl. 56—1 21 Claims

A crop harvesting machine including a longitudinal frame portion adapted at its forward end for attachment to a draft vehicle, a transverse frame portion fixed at its left end to the rearward end of the longitudinal portion, a pair of upright frame members fixed to opposite sides of the transverse frame portion, a pair of transversely spaced wheel arms connected to the transverse frame portion for vertical swinging movement and having ground-engaging wheels rotatably mounted thereon, extensible and retractable means acting between the upright frame members and the wheel arms to vertically swing the latter and thereby raise and lower the frame relative to the ground, a header subframe carrying crop harvesting elements thereon, the header extending longitudinally above the transverse frame portion and between the upright frame members, upper and lower links mounting the header on the frame, the upper links extending between the header and the upper ends

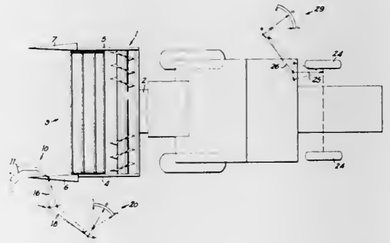


of the upright frame members and the lower links extending between the header and the wheel arms, and elongated springs acting between the transverse frame portion and the header to urge the latter upwardly relative to the former. In one embodiment, the springs extend between the upper ends of the upright frame members and the header, and in another embodiment, the springs extend between the upper links and the header.

3,797,208
MECHANISM FOR THE AUTOMATIC STEERING OF AGRICULTURAL MACHINES, ESPECIALLY COMBINES

Gilbert J. Strubbe, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium

Filed Oct. 21, 1971, Ser. No. 191,303
Claims priority, application Belgium, Oct. 23, 1970, 50546
Int. Cl. A01d *35/02*
U.S. Cl. 56—10.2 12 Claims



A mechanism for the automatic steering of agricultural machines, especially combines, comprising a first electrical transducer operatively coupled to an element of the crop edge sensor, a second electrical transducer coupled to a moveable element of the steering means, an electric motor which acts on the steering means, and an electronic reversing means which switches said electric motor such that the position of the aforesaid second transducer is brought into agreement with the position of the aforesaid first transducer.

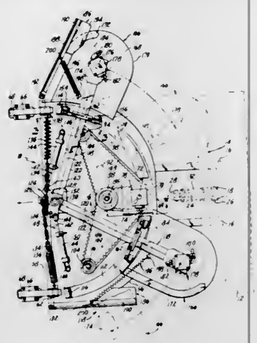
3,797,209
VARIABLE WIDTH FRONT MOUNTED MOWER

Herbert W. Davis, Box 468-506 E. Baldwin St., Hackettstown, N.J.

Filed Dec. 29, 1972, Ser. No. 319,677
Int. Cl. A01d *75/30*
U.S. Cl. 56—13.6 6 Claims

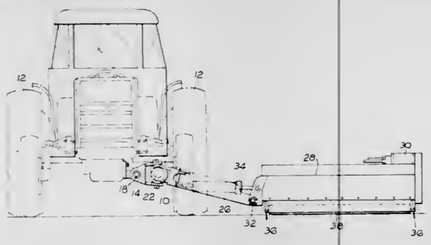
A mowing apparatus has a main housing adapted for attachment forwardly of a prime mover. The housing supports a

series of blades and drive mechanisms therefor. Arms are pivoted on the main housing and have auxiliary housings with cutting blades thereon, the arms being urged to lateral posi-



tions and being pivotal to rearward trailing positions when the auxiliary housings encounter an obstruction. Means is provided to purposely move and maintain the auxiliary housings in trailing position when desired.

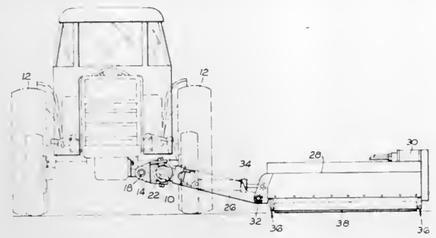
3,797,210
MOWERS
Anthony Leonard Turner, Alcester, England, assignor to Turner Engineering Company (Coughton) Limited, Coughton, near Alcester, Warwick, England
Filed June 13, 1972, Ser. No. 262,283
Int. Cl. A01d *35/00*
U.S. Cl. 56—15.8 **6 Claims**



An elongate shaft extends fore-and-aft of a tractor having a bearing for mounting one end of the shaft on the tractor. A first power-driven means is used for rotating such end of the shaft to adjust the angular position of the shaft. A laterally extending arm is fixed to the other end of the shaft, and a mower is povoted to the outer end of the arm. A second power-driven means is used for adjusting the angular position of the mower relative to the arm. The angular position of the shaft and the angular position of the mower are fixed after adjustment by the two power-driven means, and variations in the position of the mower relative to the tractor, to follow undulations of the ground, are accommodated solely by deflection of the shaft.

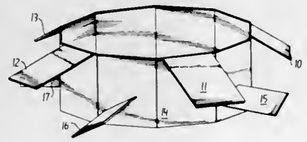
3,797,211
MOWERS
Anthony Leonard Turner, Alcester, England, assignor to Turner Engineering Company (Coughton) Limited, Coughton, near Alcester, Warwick, England
Filed June 13, 1972, Ser. No. 262,328
Int. Cl. A01d *35/00*
U.S. Cl. 56—15.6 **3 Claims**

A self-contained hydraulically operated mower assembly for detachable mounting on a tractor comprises a body which forms a hydraulic reservoir and which is provided with means for releasably mounting the body on the rear end of a tractor. A shaft has one end rotatably mounted on said body, and the other end is rotatably and releasably supported on a tractor forward of said body. A laterally-extending arm is fixed to said shaft adjacent to said other end of the shaft, and a cutter is



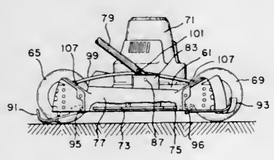
pivoted to the arm for pivotal movement about an axis parallel to the shaft. A hydraulic motor drives the cutter, a first hydraulic ram maintains the shaft in a selected angular position relative to said body, and a second hydraulic ram maintains the cutter in a selected angular position relative to the arm.

3,797,212
COMBINATION MOWING-MULCHING APPARATUS
Oden A. Pursel, 918 Ext. E. 8th St., Bloomsburg, Pa.
Filed Mar. 26, 1973, Ser. No. 344,955
Int. Cl. A01d *35/26*
U.S. Cl. 56—255 **7 Claims**



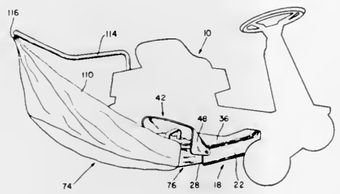
A combination mowing-mulching apparatus in which a generally cylindrical skirt, including at least two sets of fixed mulching blades, are arranged between the cutting blade of a lawnmower and the underside of the housing, concentric with the drive shaft connecting the cutting blade to a prime mower.

3,797,213
COMBINED SAFETY GUARD AND FLIP-OVER HANDLE FOR LAWNMOWERS
Peter Thomas Sadow, Jr., Cockeysville; Thaddeus Eugene Bednarski, Timonium, and Allen George Beares, Towson, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.
Filed Jan. 2, 1973, Ser. No. 320,065
Int. Cl. A01d *67/00, 55/18*
U.S. Cl. 56—320.1 **15 Claims**



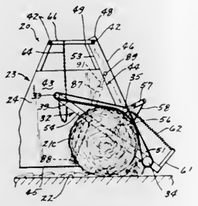
A rotary power-operated lawnmower of the type having a wheel supported deck housing provided with an upstanding handle pivotally supported on the deck housing for reversal or flip-over movement to facilitate opposite directional, longitudinal movement of the mower without the necessity of turning it around, the mower being provided with a novel safety guard construction pivotally supported on the deck housing and operatively connected with the handle through flexible cable means, or pivoted on the deck and connected directly to the handle, the construction being such that the safety guard is positively pivotally moved by flip-over movement of the handle from either of its operative positions so that it is positioned to protect the operator's feet in both longitudinal directions of movement of the mower and to minimize interference with efficient grass cutting. In addition, the handle is shown as provided with latch means for releasably latching the handle in both of its operative positions.

3,797,214
MOWER DISCHARGE CHUTE DEFLECTOR AND BAGGING ATTACHMENT
Leon Paul Erdman, Beaver Dam, and Lee Joseph Wanie, Horicon, both of Wis., assignors to Deere & Company, Moline, Ill.
Filed Nov. 10, 1972, Ser. No. 305,475
Int. Cl. A01d *35/26*
U.S. Cl. 56—320.2 **12 Claims**



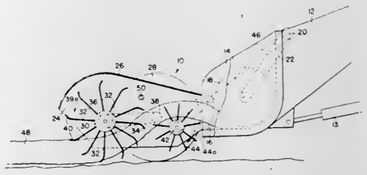
A rotary lawn mower includes a housing defining a discharge chute, the latter including a hinged outer portion in the form of a deflector or guard. The deflector is biased toward a lowered operative position wherein it acts to intercept and deflect objects thrown at a high trajectory by the mower blade, the deflector also acting to evenly disperse grass cuttings over the ground. The deflector may optionally be raised to an inoperative position wherein it permits a bagging attachment to be installed.

3,797,215
APPARATUS FOR FORMING ROLLS OF HAY
Arnold F. Kopaska, Rural Rt. 4, Guthrie Center, Iowa
Filed Nov. 9, 1972, Ser. No. 305,054
Int. Cl. A01d *75/00*
U.S. Cl. 56—341 **13 Claims**



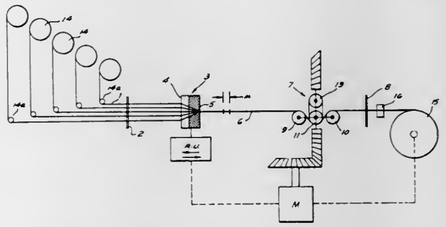
An apparatus for forming rolls of hay from a windrow of hay lying in a field. A wheeled frame includes sides spaced apart sufficient to pass on either side of the hay windrow. A lift means is mounted to the rear of the frame, being pivotally connected at its upper end and resting at its lower end on the frame, and with means for raising the lift means upwardly and rearwardly about its pivot. A subframe is pivotally secured at its rear end to the lower end of the lift means and is rockably suspended forwardly and between the sides. At least three rollers are mounted in a triangular relationship on the subframe and have a plurality of endless, flexible belts extended longitudinally of the apparatus and trained side-by-side over the rollers. The rear roller, rotated in response to operation of the apparatus, has teeth associated therewith which perform the dual function of beginning to form a roll of hay as the apparatus passes over the windrow while serving to maintain the belts in alignment; and with the subframe pivoting upwardly about the lower end of the lift means as the hay is rolled up as a snowball. When the roll reaches a predetermined size, the lift means is raised, carrying upwardly with it the subframe to clear the roll whereby the apparatus can be moved away from the roll.

3,797,216
CROP PICK-UP MECHANISM
John Martin Resetich, Silvis, Ill., assignor to Deere & Company, Moline, Ill.
Filed Mar. 2, 1972, Ser. No. 231,107
Int. Cl. A01d *89/00*
U.S. Cl. 56—364 **8 Claims**



A pick-up includes a first finger drum which rotates in a forward direction and at a fingertip speed slightly less than ground speed so that the fingers scoop into the crop and lift the crop at the rear. A second finger drum rotates in a reverse direction and at a higher speed than the first drum to pick up crop material from the first drum and deliver the same rearwardly to a platform.

3,797,217
METHOD AND ARRANGEMENT FOR MAKING SZ-TWISTED CABLES
Dieter Braun, Cologne, Germany, assignor to Felten & Guilleaume Kabelwerke Aktiengesellschaft, Cologne, Germany
Filed July 17, 1972, Ser. No. 272,631
Claims priority, application Germany, July 30, 1971, 2138239
Int. Cl. H01b *13/04*
U.S. Cl. 57—34 AT **24 Claims**



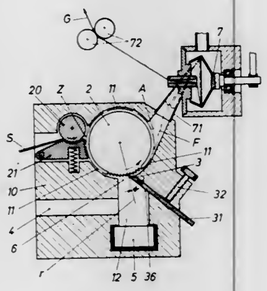
An arrangement for making cables and the like comprises an advancing arrangement for advancing an elongated bundle of strands along a predetermined path. A twisting unit positioned along the path twists the elongated bundle of strands in direction circumferentially of its elongation. A first engaging

unit upstream of the twisting unit prevents the twist imparted to the bundle by the twisting unit from travelling upstream along the bundle freely past the first engaging unit, and permits advancing of the bundle along the path and relative to the first engaging unit. A second engaging unit downstream of the twisting unit prevents the twist imparted to the bundle by the twisting unit from travelling downstream along the bundle freely past the second engaging unit, and permits advancing of the bundle along the path and relative to the second engaging unit. At least one of the units is movable in direction along the path. A moving arrangement is provided for continually effecting relative movement between the testing unit and at least one of the engaging units in direction along the path and in a sense varying the degree of twist imparted to the bundle of strands by the twisting unit.

3,797,218
METHOD AND APPARATUS FOR SPINNING SLIVER

Hans Landwehrkamp; Franz Schreyer, both of Ingolstadt, Germany, and Adolf Schiltknecht, Winterthur, Switzerland, assignors to Schubert Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Mar. 9, 1970, Ser. No. 17,496
Claims priority, application Germany, Mar. 20, 1969, 1914115; Apr. 30, 1969, 1922078
Int. Cl. D01h *7/02*; **D01g** *15/00, 23/00*
U.S. Cl. 57—58.89 **30 Claims**



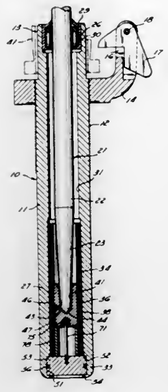
On its way to a spinning chamber a sliver is opened out to divide it up into individual fibers and is then caused to pass along a path with two parts placed at an angle to each other. Owing to the sudden change in direction as the fibers pass from one part to the other dirt particles, which are denser than the fibers, are thrown out by centrifugal force and leave the fibers through a separating opening.

3,797,219
SPINDLE BOLSTER

John P. Kieronski, Charlotte, N.C., and Ray C. Johnson, Holden, Mass., assignors to Whitin Machine Works, Inc., Charlotte, N.C.

Filed Mar. 1, 1972, Ser. No. 230,603
Int. Cl. D01h *7/12*
U.S. Cl. 57—135 **5 Claims**

A spindle bolster assembly of the type wherein a spindle blade is resiliently mounted in a bolster case for lateral movement of its lower end with a footstep bearing to minimize vibrational stresses. The footstep bearing is resiliently biased to a centered position by a centering spring anchored to the



lower end of the bolster case which additionally axially locates and prevents rotation of the footstep bearing.

3,797,220
METHOD FOR THE TEXTURIZATION OF YARNS, AND THE PRODUCT THEREOF

Giorgio Faraci, and Giuseppe Godi, both of Gozzana, Italy, assignors to Bemberg S.p.A., Milan, Italy

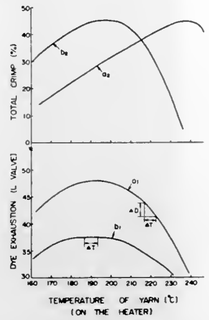
Filed Mar. 16, 1971, Ser. No. 124,797
Claims priority, application Italy, Mar. 18, 1970, 22137/70
Int. Cl. D02g *1/02*
U.S. Cl. 57—140 R **6 Claims**

A method and a device for texturing yarns, more particularly synthetic yarns, is disclosed, in which the false twist annular body is made of rubber having a hardness of 70 Shore and over. Advantageously, the yarn is heated, upstream of the false twist annular body, at a temperature well below the melting point of the material forming the yarn. Critical dimensions for the false twist annular body and for the distance therefrom of the tube on which the yarn is wound, are also specified. It is preferred that the yarn be drawn prior to reaching the false twist annular body.

3,797,221
FALSE TWIST-CRIMPED POLYESTER YARNS AND PROCESS FOR THEIR PRODUCTION

Morio Ikeda, and Mamoru Tsumoto, both of Ibaraki, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 5, 1971, Ser. No. 131,242
Claims priority, application Japan, Apr. 6, 1970, 45-29236
Int. Cl. D02g *1/02, 3/02*
U.S. Cl. 57—140 R **6 Claims**



A false twist-crimped polyester yarn having a density d of $1.3800 \leqq d \leqq 1.3950$ (g/cm³) and a total percentage crimp (TC) of TC $\geqq$ 30% is produced by false twisting a polyester multi-filament having a birefringence (Δn) of $0.030 \leqq \Delta n \leqq 0.145$ while heat setting the filament in the twisted state at 160° to 210° at a draft (dr) which satisfies the following equation:

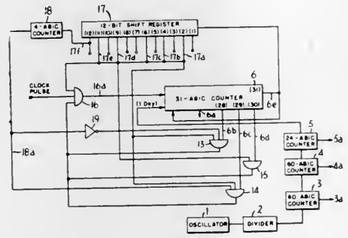
$$-250.\Delta n + 38 \geqq d_r \geqq -150.\Delta n + 17$$

Heat-setting the above false twist-crimped polyester yarn at a higher temperature gives a modified false twist-crimped polyester yarn having a density (d) of $1.3800 \leqq d \leqq 1.3950$ (g/cm³), a total percentage crimp (TC) of TC $\leqq$ 20%, and a torque (Tq) of Tq $\leqq$ 26(T/25 cm).

3,797,222
DIGITAL ELECTRONIC TIMEPIECE HAVING A PERPETUAL CALENDAR DISPLAY DEVICE

Takashi Kato, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 5, 1972, Ser. No. 295,194
Claims priority, application Japan, Oct. 5, 1971, 46-78115; Oct. 5, 1971, 46/78116
Int. Cl. G04b *19/24*
U.S. Cl. 58—4 A **6 Claims**

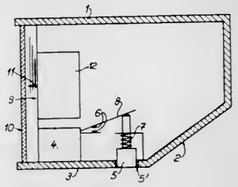


A digital electronic timepiece having a perpetual calendar display device comprises a standard oscillator for producing a pulse signal having a frequency high enough to serve as a time reference base, a divider circuit connected to the oscillator for dividing the pulse signal into a one-second signal having a frequency of one pulse per second, a series of counters, for counting the one-second signals and developing appropriate second, minute and hour signals and applying same to a display panel for displaying the time in seconds, minutes and hours, and a perpetual calendar display device for receiving the signals from the last of the series of counters and automatically and correctly displaying the month and the date of the month. The perpetual calendar display device comprises a day counter for successively delivering a date signal on each successive day, a shift register connected to the day counter for providing an output signal corresponding to each successive month of the year, and electronic circuitry responsive to both the date signals and the signals from the shift register to automatically reset the day counter to commence counting at the first day and to shift the register to the proper month. A display panel receives the date signals from the day counter and the month signals from the register and displays the correct month and date of the month.

3,797,223
ALARM CLOCK

Lucio Oliveri, Milan, Italy, assignor to Cohel Compagnie de' Harlogerie et Electronique S.A., Roveredo, Switzerland

Filed Nov. 15, 1972, Ser. No. 306,953
Claims priority, application Switzerland, Dec. 10, 1971, 18005/71
Int. Cl. G04b *13/00*
U.S. Cl. 58—21.15 **5 Claims**

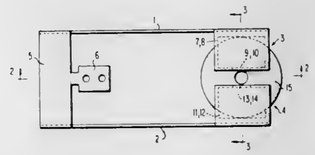


An alarm clock has an alarm device which can be set in an operative or an inoperative condition by tilting the clock from one stable rest position to another.

3,797,224
COMPENSATION OF THE THERMAL FREQUENCY DRIFT OF A MECHANICAL OSCILLATOR FOR TIMEKEEPING

Robert Favre, Lausanne, Switzerland, assignor to Fabriques Movado, La Chaux-de Fonds Canton, Neuchatel, Switzerland

Filed July 26, 1971, Ser. No. 166,060
Claims priority, application Switzerland, Aug. 4, 1970, 11700/70
Int. Cl. G04c *3/00*; **H02k** *33/00*
U.S. Cl. 58—23 TF **6 Claims**

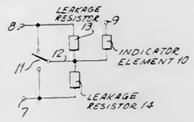


A system for compensation of the thermal frequency drift of a mechanical oscillator for timekeeping, wherein the compensating effect is obtained by interaction of magnets fixed to the oscillator, such magnets having a thermal coefficient of negative character. A secondary compensating effect is obtained by means of magnetic shunts associated with said magnets, such shunts having a Curie-point at a suitable temperature.

3,797,225
DRIVING ARRANGEMENT FOR PASSIVE TIME INDICATION DEVICES

Tetsuro Hama, and Izuhiko Nishimura, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Siekosha, Tokyo, Japan

Filed Feb. 28, 1972, Ser. No. 232,461
Claims priority, application Japan, Feb. 27, 1971, 46-9804
Int. Cl. G04b *19/30*
U.S. Cl. 58—50 R 5 Claims

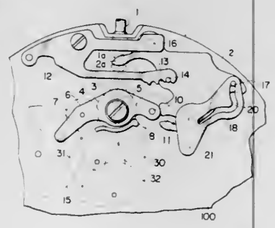


A driving arrangement for passive time indication devices wherein a passive indication device is connected between the output terminal of a double throw-type switching element and a terminal having a first potential such that the difference between said first potential and a second potential applied to the output terminal of said switching element when said switching element is in a first position is sufficient to excite the passive time indication device while the difference between said first potential and a third potential applied to said switching element output terminal when said switching element is in a second position is less than the threshold voltage of the passive time indication element.

3,797,226
TIMEPIECE FITTED WITH A REGULATOR CONTROLLABLE FROM OUTSIDE

Kazuyoshi Inoki, Tokyo; Testuo Mastumura, Saitama-ken, and Katsuhiko Komiyama, Tokyo, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed May 15, 1973, Ser. No. 360,552
Claims priority, application Japan, May 16, 1972, 47-047691; May 16, 1972, 47-047692; Mar. 31, 1973, 48-037147; Mar. 31, 1973, 48-037148; Mar. 31, 1973, 48-039164; Apr. 19, 1973, 48-44470
Int. Cl. G04b *27/02*
U.S. Cl. 58—67 4 Claims



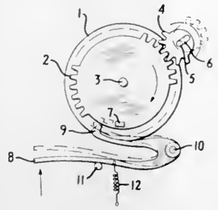
A watch having a regulator-adjusting mechanism from a winding and time-settable stem operable from outside of the watch movement, the mechanism being provided with specific resisting means against manual pull of the stem to its regulator-adjusting position.

3,797,227
TIME ADJUSTMENT APPARATUS FOR DIGITAL CLOCK

Kitoshi Kitai, Tokyo; Mitsuo Koyama, Yotsukaido; Shogo Kato, Kichioka; Yozuru Takazawa, Tokyo, and Shinji Nagaoka, Yotsukaido, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,689
Claims priority, application Japan, Nov. 19, 1971, 46-92911
Int. Cl. G04b *27/00, 19/02*
U.S. Cl. 58—85.5 3 Claims

Apparatus for making time adjustments or corrections in a digital clock having a plurality of time-indicating driven elements, one of which indicates the least time unit in the clock, for example, seconds. A pawl lever having a pawl for engaging a stop on the driven seconds wheel for indicating the least time units is manually actuated to stop this seconds wheel after a correct time has been set in the hours, tens of minutes and minutes time-indicating wheels. Upon release of the seconds wheel, the time is correctly and accurately set in the clock in-

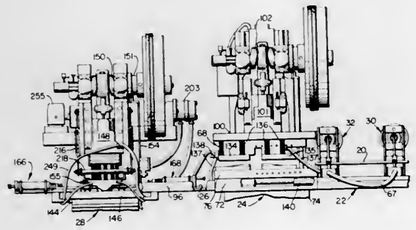


cluding correct time as to the least time unit. The seconds wheel is stopped by engaging it and using its force of rotation to disengage an input drive element therefrom or to open a switch disenabling a drive motor. The pawl lever is released at the time of a time signal. The seconds wheel is releasably held at a given position of rotation thereof corresponding to a given time indication when making the time correction or setting.

3,797,228
ARTICLE MAKING MACHINE AND METHOD

Max B. Kirkpatrick, deceased, late of Anchorage, Alaska (by Mildred E. Kirkpatrick, executrix); Andrew G. Harvey, and Roger H. Erichsen, both of Wickenburg, Ariz., assignors to Alaska General Credit Corporation, Anchorage, Alaska

Filed Oct. 26, 1971, Ser. No. 192,147
Int. Cl. B21k *15/02*
U.S. Cl. 59—37 22 Claims



Method and apparatus for making articles by passing stock material through heating, contour forming, and final shaping stations. Articles such as horseshoes are advantageously subjected to the combined steps of bending and nail hole punching at the final shaping station.

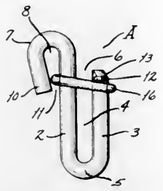
3,797,229
CONNECTOR HOOK

Robert C. Rueff, and Herschel E. Woltzen, both of St. Louis County, Mo., assignors to Nixdorff-Krein Mfg., St. Louis, Mo.

Filed Sept. 25, 1972, Ser. No. 291,568
Int. Cl. F16g *17/00*
U.S. Cl. 59—93 10 Claims

A connector link for engagement with separate chains or selected links of the same chain, having a pair of parallel legs with an intervening opening; the same being closed at one end by means of a bight portion extending between the adjacent

ends of the legs and being normally open at its other end to permit engagement with a chain link. Provided for extension

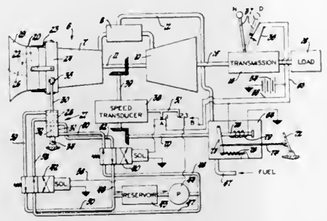


across the opening is a keeper link, embracing each of the legs for restraining the same against parting under applied forces.

3,797,230
CONTROL METHOD AND APPARATUS FOR A SINGLE SHAFT TURBINE WITH PREWHIRL OF AIR ENTERING THE COMPRESSOR

Charles A. Amann, Bloomfield Hills, and Erik H. Rucins, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 194,116, Nov. 1, 1971, Pat. No. 3,688,605, which is a division of Ser. No. 854,651, Sept. 2, 1969, Pat. No. 3,657,881. This application Aug. 9, 1972, Ser. No. 279,200The portion of the term of this patent subsequent to Apr. 25, 1989, has been disclaimed.
Int. Cl. F02c *9/14*
U.S. Cl. 60—39.03 4 Claims



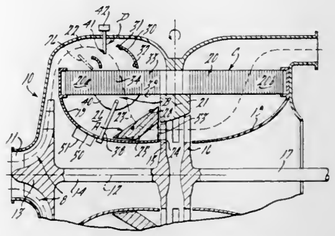
A vehicle turbine propels the vehicle through a change-speed transmission. To reduce vehicle acceleration time with an acceptable penalty with respect to fuel consumption, the compressor of the engine has variable inlet guide vanes which are shifted into a positive prewhirl angle at idling speeds when the transmission is shifted into a drive condition. Thus the engine has a low speed idle, with axially oriented guide vanes and normal air entrance, when the transmission is in neutral or park, and a high speed idle with positive prewhirl when the transmission is in a drive condition. Also, the vanes are shifted at full speed of the engine to provide negative prewhirl and thus reduce the engine speed corresponding to maximum power output. Because of the higher idle and lower maximum speeds, the acceleration time of the turbine is reduced.

3,797,231
LOW EMISSIONS CATALYTIC COMBUSTION SYSTEM

Arthur F. McLean, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 31, 1972, Ser. No. 276,875
Int. Cl. F02c *7/10*
U.S. Cl. 60—39.51 H 9 Claims

In a continuous combustion, regenerative, gas turbine engine, supply of compressed air is divided so that a portion thereof can be mixed with fuel to support a local flame on the surface of a heat exchanger through which all portions of the flow pass to be combusted. The flame brings the temperature of the flow up to a predetermined operating range for support-

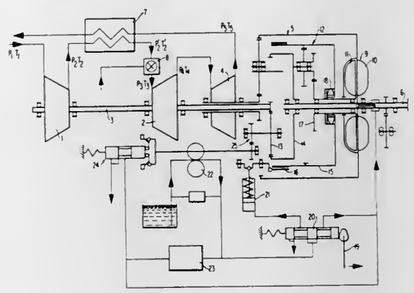


ing catalytic combustion and at which time the local flame is extinguished.

3,797,232
VEHICLE GAS TURBINES WITH RATIO COUPLINGS THEREBETWEEN-THEREFOR

Dieter Muller, Stuttgart, and Wilhelm Jurisch, Nellingen Kr. Esslingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Division of Ser. No. 121,956, March 8, 1971, Pat. No. 3,744,241. This application Apr. 5, 1973, Ser. No. 348,079
Claims priority, application Germany, Mar. 6, 1970, 2010581
Int. Cl. F02c *3/10*
U.S. Cl. 60—39.16 R 7 Claims



Gas turbine unit for motor vehicles in which the compressor turbine is selectively connected to the output shaft through a controllable fluid coupling so as to provide a transfer of power to the output shaft from the compressor turbine during partial-load operation and a transfer of power from the output shaft to the compressor turbine during braking.

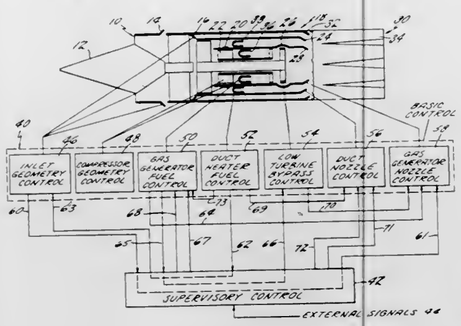
3,797,233
INTEGRATED CONTROL FOR A TURBOPROPULSION SYSTEM

William L. Webb, Lake Park; Thomas R. Warwick, Jupiter; Ronald D. Hackey, Palm Beach Garden, and Robert L. Price, Tequesta, all of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 138,163, April 28, 1971. This application June 28, 1973, Ser. No. 374,611
Int. Cl. F02c *9/04, 3/06*
U.S. Cl. 60—39.16 R 15 Claims

An integrated turbopropulsion system is disclosed consisting of a variable air induction system, a turbine engine and an exhaust nozzle/ejector. Control of the total system is provided by a plurality of basic control systems consisting of separate controls for each individual system variable. A supervisory

control receives inputs from selected basic controls and from external signals, and provides additional inputs to the basic controls to permit the basic controls to increase the performance of the turbopropulsion system and to extend the control envelope of the total system. Additional basic controls may be added to the system, or basic controls may be subtracted from the system without affecting the performance of



the entire turbopropulsion system. Novel basic controls for individual system variables are disclosed, as well as a novel integrator lockout control and a novel variable rate control. As a result of the intercommunication between individual basic controls provided by the supervisory control, the entire integrated turbopropulsion system may be controlled to more stringent limits than can be provided by a plurality of independent basic controls.

3,797,234

GAS TURBINE SYSTEM WITH SUBTERRANEAN AIR STORAGE

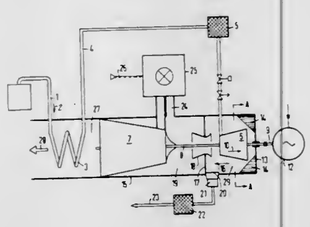
Theodor Schwarz, Erlangen, Germany, assignor to Kraftwerke Union Aktiengesellschaft, Mulheim, Germany

Filed Apr. 5, 1972, Ser. No. 241,299

Claims priority, application Germany, Apr. 6, 1971, 2116851

Int. Cl. F02c *3/10*

U.S. Cl. 60—39.18 C **7 Claims**



In a gas turbine system with subterranean air storage such as in a cavern formed in a salt stratum, a hot-air decompression turbine stage for partially decompressing combustion air stored at high pressure, prior to the entry thereof into the combustion chamber of the gas turbine proper, after the combustion air has been delivered by suitable conducting means to a location at which it is heated by the exhaust gases of the gas turbine to a temperature below the melting temperature of any salt particles that may be present in the stored air.

3,797,235

FUEL INJECTION APPARATUS FOR AUTOMOTIVE VEHICLES USING GAS TURBINE POWER PLANTS

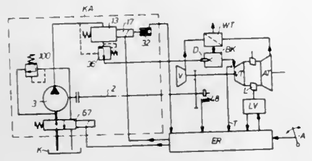
Franz Eheim, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 10, 1971, Ser. No. 170,582

Claims priority, application Germany, Aug. 27, 1970, 2042541

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.28 R **16 Claims**



In a fuel injection apparatus particularly adapted to be associated with a gas turbine constituting the power plant of an automotive vehicle, there is provided an electromagnetically operated fuel metering valve, the fuel quantity control member of which is directly connected with the armature of an electromagnet supplied with electric current as a function of independent (arbitrary) and dependent operational variables.

3,797,236

ANNULAR COMBUSTION CHAMBER WITH CERAMIC ANNULAR RING

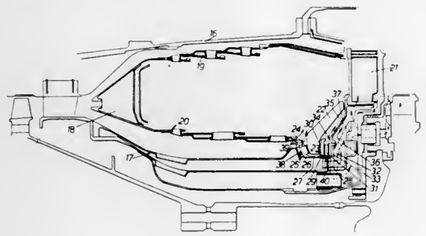
Noel Harry Hooke, Etwall; Thomas Steel, Littleover, and Jack Raymond Bird, Chellaston, all of England, assignors to Rolls-Royce (1971) Limited, London, England

Filed June 8, 1972, Ser. No. 261,110

Claims priority, application Great Britain, June 11, 1971, 27471/71

Int. Cl. F02c *7/20*

U.S. Cl. 60—39.31 **14 Claims**



An annular combustion chamber for a gas turbine engine in which an annular wall part is made of a ring of ceramic material which is located in the chamber by compression between a frusto-conical first face and a second face which is radial or frusto-conical.

3,797,237

INTERNAL COMBUSTION ENGINE HAVING TWO PISTONS ROTATABLE THROUGH SEPARATE INTERSECTING CIRCULAR PATHS

Minoru Kamiya, 2-46-3, Minamiotsuka, Toshima-ku, Tokyo, Japan

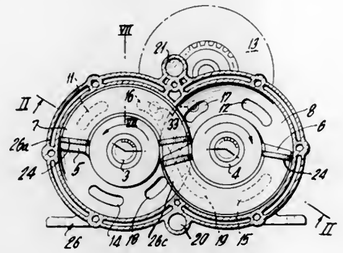
Filed Dec. 30, 1971, Ser. No. 214,293

Int. Cl. F02g *3/00*

U.S. Cl. 60—39.61 **10 Claims**

An internal combustion engine comprises a cylinder in the general form of a 'Figure eight,' and comprises two engine

cylinder portions, for example, of toroidal form arranged side by side and interconnected centrally so that the toroids intersect at an intermediate portion common to both. Pistons are centrally rotatably mounted in each associated cylinder portion and operate through a path which moves them through the associated adjacent cylinder portion. The pistons are timed for rotation at a substantially 180° phase difference so that they alternately and cyclically run through the common intermediate portion. The cylinders advantageously rotate with parallel arranged shafts interengaged by appropriate gearing to provide for the necessary phase difference opera-



tion. The construction includes a rotary valve for timing the opening and closing of inlet and outlet ports which are connected to the respective cylinder parts and which regulate the inlet air flow from a compressor and the exhaust of gases from the cylinder. Each cylinder part is provided with a port which leads to a small sized combustion chamber and the rotation of the pistons is such that the fuel and gas mixture is directed into each combustion chamber during each revolution, where it is ignited in the chamber and the compressed combustion gases are directed outwardly behind the pistons to provide the driving power.

3,797,238

SOLID HYPERGOLIC PROPELLANT SYSTEMS

Bernard L. Iwanciow, Sunnyvale, and William J. Lawrence, San Jose, both of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 4, 1965, Ser. No. 461,555

Int. Cl. C06d *5/06*

U.S. Cl. 60—219 **8 Claims**

Hypergolic solid oxidizer and fuel systems are provided whereby ignition and combustion of the separate solid fuel and oxidizer grains can be obtained by contacting of the respective grains. Suitable solid oxidizers include $NOBrF_4$, $LiClO_4 \cdot NOF$, $MgClO_4 \cdot 2NOF$, NO_2ClO_4, NO_2BF_4, $(NO_2)_3(AlClO_4)_6$, NO_2AsF_6, NO_2SbF_6, and NO_2PF_6. Suitable solid fuels include $LiAlH_4$, $LiBH_4$, Li_2AlH_5, BeH_2, $LiH_2 \cdot BeH_2$, tetramethylammonium hydrotriborate, triaminoguonidinium diazine, diaminotetrazine, 4-amino-3, 5-dihydrazine-1,2,4-triazole, $N_2H_4(BH_3)_2$, μ-(hydrazino)decaborane, 3,6-dihydrazine-s-tetrazine, NH_4N_3, $(CH_3)_4NB_3H_8$ and borane complexes with ammonia such as $B_{10}H_{12} \cdot 2NH_3$.

Completely fluorinated polyethylene resin is a suitable binder for the oxidizer system.

3,797,239

SUPERSONIC COMBUSTION ENGINE

George F. Hausmann, Glastonbury, Conn., and Arthur W. Blackman, Cambridge, Mass., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 24, 1965, Ser. No. 504,706

Int. Cl. F02k *3/00*

U.S. Cl. 60—268 **1 Claim**

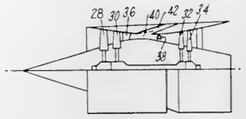
1. An airbreathing turbine-type powerplant comprising:

a supersonic convergent inlet having a throat in which air flows at supersonic velocity,

a plurality of counterrotating supersonic impulse rotors located at the throat of said inlet whereby the air is accelerated and discharged at supersonic velocity

means for driving said rotors,

a plurality of supersonic straightening stators downstream of said rotors,



means for injecting fuel into said supersonic airstream through said supersonic straightening stators,

a fixed, annular supersonic diffuser downstream of said stators,

and a combustion chamber downstream of said fuel injecting means for combusting said fuel-air mixture at supersonic velocities.

3,797,240

EXHAUST EMISSION CONTROL DEVICE

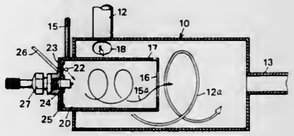
Tokuta Inoue, and Shunzo Yamaguchi, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichiken and Nippon Denso Kabushiki Kaisha, Kariya-shi, both of, Japan

Filed Feb. 2, 1972, Ser. No. 222,900

Claims priority, application Japan, June 2, 1971, 46-38824

Int. Cl. F01n *3/14*

U.S. Cl. 60—303 **5 Claims**



This invention relates to an exhaust emission control device. A vortical combustion chamber extends into an oxidation reaction chamber so that the exhaust gases introduced into the oxidation reaction chamber through the exhaust manifold may be brought into direct contact with the outer wall surfaces of the vortical combustion chamber.

3,797,241

APPARATUS FOR CONTROLLING THE EXHAUST EMISSIONS FROM INTERNAL COMBUSTION ENGINES

Herbert Kern, Lerchenstr. 46, 7272 Altensteig, Germany

Filed Aug. 9, 1971, Ser. No. 169,937

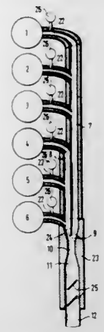
Claims priority, application Germany, Dec. 9, 1970, 2060630

Int. Cl. F02b *27/04*; **F01n** *3/10*

U.S. Cl. 60—305 **16 Claims**

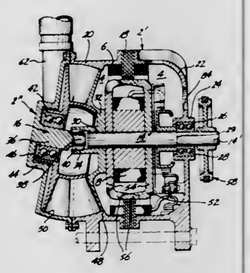
An improved apparatus for controlling exhaust emissions and reducing the poisonous components in exhaust gases from multi-cylinder reciprocating and rotary piston internal combustion engines which utilizes the introduction of secondary air into the exhaust gases to further combustion thereof. A pair of exhaust collecting conduits are provided and coupled to a pulse converter which includes an inlet nozzle, a mixing

tube and diffuser section. At least a portion of the pulse converter is thermally insulated so as to provide a thermally insu-



lated reaction section wherein the exhaust gases from the engine are further reacted to control the emissions.

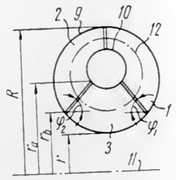
3,797,242
UNIFIED SMOG PUMP AND ALTERNATOR
Meredith E. Bowdish, P.O. Box 2011, Anchorage, Alaska
Filed June 2, 1972, Ser. No. 259,142
Int. Cl. F01n *3/10*; **H02k** *9/06*
U.S. Cl. 60—307 **13 Claims**



The unit is employed with a combustible fuel driven engine, and comprises a casing defining a chamber having an operatively driven shaft rotatably mounted therein, and a rotary electric winding and a pump rotor fixed end to end of one another on the shaft in the chamber. The rotor and the winding are closed to one another, at one end portion thereof, within a circle centered about the shaft, and there are means about the circle in the chamber, forming a rotary seal with the one end portion, so that the portion of the chamber occupied by the rotor is segregated from that occupied by the winding, in a fluid-tight manner. There are also means cooperating with the rotor to intake and discharge air to the exhaust system of the engine, from the portion of the chamber occupied by the rotor during the rotation of the shaft, and means cooperating with the winding to generate an electric current flow to the engine ignition system, during the intake and discharge of the air from the chamber.

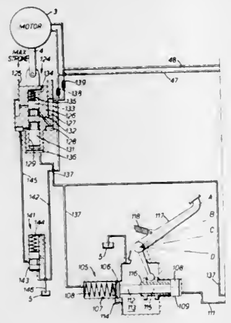
3,797,243
HYDRAULIC TORQUE CONVERTER
Sergei Mikhailovich Trusov, 11 Parkovaya, 44, Korpus 4, kv. 28, Moscow, U.S.S.R.
Filed July 7, 1972, Ser. No. 269,781
Claims priority, application U.S.S.R., July 8, 1971, 1679758
Int. Cl. F16d *33/20*
U.S. Cl. 60—361 **10 Claims**

A hydraulic torque converter is disclosed with a wide passage area and specially selected parameters of the blading



of the individual converter wheels which increases considerably the efficiency and power capacity of said converter.

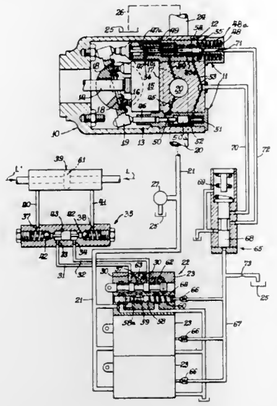
3,797,244
HYDRAULIC APPARATUS
John Henry Waters, Cheltenham, England, assignor to Dowty Hydraulic Units Limited, Arley Court, Cheltenham, England
Filed May 24, 1971, Ser. No. 146,105
Claims priority, application Great Britain, May 26, 1970, 25156/70
Int. Cl. F15b *15/18*
U.S. Cl. 60—443 **15 Claims**



A hydraulic control system comprising a master piston-and-cylinder unit adjustable by a main control member to displace liquid, a plurality of slave piston-and-cylinder units hydraulically connected to the master cylinder to displace liquid and intended for connection to a plurality of subsidiary control members, and mechanical means such as springs, operative as liquid is displaced from the master piston-and-cylinder unit to cause movement of the slave units in a desired sequence. The control system may be combined with a hydraulic power transmission comprising a fixed positive displacement pump and a variable positive displacement motor, a first slave piston-and-cylinder unit being arranged to adjust motor displacement and a second slave piston-and-cylinder unit being arranged to control a variable by-pass for selectively by-passing a proportion of pump delivery such that continuous adjustment of the main control member will sequentially adjust the variable by-pass and motor displacement.

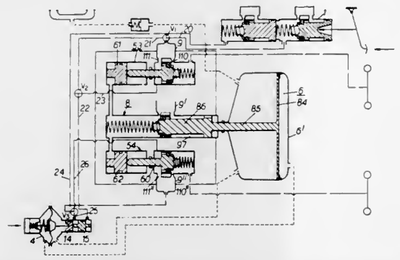
3,797,245
DUAL RANGE PRESSURE DEPENDENT VARIABLE FLOW FLUID DELIVERY SYSTEM
Arthur J. Hein, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 25, 1972, Ser. No. 283,855
Int. Cl. F16h *39/46*
U.S. Cl. 60—452 **9 Claims**

Using a variable displacement pump as a source of pressurized fluid in a pressurized fluid delivery circuit, the displacement of the pump can be controlled by pressure in the fluid delivery circuit over a first pressure compensated range when work circuits connected thereto are capable of being operated within the first pressure range and also at a second



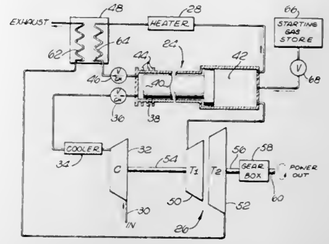
higher pressure compensated range if any work circuit requires a higher pressure by using the pressure above a preselected value in the work circuit to change the range pressure compensation to a higher level through adjustment of control components.

3,797,246
MULTI-CIRCUIT BRAKE SYSTEM
Juan Belart, Walldorf; Hans-Albert Beller, Bad Vilbel, and Jochen Burgdorf, Offenbach, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed Oct. 18, 1972, Ser. No. 298,737
Claims priority, application Germany, Oct. 30, 1971, 2154229
Int. Cl. F15b *7/00*
U.S. Cl. 60—555 **3 Claims**



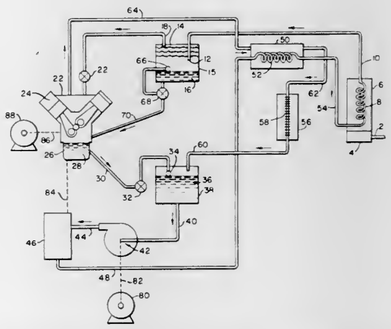
This relates to a power assisted multi-circuit brake system. The brake system includes a primary multi-circuit master cylinder, an intermediate master cylinder for each brake circuit, a brake booster common to each intermediate master cylinder and a control valve for the brake booster. As disclosed herein a single compact structural unit of reduced axial length is provided including the intermediate master cylinders and the brake booster. This is accomplished by placing the intermediate master cylinders and the brake booster in a parallel relationship with respect to each other in the compact structural unit. A single brake fluid reservoir can be employed for the intermediate master cylinders and the brake booster because the intermediate master cylinders are oriented with respect to the brake booster so that the intermediate master cylinder stroke is opposite to the brake booster stroke.

3,797,247
COMPOUND BRAYTON-CYCLE ENGINE
Everett H. Schwartzman, 724 Cloyden Rd., Palos Verdes Estates, Calif.
Filed Aug. 10, 1972, Ser. No. 279,552
Int. Cl. F01k *3/18*
U.S. Cl. 60—59 T **10 Claims**



A system is disclosed incorporating a reciprocating-piston compressor and drive arrangement for converting a portion of the heat of a working fluid to attain a pressure increase, with the resulting working fluid supplied to a turbine. As disclosed, the reciprocating structure is a free-piston engine with the compressor piston and drive-engine piston an integral structure. The housing of the free-piston structure incorporates cooling structure, for example so that the reciprocating compressor may approach isothermal operation. As disclosed, working fluid is heated to drive the free-piston engine, exhausting to drive the turbine which supplies mechanical output power. Also as disclosed, the turbine drives a rotary compressor or supercharger, which supplies intake fluid to the free-piston compressor, the output of which supplies the heater.

3,797,248
RANKINE CYCLE START UP SYSTEM
Walter H. Witzel, Sudbury, and Edward F. Doyle, Dedham, both of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.
Filed , Ser. No. 210,749
Int. Cl. F01k *25/08, 27/00*
U.S. Cl. 60—36 **4 Claims**



In the starting mode of a closed cycle system, after a period of quiescence, a mixture of working fluid and lubricant is extracted from portions of the system, according to the need for fluid in the cycle, and transmitted into a reservoir where it provides a small pressure head to a starting mode pressurization pump and also provides working fluid for the starting mode. During the starting mode, the prepressurization pump is activated to maintain the static pressure of the fluid exiting

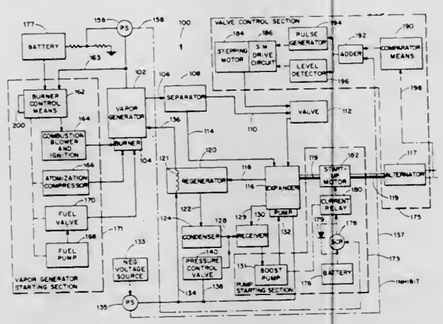
through it above its vapor pressure, before it is further pressurized. The mixture is later heated at least to a point where the working fluid is vaporized. The lubricant is removed from the working fluid in a liquid state before the working fluid is recondensed, by a gravity or screen separator. The separated working fluid is retained in the cycle, while the separated lubricant is returned to the point from which it was extracted.

3,797,249

AUTOMATIC VAPOR ENGINE START-UP

Constantine D. Pezaris, Nahant; William P. Tegan, Billerica, and Paul J. Trame, South Hamilton, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed Jan. 6, 1972, Ser. No. 215,898
Int. Cl. F23n *1/10*
U.S. Cl. 60—106 **23 Claims**



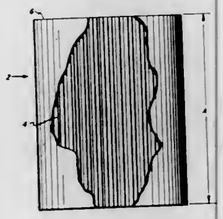
An automatic start-up system for a Rankine cycle engine provides start-up from a single actuation; for example, the closing of a switch. The start-up system initiates operation of a vapor generator for vaporizing working fluid which is admitted to an expander to produce work and a pumping system which supplies working fluid in the liquid state to the vapor generator. When the vaporized working fluid from the vapor generator begins to operate the expander at a predetermined running speed, the start-up system is deenergized to terminate start-up operation. The engine then continues in a running mode. The engine may have a valve between the vapor generator and the expander for controlling admission of vaporized working fluid to the expander. When such a valve is present, a control means responsive to an appropriate engine operating condition is provided for establishing the proper valve setting.

3,797,250

CAPILLARY DEVICE

Gerard P. Canevari, Cranford, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 40,923, May 27, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,219
Int. Cl. E02b *11/00*
U.S. Cl. 61—10 **2 Claims**



A device for sorbing large amounts of liquid by capillary action. The device comprises a multiplicity of cylindrically shaped particles. Each particle comprises a plurality of capillary sized passageways which run the length of the particle. The particles each sorb an amount of liquid, by capillary action, equal to the volume of the capillary passageways. The particles may be used in any application requiring the sorption and retention of liquids. These particles have particular application to sorbing and retention of water from muddy soils so as to improve the load-bearing characteristics of the soil.

3,797,251

DRAIN MATERIAL FOR USE IN A WATER-CONTAINING POOR SUBSOIL AND A METHOD FOR INSTALLING SAID DRAIN MATERIAL THEREIN

Teruo Shimizu, Tokyo, Japan, assignor to Kabushiki Kaisha Kumagaigumi, Fukui-ken, Japan

Filed Aug. 21, 1972, Ser. No. 282,154
Claims priority, application Japan, Aug. 31, 1971, 46/66279
Int. Cl. E02b *11/00;* **E02d** *3/10*
U.S. Cl. 61—11 **7 Claims**

There are disclosed a drain material and a method of installation thereof, in which a column-shaped or rod-shaped drain member of an extremely light and continuous cellular foamed synthetic resinous material is used as a drain material for withdrawing water from the water-containing poor subsoil to improve the strength or condition of the soil, thereby providing convenience for transportation and simplicity in working. For facilitating the insertion of the drain member into the water-containing poor subsoil, a casing pipe having a lid member at its lower end is employed. When the casing pipe is withdrawn from the water-containing poor subsoil, the drain member is pressed down either by a weight secured to the lower portion of the drain member or by compressed air pressure thereon to prevent upward shifting caused by the frictional force between the drain member and the casing pipe.

3,797,252

METHOD FOR INSTALLING A DRAIN MATERIAL IN A WATER-CONTAINING POOR SUBSOIL

Motoo Ohtsuka, Tokyo, Japan, assignor to Kabushiki Kaisha Kumagaigumi, Fukui-shi, Fukui-ken, Japan

Filed Aug. 21, 1972, Ser. No. 282,156
Claims priority, application Japan, Sept. 1, 1972, 47-66594
Int. Cl. E02b *11/00, 13/00*
U.S. Cl. 61—11 **3 Claims**

Drain material formed into a column-shaped or rod-shaped member of an extremely light continuous cellular foamed synthetic resinous material is used for withdrawing water from a water-containing poor subsoil to improve the strength or condition of the soil. For facilitating the insertion of the drain member into the subsoil, the drain member is inserted within a casing pipe prior to installation. A stopper which engages the lower end face of the casing pipe is secured to that lower portion of the drain member which extends downwardly from the lower end of the casing pipe. When the casing pipe, within

which the drain member is accommodated, is driven into subsoil, the stopper functions to prevent the drain member from being shifted upwardly by resisting the lifting through the soil,

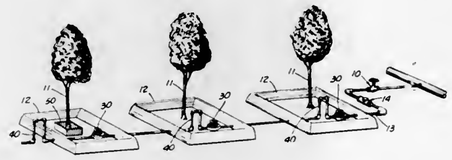
at the stage of removing the casing pipe, said stopper utilizing the soil resistance acting thereon, functions to prevent the drain member from being withdrawn with the pipe.

3,797,253

AUTOMATIC IRRIGATION SYSTEM

Chester C. Rodieck, 1596 W. Mells Ln., Anaheim, Calif.

Filed Jan. 10, 1972, Ser. No. 216,576
Int. Cl. E02b *13/00*
U.S. Cl. 61—12 **10 Claims**



The irrigation system is comprised of a plurality of valves with each valve connected by means of piping to a pressurized water source. Each item to be watered is provided with a well around its base and at least one valve is positioned within each of the wells. One or more risers, of preselected height, are provided in said piping so as to force each valve that has been closed, by the water reaching a preselected height in the well, to remain closed for so long as there is water pressure applied to the system.

3,797,254

CONSOLIDATION OF ROCK STRATA

Arthur Askey, Doncaster, and John Michael Murphy, Mansfield, both of England, assignors to Explosives and Chemical Products Limited, London, England

Filed Feb. 28, 1972, Ser. No. 229,844
Claims priority, application Great Britain, Mar. 1, 1971, 5729/71
Int. Cl. E21d *21/00*
U.S. Cl. 61—45 B **10 Claims**

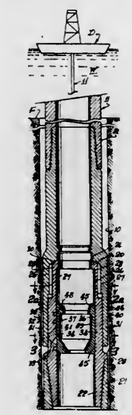
The consolidation of friable rock strate found in, for example, underground roadways and tunnels encountered in mining and civil engineering is effected by the use of a hollow tubular reinforcing member having enlarged end portions in a borehole having a diameter which is at least 4 mm. greater than that of the unenlarged portion of the reinforcing member. It is possible to install such reinforcing members using relatively simple hand-held drilling machines, and to provide the reinforcing member with an inner calibrated rod capable of indicating an increase in stress within the tubular member.

3,797,255

UNDER-WATER ANCHOR APPARATUS AND METHODS OF INSTALLATION

Archer W. Kammerer, Jr., Fullerton, Calif., and Gary R. Johnson, Houston, Tex., assignors to Baker Oil Tools, Inc., Commerce, Calif.

Continuation of Ser. No. 132,993, April 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 23,700, March 30, 1970, abandoned. This application Feb. 26, 1973, Ser. No. 335,648
Int. Cl. E02d *5/54*
U.S. Cl. 61—46 **35 Claims**



An anchor forms part of a drill pipe string secured to a drill bit that drills the hole from the ocean sea bottom or floor to the required depth at which the anchor is to be set. Anchor members or flukes are expanded outwardly to set or secure the anchor to the formation, or the anchor is otherwise secured to the formation, after which an anchor cable or chain is lowered through the drill pipe or lowered over the drill pipe and coupled to the set anchor, whereupon the drill pipe is released from the anchor apparatus and retrieved, with the cable or chain extending to the surface of the ocean or other body of water.

3,797,256

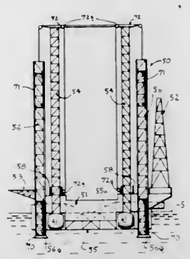
JACK-UP TYPE OFFSHORE PLATFORM APPARATUS

Robert P. Giblon, Shrewsbury, N.J., assignor to George C. Sharp, Inc., New York, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,256
Int. Cl. E02b *17/00;* **B63b** *35/44*
U.S. Cl. 61—46.5 **30 Claims**

Floatable, jack-up type offshore drilling platform apparatus has "multiple-stage" feature permitting use in water depths greater than 300 feet, e.g. 600 feet or more, under 100-year storm conditions. Either a mobile type rig or a self-erecting permanent type platform structure is provided. Apparatus includes a floatable upper or working platform to be jacked out of water, one or more lower support platforms each functioning as a weight support and as a lateral bracing structure when the apparatus is erected, a plurality (three or more) of 300 feet long upper support legs permanently attached at their lower ends to each lower platform and whose upper ends are slidable through, but attachable to the next platform

thereabove, and a plurality of independently movable lower support legs whose upper ends are slidable through, but attachable to the lowermost platform and whose lower ends rest on the sea bottom. Lower stages widen progressively for increased stability. Stages telescope, the lower platforms nesting with the upper platform, and all support legs projecting above water level, when rig is collapsed and floating. Buoyancy tanks on lowermost legs permit use of winch and cable devices or

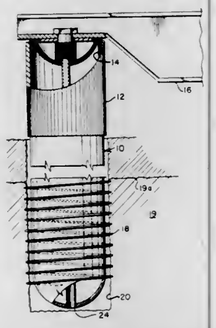


low-powered jacks for raising and lowering same, and buoyancy tanks in each lower platform permit use of low-powered jacks for raising and lowering platforms, including upper platforms. Telescopic air or compressed gas operated jack, 145 feet long and having expansible movement of 105 feet, is attached at lower end of each lower support leg in one embodiment, and is also useful on modified form of jack-up offshore platform for intermediate depths.

3,797,257
BLADE PILE AND METHOD FOR INCREASING THE BEARING STRENGTH OF PILE

Erwin L. Long, 5741 College Dr., Anchorage, Alaska

Filed Aug. 4, 1972, Ser. No. 278,048
Int. Cl. E02d *3/12, 5/48*
U.S. Cl. 61—53.5 **21 Claims**



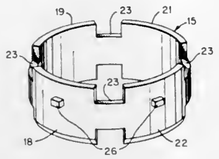
A pile and a method for increasing the bearing strength of a pile in which a pile having a helical, flexible blade is rotated or screwed into a pre-augered hole in the permafrost. Several embodiments are disclosed for reducing friction on the blade, by changing the shape of the blade or precutting a groove for the blade. Another embodiment of the method includes introducing a fill material between the surfaces of the blades and between the pile and the soil surrounding the pile and blades.

3,797,258
SHIM TAKE-UP RING FOR PILE CONNECTION

Sidney E. Dubuisson, P.O. Box 60252, New Orleans, La., and Allen J. Verret, P.O. Box 1219, Morgan City, La.

Filed July 12, 1972, Ser. No. 270,893
Int. Cl. B63b *21/00;* **F16l** *9/18;* **E21b** *19/10*
U.S. Cl. 61—53.5 **6 Claims**

The invention relates to a shim fixture adapted for use on a structure employing an elongated cylindrical leg which accommodates an internal cylindrical anchoring pile. The leg slidably accommodates the pile through the center passage thereof as the pile is embedded into an anchoring substratum to a desired depth. The non-uniform annular opening defined between contiguous walls of the pile and the leg respectively is

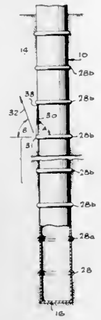


provided with a shim type take-up ring. The latter is fabricated from a series of discrete, circularly arranged shim segments, each segment having a desired thickness adapted to best be urged through a portion of the irregularly spaced annular opening.

3,797,259
METHOD FOR INSITU ANCHORING PILING

Archer W. Kammerer, Jr., Fullerton, Calif., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Dec. 13, 1971, Ser. No. 207,144
Int. Cl. E02d *5/28;* **B21d** *39/00*
U.S. Cl. 61—53.68 **3 Claims**



Method for securing tubular piling or pile casing in the ground which comprises inserting tubular piling into the ground, preferably heavy piling adapted to be driven into the ground, inserting an expandable mechanism, e.g., an expandable hydraulically actuated mandrel, into the tubular piling at one or more spaced intervals or positions longitudinally along the piling, expanding the mechanism at each such position to expand the piling outwardly to form one or more protrusions spaced longitudinally along the piling, and retracting the expandable mechanism at each such position.

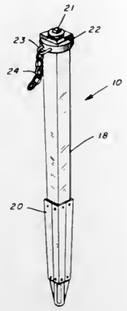
3,797,260
PIPELINE ANCHORING SYSTEM

Brian C. Webb, 732 South 95 East Ave., Tulsa, Okla.,

Filed May 18, 1972, Ser. No. 254,461
Int. Cl. F16l *1/00;* **E02d** *5/74*
U.S. Cl. 61—72.1 **13 Claims**

This invention describes a method and apparatus for anchoring a mechanical pipeline system by attaching it to a plurality of anchor posts which have been positioned in the earth. The anchor posts are provided with means for attaching two tension members to their top end. The pipeline may be anchored in a ditch dug into the earth, or in the earth under an overlying layer of water. A plurality of anchor posts arranged

in spaced relation along a line are positioned in the earth. The pipeline is placed on the line over the tops of the anchor posts. A clamp means, adapted to be bent around the pipe, is placed

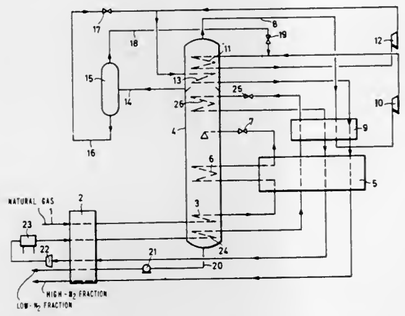


over and around the pipe. The two tension members which are attached to the posts are then locked to the clamp. Thereafter the pipe is locked to the anchor posts by means of the clamps and the tension members.

3,797,261
SINGLE-STAGE FRACTIONATION OF NATURAL GAS CONTAINING NITROGEN

Friedrich Juncker, Bergen-Enkheim; Johannes Kranz, Bad Vilbel; Martin Streich, Nieder-Eschbach; Heiner Tanz, Sprendlingen, and Gerd Vollrath, Steinheim/M, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed May 11, 1971, Ser. No. 142,299
Claims priority, application Germany, May 12, 1970, 2022954
Int. Cl. F25j *1/02, 3/02*
U.S. Cl. 62—40 **8 Claims**

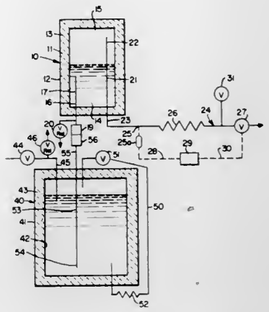


Separation of natural gas containing nitrogen into a low-nitrogen fraction and a high-nitrogen fraction is achieved in a single distillation column in which reflux is provided by expanding the high-nitrogen fraction with the performance of work and using the resulting refrigeration to condense vapor in the upper section of the column while additional reflux is provided by vaporizing a recycle medium in heat exchange relation with vapor in the column. Incoming natural gas is passed in heat exchange relation with liquid in the column bottom, further cooled and expanded into the middle section of the column. A helium-rich fraction may be separated from the high-nitrogen fraction.

3,797,262
CRYOGENIC FLUID SUPPLY SYSTEM

Lester K. Eigenbrod, Indianapolis, Ind., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,091
Int. Cl. F17c *7/02*
U.S. Cl. 62—50 **9 Claims**

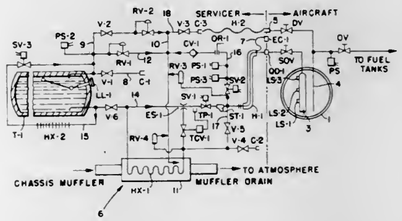


Oxygen breathing gas is discharged from a system including a larger liquid oxygen supply container and a separate smaller storage-dispenser container which is inverted for filling by the supply container and then turned to the top-up position for dispensing.

3,797,263
DEWAR FILLING, PURGING, AND DRAINING SYSTEM

Fred A. Shahir, Santa Ana, and William R. Clarke, Los Angeles, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jan. 7, 1972, Ser. No. 216,112
Int. Cl. F17c *7/02*
U.S. Cl. 62—51 **27 Claims**



A dewar filling, purging, and draining system characterized in that in the case of servicing of an aircraft dewar containing inerting fluid in liquid form, such as liquid nitrogen (LN_2), for use in the aircraft for inerting fuel tanks and the like to prevent fire and explosion, the system is embodied in a mobile vehicle such as a pickup truck with the muffler thereof constituting a heat exchanger to control the saturation pressure of the liquid supplied from the system to the aircraft dewar and to heat gaseous nitrogen (GN_2) vented from the system so that no vapor clouds will be visible. The system herein is further characterized in that a single fill hose is employed through which all filling and venting is accomplished, the system and aircraft dewar being provided with pressure switches and the aircraft dewar being provided with liquid level sensors to automatically control the filling and venting functions of the system through electronic controls and valving contained in the system.

3,797,264

LOW-TEMPERATURE PUMPING DEVICE

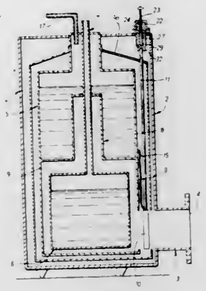
Jean-Jacques Thibault, Saint Martin d'Uriage, and Jean-Claude Boissin, Montbonnot-Saint-Martin, both of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 27, 1972, Ser. No. 309,701

Claims priority, application France, Nov. 6, 1971, 71.42384; July 7, 1971, 71.24603

Int. Cl. B01d *5/00*

U.S. Cl. 62—55.5 **18 Claims**



An improved low-temperature pump and apparatus for producing very high vacua and ultra-vacua with a pumping speed which can be varied at will, comprises a pumping chamber, a gas-evacuation opening formed in the said chamber, a pumping body located at a distance from the said chamber and adapted to form a main low-temperature pumping surface, comprising also means for cooling the said body to a very low temperature and, if so desired, means for forming a head screen at a moderately cold temperature around and at a distance from the said main low-temperature pumping body, such as an internal wall of the heat-insulating chamber and a gas-permeable reflector baffle, the said pump further comprising a wall-screen continuous thermal relation with a cold element of the said low-temperature pump, forming an auxiliary low-temperature pumping surface and disposed in a valve conduit adapted to be controlled to the chamber to be evacuated, said valve being equipped with a clapper device adjustable in position and adapted to close the opening in the said pumping chamber, and also with means for putting the said wall-screen into operation, said latter means being controlled in dependence on the position of the said closure clapper, forming through said wall-screen a passage of minimum conductivity in the minimum opening position of said clapper and with increasing conductivity between the minimum and maximum opening positions of the said clapper. The invention is especially applicable to furnaces or ovens operating under very high vacua.

3,797,265

PRESSURIZED REFRIGERANT FEED WITH RECIRCULATION

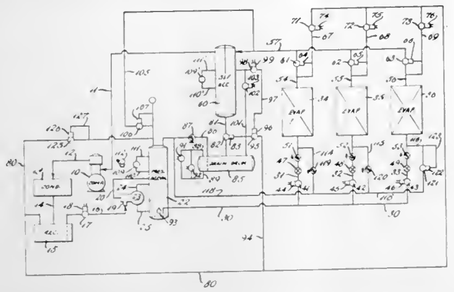
Milton E. Garland, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Continuation-in-part of Ser. No. 71,487, Sept. 11, 1970, Pat. No. 3,643,460, and a continuation-in-part of Ser. No. 186,750, Oct. 5, 1971, abandoned. This application Jan. 3, 1973, Ser. No. 320,794

Int. Cl. F25b *41/00*

U.S. Cl. 62—174 **7 Claims**

A pressure accumulator receives liquid refrigerant from the receiver and supplies it to the evaporators. Liquid from the evaporators is temporarily stored in an upper accumulator from which it may drain to a drum which can be pressurized to return it to the pressure accumulator. A gaseous refrigerant connection from the receiver supplies pressure for the accumulator and for defrosting the evaporators, the arrangement



eliminating the need for individual back pressure valves for each evaporator or group of evaporators during defrosting.

3,797,266

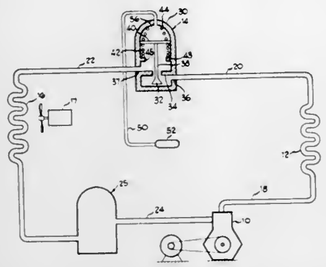
AIR CONDITIONING CONTROL SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 7, 1972, Ser. No. 269,638

Int. Cl. F25b *41/04*

U.S. Cl. 62—223 **3 Claims**



A refrigerant control system, particularly useful for air conditioning apparatus, including means for operating the system with a relatively high evaporator pressure during the time the temperature within the cooled space is being reduced to its desired level. The constant pressure expansion device, at system start up, is operated at a relatively high pressure to maximize the refrigeration effect and increase cooling capacity. A temperature sensing element, which is sensitive to a variable indicative of air temperature within the cooled space, is operative to reset the control point of the expansion device to reduce the temperature and pressure of the evaporator. The improvement of the subject invention is directed to a system in which the temperature sensing element comprises a temperature responsive bulb and capillary charged with a fluid having a pressure difference over its temperature range which approximately matches the pressure difference of the system refrigerant over its range of operating conditions.

3,797,267

ICE RAKE CONTROL

William F. Hagen, Argyle, Tex., assignor to Turbo Refrigerating Company, Denton, Tex.

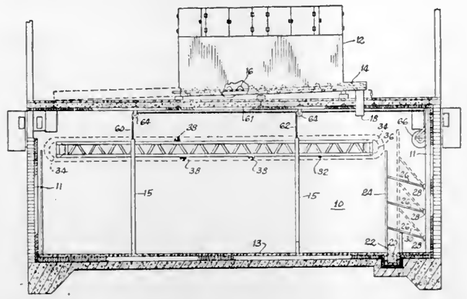
Continuation-in-part of Ser. No. 273,327, July 19, 1972. This application Nov. 15, 1972, Ser. No. 306,712

Int. Cl. F25c *5/18*

U.S. Cl. 62—233 **11 Claims**

A control system for an ice rake in ice making apparatus comprising means to activate the ice rake to raise the ice rake

at predetermined intervals for a predetermined period of time when ice is supplied to the ice making apparatus and means to simultaneously energize the ice rake to drive the flites of the



ice rake in a forward direction for a predetermined time and to drive the flites in a rearward direction for another predetermined time.

3,797,268

MACHINE FOR MAKING ICE CREAM

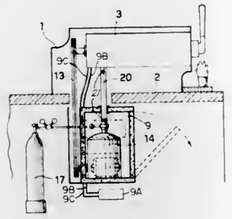
Giancarlo Garavelli, Rome, Italy, assignor to Isernia Aktiengesellschaft, Gamprin, Liechtenstein

Continuation-in-part of Ser. No. 49,450, June 24, 1970, Pat. No. 3,724,234. This application Feb. 1, 1972, Ser. No. 222,615

Claims priority, application Italy, Mar. 6, 1971, 48857/71

Int. Cl. F25c *7/14*

U.S. Cl. 62—258 **9 Claims**



A machine for making ice cream having an independent container containing ice cream mix located within a refrigerating chamber, a cylinder of gas under pressure, a feed line extending from the cylinder to the container, a mixer-freezer located outside of the refrigerating chamber, and an outlet tube extending between the container and the mixer-freezer.

3,797,269

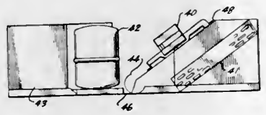
CONDENSATE DISPOSAL SYSTEM

Gordon M. De Jarlais, Frankfort, Ind., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 18, 1972, Ser. No. 290,276

Int. Cl. F25b *47/00*

U.S. Cl. 62—280 **5 Claims**



Apparatus is disclosed for disposing of condensate from the evaporator of a refrigeration air conditioning system. A fan in a fan shroud is provided to move a current of air over the condenser and to pressurize the condenser plenum. An aperture through the fan shroud is adjacent to a low point in a base pan designed to collect the condensate. A baffle or air duct adjacent the aperture on the inlet side of the fan shroud directs air from the aperture back into the fan. Condensate is atomized by the return flow of air through the aperture, directed through the fan and onto the condenser of the refrigeration system where it is evaporated. The air duct may be in the form of an upstanding conduit for an air conditioner having a fan with a horizontal axis. In a preferred arrangement the fan axis is tilted and a semi-cylindrical baffle tangent to the base pan opposite the aperture directs air flow back in a largely horizontal direction into the fan.

3,797,270

HEAT PUMP WITH TWO FLUID CIRCUITS

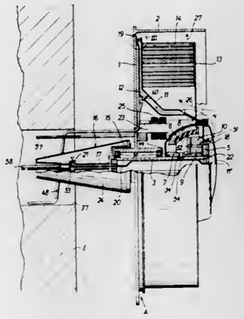
Nikolaus Laing, Aldingen near Stuttgart, Germany, and Ludwig Ludin, Anglikon-Wohlen, Switzerland, assignors to Physikalisch-Technisches Entwicklungsburo Laing, Aldingen bei Stuttgart, Germany

Continuation of Ser. No. 198,721, Nov. 15, 1971. This application June 26, 1973, Ser. No. 373,851

Claims priority, application Switzerland, May 30, 1969, 8321/69; Italy, Nov. 14, 1970, 915728/70

Int. Cl. F25b *3/00*

U.S. Cl. 62—333 **22 Claims**



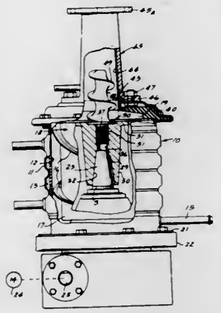
A reversible heat pump, to be used for cooling or heating a space bounded by a wall, has two rotary heat exchangers coaxially mounted on opposite sides of that wall and interconnected by a hub traversing same. The hub includes a highly heat-conductive partition between the fluid-circulation systems of the two heat exchangers. A rotary compressor, forming part of the exterior circulation system, has a housing rigid with the external heat exchanger and an impeller freely rotatable on a shaft of that heat exchanger, this impeller being secured to an armature of a squirrel-cage motor whose field windings are fixedly mounted on the supporting wall structure. The motor armature and the compressor are enshrouded by a magnetically permeable cowl forming a rotary chamber which is filled with a primary heat-carrying fluid, such as Freon, as well as lubricating oil and which communicates with a radiator drum on the periphery of the external heat exchanger. A similar radiator drum on the periphery of the internal heat exchanger is permeated by a secondary heat-carrying fluid, such as a low-boiling alcohol, circulating along the thermally conductive partition in heat-transfer relationship with the primary fluid.

3,797,271

ICE MAKER CONSTRUCTION

Donald F. Swanson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed July 12, 1972, Ser. No. 270,950
Int. Cl. F25c *5/12*
U.S. Cl. 62—354 5 Claims



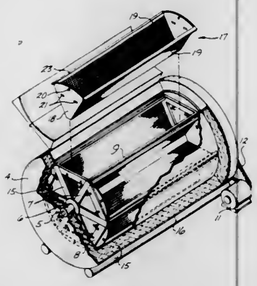
A removable drive connection for the harvest auger of a continuous ice maker having a combined auger and press, has a tapered bored portion extending for a greater portion of the length of the harvest auger and a coaxial threaded portion in comunication with the tapered bored portion forms a means for threading a compression auger to the harvest auger for co-rotation therewith. A correspondingly tapered drive shaft is keyed to the tapered portion of the harvest auger and is removable therefrom by removing the compression auger and threading a puller screw in the threaded portion of the harvest auger thereby to exert a compressive force on the end of the tapered shaft and pull the harvest auger from the shaft.

3,797,272

QUICK-FREEZER

John A. Huey, 830-84th Ave. N.E., Bellevue, Wash.

Filed Apr. 27, 1971, Ser. No. 137,768
Int. Cl. F25d *25/02*
U.S. Cl. 62—38 6 Claims



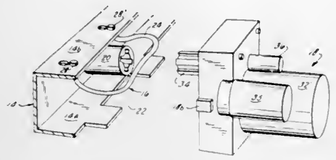
A drum for holding articles to be quick-frozen or otherwise treated is mounted to rotate about a horizontal axis in the cylindrical cavity of a refrigerated or treatment casing which closely embraces the drum. The drum is of skeletal construction and holds trough-shaped receptacles which can be loaded into and removed from the drum through an access opening in the upper portion of the casing closed by a divided cover. The freezing chamber is nearly full of liquid refrigerant, and the convergent sides of the receptacles are perforate or reticulated for free flow of refrigerant through the receptacles as the drum is rotated slowly.

3,797,273

ADJUSTABLE BED MOTOR MOUNT

Roland A. Benoit, and Edmond P. Guillot, both of Danielson, Conn., assignors to Interroyal Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,861
Int. Cl. F16c *1/06*
U.S. Cl. 64—4 8 Claims



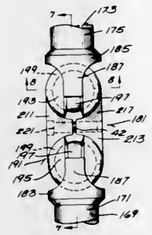
A motor mount, particularly for hospital beds, includes a motor unit equipped with a splined male powered shaft which coacts with a female splined socket which is mounted at a bed motor mounting. The socket is rotatably mounted on a mounting member of the bed frame and is connected to a rotatable part which activates the moving parts of the bed. The splined shaft supports the motor unit which is held against rotation by a slot in a cross frame member and against end play by a spring clip attached to the frame. A plurality of motor units are positioned in a console cabinet in a head or foot board. The console contains operational switches for an attendants use and a master disconnect switch which operates when the cabinet door is completely opened to render safe access to motor servicing and the like. The motor mounting includes a gear housing with an output shaft which is connectable to the female splined socket. The gears in the housing are selectably driven by one of a plurality of different motors or by a hand crank which is connectible to an external crank fitting of the housing.

3,797,274

STERN DRIVE UNIT WITH BELLOWS ENCLOSED REVERSING TRANSMISSION AND UNIVERSAL COUPLING STEERING CONTROL

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 139,555, May 3, 1971. This application July 18, 1972, Ser. No. 272,761
Int. Cl. F16d *3/44*
U.S. Cl. 64—16 3 Claims



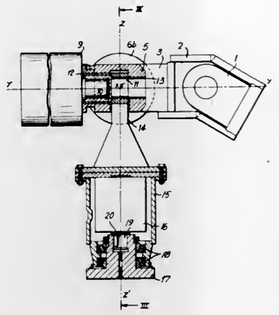
Disclosed herein is a stern drive unit comprising a bellows enclosure defined by a bellows connected between a support adapted to be fixed relative to a boat hull and a tilt housing connected to the support for pivotal movement about a tilt axis, an input shaft extending in the support perpendicularly to the tilt axis, an output shaft journaled in the housing and extending perpendicularly to the tilt axis in generally co-planar relation to the input shaft, a propulsion leg which includes a rotatably mounted propeller connected to the output shaft and which is connected to the tilt housing for pivotal steering movement about an axis co-axial with the output shaft, a reversing transmission located within the bellows enclosure and connected to the input and output shafts for selectively controlling operation of the propeller and including an actuating lever located forwardly of the support, a shock absorber connected between the tilt housing and the support and extending, at least in part, within the bellows enclosure, and a steering control linkage connected to the steerable propulsion leg and extending, at least in part, in the bellows enclosure and including an actuating member located forwardly of the support, and a universal coupling located within the bellows enclosure and connecting two steering control shafts extending radially of the tilt axis.

3,797,275

CONTROLLED-MOTOR PIVOTING COUPLING DEVICES

Pierre Yvon David; Joel M. Charles, both of La Valette, and Robert Julien Toscano, La Seyne Sur Mer, all of France, assignors to Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement, Paris, France

Filed Aug. 8, 1972, Ser. No. 278,798
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 R 5 Claims



A device for allowing a part to be coupled to a support with means for controlling pivotal movements around three perpendicular axes. The device includes an appliance suspended on the arm of a hoisting apparatus by means of a coupling device comprising a bearing extended by a fork carrying two hydraulic motor brakes. A cardan sprocket rotates the fork around the x–x′ axis and is firmly connected with the shafts of the motors. The sprocket carries a further hydraulic motor-brake on a shaft to which is attached a shaft pivotable relative to said the sprocket around the y–y′ axis. A support is integral with the latter shaft and it contains a further or motor brake on which is suspended an appliance pivotable around the vertical axis Z–Z′.

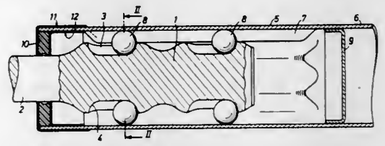
3,797,276

SLIDING JOINT FOR TRANSMITTING TORQUE

Michel Orain, Conflans-Ste-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France

Filed May 22, 1972, Ser. No. 255,459
Claims priority, application France, Dec. 10, 1971, 71.44408
Int. Cl. F16d *3/06*
U.S. Cl. 64—23.7 6 Claims

A sliding joint for transmitting torque from a driving shaft to a driven shaft. One of the shafts is connected to a shank member and the other of the shafts to a sleeve member. The shank member is adapted to be displaced axially relative to the sleeve member. Balls are interposed between the members which are in addition provided with sockets and grooves respectively for housing the balls along their rolling paths of movement. The grooves are substantially semi-circular in cross section and extend parallel to the axis of the joint and regularly angularly spaced thereabout. The sockets on the other hand are divided into two axially spaced groups and are



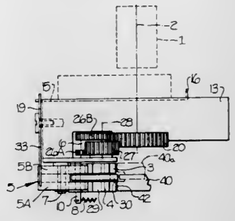
parallel to the grooves. The sockets have spherically shaped ends and middle sections in semi-circular cross section. The spherical ends of the sockets may be formed in stop members of material having a low coefficient of sliding friction.

3,797,277

SAFETY DEVICE FOR POSITIONING OF PATTERN DRUMS IN CIRCULAR KNITTING MACHINES

Jose Maria Dalmau Guell, San Bruno, 103, Badalona, Spain

Filed July 19, 1971, Ser. No. 163,895
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 B 3 Claims



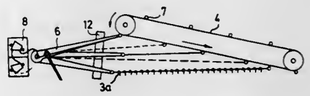
In a circular knitting machine first and second ratchet wheels which regulate the alternate clockwise and counter-clockwise rotation of a knitting instrumentality selector drum, a safety device for ensuring accurate positioning of the drum, consisting of a pawl with two pawl fingers adapted to latch the ratchet wheels and an unlatching element which withdraws the pawl from the ratchet wheels and allows the drum to turn.

3,797,278

WARP KNITTING MACHINE

Karl Kohl, Chlorodontstrasse 10, D-6053 Obertshausen, Germany

Continuation-in-part of Ser. No. 161,859, July 9, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,784
Int. Cl. D04b *23/06*
U.S. Cl. 66—84 5 Claims

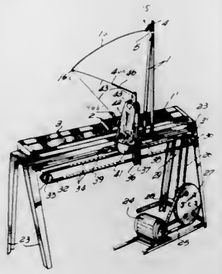


A warp chain receives yarn from a plurality of spools fixedly arranged laterally adjacent a warp knitting machine. The yarn is transferred from the spools to the chain by a plurality of pivotal yarn guides whose free ends pass through arcuate paths during pivoting of the guides. One point of each yarn guide path is adjacent the warp chain for transfer of the yarn thereto and all the arcuate paths intersect at least in one point in the region of the yarn transfer point.

3,797,279
THREAD-FEEDING, TENSION-REGULATING DEVICE FOR STRAIGHT KNITTING MACHINES

Luis Kline, Estados Unidos 1666, and Fernando J. Silberman, Chacabuco 145, both of Buenos Aires, Argentina

Filed May 25, 1972, Ser. No. 256,691
Claims priority, application Argentina, May 26, 1971, 235806
Int. Cl. D04b *15/52, 15/56, 15/64*
U.S. Cl. 66—126 R 11 Claims

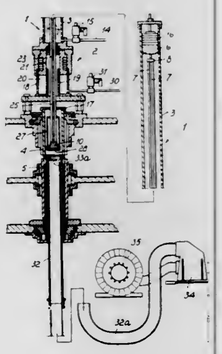


Thread-feeding, tension-regulating device for straight knitting machines, comprising a tensioning arm having a threading member at its free end, supplementing those of the associated machine, with resilient means tending to lift the free end of the supplemental arm, and a device for multiplying the displacements, interposed between a movable application point of the resilient means and that of the pressure exerted on the body of the supplemental arm. The latter performs a substantial angular displacement despite of a very small displacement of the movable application point, the pressure of the resilient means thus remaining virtually uniform along the path of the angular displacement. The inventive device can take various constructional forms.

3,797,280
STRETCHER DEVICE FOR ARTICLES UNDER MANUFACTURE ON DOUBLE CYLINDER CIRCULAR KNITTING MACHINES

Francesco Lonati, Via S. Polo 11, Brescia, Italy (25100)

Continuation-in-part of Ser. No. 188,693, Oct. 12, 1971. This application Apr. 24, 1972, Ser. No. 271,263
Int. Cl. D04b *15/88, 27/34*
U.S. Cl. 66—149 R 9 Claims

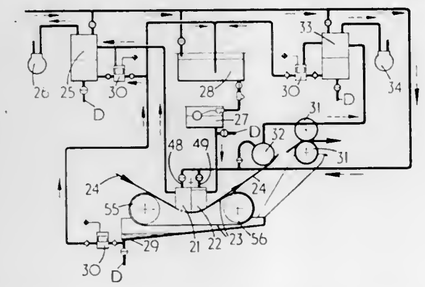


A stretcher device for articles under manufacture on double cylinder circular knitting machines has a first hydraulic piston cylinder unit fixed coaxially above the needle cylinder and a first pair of vertical rods supported on the stem of the piston-cylinder unit. The stretcher devices also comprises a second hydraulic piston-cylinder unit co-axial with the first one. The piston of the latter piston-cylinder unit is formed with cavities for the slidable passage of the first pair of rods. A second pair of rods is arranged to pass into corresponding passages formed in a body rigid with the needle cylinder. Engagement means for the articles, under manufacture are supported by the two pair of rods and arranged to be alternately moved in an upward and downward direction by the two piston-cylinder units.

3,797,281
APPARATUS FOR TREATING WEBS

David Edward Pepler Norton, Over Alderley, England, assignor to Sir James Farmer & Co. Limited, Salford, Manchester, Lancashire, England

Filed Mar. 7, 1972, Ser. No. 232,545
Claims priority, application Great Britain, June 12, 1971, 27654/71
Int. Cl. B05c *5/02, 9/08*
U.S. Cl. 68—19.1 16 Claims

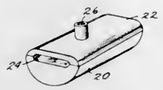


An apparatus for impregnating cloth with, for example a dye liquor in which the cloth is moved past a vacuum chamber which removes the air from the cloth and is then immediately subjected to the action of a dyeing bath. The evacuated cloth either is passed through the dye bath or it is moved past the outlet of a dye bath, the dye being fed gravitationally to the cloth in the latter case. An endless rubber belt ensures that there is no loss of vacuum at the vacuum chamber and assists in moving the cloth past the vacuum chamber and dye bath; the cloth is in direct contact with the vacuum chamber which is not rotated.

3,797,282
CHAIN LOCK

Rene Frontera-Mariani, Calle 4 No. 12-Urb. El Rosario, Yauco, P.R.

Filed Nov. 1, 1972, Ser. No. 302,673
Int. Cl. E05b *67/36*
U.S. Cl. 70—49 6 Claims

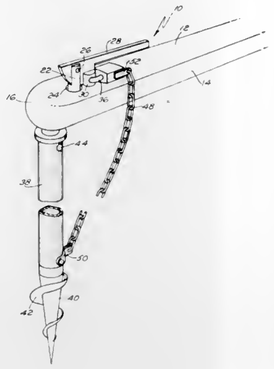


An improved chain lock with a pair of chain engaging members mounted for rotational movement within a housing having opposed openings for each receiving a chain end, a latching mechanism for latching the members in a chain engaging position after they have been rotated to that position by insertion of a chain end into the opening, a spring urging the members into rotation to a release position and a key mechanism for releasing the latching mechanism for either member so that the chain end held by that member can be withdrawn.

3,797,283
DEVICE FOR LOCKING MOVABLE OBJECTS TO THE GROUND

Arthur M. Honer, 111 Redfield Ave., Fayetteville, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,789
Int. Cl. E05b *73/00*
U.S. Cl. 70—58 3 Claims

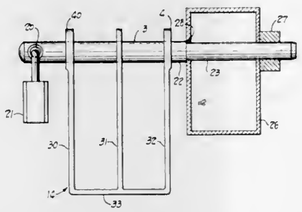


A device for locking movable objects, such as trailers, campers, or the like, to the ground, comprising a conventional trailer tongue secured to the movable object, said tongue being of the type having socket means for lockingly receiving a ball member attached to the top end of a stake having a pointed and threaded lower end which is securely screwed into the ground, whereby the movable object is locked to the stake by means of the ball and socket connection, the invention further comprising link means interconnecting the stake and the trailer tongue so as to prevent sufficient turning of the stake to permit it to become unscrewed from the ground.

3,797,284
SKI PROTECTION SYSTEM AND PARTS THEREFOR

George W. Grossman, 17125 Amber Dr., Cleveland, Ohio

Filed Mar. 16, 1972, Ser. No. 235,201
Int. Cl. E05b *73/00*
U.S. Cl. 70—58 15 Claims

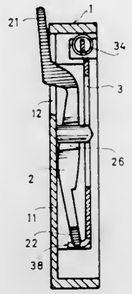


A device for securing skis, ski poles, and the like, including a rod secured to a beam, wall, or other supporting structure, a frame adapted to slide over the rod and means for locking the frame on the rod. The frame includes at least two interconnected members and is open at one side to receive the skis between them. Each member has a rod receiving aperture by which the frame is mounted over the rod to close the open side of the frame once the skis are disposed within the frame. An aperure is also provided in the rod at its outer end to receive a padlock for securing the frame on the rod.

3,797,285
ROUND FURNITURE RECESS LOCK

Ewald Jung, Mettberg, Germany, assignor to La Porte Sohne, Wuppertal-Barmen, Germany

Filed Jan. 23, 1973, Ser. No. 325,964
Claims priority, application Germany, Feb. 2, 1972, 2204847
Int. Cl. E05b *65/46*
U.S. Cl. 70—83 9 Claims

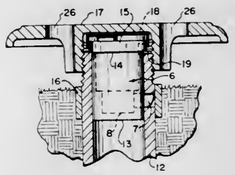


A lock for recessing into an article of furniture which is responsive to a key consisting of a housing having a latch opening formed on its back side, a lid having an opening to receive the key for closing the housing, a latching bolt slidably disposed in said housing having an extending front latch portion offset from the plane of the bolt in the direction of the back of the housing for movement through the opening of said housing, a spring-loaded lock tumbler disposed in said housing and engaging said latching bolt for defining the lock and unlock positions of said bolt, so that when the key is inserted in the housing and rotated, it engages the latch bolt to move the offset front portion out of the housing latch opening in order to lock the furniture article.

3,797,286
CONCEALED LOCK FOR WATER SERVICE CUT-OFF BOX

John R. Saporito, Rockford, Ill., assignor to Joseph A. Spinello and Frank J. Fasula, both of Rockford, Ill., part interest to each

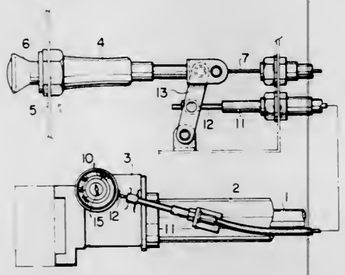
Filed July 26, 1972, Ser. No. 275,235
Int. Cl. F16k *35/10*
U.S. Cl. 70—169 2 Claims



This lock consists of only a stepped cylindrical body the reduced lower shank portion of which fits snugly in the upper end of the stand-pipe with the shouldered upper end resting on the stand-pipe so as to locate the radially movable bolt at the exact level of a keeper hole drilled radially in the upper end portion of the stand-pipe. A press fit ring applied to the outside of the pipe closes the outer end of the hole to protect the lock against dirt and moisture from outside the pipe. A key in possession of an authorized employee of the city water department serves to unlock the lock so it can be removed when a T-wrench of suitable length to reach down below the frost line is to be applied to the stem of the shut-off valve through the

stand-pipe to open or close the valve. The usual screw-on cover cap at ground level threads onto the upper end of the stand-pipe and serves to conceal and protect the lock against being tampered with. Usually the aforesaid T-wrench serves also to unscrew this cap and replace it.

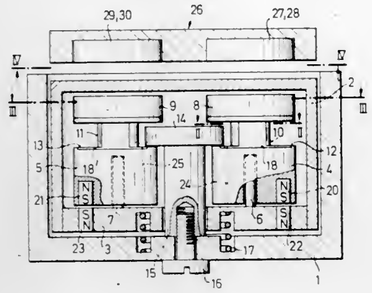
3,797,287
STEERING SYSTEM LOCK FOR DIESEL POWERED MOTOR VEHICLES
Yoshio Iba, and Yutaka Tomizu, both of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-cho, Japan
Filed May 1, 1972, Ser. No. 249,083
Claims priority, application Japan, Aug. 24, 1971, 46-63995
Int. Cl. B60r *25/04, 25/02*
U.S. Cl. 70—239 **6 Claims**



A steering system lock device for a Diesel powered motor vehicle includes, in combination, a key cylinder assembly for locking the steering shaft of the vehicle and an engine shut-down device for starting and stopping the vehicle engine. By inserting a key, the key cylinder assembly can be displaced between several positions including a locked position for the steering shaft. A push-pull connector cable extends between the key cylinder assembly and the engine shut-down device to operatively connect to each other. The key cylinder assembly can be displaced in a position for locking the steering shaft by a key only during the engine stop by operation of the engine shut-down device. On the other hand, the key cylinder assembly is prevented from displacing into the locking position during operation of the engine.

3,797,288
MAGNETICALLY-OPERATED LOCKING AND CONTROL DEVICE
Hermann Hallmann, Hofweg 51, 2 Hamburg 76, Germany
Filed Feb. 8, 1973, Ser. No. 330,758
Claims priority, application Germany, Feb. 10, 1972, 2206332
Int. Cl. E05b *47/00*
U.S. Cl. 70—276 **5 Claims**

A locking and control device has at least one tumbler in which a control magnet is arranged, and which is rotatable between two extreme positions. The tumbler is movable by means of an operating magnet carried by a functional member to an operative position in which a protection bolt can be inserted through an excision of the tumbler. A magnetic compensatory device comprises a further magnet carried by the functional member, with the compensatory magnet and the operating magnet arranged so that in the operative position they are located on either side of the control magnet but in a plane transposed along the axis of rotation of the tumbler. The compensatory device exerts a repulsive force contrary to the operating magnet, with the result that the control magnet is urged to said operative position which is intermediate said extreme positions. In a non-operative position the tumbler has a contacting surface disposed adjacent a contacting surface of the bolt, to prevent withdrawal of the latter, and the contacting surface of the tumbler is formed with at least one detent groove. The bolt can enter into detent engagement with said groove to prevent unauthorised rotation of the tumbler when



in a position separate from the operative position, and the tumbler is associated with a security-type magnet arrangement which tends to shift the tumbler into the position of detent engagement.

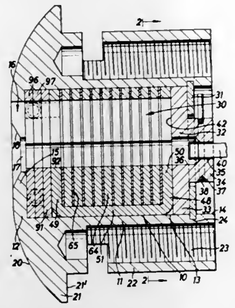
3,797,289
RADIALLY ARRANGED TUMBLER TYPE LOCK
Leonard Mercurio, 34 Beaumont Dr., Plainview, N.Y.
Filed Jan. 17, 1973, Ser. No. 324,332
Int. Cl. E05b *15/14, 27/08*
U.S. Cl. 70—363 **2 Claims**

A radially arranged tumbler type lock having secondary locking means brought into operation upon an attempt to pick the lock without a key. The rotating parts of the lock include a main shaft engageable at an outer end by a key, a first tumbler-carrying plug element fixed to said shaft, a second tumbler-carrying plug element fixed relative to an outer housing, and a third plug element fixed to said shaft and defining a circular groove in which the inner ends of tumblers may move when the tumblers are properly aligned. Arcuate slots transversely communicate with said groove and permit entry of the inner ends of said tumblers therethrough. However, if an attempt is made to pick the lock by progressively overcoming individual tumblers, rotation of the main shaft through a small increment made possible by the overcoming of the first tumbler serves to misalign the remaining arcuate slots with respect to the inner ends of the remaining tumblers, and prevents subsequent aligning movement thereof.

3,797,290
CYLINDER LOCK
Jack William Taylor, Bournemouth, England, assignor to Ingersoll Locks Limited, Ascot, Berkshire, England
Filed July 21, 1972, Ser. No. 273,863
Claims priority, application Great Britain, July 28, 1971, 35430/71
Int. Cl. E05b *29/00*
U.S. Cl. 70—366 **11 Claims**

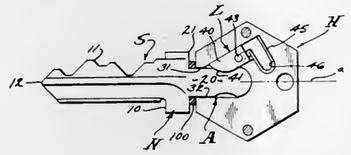
A key operable plug mechanism having a body, a side bar movable to engage the body, a plurality of tumblers, a cylinder for said tumblers, each of said tumblers having a key engaging surface and a side bar accommodating notch the arrangement

being such that on insertion of an appropriate key and rotation of the same, the key engaging surfaces are picked-up to align



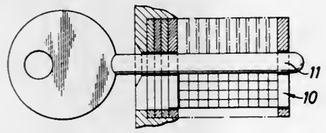
the notches of the tumblers and such that the rotary motion of the key is transmitted to said side bar through said cylinder.

3,797,291
SEPARABLE KEY-HEAD LATCH AND CASE
Parviz Simorghi, 10645 Wilshire Blvd., Los Angeles, Calif.
Filed Aug. 14, 1972, Ser. No. 280,658
Int. Cl. E05b *19/04*
U.S. Cl. 70—395 **9 Claims**



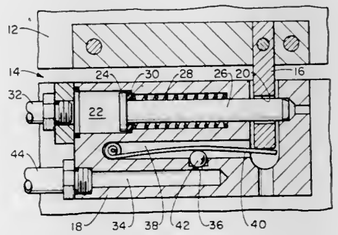
A key system especially suited for encasing a multiplicity of different sized keys with facility, reducing their weight and bulk and with indicating means assuring the selectivity as circumstances require; and comprised of separable keys and a common head therefor with a releasable self-binding latch for manipulation of said keys respectively; and all of which reduces the keys to their minimum shank configurations containing the lock combinations and adapted to be stored in a case associated therewith and having individual pockets selected according to their relative size.

3,797,292
KEYS
Jack William Taylor, Bournemouth, England, assignor to Ingersoll Locks Limited, Berkshire, England
Filed July 21, 1972, Ser. No. 273,794
Int. Cl. E05b *19/06*
U.S. Cl. 70—409 **4 Claims**



The invention is for a key comprising a bit having at least one tumbler engaging surface area including a plurality of step portions each step portion being adapted to engage an appropriate tumbler in said lock with which the key is to be employed each step being shaped or cut in its extremity to enable a surface area of the step to engage a key engaging portion of said tumbler wherein the thickness of the step portions is varied along the length of a bit constituted by said portions.

3,797,293
SAFETY LOCK FOR SAFETY EQUIPMENT SUCH AS HOODS FOR CAN MAKING MACHINERY
Elpidifor Paramonoff, Los Angeles, Calif., assignor to Stanclun, Inc., St. Compton, Calif.
Filed Jan. 22, 1973, Ser. No. 325,908
Int. Cl. B21d *55/00*
U.S. Cl. 72—26 **12 Claims**

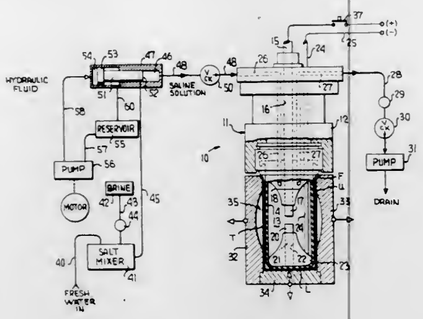


A first fluid line requiring fluid pressure therein throughout operation of an operating mechanism communicates with a fluid cylinder which when fluid pressurized, extends a plunger into secure engagement with an engagement member in its fully engaged position. The engagement member forms a part of safety equipment which places the engagement member in fully engaged position when closed and must be retained closed during operating mechanism operation for safety purposes. A second fluid line requiring fluid pressure therein to be maintained for the starting of the operating mechanism or for the continued operation thereof communicates with a fluid vent relieving fluid pressure when open and retaining fluid pressure when closed by a ball controlled by a pivotal cantilever member. An end portion of the cantilever member is engaged by the engagement member when in fully engaged position retaining the ball against fluid venting, the cantilever member relieving the ball for fluid venting when the engagement member is in any disengaged position away from fully engaged position. Thus, the cantilever member and ball absolutely assures that the engagement member will be in fully engaged position prior to start or for continued operation of the operating mechanism and the cylinder and plunger positively locks the engagement member in fully engaged position during operating mechanism operation.

3,797,294
APPARATUS FOR HYDRAULIC ELECTROHYDRAULIC FORMING OF TUBULAR ELEMENTS
Donald J. Roth, Chicago Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Sept. 25, 1968, Ser. No. 762,522
Int. Cl. B21d *26/12*
U.S. Cl. 72—56 **1 Claim**

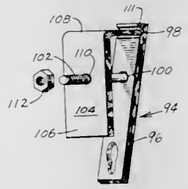
This disclosure relates to an apparatus for contouring tubular elements, such as can bodies, into conformity with a mold by first subjecting the interior of a tubular element to fluid pressure which expands the tubular element into general conformity with the mold cavity surface, and thereafter discharg-

ing electrical energy while the fluid medium is still under pressure to create a momentary shock wave which further expands



the tubular element into intimate contact with the cavity surface.

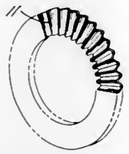
3,797,295
METHOD OF AND APPARATUS FOR REPAIRING DEFORMED YIELDABLE STRUCTURES
Anastacio V. Sanchez, 10775 Foothill Blvd., Santa Clara, Calif.
Division of Ser. No. 14,558, Feb. 26, 1970, Pat. No. 3,673,842.
This application Nov. 26, 1971, Ser. No. 202,109
Int. Cl. B21d *1/12, 37/00*
U.S. Cl. 72—308 **1 Claim**



Method and apparatus for repairing vehicle bodies including placing a vehicle body to be repaired within a stall, engaging attachment tools with preshaped contour surfaces to the body about the area to be repaired, joining the tool to tension cable means guided by a select guide means to guide the cable along a desired line of action, and applying tension means to the cable means for placing the cable in tension at adjustable magnitudes along said line of action.

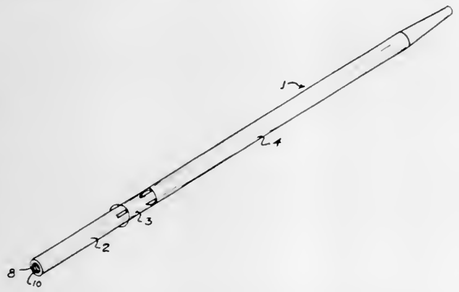
3,797,296
METHOD AND APPARATUS FOR FORMING CONVOLUTED METAL ANNULUS
Vernon R. Fencl, Northbrook, and Albert Roze, Chicago, both of Ill., assignors to Crontnes Machine Works, Inc., Chicago, Ill.
Division of Ser. No. 226,057, Feb. 14, 1972. This application Jan. 18, 1973, Ser. No. 324,644
Int. Cl. B21d *13/00*
U.S. Cl. 72—367 **2 Claims**

A method and apparatus for forming a radially convoluted annulus from a cylindrical blank of sheet metal. The convoluted annulus may be used in disc brake assemblies, for example. Two circular sets of individually pivoted forming tools initially grip the cylindrical blank on opposite sides thereof, and are then pivoted inwardly to convert the cylinder to an annulus which may be either flat or tapered. At the same time, the two sets of forming tools are advanced relatively toward each other so as to form radial convolutions in the metal



blank. The pivotal movement of the two sets of forming tools is controlled by hydraulically actuated cams.

3,797,297
ROLLER RIDGE EXPANDING TOOL
Lawrence W. Wightman, and Eugene F. Paul, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis County, Mo.
Filed Feb. 25, 1972, Ser. No. 229,457
Int. Cl. B21d *41/02*
U.S. Cl. 72—393 **16 Claims**

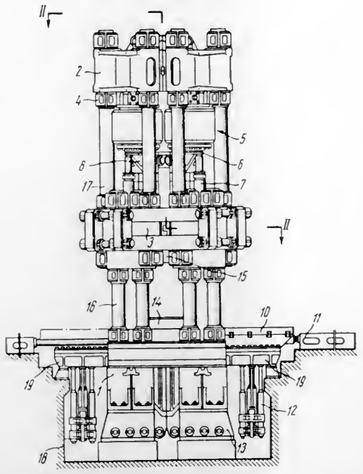


An expanding tool is provided which utilizes low friction means to expand tubular structures, for example, electrode elements for electronic air filters. The low friction means, in the illustrated embodiment, comprises a plurality of roller wheels arranged to provide tube expansion at spaced intervals about the tube. The particular construction utilized enables the radial expansion force exerted during tube expansion, that is, the force of the roller against the tube, to be balanced by the reaction force between the rollers themselves. Consequently, the only force required to push the expanding tool is that necessary to overcome the friction force of the rollers.

3,797,298
VERTICAL HYDRAULIC PRESS
Vitaly Pankratievich Vasilkovsky, ulitsa Kirovgradskaya, 65, kv. 18; Nikolai Feodosovich Grebnev, ulitsa Novatorov, 7, kv. 8; Leonid Alexandrovich Efimov, ulitsa Khmeleva, 18, kv. 77; Georgy Pavlovich Zakharov, ulitsa Kalinina, 65, kv. 53; Mikhail Ruvimovich Kavitsky, ulitsa 40 let Oktyabrya, 15, kv. 55, all of Sverdlovsk; Pavel Andreevich Malkov, ulitsa Televidenia, 1, Korpus 4, kv. 34, Moscow; Petr Alexeevich Pylaikin, ulitsa Lomonosova, 9, kv. 115, Sverdlovsk; Boris Vasillevich Rozanov, ulitsa Sharikopodshysnikovskaya, 2, Kv. 40, Moscow; Vladimir Mikhailovich Sinitsky, ulitsa 40 let Oktyabrya, 9, kv. 39, and Sergei Grigorievich Khirdzhiev, ulitsa Mashinostroitelei, 51, kv. 38, both of Sverdlovsk, all of U.S.S.R.
Filed Feb. 18, 1972, Ser. No. 227,421
Claims priority, application U.S.S.R., Mar. 17, 1971, 1,628,325
Int. Cl. B21j *9/12*
U.S. Cl. 72—453 **3 Claims**

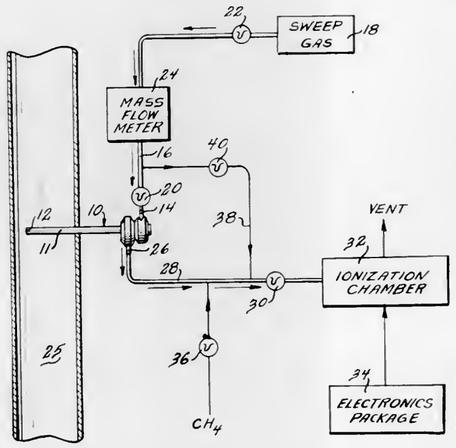
The press disclosed comprises a plate disposed between upper and lower fixed cross-booms, rigidly connected

therewith by columns and carrying return cylinders. The plate has a central hole accomodating guides mounted therein, ad-



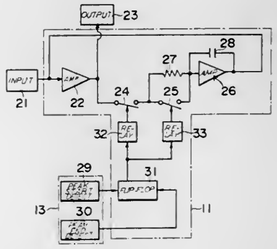
justed in accordance with the clearance and intended for a slide moving therealong, connected with a movable cross-piece and carrying a movable tool.

3,797,299
METHOD OF MEASURING THE TRITIUM CONCENTRATION IN A HIGH-TEMPERATURE ENVIRONMENT
Paul A. Nelson, Wheaton, and Romesh Kumar, Hinsdale, both of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Apr. 23, 1973, Ser. No. 353,256
Int. Cl. G01n *7/10*
U.S. Cl. 73—19 **10 Claims**



This invention deals with a novel method for measuring the tritium concentration in a high-temperature environment such as liquid metal. An enclosed, thin-wall metal membrane is connected to a sweep gas source containing hydrogen in an inert carrier gas, the membrane being formed from a metal substantially inert to the high-temperature environment and through which elemental hydrogen and tritium will diffuse. The outer surface of the metal membrane is then contacted with the high-temperature environment, and the interior surface of the membrane is contacted and swept by the sweep gas, whereby tritium atoms diffusing through the walls of the membrane react with the hydrogen in the sweep gas at the interior surface of the membrane to form gaseous hydrogen tritium molecules which are immediately swept away from the membrane's interior surface. The sweep gas containing the gaseous hydrogen-tritium molecules is continuously removed from the enclosed membrane and measured for tritium radioactivity, the radioactivity measurement being indicative of the tritium concentration in the high-temperature environment.

3,797,300
AUTOMATIC BASE LINE DRIFT CORRECTOR DEVICE FOR USE IN AN INTEGRATOR FOR CHROMATOGRAPHICAL ANALYSIS
Tatsuo Sato, Kyoto City, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto City, Japan
Filed Nov. 23, 1971, Ser. No. 201,396
Claims priority, application Japan, Nov. 25, 1970, 45-103936; Nov. 25, 1970, 45-117157
Int. Cl. G01n *31/08*
U.S. Cl. 73—23.1 **5 Claims**

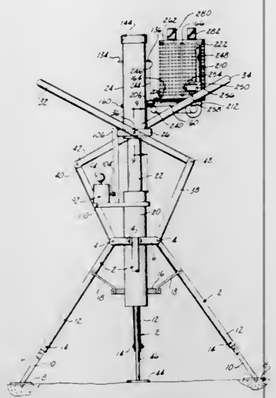


An automatic base line drift corrector device for use in an integrator for chromatographical analysis, essentially including means for generating an instantaneous correction signal by which a correcting operation with respect to the base line value of the signal can be instantaneously carried out and means for generating a non-instantaneous correction signal by which a correcting operation with respect to the base line value of the signal can be carried out with a time lag with respect to the detected signal, either of said first and second generating means being employed by a switching means for excluding an interval between the starting and terminating points of the peak appearing in the signal in connection with the wave form or time of the signal.

3,797,301
SOIL TESTER
Edward M. Hawes, 32418 Birkshire, St. Clair Shores, Mich.
Filed Sept. 6, 1972, Ser. No. 286,640
Int. Cl. G01n *3/24*
U.S. Cl. 73—84 **32 Claims**

Two cylinders telescopingly receive a third between them, one of the two is on a quadripod mount. Handles pull said two cylinders together and put air pressure on a soil engaging instrument. The greater the downward pull on the handles, the greater the air pressure and the greater the torque, through a helical cam, on the instrument. The top cylinder carries a recorder which marks a strip chart on a drum with the soil

shear strength (torque) as a function of the vertical load (air pressure) on the instrument. The chart is carried on supply



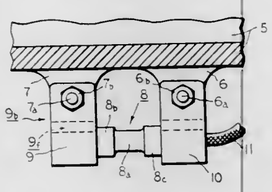
and take-up spools mounted on the underside of the recorder drum, slotted to permit chart movement.

3,797,302

ON-BOARD AIRCRAFT WEIGHT TRANSDUCER WITH MECHANICAL OFFSET ADJUSTMENT

Eric Laimins, Belmont, Mass., assignor to BLH Electronics, Inc., Waltham, Mass.

Filed June 21, 1972, Ser. No. 264,941
Int. Cl. G01l *1/22*
U.S. Cl. 73—88.5 **8 Claims**



An externally-mounted strain-gage transducer for sensing aircraft weight components in response to load-induced deformations of a support such as an axle, truck beam, or the like, is of an elongated form with end lugs designed for bolting to cooperating horizontally-spaced lugs integral with the support, the transducer end lugs each being provided with an adjustably-deformable hole-and-slot type symmetrical flexural connection by which the transducer ends may be raised or lowered wholly in the desired vertical direction to offset effects such as those of otherwise-unavoidable installation zero shift.

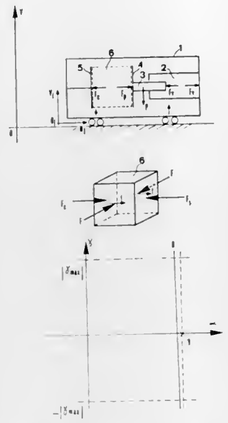
3,797,303

BIAXIAL COMPRESSION-TESTING MACHINE

Alain Georges Bernard Bascoul, Toulouse; Jean-Paul Bourdes, Albi, and Jacques Moulis, Ram Onville-Saintagne, all of France, assignors to Agence Nationale de Valerisation de la Recherche, Tour Aurore, France

Filed Nov. 28, 1972, Ser. No. 310,094
Claims priority, application France, Nov. 29, 1971, 71.42699
Int. Cl. G01n *3/08*
U.S. Cl. 73—94 **7 Claims**

The machine comprises two compression assemblies, each of which is called upon to apply a monoaxial compression load to the test piece in a direction horizontal and perpendicular to the load applied by the other assembly and coplanar therewith; each assembly includes a jack, the body of which is integral with the frame, and a piston applying pressure to a vertical plate adapted to apply a load to one surface of the test piece; an opposing vertical plate, coaxial with the first plate, is connected to the frame for applying to the opposite parallel surface of the test piece a load of modulus equal to the load applied by the first plate and in opposite direction thereto. The machine is characterized in that each compression as-



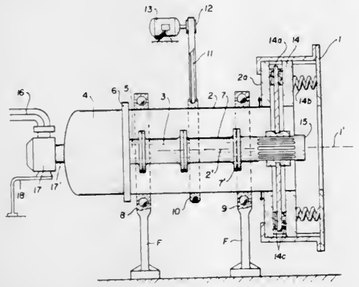
sembly is carried, independently of the other assembly, on guide means having little friction and making it possible for the assembly to move freely in a horizontal direction, parallel with the direction of application of the load by the assembly; the guide means associated with the other assembly similarly making it possible for the latter to move in a direction parallel with the direction of application of the load by the other assembly and at right angles to the direction of movement of the first assembly.

3,797,304

TORQUE LOAD APPLYING TESTING APPARATUS

Friedrich Klinger, Kafkastrasse 30, Arheligen, Germany

Filed Feb. 24, 1972, Ser. No. 228,836
Claims priority, application Germany, Mar. 8, 1971, 2110951
Int. Cl. G01m *13/02*
U.S. Cl. 73—99 **19 Claims**



The present testing apparatus applies torque loads to test samples. The test sample and a torque transmitting member are arranged to have substantially the same main axis, whereby one end of the test sample and the respective end of the torque transmitting member are connected to each other in a force transmitting manner, whereas the opposite end of the test sample and the corresponding opposite end of the

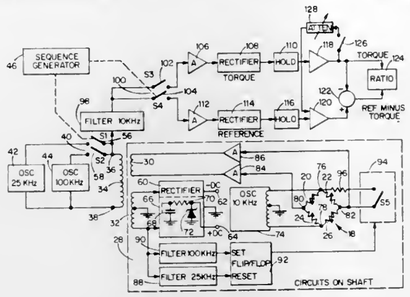
torque transmitting member are coupled to wind up said opposite ends relative to each other.

3,797,305

SELF CALIBRATING STRAIN GAGE TORQUEMETER

Ginns Haskell, Belmont, Mass., assignor to The Indikon Company, Inc., Watertown, Mass.

Filed Jan. 31, 1972, Ser. No. 222,267
Int. Cl. G01l *3/10*
U.S. Cl. 73—136 A **12 Claims**



A torquemeter for sensing the torque transmitted by a rotatable shaft and adapted to compensate for measurement errors such as those resulting from variations in coupling between instrumentation on the rotatable shaft and torque indicating electronics or variations in the shaft mounted instrumentation. Torque sensing instrumentation on the rotatable shaft provides a torque signal representative of actual shaft torque and periodically interrupts the torque signal to provide a reference signal representative of a known, calibration torque. The torque and reference signals are both coupled from the shaft to the external torque indicating electronics where they are logically processed to provide an indication of the torque in the shaft, compensated for variations that do not represent torque

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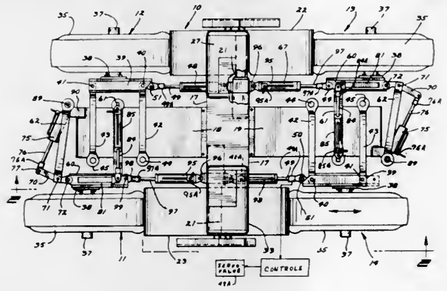
3,797,306

TIRE COMPLIANCE TEST MACHINE

Niel R. Petersen, Hopkins, and Paul S. Petersen, Minnetonka, both of Minn., assignors to MTS Systems Corporation, Minneapolis, Minn.

Filed Sept. 25, 1972, Ser. No. 291,720
Int. Cl. G01m *17/02*
U.S. Cl. 73—146 **10 Claims**



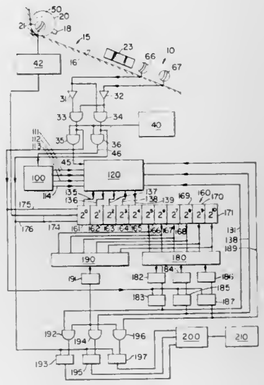
A tire compliance test machine which mounts a tire to be tested on a parallel linkage arrangement that maintains the tire in a preselected relationship to a road wheel against which the tire is loaded, and which is mounted so that the loading forces are transferred directly between the road wheel and the tire being tested without having a large, cumbersome frame to carry the load. The test machine includes means for adding camber and steer motions to the tire being tested.

3,797,307

COIN DISCRIMINATOR

Reed H. Johnston, Wellesley, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 172,096, Aug. 16, 1971, abandoned. This application Jan. 20, 1972, Ser. No. 219,327
Int. Cl. G07f *3/02*
U.S. Cl. 73—163 **94 Claims**



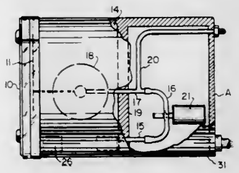
A method and apparatus for discriminating between coins with respect to denomination and authenticity, employing means for performing two or more coin tests, means for storing a value dependent upon the results of the first coin test, and means for evaluating the results of the second coin test in a manner dependent upon the results of the first coin test.

3,797,308

AIRCRAFT LANDING ALTIMETER

Carl J. Crane, Box 316, Helotes, Tex.

Filed Nov. 6, 1972, Ser. No. 303,828
Int. Cl. G01c *21/00*; **G01l** *7/12*
U.S. Cl. 73—178 T **3 Claims**

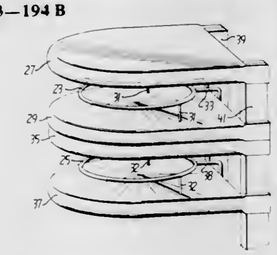


An aircraft landing altimeter is obtained for indicating height above touchdown of a landing aircraft after passing a known distance and known height from touchdown point. The indicator pointer responds to static atmospheric pressure difference between the touchdown point and that along the glide slope (ILS) at a selected marker beacon site.

3,797,309
METHOD AND APPARATUS FOR SENSING THE RELATIVE DIRECTION AND VELOCITY OF MOVEMENT OF A BODY IN A LIQUID OR GAS MEDIUM

Robert D. Joy, and Russell F. Cotton, both of Cedar Rapids, Iowa, assignors to J-TEC Associates, Incorporated, Cedar Rapids, Iowa

Filed July 31, 1972, Ser. No. 276,364
Int. Cl. G01f *1/00;* **G01p** *5/00*
U.S. Cl. 73—194 B **32 Claims**

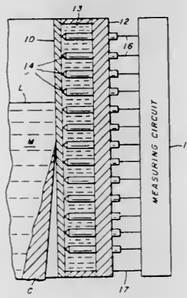


A method of and an apparatus for determining the relative direction and velocity of movement between an object and a fluid stream (either gas or liquid) using the Karman vortex phenomena is disclosed. In one form, two omnidirectional ring-shaped struts, at least one of which has a varying thickness, are each mounted between a pair of sonic transducers. One of each pair of sonic transducers is a transmitting transducer, and the other is a receiving transducer. The transmitting transducers transmit sonic signals toward the Karman vortices formed in the wake of their related omnidirectional struts. The vortices modulate the transmitted signal and the modulated signal is received by the receiving transducers. The two thusly received modulated signals are compared in a manner such that the relative direction and the velocity of movement between the strut and the fluid stream is determined. In a second form, two tubes are mounted in orthogonal directions relative to one another. A vortex sensing arrangement is located in either end of each tube to sense the rate of fluid flow entering the ends of the tubes. The thusly measured rates of fluid flow are combined to determine the relative direction and velocity of movement between the tubes and the fluid stream in which the tubes are located.

3,797,310
TEMPERATURE SENSING DEVICE

Clarence E. Babcock, Penn Hills Township, Allegheny County, and James H. Wilson, Franklin Township, Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 88,780, Nov. 12, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 230,048
Int. Cl. G01f *23/22;* **G01k** *7/08*
U.S. Cl. 73—295 **5 Claims**

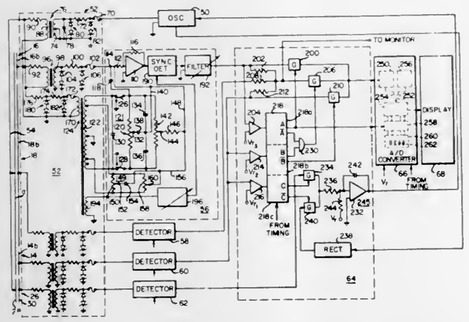


An improved temperature-sensing device for use in a mechanism which locates the level of a hot liquid in a metallic vessel. The device is intended especially for use in a water-cooled continuous-casting mold, where it is known to place a row of vertically spaced thermocouples in the mold and connect them to a measuring circuit. The circuit indicates a temperature profile in which an abrupt temperature change shows the location of the liquid level. The present invention replaces the conventional thermocouples used previously with simple probes which have single point contact with the vessel. The probes and vessel wall are of different metals, whereby they form thermocouples, but these thermocouples measure only relative temperature differences rather than true temperatures.

3,797,311
FLUID LEVEL METER

Robert L. Blanchard, Lexington; Arthur E. Sherburne, Bedford, and Robert A. Williams, Burlington, all of Mass., assignors to Trans-Sonics, Inc., Lexington, Mass.

Filed Feb. 11, 1972, Ser. No. 225,471
Int. Cl. G01f *23/26*
U.S. Cl. 73—304 C **29 Claims**

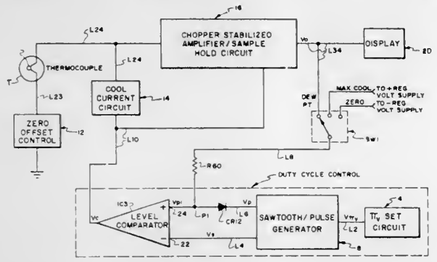


A fluid level meter achieves enhanced accuracy over the opposite extremes of a fluid level range by utilizing a segmented sensing capacitor providing distinct outputs corresponding to adjacent sensing levels within the range and switching from one segment to the other at the extremes. The meter is calibrated for both zero and full scale with the sensing capacitors completely dry. An intrinsic safety barrier is provided between the sensor and the power supply and measuring circuit.

3,797,312
THERMOCOUPLE HYGROMETER AND METHOD

Eric C. Campbell, Providence, Utah, assignor to Wescor, Inc., Logan, Utah

Filed Feb. 14, 1973, Ser. No. 332,540
Int. Cl. G01m *25/56*
U.S. Cl. 73—336.5 **14 Claims**

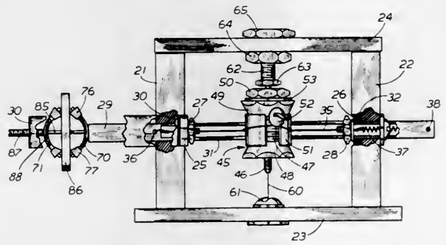


A thermocouple hygrometer and method for determining the osmolality and water potential of small samples wherein the apparatus comprises a duty cycle control system including a controlled dual output generator, one output of which is set by a control circuit to match the characteristics of the thermocouple being used, and a level comparator which receives, during the DEW POINT mode, at one input a sawtooth wave form voltage from the generator and at the other input a composite of a square wave form voltage from the generator and the amplified voltage across the thermocouple. Thus, the level comparator output duty cycle varies and at any one point in time is established by the potential across the thermocouple. Reading occurs when the sawtooth wave form is high and the output voltage of the comparator is low. Cooling (or heating as may be required) occurs when the level comparator output is high. Accordingly, as the thermocouple potential stabilizes from a higher to a lower value, it will cause a cooling duty cycle to decrease and the amount of read time to increase. Before the generator is utilized, a zero offset control is used to adjust the thermocouple potential to zero under dry conditions. A cool current circuit, during cooling, causes a comparator controlled current to flow to the thermocouple, causing a temperature change at that location. By maintaining a balance of energy into a wet thermocouple with the energy loss at the thermocouple to its surroundings, the temperature change, measured by the thermocouple voltage, is proportional to the actual osmolality or water potential of the sample. The voltage from the thermocouple is communicated to a microvolt meter where it is amplified by a chopper stabilized amplifier. For a brief time interval each cycle, a sample hold circuit holds the previous amplified voltage output, which is displayed and/or recorded on one or more suitable devices. Apart from the DEW POINT mode, the device has a ZERO mode for dry calibration and a MAX COOL mode where the thermocouple potential is not fed to the level comparator, thereby creating a 95 percent cooling duty cycle under control of a generator for accelerating temperature equilibration at the thermocouple.

3,797,313
LINEAR ACTION HYGROMETER

Roy J. Renholts, Oakland, Calif., assignor to Hygrometrics, Inc., Oakland, Calif.

Filed Jan. 31, 1972, Ser. No. 221,891
Int. Cl. G01w *1/00;* **G01n** *19/10*
U.S. Cl. 73—337 **6 Claims**

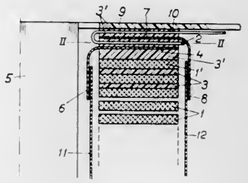


This invention relates to a linear action hygrometer utilizing two or more xeric elements which are sensitive to changes in vapor pressure, i.e., relative humidity, and which bend in a single plane from substantially straight when soaked to a substantial arc when dry, whereby the combined effect of the various elements can give a greater force and move a greater distance than was possible with a single such element.

3,797,314
MEANS FOR DETERMINING THE TOP OIL TEMPERATURE IN TRANSFORMERS

Wolfgang Lampe; Erich Spicar, and Bo-Goran Persson, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed July 10, 1972, Ser. No. 270,437
Int. Cl. G01k *13/02, 5/32;* **H01f** *27/12*
U.S. Cl. 73—350 **4 Claims**

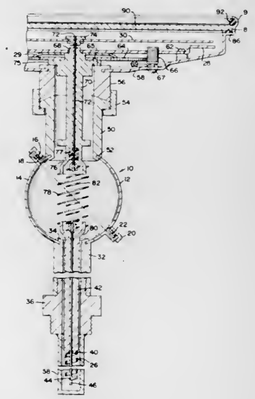


For determining the highest oil temperature in a transformer, a temperature-sensitive transducer in the form of a hollow closed body is arranged adjacent the point in the upper part of the winding where the oil temperature is assumed to be highest and is connected by a conducting tube to a measuring device located outside the transformer. The transducer and the connecting tube are filled with a liquid having a higher coefficient of expansion than the material of the transducer and a boiling point which is higher than the highest permissible oil temperature. The tube has a volume which is small in relation to the volume of the transducer.

3,797,315
REMOTE INDICATING ADJUSTABLE ANGLE INSTRUMENT

Walter J. Halpern, 1119 Crescent St., Sarasota, Fla.

Filed July 6, 1972, Ser. No. 269,389
Int. Cl. G01k *5/70*
U.S. Cl. 73—363.9 **6 Claims**



In a gauge, a case assembly and measuring assembly movable as a unit into and out of the case assembly. The case assembly includes a stem portion adapted to be secured in gauging position, a dial-receiving portion adapted to be secured in read-out position, and angular joint means adjustably securing the stem portion to the dial portion. The measuring assembly includes a bimetallic helix, a dial, a pointer and means including torque springs for moving the pointer over the dial when the helix is subjected to temperature changes. The measuring assembly when moved into the case assembly positions the

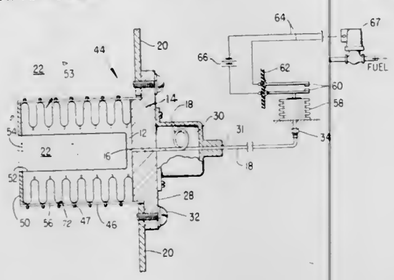
helix in the stem portion, the torque springs extending through the angular joint and the dial and pointer in the dial-receiving portion, and a gear for revolving the measuring assembly to reposition the pointer on the dial.

3,797,316

BELLOWS TEMPERATURE BULB SENSOR

Elliott R. Thompson, Sr., Huntsburg, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

Filed Dec. 22, 1971, Ser. No. 210,755
Int. Cl. G01k *5/42*
U.S. Cl. 73—368.4 **4 Claims**



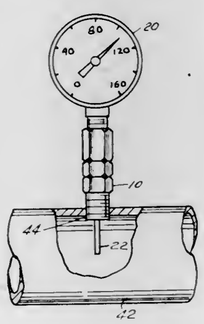
A device providing a large heat transfer area for ambient temperature and a small volume of heat sensitive fluid within the bulb. Bulbs with rigid corrugated walls or thin-wall bellows with reinforced convolutions have substantially equal heat-transfer areas exposed to the ambient temperature outside the bulb and to the heat sensitive fluid inside the bulb. Concentric, corrugated or bellows surfaces are used to form the sensing bulb between them and to increase heat transfer area. Concentric bellows are reinforced by a spider assembly allowing flow of sensed ambient to the inside bellows surface.

3,797,317

SPLIT VALVE TEST PLUG

Charles D. Peterson, Jr., P.O. Box 217, Richardson, Tex.

Filed Dec. 7, 1972, Ser. No. 312,875
Int. Cl. G01l *19/00*
U.S. Cl. 73—420 **7 Claims**



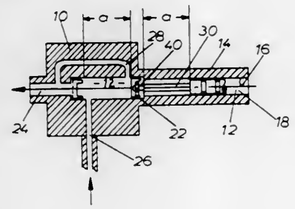
A split valve pressure test plug is used for high pressure systems of fluids to sense pressure or temperature by means of a test probe. The test probe is connected either to a pressure gauge, thermometer or other sensing device and is received within split valve resilient valve core members in a rigid pressure plug housing. The relilient split valve core members are of a special probe passage construction to receive a test probe through the core in the two split valve members passing through vlave pockets. The split valve construction is comprised of two identical valves working in conjunction with each other. Upon removal of a test probe from a fluid system in which the plug is used, leakage is prevented since one of the split valve closes before the other. Further through the use of a valve retainer in the housing relative movement is provided in one valve upon withdrawal of the probe member through it which will tend to compress the other valve core member which aids in sealing.

3,797,318

METHOD AND APPARATUS FOR COLLECTING AND INTRODUCING A SAMPLE INTO AN ANALYTICAL INSTRUMENT

Ernst Palm, Uberlingen, Bodensee, Germany, assignor to Bodenseewerk Perkin-Elmer Co., GmbH, Uberlingen/Bodensee, Germany

Filed Aug. 7, 1972, Ser. No. 278,338
Claims priority, application Germany, Aug. 10, 1971, 2139992
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 GC **19 Claims**



A sample is collected and introduced into an analytical instrument by sorbing the sample with a sorption material which is arranged as a surface of a sampling transportable body, positioning the sampling body in an inlet chamber of the instrument, heating the sampling body for causing desorption of the sample material, and conveying the desorbed material in a carrier stream to an analysis station of the instrument. A sampling collecting device comprises a sampling body including a sorption segment thereof having a surface arranged for sorption of sample material. The sampling body further includes an elongated segment which is coupled to the sorption segment, an annular seal extending about a circumference of the elongated segment and a sealing plug and handle located at an end of the body opposite to that of the sorption surface segment. An apparatus for receiving the sampling device and for introducing the sample therein includes an inlet chamber which is positioned near a guide channel and through which channel the sorption segment of the sampling body is introduced. The elongated segment is guided in the channel and a chamber closure member is provided which is actuated by the device when the annular seal on the elongated segment establishes a leak-proof seal between the guide channel and chamber. The chamber closure member is actuated by the sampling body for causing a carrier gas stream to flow over the sampling body and to convey a desorbed material to the instrument.

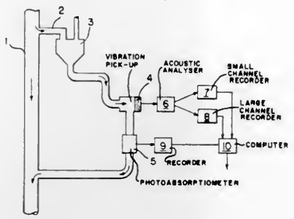
3,797,319

PROCESS FOR MEASURING PARTICLE SIZE AND CONCENTRATION OF SLURRIES ACCORDING TO ON-STREAM ANALYSIS

Toshihiko Abe, Sendai, Japan, assignor to Director-General of Agency of Industrial Science and Technology, Tokyo-to, Japan

Filed Aug. 8, 1972, Ser. No. 278,816
Int. Cl. G01n *15/00*
U.S. Cl. 73—432 PS **1 Claim**

A process for measuring particle size and concentration of a slurry according to on-stream analysis is provided wherein a slurry to be measured is impacted at a given velocity against a plate to measure impact energy thereof, simultaneously with light transmission of the slurry being measured, the results of the individual measurements are supplied as information to a



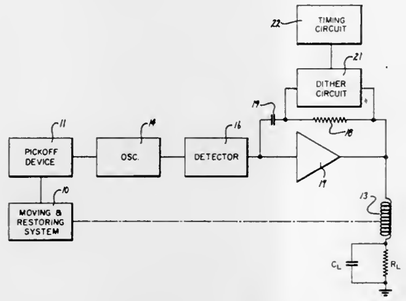
data memory collation device to check the information with data previously stocked in the device, thereby converting the information into the corresponding slurry concentration and average particle size.

3,797,320

ELECTRONIC DITHER CIRCUIT FOR A MECHANICAL BEARING ASSEMBLY AND METHOD AND ACCELEROMETER USING THE SAME

Robert L. Clampitt, Walnut Creek, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Nov. 29, 1972, Ser. No. 310,551
Int. Cl. G01p *15/08;* **G01d** *11/14*
U.S. Cl. 73—496 **17 Claims**



Electronic dither circuit for a mechanical bearing assembly having a housing with a member disposed in the housing. Means is provided in the form of a mechanical bearing assembly for pivotally mounting the member in the housing for movement about a pivot axis. Means is mounted in the housing forming a magnetic field in the housing. A torque coil is connected to the member and is disposed in the magnetic field. Electronic means is provided for supplying electrical energy to the torque coil. The electronic means includes a damped closed loop servo system and means for removing the damping from the closed loop servo to cause the servo loop to oscillate to thereby supply oscillatory electrical energy to said torque coil to cause the torque coil to oscillate and to thereby minimize the effects of friction.

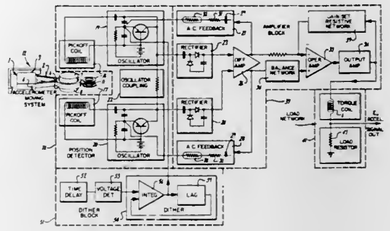
In the method, the damping is removed from the closed loop servo for a predetermined period of time to permit the servo loop to oscillate. The damping is gradually restored to the servo loop over a predetermined period of time. The electronic dither circuit and method are particularly useful in connection with accelerometers.

3,797,321

PIVOT MECHANISM WITH ELECTRONIC DITHER CIRCUIT

Harold D. Morris, Orinda, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Continuation of Ser. No. 47,271, June 18, 1970, abandoned. This application May 8, 1972, Ser. No. 251,392
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 B **11 Claims**



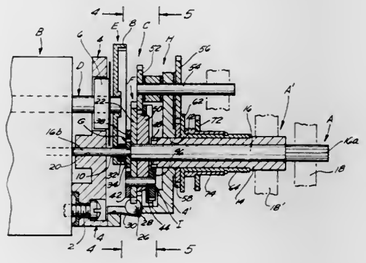
Pivot mechanism with electronic dither circuit having a housing, a member disposed in the housing and means pivotally mounting the member in the housing for pivotal movement about a pivot axis. Means is connected to the member for moving the member about the pivot axis and means is utilized for applying oscillatory transitory movement to the member to minimize friction in the means pivotally mounting the member in the housing.

3,797,322

FINE TUNING MEANS FOR STEP-BY-STEP TV TUNER

Carroll R. Miner, Wilbraham, Mass., assignor to General Instrument Corporation, Newark, N.J.

Filed Jan. 23, 1973, Ser. No. 326,146
Int. Cl. H03j *1/08, 1/14*
U.S. Cl. 74—10.54 **22 Claims**

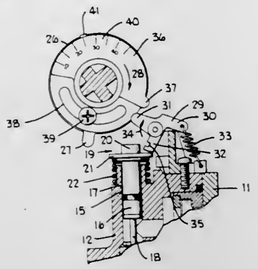


In a tuner for tuning a TV set or the like to a selected one of a plurality of predetermined frequencies or channels, means are provided for fine tuning of the set at a given channel setting, which fine tuning arrangement, although positive in operation and effective to maintain its position as the set is turned from one channel to the next, takes up a minimal amount of space. One of the members which rotates when the channel selection is effected carries a part which is pivotally mounted thereon, and a cam controlled by the fine tuning shaft rotates about an axis displaced from the axis of the member to position that part, which is in turn connected to the output element which drives the tuning device itself thus addition an increment of movement in one direction or the other to the gross meovement produced when the member is moved to effect channel selection.

3,797,323
TIME VARIABLE VALVE APPARATUS

Earl P. Brane, P.O. Box 605, Largo, Fla.

Filed Sept. 5, 1972, Ser. No. 286,458
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 7 Claims

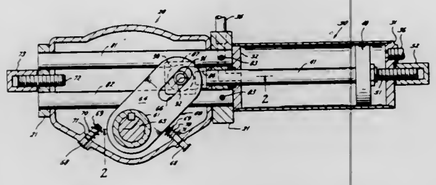


A time variable apparatus for controlling a valve. A first and second cam are mounted to a shaft rotatably driven adjacent to a piston which extends outwardly from a frame adjacent to the cams. One cam is operable to force the piston head to a first position whereat a spring biased latch secures the piston in the first position. The second cam is operable to release the latch thereby allowing the piston to move to a second position. The second cam is slotted and receives a fastener extending outwardly from the first cam. The fastener may be loosened so as to adjust the relative rotational positions of the second cam with respect to the first cam thereby allowing for adjustment and control of the duration during which the piston is in either position.

3,797,324
ACTUATOR

John M. Sheesley, Houston, and Ronald A. Gulick, Sugarland, both of Tex., assignors to Research Engineering Company, Houston, Tex.

Filed July 31, 1972, Ser. No. 276,327
Int. Cl. F16h *21/44*
U.S. Cl. 74—99 10 Claims



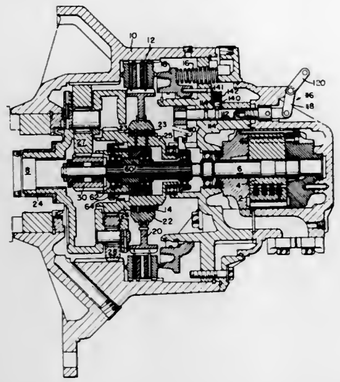
A valve actuator wherein the actuator housing structure includes reinforcing means such as rods capable of resisting forces exerted thereagainst by a force transmission device, such as a yoke and roller.

3,797,325
TWO SPEED PRIMARY DRIVE ASSEMBLY FOR HYDRAULIC WINCH

Sommerville G. Christison, Delta, British Columbia, Canada, assignor to Gearmatic Co. Ltd., Surrey, British Columbia, Canada

Filed June 7, 1971, Ser. No. 150,399
Int. Cl. F16h *3/38*
U.S. Cl. 74--339 4 Claims

This invention relates to a two-speed primary drive assembly for a hydraulic winch whereby the winch may be used in either a fast or slow range of speed depending upon the function for which it is used. The primary drive has no neutral position so that the shift is directly from one speed to another and the speed change is done with the winch in a locked or "-brake-on" position. The change of gears during a time when the shafts are not free to rotate is made possible by incorporation of cylindrical change gears having every second spline

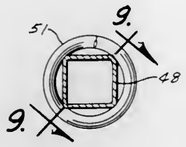


tooth removed and adapted to engage with a shifter sleeve likewise having every second spline tooth removed. The front portion of the splines on both the change gears and the shifter sleeve are chamfered to allow camming of the two elements about their axes when the front portions are axially forced into contact with each other. The change gears are rotationally spring biased such that they are continuously urged to a position whereat the splines are respectively centered.

3,797,326
COIL SPRING WORM SHAFT

George D. Conlee, Colonial House-Apt. 6, Highway 169 South, Humboldt, Iowa

Division of Ser. No. 127,200, March 23, 1971, Pat. No. 3,736,483. This application Jan. 26, 1972, Ser. No. 220,759
Int. Cl. F16h *1/16*
U.S. Cl. 74—425 5 Claims

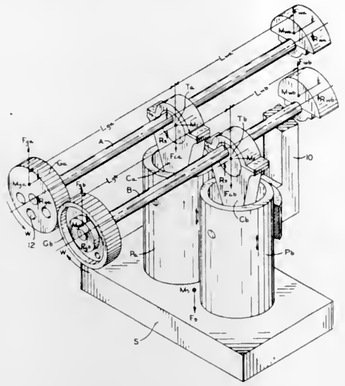


The output shaft of a motor is connected directly to a worm shaft which moves a traveler connected to the door. The motor includes a second centrifugal switch in the relay coil circuit whereby the motor will stop upon the door engaging stops in either direction. The worm shaft includes a length of spiral wire locked in place on thin wall tubing rectangular in cross section. The method of producing the worm shaft includes placing the length of spiral wire on a length of cylindrical tubing and then applying pressure to the tubing between adjacent coils causing corners to be formed which lockingly engage the wire coils. A predetermined axial force in either direction on the motor will cause the motor to move relative to the traveler and actuate an interrupter switch and a reversing switch thereby stopping the motor. Upon the relay coil being reactivated the motor will then move in the opposite direction to the end of the cycle where it will then shut off and be ready to repeat the cycle.

3,797,327
ARRANGEMENT FOR DYNAMIC BALANCING OF A HIGH SPEED PRESS

John E. Voorhees, Sidney, and Donald J. Hemmelgarn, Minster, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio

Filed Sept. 5, 1972, Ser. No. 286,122
Int. Cl. F16f *15/10*
U.S. Cl. 74—604 7 Claims

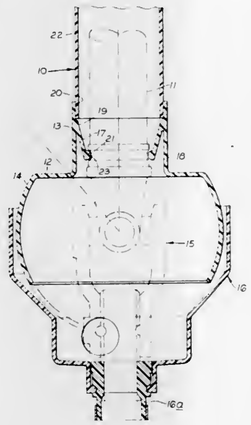


A high speed mechanical press having two parallel counter-rotating crankshafts with a reciprocating slide connected thereto and with off center masses fixed to the crankshafts in distributed relation therealong for counterbalancing the inertia forces developed on the crankshafts by the reciprocating components of the press and the centrifugal forces developed on the crankshaft by off center masses acting thereon at the throw portions of the crankshafts.

3,797,328
SAFETY GUARDS

John Andrew Quirk, Burscough, England, assignor to Atkinson's of Clitheroe Limited, Clitheroe, England

Filed June 21, 1972, Ser. No. 264,730
Int. Cl. F16p *1/04*
U.S. Cl. 74—609 7 Claims

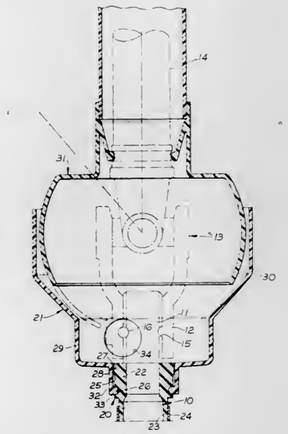


Rotatable shaft drive guard, particularly for power take-off shafts drive connecting a tractor or other prime mover to a trailed or mounted implement, comprises an end formation having a tubular part for surrounding an end of the shaft and a cone or ball shaped part for covering at least part of a coupling, said end formation, which is preferably formed from synthetic plastics material, includes an integral bearing means, typically in the form of a plurality of resilient fringes, for releasable engagement with a bearing formation at the end of the shaft while permitting relative rotation between the shaft and guard.

3,797,329
SAFETY GUARDS

John Andrew Quirk, Burscough, England, assignor to Atkinson's of Clitheroe Limited, Clitheroe, Lancashire, England

Filed June 21, 1972, Ser. No. 264,731
Int. Cl. F16p *1/04*
U.S. Cl. 74—609 4 Claims

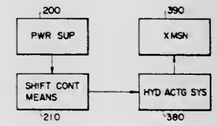


Safety shield for a drive shaft, typically the output or power take-off drive shaft of a tractor or the like which is operatively coupled to an implement, is located on a mounting in the form of a sleeve, preferably formed from plastics material, clamped to the shaft and provided with a peripheral groove or other bearing formation on which a neck portion of the shield is releasably engaged, said engagement permitting relative rotation between the shield and shaft. The shield is preferably also formed from plastics material.

3,797,330
CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION FOR VEHICLES

Fmihiro Ushijima, Toyota, Japan, assignor to Toyota Jidosha Kogya Kabushiki Kaisha, Toyotacho, Toyota-shi, Japan

Filed Sept. 23, 1971, Ser. No. 183,044
Claims priority, application Japan, Dec. 1, 1970, 45-106600
Int. Cl. B60k *21/00*; F16h *3/74*
U.S. Cl. 74—752 A 13 Claims



A control system for an automatic transmission which does not employ a manual valve having a plurality of positions for providing communication between fluid passages, but em-

ploys a plurality of solenoid operated shift control valves each having two positions electrically changed over. In the control system, various speed ratios are established by a variety of combinations of the positions of the shift control valves and an electrical switch is changed over to one of a plurality of positions by a shift lever to control the current supplied to the solenoids of the solenoid operated shift control valves. Thus, electrical wiring is solely required for functionally connecting the automatic transmission with the shift lever.

3,797,331

PLANETARY WASHING MACHINE DRIVE WITH CENTRIFUGAL CLUTCH

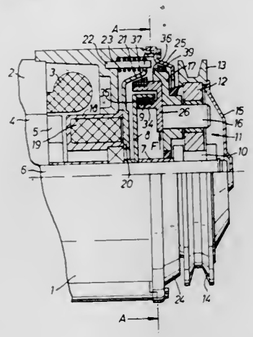
Per Kjeldsteen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed June 2, 1972, Ser. No. 259,114

Claims priority, application Germany, June 8, 1971, 2128418

Int. Cl. F16h *5/46*

U.S. Cl. 74—752 E **5 Claims**



The invention relates to a washing machine drive which comprises a motor and a planetary gear set. In operation the drive is switched from a washing speed to a spinning speed by clutch and brake means having two stages. The clutch means for maintaining the washing speed are associated with centrifugal weights and these brake means do not release until moments after the clutch means for the spinning speed is actuated. The main object is to avoid a mode of operation which involves a sudden pronounced change in the load which has a harmful effect on the machine.

3,797,332

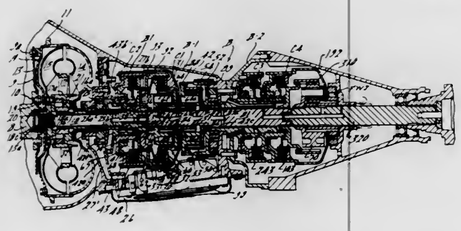
HYDRODYNAMIC TRANSMISSION

Dugald Cameron, Taylor; Robert A. Hoetger, St. Clair Shores, and Ervin R. Miller, Detroit, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 3, 1972, Ser. No. 249,838

Int. Cl. F16h *57/10, 3/44*

U.S. Cl. 74—763 **2 Claims**



Four forward speed and reverse transmission having three planetary gear sets, four clutches, and two brake bands, certain components of which are substantially identical. The housing for the transmission is in two sections with the rear section containing two clutches and one planetary gear set. The forward housing section contains two clutches, two planetary gear sets and two brake bands.

3,797,333

ROTARY INDEXING MECHANISM

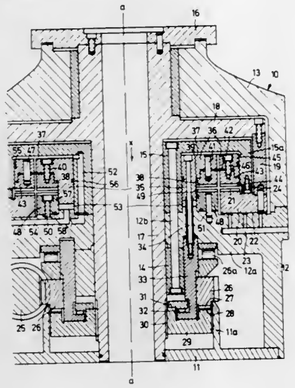
Heinz Maier, Sulzbach, Germany, assignor to Fischer-Brodbeck GmbH Prazisionsteile-Fabrik, Weinsberg, Wurttemburg, Germany

Filed July 21, 1972, Ser. No. 274,062

Claims priority, application Germany, July 28, 1971, 2137698

Int. Cl. B23b *29/32*

U.S. Cl. 74—826 **16 Claims**



A rotary indexing mechanism comprising a support and a turntable mounted on the support for rotation about its axis. A first crown gear is fixedly mounted on the support coaxial with the axis of the turntable and a second crown gear concentric with the first crown gear is connected with the turntable for rotation therewith. Opposite the first and the second crown gears are two concentric crown gears which are connected by flexible means for simultaneous rotation about the aforementioned axis and slithgly shiftable relative to each other in axial direction. The opposite gears can be moved in axial direction relative to the first and the second gear to bring the teeth out of engagement, permitting turning of the turntable, or to engage the teeth for locking the turntable in its turned position.

3,797,334

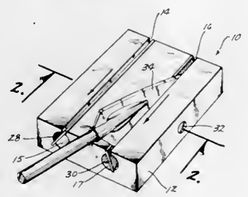
SHARPENING DEVICE

Bernard J. Sinclair, 7211 S.W. 11th St., Des Moines, Iowa

Filed Oct. 25, 1972, Ser. No. 300,519

Int. Cl. B21k *5/06*

U.S. Cl. 76—88 **4 Claims**



A sharpening device for sharpening arrowheads, knives and the like comprising a support block having a pair of spaced

apart elongated grooves extending downwardly into the upper end thereof. Each of the grooves communicates with an elongated bore formed in the block. A sharpening means such as a file or the like is positioned in each of the bores and is disposed at an angle with respect to the upper end of the support block. The sharpening means are adapted to sharpen the arrowhead or the like upon the arrowhead being inserted downwardly into the groove and moved along the sharpening means. The grooves define a guide means to properly position the arrowhead in the proper attitude with respect to the sharpening means. A modified form of the sharpening device is disclosed and comprises a triangular shaped sharpening means positioned in a channel formed in the upper end of the support block.

3,797,335

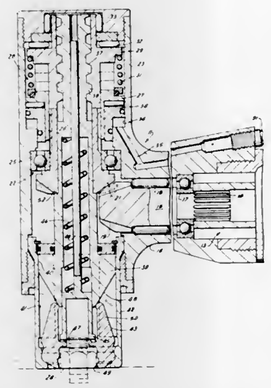
PNEUMATIC NUT RUNNING TOOL WITH GOVERNOR SHUT-OFF CONTROL

Lester A. Amtsberg, and William K. Wallace, both of 2200 Bleecker St., Utica, N.Y.

Division of Ser. No. 138,091, April 28, 1971. This application May 29, 1973, Ser. No. 364,885

Int. Cl. B25b *23/00*

U.S. Cl. 81—10 **4 Claims**



A pneumatic tool provided with combined nut setting and crimping mechanism which responds to rotation of an air motor in one direction to set a nut and responds to rotation of the motor in an opposite direction to crimp the nut. Shiftable valving mechanism is included to direct operating air flow to drive the motor in one direction or the other. A throttle valve is depressible to initiate air flow to the valving mechanism and becomes pneumatically unbalanced against the force of a spring in open condition. A centrifugal motor speed responsive governor valve controls shifting of the valving mechanism and automatic return of the throttle valve to shut-off condition.

3,797,336

QUICK CONNECT NUT

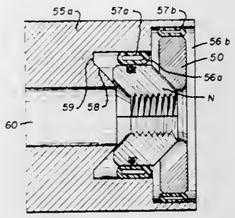
Wilson S. Howe, 1935 Spruce Ave., Longmont, Colo.

Continuation-in-part of Ser. No. 15,613, March 2, 1970, Pat. No. 3,695,139. This application Dec. 6, 1971, Ser. No. 204,977

Int. Cl. B25b *13/02*

U.S. Cl. 81—125 **3 Claims**

A segmented, quick connect nut held together by a resilient ring. The segments spread apart to slip over a threaded bolt or stud. The base of the nut is conical and is mounted against an associated washer having a conical seat to receive the base and jam the segments together whenever the nut is tightened upon the bolt. The nut has a conical cavity at the head end, opposite the base, and the conical seat of a holding tool engages this cavity to facilitate spreading the segments whenever



the nut is being threaded into position upon the bolt. A removal tool spreads the segments to remove the nut from the bolt once it is loosened from its seat in its associated washer.

3,797,337

DEVICE FOR GUIDING A BAR OF A CUTTER OF A PEELING MACHINE

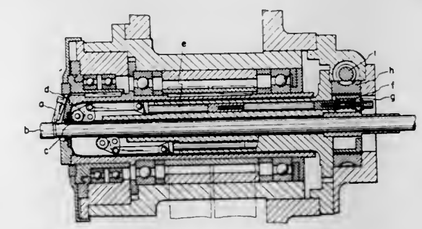
Seishi Muramoto, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho

Filed Jan. 19, 1973, Ser. No. 325,058

Claims priority, application Japan, Jan. 26, 1972, 47/10483

Int. Cl. B23b *5/00*

U.S. Cl. 82—20 **2 Claims**



A device for guiding a bar of a cutter of a peeling machine which has a cutter, plural guide rollers provided behind the cutter, plural links for supporting the guide rollers, plural rods connected through rods to the links, and plural connectors connected at the ends to the first rods; which device has a cylinder composed of the case of the cutter and a sleeve, a piston slidably inserted into the cylinder, an air supply port for supplying compressed air from source of compressed air into the cylinder for acting the piston, said connectors being integrally and rotatably connected axially to the piston, a stopper rotatably connected to the end of the piston, a nut fixed to the end of the connector, a rotary stopper of the nut, an adjusting nut screwed to the case of the cutter for adjusting the stopping position of the stopper. Thus, the work to be cut by the device may be always maintained at correct position at the center of the cutters.

3,797,338

MACHINE FOR MASS PRODUCTION OF BOTH MEDIUM AND SHORT LENGTHS OF TUBING

Michael Molnar, 4381 Valley Forge Dr., Fairview Park, Ohio

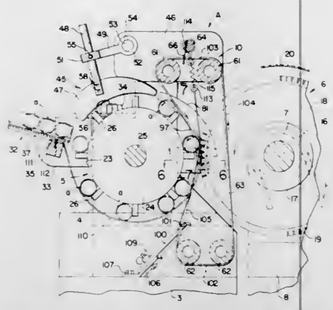
Filed Apr. 7, 1972, Ser. No. 241,956

Int. Cl. B26d *7/06;* **B23b** *5/14*

U.S. Cl. 82—46 **8 Claims**

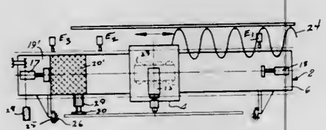
A versatile hign-speed drum-type tube cutting machine having a series of axially spaced endless bands for rotating the tubes and holding them in parallel relation between the radial vanes of the drum and rotary knife means adjacent the drum

for cutting the rotating tubes. The machine can be used to perform multiple cuts during each revolution of the drum and can also be used to effect rapid cutting of very short lengths. In the



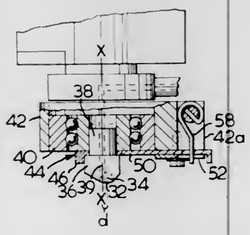
latter case the endless band means is skewed to effect axial feeding of the tubes against an adjustable stop near the end of the drum and a rotary knife is arranged to cut one short piece off the end of each tube during each revolution of the drum.

3,797,339
APPARATUS FOR CUTTING GLASS
Heinz Pape, and Heinz-Josef Reinmold, both of Aachen, Germany, assignors to Saint-Gobain Industries, Neuilly sur-Siene, France
Filed Sept. 20, 1971, Ser. No. 181,877
Claims priority, application France, Sept. 22, 1970, 7034233
Int. Cl. B26d *3/08*
U.S. Cl. 83—12 **4 Claims**



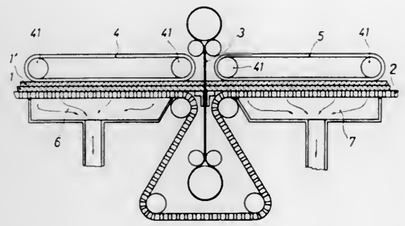
Apparatus is provided for cutting glass, particularly for cutting sheets from the advancing end of a ribbon of formation, in which the motive power for the scribing tool is a linear induction motor.

3,797,340
GLASS CUTTING DEVICE
Gordon F. Pereman, Columbus, Ontario, Canada, assignor to PPG Industries Inc., Pittsburgh, Pa.
Filed Jan. 3, 1973, Ser. No. 320,829
Claims priority, application Canada, Oct. 10, 1972, 153551
Int. Cl. B26d *3/08, 7/26;* **C03b** *33/04*
U.S. Cl. 83—12 **9 Claims**



A scoring machine includes a template and follower assembly for guiding a scoring head along a predetermined path over a work piece to score the work piece along a predetermined path. Means are provided for controlling and damping fish-tailing motion of the castor-mounted cutting wheel thus making it possible to achieve higher scoring speeds than would otherwise be permitted. This "fish-tailing" motion is controlled or damped by means which provides spring biasing of the scoring wheel mount only within the arc necessary for normal operation of the castor scoring wheel; should the castor scoring wheel be inadvertently moved beyond or outside of this arc of normal operation, the damping means is designed such that the spring does not become overstressed or broken and also so that the scoring wheel and its mounting arrangement can readily be pivoted back to the correct position.

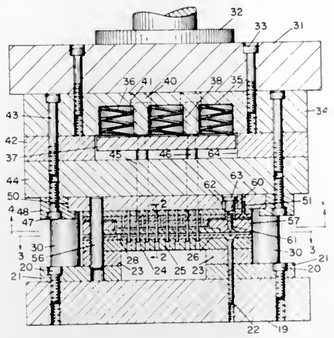
3,797,341
METHOD OF AND APPARATUS FOR CUTTING TEXTILE MATERIAL
Bruno Bystron, Ingolstadt, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany
Continuation-in-part of Ser. No. 80,905, Oct. 15, 1970, abandoned. This application Jan. 11, 1973, Ser. No. 322,698
Claims priority, application Germany, Oct. 21, 1969, 1952852
Int. Cl. B26d *1/10;* **B23d** *55/04;* **A41h** *43/00*
U.S. Cl. 83—14 **5 Claims**



A flimsy sealing surface sheet of silk paper, rough on one side, closely overlies a pack of cloth sheets to be cut, which cloth sheets are supported on an apertured support. The sealing surface sheet is less air-permeable than the cloth sheets and may simply be carried by the pack of cloth sheets, or such sealing surface sheet may be in the form of endless belts located on opposite sides of a cutting implement used for cutting the cloth sheets of the pack. The surface sheet is pressed firmly against the pack of cloth sheets by suction applied through apertures of the sheet pack support.

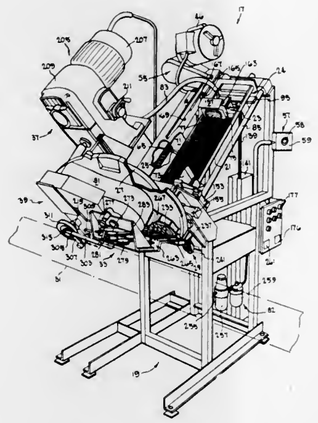
3,797,342
PRINTED CIRCUIT BOARD WITH PLATED THROUGH HOLES
John Sekel, Cumberland, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Mar. 22, 1973, Ser. No. 343,714
Int. Cl. B26f *1/14*
U.S. Cl. 83—55 **12 Claims**

A method and apparatus for punching holes in a printed circuit board which are to be subsequently plated. The method utilizes a punch comprising the fluted end of a standard high helix drill which is secured to a punch holder. The drill is supported by a stripper plate and a guide plate. The stripper plate is held against the printed circuit board by movement of the



punch holder while the drill moves through the printed circuit board, punching and reaming a hole in the printed circuit board.

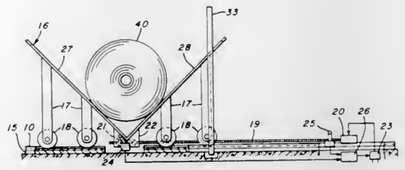
3,797,343
RAPID SLICING MACHINE
Roland E. Miller, Orangeville, and Clyde D. Wayne, Wilmette, both of Ill., assignors to Kraftco Corporation, Chicago, Ill.
Filed May 24, 1971, Ser. No. 146,286
Int. Cl. A01j *21/00*
U.S. Cl. 83—80 **19 Claims**



A method and apparatus for rapidly slicing a mass of material to obtain slices of controlled weight.

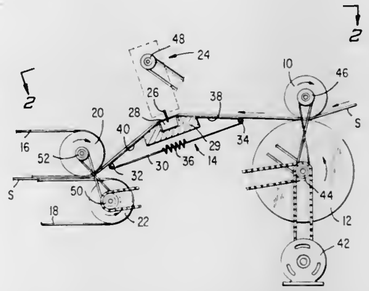
3,797,344
ELECTROMECHANICAL APPARATUS FOR CUTTING COILS OF POLYESTER FOAM STRIP OR THE LIKE
Henry H. Hattman, III, 38 William Dr., Coraopolis, Pa.
Filed Dec. 15, 1972, Ser. No. 315,340
Int. Cl. B26f *3/12*
U.S. Cl. 83—171 **11 Claims**

An electromechanical apparatus for subdividing a coil of polyester foam material into one or more coils. The apparatus includes a carriage with V-shaped support surfaces for supporting the coil. A plurality of wheels extend from the carriage for support by stationary tracks that extend in a direction normal to the axis of the coil. An electrically heated wire is connected at its ends to springs and electric insulators that are carried by a C-shaped frame arranged at one side of the carriage. The springs compensate for length changes of the wire



during heating thereof. The wire extends through a slot in the carriage such that upon displacement of the carriage by a drive means toward the wire, a coil located on the carriage is divided into predetermined widths. A power control circuit is used for heating the resistance wire.

3,797,345
CONVEYORIZED SHEET CUTTER
Philip Allen, Radnor, Pa., assignor to Charles Beck Machine Corporation, King of Prussia, Pa.
Filed Mar. 21, 1972, Ser. No. 236,649
Int. Cl. B26d *7/14*
U.S. Cl. 83—175 **5 Claims**



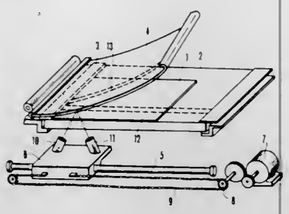
An improved conveyorized sheet cutter is herein described for cutting a plurality of stacked sheets of thermoplastic material, and the like. A first conveyor is provided for moving stacked sheets of material along a first conveyorized path and an elongated tensioning block is disposed beneath the sheets of thermoplastic material to urge upwardly against the moving material, so as to tension the material. The tensioning block may be formed with a channel for receiving a razor-blade which may be mounted on a second conveyor disposed for movement along the channel, for cutting sheet material held taut across the channel. The first and second conveyor systems are driven through a common drive shaft so as to be mechanically synchronized. As a result thereof, the angle of cutting bias necessary to cut squared off sheets of moving material is constant, regardless of the speed of sheet material travel.

In one form of the invention, a plurality of cords may be provided to extend outwardly from leading and trailing edges of the tensioning block for the purpose of supporting the moving sheet material before and immediately after the razor-blade has cut the sheet. The plurality of cords may take the form of a continuous loop having a resilient member incorporated therein for the purpose of maintaining tension in each of the plurality of cords.

3,797,346
APPARATUS FOR CUTTING A ROLL OF COPYING MATERIAL ACCORDING TO THE LENGTH OF THE ORIGINAL

Shunichiro Kakii, Kugayama, and Satoshi Hisabayashi, Tokyo, both of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1972, Ser. No. 296,533
Claims priority, application Japan, Nov. 10, 1971, 46/89085
Int. Cl. G03g *15/00*
U.S. Cl. 83—203 **8 Claims**

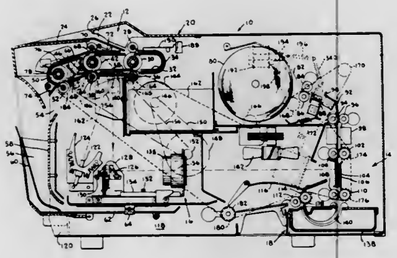


A copying machine is disclosed having an apparatus for cutting a roll of copying material according to the length of an original positioned on a transparent supporting table. The cutting apparatus includes a device for optically detecting the forward edge of the original. The roll copying material and a moving member carrying the detecting device are driven at the same speed. When the edge detector detects the forward edge of the original, the cutter is triggered.

3,797,347
SEQUENCE CONTROL APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Joseph F. Miciukiewicz, Trumbull; Douglas I. Morrison, Norwalk; Philip Pollak, Jr., Westport, and William A. Ross, Darien, all of Conn., assignors to Pitney-Bower, Inc., Stamford, Conn.

Division of Ser. No. 74,737, Sept. 23, 1970. This application July 27, 1972, Ser. No. 275,455
Int. Cl. B26d *5/26*
U.S. Cl. 83—205 **24 Claims**

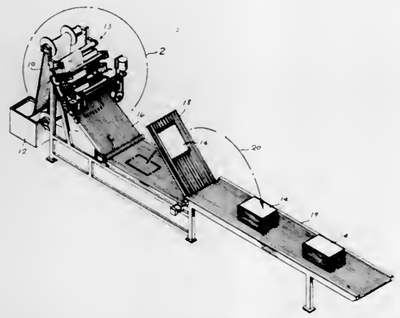


An apparatus for controlling the sequential operation of several functions of a fully automatic electrophotographic copying machine. The copying machine has the capability of projecting an image of indicia on a moving document to a piece of copy paper which is moving in synchronism with the document, and of developing a visible image of the indicia on the copy paper. The disclosed apparatus controls, in response to sensing the leading edge of the document, the energization and de-energization of an illuminating lamp, an electrostatic charger, the commencement of feeding of copy paper, the moment of operation of a severing mechanism for severing a sheet of copy paper from a roll thereof and the feeding of a minimum length of copy paper, regardless of the length of the original document, to prevent pieces of copy paper less than that minimum length from being fed through the machine. The apparatus has features of adjustability which assure that sheets of copy paper will be severed from the roll having a length in exact accordance with the length of the original document, and which assure that the indicia on the original document will be reproduced on the sheet of copy paper in exact accordance with the position of the indicia on the document.

3,797,348
TOWEL CUTTER APPARATUS

Arthur Ronald Moore, 3512 Hilly Ln., Elkhart, Ind.

Filed Jan. 26, 1973, Ser. No. 327,151
Int. Cl. B26d *5/20*
U.S. Cl. 83—209 **8 Claims**

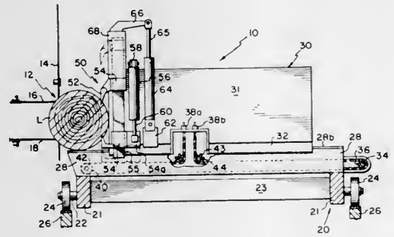


Apparatus for handling an elongated piece of towel material and cutting the material into selected lengths to form individual towels. The towel material is moved across a table surface and at selected locations is engaged by a plurality of comb-like teeth which serve to position the towel material for a cutter blade which traverses the material and severs the material into sections forming the individual towels.

3,797,349
SAWMILL LOG HOLDER ASSEMBLY

Leward N. Smith, Remus, Mich., assignor to Morbark Industries, Inc., Winn, Mich.

Filed Dec. 13, 1971, Ser. No. 207,395
Int. Cl. B27b *7/04, 29/08*
U.S. Cl. 83—404.1 **7 Claims**

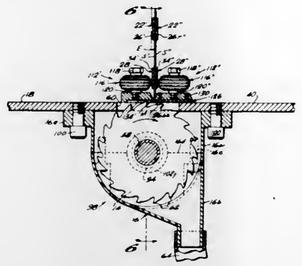


Apparatus for use in sawing a log including a log holder assembly having opposed upper and lower log-gripping members which are movable between vertically remote, inoperative positions and operative log-penetrating support positions, and incorporating mechanism for positively locking one of the gripping members in vertical position so that the gripping members provide the sole support for maintaining the log at a predetermined elevation while multiple cuts are being taken.

3,797,350
ENVELOPE OPENING APPARATUS

W. E. Orrick, Homestead; William Sottle, and John R. DeHart, both of Coral Gables, all of Fla., assignors to United States Envelope Company, Springfield, Mass.

Continuation of Ser. No. 57,045, July 22, 1970, abandoned. This application July 27, 1973, Ser. No. 383,278
Int. Cl. B26d *1/20, 7/06*
U.S. Cl. 83—418 **6 Claims**

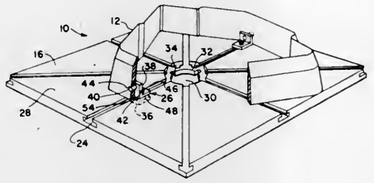


Apparatus for opening letter envelope work items or the like, each having a folded edge margin. A supply of envelope work items are clampingly conveyed in successive order by mating belt means and conveyed transversely across the cutting periphery of a circular cutting element which removes the folded edge margin of each envelope item for permitting access to the envelope contents.

3,797,351
MOUNTING SYSTEM FOR ENVELOPE-DIE HOLDERS

Wilbur M. Jones, Jr., 6909 Lachlan Cir., Baltimore, Md.

Filed Mar. 7, 1973, Ser. No. 338,953
Int. Cl. B26d *1/00*
U.S. Cl. 83—698 **10 Claims**



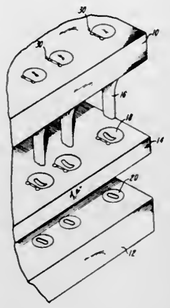
An effectively self-centering and size-universal envelope-die and mounting system in which envelope dies are secured to mounting plates by clips which engage pre-located apertures in the sides of dies and radial slots in the mounting plates; co-acting aperture locating and hole drilling jigs are also disclosed.

3,797,352
APPARATUS FOR KEYING AND LOCKING ELEMENTS TO THEIR RETAINERS

Robert E. Smith, Kettering, Ohio, assignor to Dayton Progress Corporation, Dayton, Ohio

Filed Jan. 26, 1973, Ser. No. 326,582
Int. Cl. B26f *1/14;* **B26d** *7/26*
U.S. Cl. 83—699 **12 Claims**

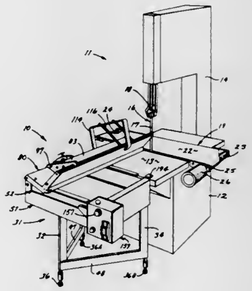
This is a system and apparatus for keying and locking tools and like elements such as punches and die and guide buttons in the appropriate bores of their retainers. The system requires the formation of a flat on the head end of the element to be inserted and locked in a retainer bore while the wall of the bore to position opposite the flat is drilled and reamed, in an axial sense, to provide parallel pin holes which open at one side to the bore. Each pin hole receives a dowel type pin which, however, has a flat along one side portion. The flat on the pin is positioned to be exposed to the bore and to generally face the flat on the inserted tool. The dowel pins are specially designed to include a taper which enables a preliminary non-seated positioning of the respective pins in their holes while the related tool is inserted in the associated bore, whereupon each pin is rotatively positioned as required to abut the flat on the inserted tool. The pins are then driven to a seated locking position referenced to the flat on the tool. The use of plural pins, so formed and utilized, eliminates the need for close tolerance in machining the related parts and insures a precise and simple procedure in the locking of a tool or other element in a desired orientation and place.



3,797,353
MEAT FEEDING MACHINE

Richard B. Calhan, Warsaw, Ind., assignor to Creative Inc., Warsaw, Ind.

Filed Feb. 18, 1972, Ser. No. 227,357
Int. Cl. B26d *1/28, 4/36, 5/42*
U.S. Cl. 83—718 **9 Claims**

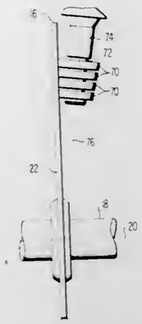


A first slide is reciprocably supported upon a base for horizontal movement past an adjacent saw blade. A second slide is reciprocably supported upon the first slide for horizontal movement toward and away from the saw blade. Meat advancing means is mounted upon the second slide for intermittently moving the meat in small increments toward the saw blade. Actuating means supported upon the base effects said reciprocal movement of the slides so that the second slide moves in a rectangular path. Drive means supported upon the second slide means and the first slide means effects the periodic and incremental movement of the meat advancing means each time the second slide moves through the rectangular path.

3,797,354
APPARATUS FOR DAMPING VIBRATIONS OF A ROTARY CUTTING BLADE

Rudolph L. Allison, Rockford, Ill., assignor to Paramount Textile Machinery Co., Chicago, Ill.

Filed Apr. 24, 1972, Ser. No. 246,654
Int. Cl. B26d *1/14*
U.S. Cl. 83—824 7 Claims

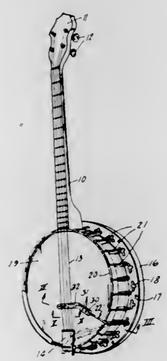


A method and apparatus for damping vibrations of a rotary cutting blade. In one disclosed embodiment, the planar surface of a rotary cutting blade is frictionally contacted by a damping means comprising a plurality of coaxial, independently rotatable disks each presenting a relatively narrow peripheral surface in contact with the planar surface and disposed with the axis of rotation parallel to the planar surface and intersecting the axis of rotation of the cutting blade. In another disclosed embodiment, the damping means comprises an elongated, roller means having a generally frustoconical peripheral surface in frictional contact with the planar surface of the cutting blade. The frustoconical surface may be defined by a continuous surface or by a plurality of spaced coaxial, frustoconical roller segments. The roller means is rotatably mounted with its axis of rotation intersecting the planar surface at the axis of rotation of the cutting blade. Means for adjusting the frictional contact between the damping means and the planar surface are also disclosed.

3,797,355
BANJO MUTE

Clement R. Law, Chicago, Ill., assignor to Clement R. Law and Josiphine F. Law, both of Chicago, Ill.

Filed May 30, 1972, Ser. No. 257,580
Int. Cl. G10c *1/10*
U.S. Cl. 84—273 2 Claims

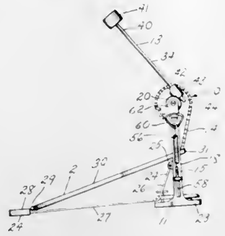


A mute for a banjo or other stringed instrument which includes a frame, a bridge and strings supported on the bridge, the mute comprising an arm which is pivotally mounted with respect to the frame and a resilient pad carried by the arm and arranged to be positioned over the bridge to dampen the vibration of the strings.

3,797,356
LINKAGE FOR FOOT OPERATED BASS DRUM PEDAL

Albert W. Duffy, 44 Garden Pl., Brooklyn, N.Y., and Frank Ippolito, 415 E. 52nd St., New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,738
Int. Cl. G10d *13/00*
U.S. Cl. 84—422 2 Claims

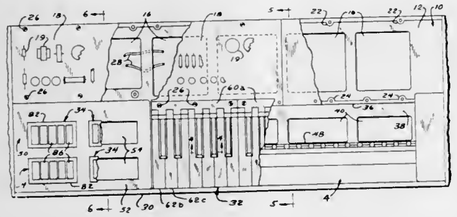


A linkage for driving a foot-operated bass drum pedal in which the conventional leather strip interconnecting the toe end of the pedal and a transversely mounted shaft carrying means for securing the pivoting end of the drum stick is replaced by a sprocket chain engaging a sprocket on said shaft. Coarse adjustment of the length of stroke is obtained by shifting the mounting means on the shaft, and fine adjustment is obtained by shifting the end point of the chain with respect to the particular teeth engaged on the sprocket. The last link of the sprocket end of the chain is secured by pintel or cotter key means extending through one of a plurality of transversely extending holes located at the periphery of the sprocket adjacent the inner ends of the teeth thereof.

3,797,357
ELECTRONIC MUSICAL INSTRUMENT MECHANICAL CONSTRUCTION

Howard M. Thomas; Robert F. Olszowka, and Roger J. McNerney, all of N. Tonawanda, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed Sept. 20, 1972, Ser. No. 290,457
Int. Cl. G10c *3/12*
U.S. Cl. 84—423 18 Claims

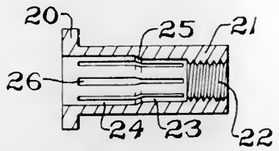


A mechanical construction for an electronic musical instrument, such as an organ, comprises a one-piece plastic key bed for mounting the keys, the stop tablet assemblies, and printed circuit boards. The keys are made up of a series of one-piece plastic key groups, the keys in each group being hingedly connected to a mounting strip. The keys of each group are alternates, namely non-successive steps in the chromatic scale. However, when the key groups are assembled they provide an octave group, and in such assembly the mounting strips are stacked and supported on the key bed such that all of the keys flex or hinge approximately about the same hinge axis. The stop tablet construction comprises a one-piece plastic housing and a number of one-piece plastic stop tablets rockably mounted in the housing and retained therein by keepers on the stop tablets. Protuberances are provided on the housing that cooperate with each stop tablet for retaining each stop tablet in either its "off" or its "on" position.

3,797,358
BLIND FASTENER WITH PRISMATIC BODY

Meredith L. Allender, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed July 25, 1972, Ser. No. 274,852
Int. Cl. F16b *13/04*
U.S. Cl. 85—71 10 Claims

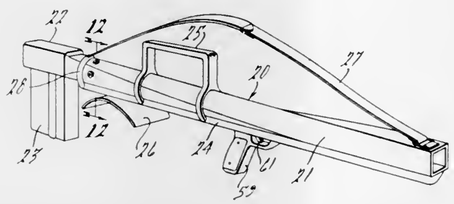


A one-piece blind fastener, of the kind which serves as a nut plate, has a head to bear against the exposed face of a structural member having a hole in it, and a prismatic hollow body having preferably four to six flat faces to pass through the hole. The middle part of the body is divided longitudinally into as many strips as it has faces, and its end remote from the head is internally threaded. The bore of the fastener contains a small step or offset so that the major diameter of bore extends from the outer face of the head to the step, and a slightly smaller diameter of bore extends from the step to the threaded portion. When the fastener is shortened by a pull on a threaded draw rod, the longitudinal strips fold outward at the step and bear firmly against the back or blind face of the structure.

3,797,359
MULTI-FLECHETTE WEAPON

Robert C. Mawhinney, Danville; Alan L. McCone, Jr., San Francisco, and Alvin L. Foote, Livermore, all of Calif., assignors to ME Associates, San Romon, Calif.

Filed Aug. 14, 1972, Ser. No. 280,558
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.8 11 Claims

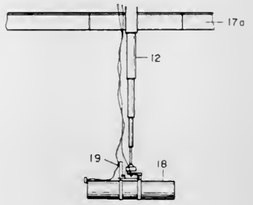


A plurality of flechettes are mounted in a casing or sabot at the forward end of a rocket motor which propels itself, the casing and flechettes through a launching tube. The casing or sabot produces the rotation of the rocket within the tube and separates at the muzzle freeing the group of flechettes which are advanced along a trajectory as the rocket motor drags and falls therebehind. The rotation of the group of flechettes causes them to spread horizontally and vertically and when retained in a rectangular group and released with a vertical orientation the progressive spreading of the flechettes covers twice the area horizontally as they do vertically thereby increasing the striking pattern as the flechette group advances along the trajectory. The flechettes have a rodlike body pointed at one end and provided with a plurality of thin vanes at the opposite ends. This permits the flechettes to be compactly grouped into layers from which they expand as they are advanced, as pointed out above.

3,797,360
TELESCOPING AIRBORN LAUNCH TUBE

Andrew J. Marhefka, Port Norris, N.J., and Martin H. Ravotto, Staten Island, N.Y., assignors to The United States of America, as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 8, 1971, Ser. No. 178,574
Int. Cl. B64d *7/08*; F41f *3/06*
U.S. Cl. 89—37.5 D 3 Claims

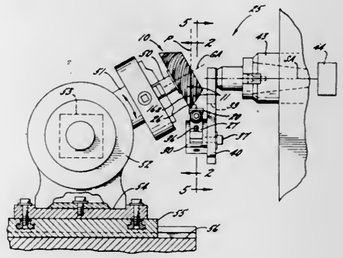


An airborne system for providing means of aerial artillery comprising: guide means securably attached to the interior of a rotary wing aircraft; attachment means slidably connected to said guide means; a telescoping assembly having two ends, one end axially rotatably connected to said attachment means; means for omnidirectional movement, said movement means being attached to the second end of said telescoping assembly; and a launch tube assembly, said launch tube assembly being attachable to said omnidirectional movement means, whereby an artillery shell may be loaded into said launch tube assembly when said launch assembly is withdrawn into the aircraft and further wherein the shell can be fired when said telescoping assembly is extended outside of the aircraft.

3,797,361
METHOD AND MACHINE FOR TOPPING GEAR

Clifton W. Redin, c/o Redino Production Machine Co., 2433 20th St., Rockford, Ill.

Filed Aug. 1, 1972, Ser. No. 276,977
Int. Cl. B23f *19/10*
U.S. Cl. 90—1.4 9 Claims

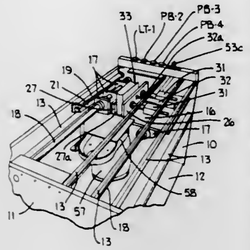


A cutter swings in an arc within a vertical plane and shaves metal from the top edges of a curved tooth gear, the gear being uniquely positioned to enable each curved edge to be presented to a topping position in which the edge approximates both the plane and the arc of swinging of the cutter. The cutter is supported for controlled floating and is spring-urged against the curved edges to conform to the latter and effect a cut of substantially uniform depth.

3,797,362
BOOK SPINE MILLER

Glen B. Heckman, North Manchester, Ind., assignor to The Heckman Bindery, Inc., North Manchester, Ind.

Filed Oct. 2, 1972, Ser. No. 293,840
Int. Cl. B23c *1/06*; B42c *17/00*
U.S. Cl. 90—19 3 Claims

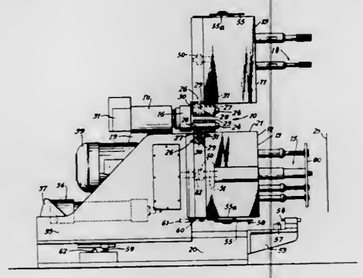


Disclosed is an apparatus for milling off the spine area of a book to be rebound. A rectilinearly moveable table is provided carrying clamping members between which the book is clamped with its spine area extending through an opening in the table, the amount of such extension being determined by an adjustably positionable underlying platform which does not move with the table. A cutter wheel is rotated in a plane parallel to the table and adjacent its underface so that, as the table moves over the cutter wheel, the fabric, staples, glue, etc. on the spine area of a clamped book are removed.

3,797,363
TOOLS CARRYING HEADS, MORE PARTICULARLY FOR TRANSFER MACHINES

Antonin Nohejl, Surbiton, England, assignor to The Mollart Engineering Company Limited, Surrey, England

Filed Nov. 8, 1971, Ser. No. 196,711
Claims priority, application Great Britain, Nov. 16, 1970, 54,422/70
Int. Cl. B23b *39/16*
U.S. Cl. 90—26 R 13 Claims

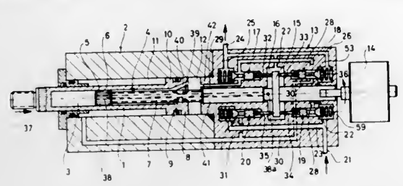


A machine tool includes a tool carrying head which comprises at least two tool carrying units which are interchangeable from an operative position to an inoperative position in which the tools can be changed while the machine is still operating. The tool carrying units are mounted on a common pivot and are interchanged by a pivotal movement about a horizontal axis. The tool carrying unit in the operative position is engaged by a movable structure and is moved slidably forward from the common pivot to its final working position. The movable structure carries a drive motor for the tools carried by the operative unit.

3,797,364
FOLLOW-UP CONTROL APPARATUS

Eckehart Schulze, Rutesheim, Germany, assignor to Hartmann & Lammle OHG, Stuttgart-Bad, Cannstatt, Germany

Filed Dec. 16, 1971, Ser. No. 208,761
Claims priority, application Germany, Dec. 17, 1970, 2062134
Int. Cl. F15b *21/02, 9/10*
U.S. Cl. 91—35 26 Claims

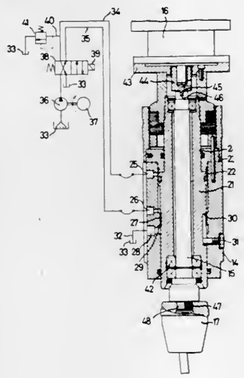


A power amplifying follow-up control apparatus which has a fluid-operated prime mover whose output element can perform translatory or angular movements in response to axial movements of a motion transmitting spindle in a composite housing for two pairs of valves which control the flow of a hydraulic fluid to and from the prime mover. The spindle is threaded to move axially in response to rotation by an electric motor or by hand and to thereby actuate selected valves in the housing in order to regulate the flow of fluid to and from the prime mover whose output member shifts or rotates one or more driven components of a machine tool or the like. The valves which control the outflow of fluid from the prime mover receive such fluid by way of pressure regulating gauges which determine the maximum pressure at which the fluid can enter the respective valves, and the control apparatus employs safety switches which terminate or change the direction of rotation of the spindle when the output member of the prime mover encounters excessive resistance to movement.

3,797,365
RIVETING MACHINE

Seiichi Yoshikawa, No. 11, 2-chome, Morikawachi-hondori, Higashi-osaka-shi, Osaka-fu, Japan

Filed June 21, 1972, Ser. No. 264,987
Int. Cl. F15b *15/22*
U.S. Cl. 91—402 1 Claim



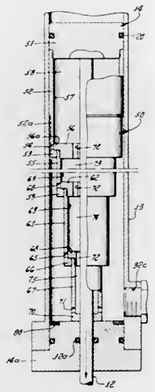
A shaft moving device for elevating and lowering an operating shaft in a riveting machine. The device has a cylinder, a cylindrical member slidable up and down in the cylinder and a coaxially and rotatably supporting the operating shaft. The cylindrical member has an annular ring which also serves as a

piston. A pump supplies pressure oil to the cylinder. A directional control valve is provided for selectively switching the oil supplied to the cylinder. Upper and lower ports are provided in said cylinder and are connected with the pump through the valve. The cylindrical member together with the operating shaft can be lowered and elevated by the actuation of the valve.

3,797,366
TELESCOPIC HYDRAULIC DECELERATOR

James W. E. Hanes, Ventura, and Edward Larralde, Santa Barbara, both of Calif., assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed July 14, 1972, Ser. No. 271,770
Int. Cl. F15b *13/04*
U.S. Cl. 91—404 12 Claims



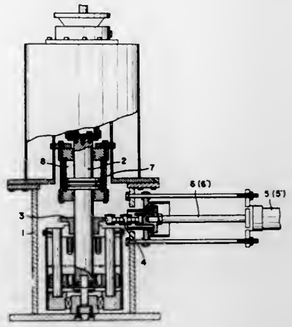
A hydraulic decelerator, particularly useful in a compensator apparatus connected between a travelling block of a well bore rig, mounted on a vessel floating in a body of water, and a hook from which a running string is supported, including a plurality of telescopic sleeves associated with the piston portion of the compensator apparatus and disposed within a companion compensator cylinder, the sleeve having ports or orifices through which hydraulic fluid in the cylinder is forced as the sleeves progressively collapse one within the other during movement of the piston portion within the cylinder, to gradually decelerate over-rapid movement of the piston portion of the compensator apparatus to a desired speed.

3,797,367
BUFFER DEVICE OF A ROBOT MACHINE FOR CONTROLLING UPWARD AND DOWNWARD MOVEMENT OF A ROBOT ARM

Hisao Fujiwara; Kentaro Sakamoto, and Goro Wada, all of Yokohama, Japan, assignors to Kabushiki Kaisha Kelaisha Seisakusko, Yohohama-Shi, Japan

Continuation of Ser. No. 152,575, June 14, 1971, abandoned. This application May 22, 1973, Ser. No. 362,878
Claims priority, application Japan, June 30, 1970, 45-56453
Int. Cl. F01b *21/00*
U.S. Cl. 92—2 2 Claims

This invention relates to a buffer device of a robot machine for controlling upward and downward movement of a robot arm by smoothly and accurately operating the rotational shaft at upper and lower ends of its motion, and which comprises a rotary machine frame rotatably supported on a frame, said frame being rotated integrally with a chain wheel providing rotation to the main shaft, piston rods in the rotary frame being inserted in to blind holes provided on a flat disk rising

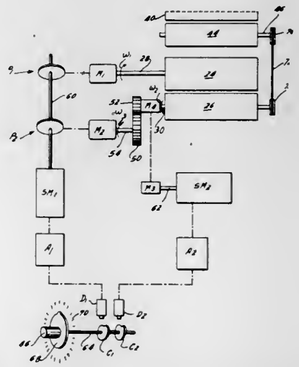


with the main shaft, a piston rod at lower end of the main shaft being inserted into a blind hole at the bottom of the machine frame, and a flat disk being dipped in the oil.

3,797,368
ROTARY BAG MAKING APPARATUS

Fabrizio G. Martelli, 45 Overlook Ter., New York, N.Y.

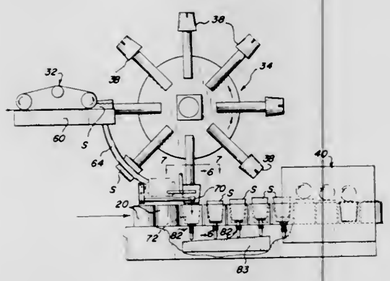
Filed July 23, 1971, Ser. No. 165,084
Int. Cl. B31b *21/02, 21/14*
U.S. Cl. 93—8 R 21 Claims



A rotary bag making apparatus of the type used to fabricate bags from a continuous web of thermoplastic film material is described. The apparatus comprises a smooth feed cylinder driven at a constant velocity and adapted to feed the web material past an operating station and a sealing cylinder having a sealing member adapted to engage the web at spaced intervals during each revolution thereof, the web being heat sealed at such spaced locations between the smooth cylinder and the sealing member. Means in the form of non-circular gearing are provided for rotating the sealing cylinder at a constant RPM with a cyclically varying instantaneous angular velocity. The non-circular gearing means rotates the sealing cylinder through a drive shaft and means are provided for adjusting the angular position of the sealing cylinder relative to that drive shaft whereby the instantaneous angular velocity of the sealing member at the moment of sealing engagement with the web may be adjusted. Bag length is adjusted by changing the RPM of the sealing cylinder relative to the smooth feed cylinder, and means are provided for automatically and simul-

taneously adjusting the angular position of the sealing cylinder on the drive shaft by a proper amount to maintain the velocity of the sealing member equal to the velocity of the web at the moment of engagement between the two.

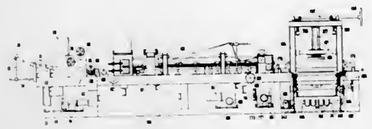
3,797,369
METHOD AND APPARATUS FOR ASSEMBLING COMPOSITE CONTAINERS
Ralph G. Amberg, Monticello, Ind., assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 162,400, July 14, 1971, Pat. No. 3,759,437. This application Feb. 14, 1972, Ser. No. 225,818
Int. Cl. B31b *11/00*
U.S. Cl. 93—36.01 **7 Claims**



Method and apparatus for assembling a composite container which consists of a cup-shaped inner shell and a sleeve-type overwrap adhesively bonded to the exterior sidewall of the shell. Sleeve blanks are cut to shape, formed into their final configuration and inserted into a cup-shaped recess in a holder mounted upon an endless conveyer. The abutting edges of the inserted sleeve are axially aligned and the sleeve is accurately seated within the holder. The holder then carries the sleeve beneath a cup transfer mechanism which deposits the cup-shaped inner shell of the composite container into the sleeve. Prior to its insertion in the sleeve, the exterior side surface of the cup is coated with a suitable adhesive. After the cup is placed within the sleeve in the holder, the holder passes beneath a cup tamping mechanism which axially presses the cup downwardly into the sleeve to firmly bond the sleeve and cup to each other.

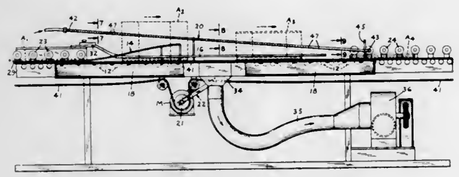
3,797,370
AUTOMATIC CARTON BOX FABRICATING APPARATUS
Tetsuya Sawada, No. 35-24, Chiyohara-cho, Katsura, Ukyo-ku, Kyoto, Japan
Filed Sept. 15, 1971, Ser. No. 180,616
Claims priority, application Japan, Dec. 28, 1970, 45-130132
Int. Cl. B31b *3/26*
U.S. Cl. 93—51 HW **5 Claims**

An automatic carton box fabricating apparatus. The apparatus has upper and lower endless feed belts conveying blanks supplied one by one therebetween. The endless belts support the lower portions of the parts of the blanks inside the creases on both side walls thereof. Guide members press the upper portions of the parts of both side walls similarly inside the creases thereof, and folding belts fold the portions of both side walls outside the creases thereof over the guide members during the advancement of the blank. A pressing plate presses down the bottom of the blank after the blank stops in a stopping position. At this point the side walls of the blank have been folded double by the guide members and folding belts. Guide rods bending upwards pieces provided on the ends of



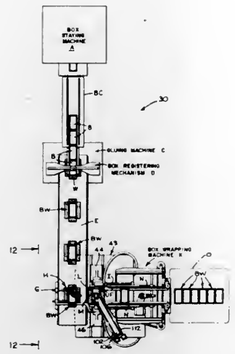
both side walls when the blank is pressed down by the pressing plate. Guide members also bending upwards both side walls after each of the pieces is bent upwards similarly during descent of the blank, and guide members also bend upwards both end walls after both side walls are bent upwards during descending of the blank plate. A receiving plate receives the carton made from the blank, supporting the bottom of the blank as it descends under the force of the pressing plate before the pressing plate reaches its lower limit of movement, and a delivery device carries the carton away to a desired place.

3,797,371
METHOD AND APPARATUS FOR FOLDING A CARTON BLANK
Fred W. Randle, Modesto, Calif., assignor to International Paper Company, New York, N.Y.
Filed Dec. 29, 1971, Ser. No. 213,586
Int. Cl. B31b *1/42, 1/72*
U.S. Cl. 93—52 **1 Claim**



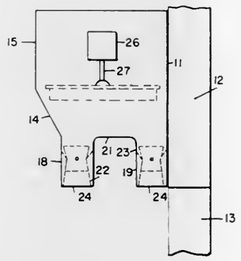
An apparatus and method for folding a planar box blank having a plurality of panels defined by fold lines wherein the blank is continuously moved along a predetermined path by conveyor means, certain of the panels of said blank being held in controlled contact with said conveyor means, and others of said panels being subjected to a plurality of air jets continuously issuing from an air folding rail to cause said last mentioned panels to be folded back into face-to-face relation with those panels in contact with the conveyor means. As the blank moves through the apparatus, a guide rod initiates folding of the blank along the fold lines. As the blank continues on its predetermined path through the apparatus, air jets issuing from the air folding rail continue and complete the folding operation.

3,797,372
BOX WRAPPING MACHINE
Donald W. Shelmire, Churchville, Pa., assignor to FMC Corporation, San Jose, Calif.
Continuation-in-part of Ser. No. 62,471, Aug. 10, 1970, abandoned. This application Mar. 29, 1972, Ser. No. 239,067
Int. Cl. B31b *15/00*
U.S. Cl. 93—54.2 **4 Claims**



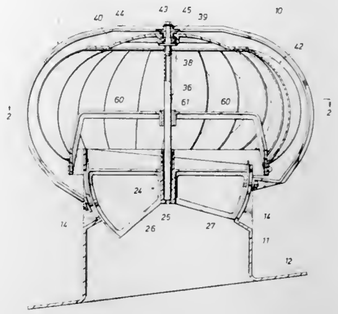
A box wrapping machine incorporating (1) a control system which senses and monitors the presence and/or movement of the box-wrapper units through the machine, and (2) a conveying mechanism for separating and discharging the finished boxes.

3,797,373
AIR CURTAIN
Eugene Larson, Millbrae, Calif., assignor to NPI Corporation, Burlingame, Calif.
Filed July 19, 1972, Ser. No. 273,121
Int. Cl. F24f *9/00*
U.S. Cl. 98—36 **3 Claims**



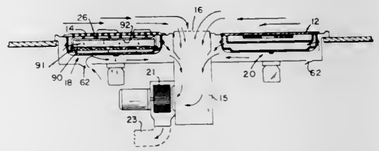
An air curtain primarily for use over a doorway has an enclosure containing motor-driven fans for moving air downwardly through the enclosure. The discharging air travels through venturi boxes mounted to pivot about horizontal axes to direct the discharging air. Flexible strips on the venturi boxes abut the enclosure sides to prevent air leakage in any venturi box position. If desired, deflectors are pivotally mounted in the venturi box outlet, and more than one row of venturi boxes may be used.

3,797,374
TURBINE VENTILATOR
James D. Jones, Houston, Tex., assignor to Wind-Wonder, Inc., Houston, Tex.
Filed Aug. 10, 1972, Ser. No. 279,474
Int. Cl. F23l *17/02*
U.S. Cl. 98—72 **14 Claims**



A turbine ventilator adapted to be used with a roof of variable pitch, ranging from flat to about 7/12, which incorporates an upstanding eliptical air pipe which has an internal pair of facing curved surfaces which support matching segments of a movable support base. The support base is connected to a vertical spindle which extends to the top of the turbine where it is braced and supported by four wind braces. The braces support a bushing which, in conjunction with a bearing assembly, supports a rotatable turbine. The rotatable turbine is held rigid by two cross arms which intersect at a bushing which surrounds the shaft at its center portion. The support base for the shaft is adjustable to position the shaft vertically, thereby accommodating variations in pitch. The entire apparatus is preferably formed of plastic, except for the bearing assemblies, nuts, bolts, and other components, to thereby define a structure which is resilient and shock resistant in use and operation. The device can be colored to coordinate with the color of the structure on which it is to be placed.

3,797,375
STOVE WITH SELECTIVELY INTERCHANGEABLE COOKING APPARATUS
Joseph J. Cerola, Indianapolis, Ind., assignor to Jenn-Air Corporation, Indianapolis, Ind.
Filed Mar. 16, 1972, Ser. No. 235,223
Int. Cl. A47j *27/12*
U.S. Cl. 99—340 **3 Claims**



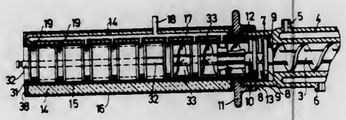
A cooking stove or range adaptable for conversion to provide for different types of food cooking. The stove has an open pan — like recess means in the top thereof adaptable to selectively receive interchangeable types of cooking units or apparatus therein.

3,797,376

APPARATUS FOR COMMINUTING AND COOKING OF RAW MEAT USED FOR THE MANUFACTURE OF COOKED SAUSAGE

Gunter Meyer, Landau, and Ludwig Grebe, Wallau/Lahn, both of Germany, assignors to Kramer & Grebe K.G., Maschinen-und Modellfabrik, Wallau/Lahn, Im Ruttert, Germany

Filed Sept. 3, 1971, Ser. No. 177,617
Claims priority, application Germany, Sept. 7, 1970, 2044228
Int. Cl. A23l *3/22*; B02c *19/12, 19/22*; A47j *43/04*
U.S. Cl. 99—353 11 Claims



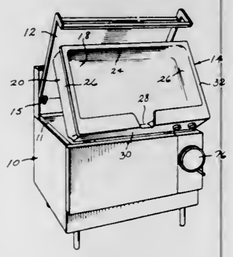
Apparatus for the cooking of raw meat to be used in the manufacture of cooked sausage. Meat subdivided into chunks of convenient size is fed into a pressure creating conveyor, preferably a screw conveyor, and into a comminuting device consisting of cooperating perforated plates and rotating knives. Finely comminuted meat from same is then conveyed directly into a cooking housing. The cooking housing in a preferred embodiment consists of an elongated tubular member having steam jets spaced both axially and circumferentially therein. Conveying means are provided for carrying the meat through the cooking housing which means in a preferred embodiment are comprised of screw flights arranged on a common shaft which is rotated as a continuation of the shaft of the comminuting mechanism.

3,797,377

TILTABLE COOKING PAN

William Lotter, and Frank De Vos, both of South Bend, Ind., assignors to South Bend Range Corp., South Bend, Ind.

Filed May 18, 1972, Ser. No. 254,606
Int. Cl. A47j *37/12*
U.S. Cl. 99—407 8 Claims



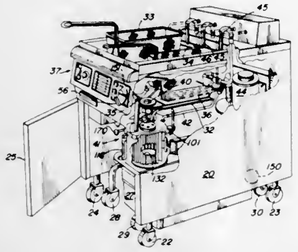
A tiltable cooking pan which is pivotally connected to a support at the front wall section of the pan. A rigid actuator rod has one end pivotally connected to the pan rearwardly and above the pivot connection of the pan to the support. The opposite end of the actuator rod is connected to a slide member which, upon fore and aft shiftable movement relative to the pan and support, causes the pan to be raised and lowered about its support pivot connection.

3,797,378

FOOD FRYER WITH CONTINUOUSLY FILTERED COOKING OIL

Wolford A. Morris, 1508 S. Lincoln, Springfield, Ill.

Continuation-in-part of Ser. No. 30,650, April 22, 1970, Pat. No. 3,648,595. This application Dec. 13, 1971, Ser. No. 207,243
Int. Cl. A47j *37/12*
U.S. Cl. 99—408 7 Claims



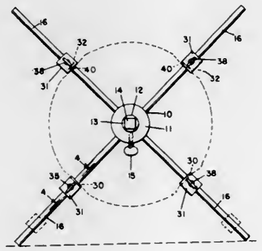
An oil filter is formed from a pair of concentric wire frame cylinders having a cylinder of filter paper positioned between them. The filter paper is preferably made from fiber of 100 percent mercerized wood pulp, saturated by a melamine-formaldehyde resin, which is 30 percent by weight. The preferred paper is 32.0 mils thick with an A.C. oil flow test of 150 secs/1,000cc and a Frazier Air Flow of 2.4 cubic feet per square foot of filter material, at a differential pressure of one-half inch of water. The maximum pore size is such that the bubble point is reached at a pressure of forty inches of water.

3,797,379

BARBECUE MEAT HOLDER

Alison C. Brion, 4706 Sunnyside Rd., Minneapolis, Minn.

Filed May 1, 1972, Ser. No. 249,129
Int. Cl. A47j *37/04*
U.S. Cl. 99—421 H 2 Claims



A barbecue meat holder having rotatable spaced hubs with aligning stub shafts secured thereto and groups of four coplanar spokes extending radially outwardly from each of said hubs together with four longitudinal clamping bars slidably mounted on the corresponding spokes of each group and secured at their ends to said spokes at various positions and removable therefrom.

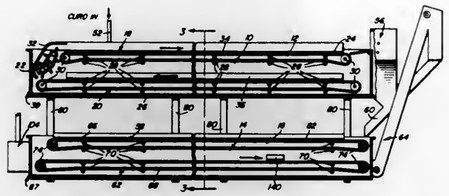
3,797,380

APPARATUS FOR MANUFACTURING CHEESE

William H. Tate, No. 1 Cheddar Ln., Valley City, Ill.

Filed Jan. 28, 1972, Ser. No. 221,645
Int. Cl. A23c *19/02*
U.S. Cl. 99—464 12 Claims

Cheese is manufactured by conveying a separated curd intermittently for at least one cycle about a first closed conveying path until it develops, turning the curd during each cycle, and standing the curd during each cycle until it knits, and conveying developed curd for at least one cycle about a second closed conveying path until it heals. Prior to the healing step, developed curd may be fed to a mill and cut into pieces. Salt



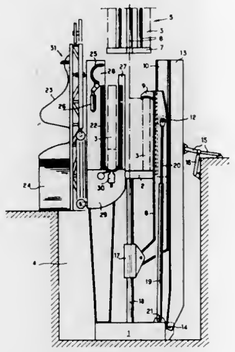
may be applied to the pieces by a blower during each cycle along the second conveying path. Each closed conveying path is formed by a pair of belt conveyors, one arranged beneath the other, and structure for elevating curd from the lower conveyor to the upper conveyor.

3,797,381

MACHINE FOR COMPACTING AND TYING COILS

Jean E. Glasson, 17, rue des Deserts, Argenteuil, France

Filed Dec. 26, 1972, Ser. No. 318,253
Int. Cl. B65b *13/04, 27/06*
U.S. Cl. 100—12 4 Claims



A machine for compacting and tying coils has a vertical frame on which a horizontal plate is fixed for receiving coils with their axes extending vertically. The compacting unit has an elongated arm disposed on the periphery of the plate for each coil, the arms being mounted in a like number of slides and each arm including a top jaw for engaging the top end of one of the coils. The arms are simultaneously moved apart to permit the introduction of coils into the machine and then lowered so that the top jaws compact the coils. A tying unit with tying material supply means, twisting heads and guide channels then ties each compacted coil.

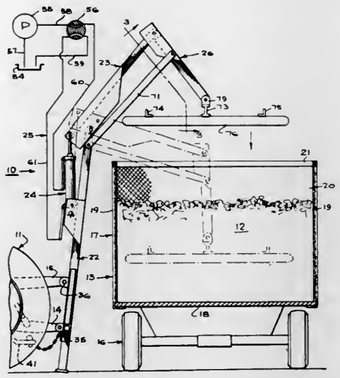
3,797,382

TAMPING APPARATUS

Vincent Muzzi, and Primo Muzzi, both of R.F.D. No. 1, Shaw, Miss.

Filed Feb. 25, 1972, Ser. No. 229,445
Int. Cl. B30b *15/00*
U.S. Cl. 100—100 5 Claims

An apparatus suitable for tamping a mass of fibrous material such as raw cotton generally including an elongated support unit adapted to be positioned in an upright position, adjacent a container loaded with such material, a base arm unit pivotally connected to the free end of the support unit, means operatively interconnecting the support unit and the base arm unit for pivoting the base arm unit relative to the support unit, an



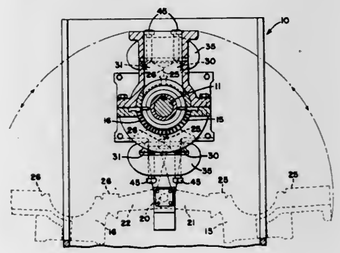
extension arm unit pivotally connected to the base arm unit, and a plate unit pivotally connected to a free end of the extension arm unit, the plate unit having a broad contact area for engaging the material being tamped.

3,797,383

SCREW PRESS

Robert M. Sturm, Sidney, Ohio, assignor to The French Oil Mill Machinery Company, Piqua, Ohio

Filed Apr. 24, 1972, Ser. No. 246,710
Int. Cl. B30b *3/00*
U.S. Cl. 100—145 4 Claims



The cage of a screw press is divided into two hingedly separable sections for access to the interior thereof to clean and service the cage and shaft. Complementary clamping surfaces on the cage sections join to form a dovetail flange. The flange is clamped together by a removable clamp to hold the cage sections firmly together. Screws in the clamp drive the clamp and the dovetail flange inclined surfaces together to provide a mechanical advantage in holding the cage sections together.

3,797,384

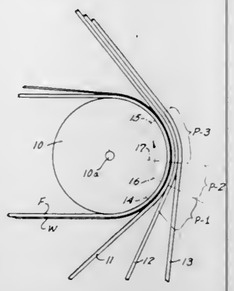
MULTIPLE BELT PRESS

Donald I. Hoff, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 20, 1971, Ser. No. 209,941
Int. Cl. D21f *3/00, 5/02*
U.S. Cl. 100—154 10 Claims

A press structure for pressing a traveling fibrous web including a support roll with first, second and third belts wrapped

over a portion of the roll and forming an extended pressing zone with the belts engaging each other successively along the



zone so that the pressure will increase with each additional belt applied to the pressing zone.

3,797,385

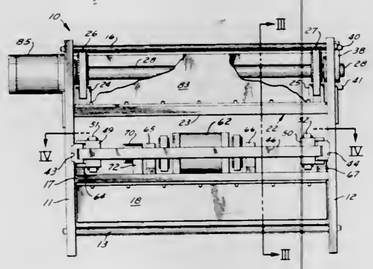
MOTOR-DRIVEN PRESS AND ACTUATING MEANS THEREFOR

Otis Ward Goff, 7151 Carlsbrook, Portage, Mich.

Filed May 10, 1972, Ser. No. 252,099

Int. Cl. B30b *7/04*

U.S. Cl. 100—232 **6 Claims**



A motor-driven hydraulic fabricating press having a reciprocating ram slidably mounted in a press frame and actuated by means of rotary actuators. One or more drive shafts are journaled in the frame, each drive shaft driven by at least one rotary hydraulic actuator, and are coupled to the reciprocating ram by means converting rotary motion into linear motion. Where a plurality of drive shafts is utilized, the drive shafts are coupled to each other by means of a kinematic crank chain.

3,797,386

MARKING SYSTEM WITH ROTARY PRINT DRUMS

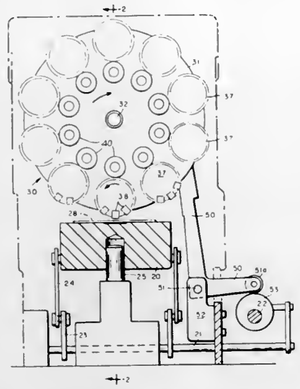
Harold L. Dean, Wellesley, and Vincent Della Penna, Jr., Lexington, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Mar. 27, 1972, Ser. No. 238,131

Int. Cl. B41l *45/00*

U.S. Cl. 101—69 **6 Claims**

A printing mechanism for applying a mark such as a character, geometric figure, etc., to an object such as a cardboard material ticket capable of receiving the mark, the printing mechanism including support means for supporting a plurality of rotatable means, each rotatable means comprising a plurality of marking means supported thereby, indexing means for positioning a selected one of the rotatable means in position to apply a mark to an object to be brought into proximity with said marking means, and control means for relatively moving said marking means and a plurality of objects into proximity to apply a mark thereto, the control means also



rotating said rotatable member to periodically position another of the marking means into position to apply a mark to the object.

3,797,387

HIGH SPEED PRINTER

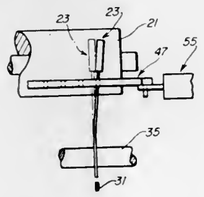
Herbert Decker, Lauf, and Friedrich Jung, Tennenlohe, both of Germany, assignors to Triumph Werke Nuernberg A.G., Nuernberg, Germany

Filed Aug. 30, 1972, Ser. No. 284,741

Claims priority, application Germany, Sept. 10, 1971, 2145245

Int. Cl. B41j *5/14*

U.S. Cl. 101—93 C **4 Claims**



Type characters arranged in columns on a rotatably driven print drum of a high speed printer are selectively impacted by print hammers which are pivotally supported for striking the print drum. Each column of type characters defines a print position along a print line, and the number of print hammers is only a fraction of the number of print positions along the print line. To enable type characters to be printed at each print position, the print hammers are disposed for movement in slots provided in a guide member which is movable parallel to the print line to flex the print hammers sideways to impact type characters of adjacent columns on the print drum.

3,797,388

APPARATUS FOR PRINTING BY REVERSE LITHOGRAPHY

Bernard Kaminstein, Paramus, N.J., assignor to Ing. C. Olivetti & Co., p.A., Ivrea, Italy

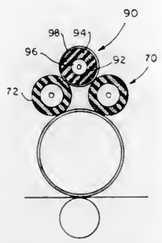
Filed Dec. 7, 1971, Ser. No. 205,522

Int. Cl. B41f *7/36*

U.S. Cl. 101—141 **13 Claims**

A reverse lithographic printing apparatus incorporating a combined inking and fountain roller is disclosed. A water-mis-

cible ink is applied to the surface of an oil loaded, porous inking roller. A mixture of ink and oil is formed which is applied



to the printing master. The oil selectively deposits on the oleophilic background portion of the master while the water-miscible ink selectively deposits on the image areas.

3,797,389

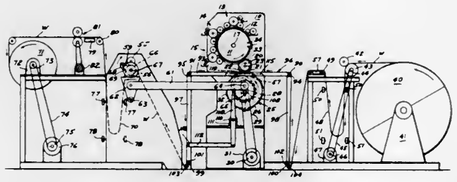
OFFSET PRINTING PRESS

Edwin K. Wolff, Stockholm, N.J., assignor to NJM, Inc., Hoboken, N.J.

Filed Apr. 28, 1972, Ser. No. 248,608

Int. Cl. B41f *13/04, 5/16*

U.S. Cl. 101—228 **12 Claims**



The heavy forces required for transferring the impressions from the blanket to a web at the printing station are provided by intermittently coacting blanket and impression segments which rotate constantly at a uniform speed. The impressions are printed on a translatory moving central portion of an oscillatory loop formed out of the web while such portion is advancing at a speed equal to the peripheral speed of the blanket and impression segments in the direction of feed of the web. The central portion of the web loop is returned with a translatory movement during the intervals that the blanket and impression are not in coactive printing relation. During such intervals also measured lengths of web are advanced through the loop.

3,797,390

INK CARTRIDGE WITH SEALING MEANS FOR RECIPROCAL PRINTING HEADS

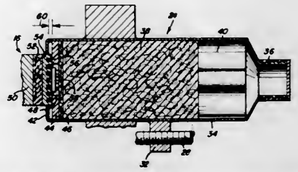
Alfred A. Marozzi, Upper Montclair, and Joseph Fuzia, Nutley, both of N.J., assignors to Bell-Mark Corporation, Bloomfield, N.J., by said Fuzia, a part interest

Filed Aug. 11, 1971, Ser. No. 170,916

Int. Cl. B41k *1/42*

U.S. Cl. 101—333 **9 Claims**

An ink supply for a film marking apparatus from which a fast drying ink is obtained for prolonged periods of time without recharging. Recharging is accomplished by replacement of an ink storage container having a foam-like filler



spaced from a closed end and exposed to a marking device at an open end through a porous pad and a restricted opening in a porous closure disk.

3,797,391

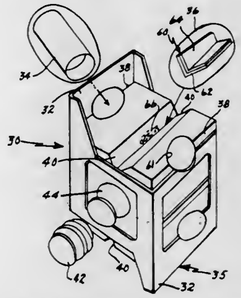
MULTIPLE CHARGE INCENDIARY BOMBLET

Vincent N. Cammarata, Baltimore, Md.; Ronald E. Brown, Altadena, and David R. Garfinkle, Tarzana, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 20, 1972, Ser. No. 308,223

Int. Cl. F42b *25/16*

U.S. Cl. 102—4 **3 Claims**



A multiple charge incendiary bomblet having a plurality of shaped charges therein. These charges are composed of a bimetallic lining of conical and linear configuration. Each of the charges have the capability of penetrating hard structures and propelling incendiary particles through the perforations made in the target by the shaped charge jet.

3,797,392

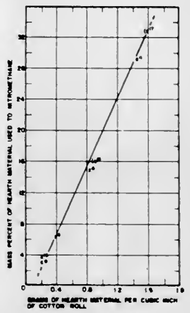
REVERSIBLE SENSITIZATION OF LIQUID EXPLOSIVES

Robert E. Eckels, 2101 Youngfield, Golden, Colo.

Filed Feb. 12, 1973, Ser. No. 331,671

Int. Cl. F42b *3/00;* **F42d** *1/00, 5/00*

U.S. Cl. 102—23 **20 Claims**



Microspheres spacially suspended in a liquid, not normally considered an explosive, cause a propagating detonation in

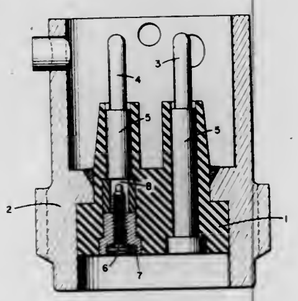
the liquid, and the liquid is reversed to non-explosive configuration by removal of the microspheres. The microspheres are prepositioned in a predetermined quantity in a porous suspending medium, the quantity being sufficient to cause an overdrive of velocity of chemical reaction to detonate the liquid. The suspending medium with the microspheres may be inserted or withdrawn as desired from the liquid, whereby the liquid with the included medium and microspheres will detonate and the liquid without the medium and microspheres will not detonate.

3,797,393

EXPLODING WIRE FUSE COMPONENT

Victor Felix Marchandise, La Jeyne; Elie Louis Signoret, La Crau; Gerard Andre Bal, and Lucien Eugene Barilero, both of Toulon, all of France, assignors to Etat Francais, Paris, France

Filed June 7, 1972, Ser. No. 260,493
Claims priority, application France, June 8, 1971, 71.20630
Int. Cl. F42b *3/12*
U.S. Cl. 102—28 EB **1 Claim**



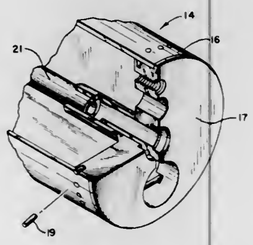
A component for an exploding wire fuse comprising a ceramic body having a pair of laterally spaced metallic pins mounted therein. One of the pins extends only partially into the ceramic body and a metallic adjusting pin is mounted within the ceramic body coaxial with that pin. An adjustable gap is provided between the coaxial pins to permit adjustment during assembly of the threshold potential for energizing the fuse.

3,797,394

CHAFF DISPENSER, METHOD OF DISPERSING CHAFF

James R. Thurston, Brigham City, and Gary V. Adams, Perry, both of Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Sept. 11, 1972, Ser. No. 287,954
Int. Cl. C06d *1/04*; **H01q** *15/00*
U.S. Cl. 102—37.6 **10 Claims**



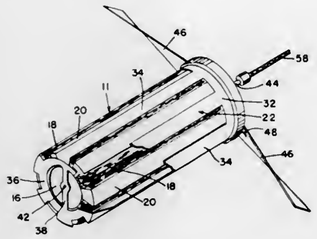
A chaff dispenser for signals and other uses, which ejects from a moving craft and disperses the signal material after a pre-set delay time, comprises an outer case, a canister holding the chaff and explosive charge, a timer, and a parachute. Upon ejection, the timer measures the delay time, releases itself and the parachute which pulls the canister from the outer case. The canister explodes to disperse the chaff. The invention herein described was made in the course of or under contract with the U.S. Air Force (Contract F33657-72-C-0136).

3,797,395

SIGNALLING DEVICE

Jesse F. Tyroler, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 1, 1966, Ser. No. 540,168
Int. Cl. C06d *1/10*
U.S. Cl. 102—37.1 **8 Claims**



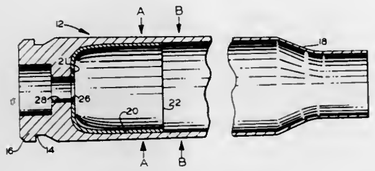
A compact thermal radiation signalling device employing infrared radiations, the device comprising a pattern of alternating high thermal emissivity zones with low emissivity zones, with a similarly patterned squirrel cage rotatable therearound to expose, to detecting means, at any given instant, emissivities of a predetermined wavelength. The heat causing the alternating emissivity zones to radiate is generated by a suitable chemical charge controllably ignitable within the device itself and carried thereby.

3,797,396

REINFORCED LIGHTWEIGHT CARTRIDGE

Frederick P. Reed, Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 15, 1972, Ser. No. 234,731
Int. Cl. F42b *5/28, 5/30*
U.S. Cl. 102—43 R **7 Claims**



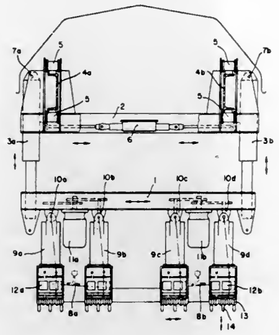
The firing obturation of lightweight military cartridges fabricated from a material other than brass can be considerably improved by the inclusion of a thin-walled cup in the head portion of the case prior to forming the required exterior taper thereof. Since the cup is fabricated from a more deformable material than that of the case, the tapering of the latter produces radial recovery forces in the mouth of the cup which serve to increase the total pressure imparted to the cartridge case sidewalls by the pressures generated during the firing of the cartridge thereby accelerating the obturation of the case in the firing chamber to a greater degree along the portion coextensive with the cup mouth than along the remainder of the case.

3,797,397

TOOL FOR BALLAST TAMPING MACHINE

Josef Eisenmann, Rheinstrahe 37, Munich, and Heinrich Helgemeir, Allmannshausenerstrasse 30b, Munich 25, both of Germany

Division of Ser. No. 835,198, June 20, 1969, abandoned. This application Aug. 24, 1971, Ser. No. 174,442
Claims priority, application Germany, June 24, 1968, 1759950; Nov. 6, 1968, 1807156
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 **5 Claims**



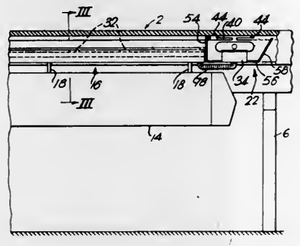
Railway track ballast compressing and shifting apparatus wherein there is provided at least one vibrating tamper tool acting on the ballast between sleepers for simultaneously compressing and shifting the ballast to fill voids beneath the sleepers.

3,797,398

AIR-CUSHION VEHICLES

Denys Stanley Bliss, Cambridge, England, assignor to Bliss Pendair Limited, London, England

Filed May 5, 1971, Ser. No. 140,478
Claims priority, application Great Britain, May 7, 1970, 22078/70
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **33 Claims**



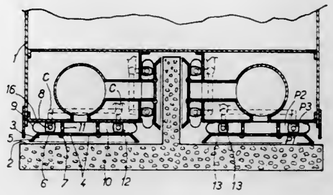
In a tracked air cushion vehicle system, the vehicle is supported and/or guided by one or more air cushions formed in a chamber between a wall of the track and a support of guidance platform, the enclosure of the chamber being completed by walls or bogies linked to the platform but movable independent of it, at least in a direction towards and away from the track without having to move with the platform and thus bear loads imposed by it. Both pendulum and non-pendulum forms of suspension are described, and the preferred embodiments of the invention utilize air cushions operating at subatmospheric pressures.

3,797,399

TRIM-CORRECTING FACILITY FOR GROUND EFFECT MACHINES

Jean Henri Bertin, Neuilly-sur-Seine, and Francis Marie Jean Croix-Marie, Viry Chatillon, both of France, assignors to Societe De L'"Aerotrain", Paris, France

Filed Mar. 9, 1972, Ser. No. 233,177
Claims priority, application France, Mar. 11, 1971, 71.08487; Feb. 8, 1972, 7204125
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **12 Claims**



An air cushion suspension system for a ground effect machine comprising in combination a movable disc bearing cushion-containing means and balanced by the cushion pressure acting on one side of the disc and by an opposing pressure acting on the opposite side of the disc, the opposing pressure existing in a deformable suspension chamber in which a tubular air chamber is disposed, the tubular air chamber being adapted to be inflated to a pressure above the opposing pressure and to bear against the disc to provide extra stiffness in the suspension.

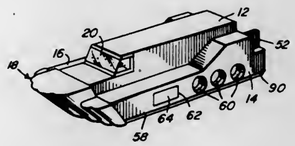
The flexible wall of the tubular air chamber is, in the balanced state and with the machine operating normally, clear either of the disc of the suspension chamber wall opposite the disc, so that the extra stiffness is introduced into the suspension only with effect from a particular amount of deformation of the disc suspension chamber, the tubular air chamber forming a kind of resilient abutment.

3,797,400

MONORAIL SYSTEM INCLUDING CONVERTIBLE AIR CUSHION VEHICLE PROVIDED WITH VERTICALLY RETRACTABLE WHEELED RUNNING GEAR

John Van Veldhuizen, Rt. 1, Estill Springs, Unionville, Tenn.

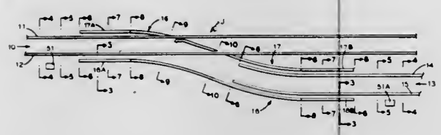
Division of Ser. No. 62,033, Aug. 7, 1970, Pat. No. 3,710,887. This application Nov. 9, 1972, Ser. No. 305,113
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **11 Claims**



A monorail system including a monorail structure and a monorail vehicle having powered supporting wheels for rollingly supporting the vehicle from the monorail. In addition, the vehicle is of the air cushion type defining an air cushion chamber therebeneath and the powered wheels of the vehicle also serve as axial flow blowers for supplying the necessary air, after initial forward speed of the monorail vehicle has been obtained, to the air cushion defining chamber beneath the vehicle for supporting the latter by means of an air cushion between opposing surfaces of the monorail structure and the vehicle. Also, the powered supporting wheels

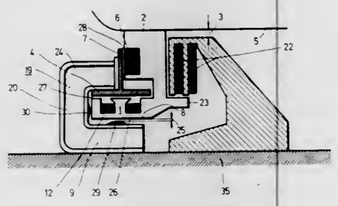
which define axial flow blowers are supported from the vehicle for vertical shifting relative thereto, with the front wheels being steerable, whereby the vehicle may be driven at low speeds over a generally horizontal surface in the manner of a conventional motor vehicle.

3,797,401
AUTOMATIC SWITCHING SYSTEM FOR PROPELLED CARRIERS
Mihai Alimanestianu, 70 W. 40th St., New York, N.Y.
Filed June 12, 1970, Ser. No. 45,754
Int. Cl. E01b *25/12*
U.S. Cl. 104—130 **9 Claims**



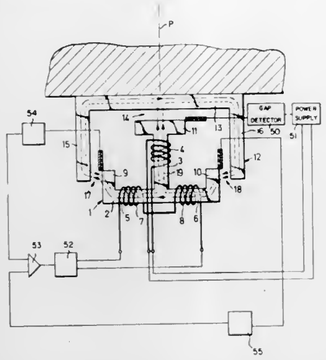
An automatic switching system for carriers propelled along a main line at a selected speed, including switching track and cooperating switching wheels on the carriers for effecting high speed switching operations to transfer the propelled carriers between the main line and the switching track.

3,797,402
MAGNETICALLY SUSPENDED RAILWAY SYSTEM
Ludwig Karch, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany
Filed May 3, 1971, Ser. No. 139,355
Claims priority, application Germany, May 5, 1970, 2021834
Int. Cl. E01b *25/08*
U.S. Cl. 104—130 **29 Claims**



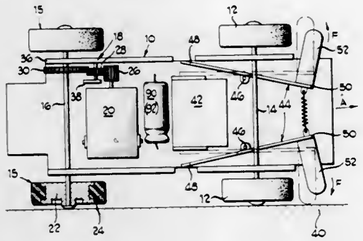
In the magnetically suspended railway system disclosed, magnetizable carriers suspended from under each side of a railroad car, support lift and traction magnets and side-to-side guide magnets which are electrically controlled to move along the underside and upright of an inverse-T shaped magnetizable rail mounted from the tops of stationary C-shaped rail supports. Slide surfaces on the rail supports, which are more closely spaced to the carriers than to the car bottom, hold up the train at the carriers in the absence of magnetic force. At switch areas where the rails diverge into two pairs, stationary lift magnets engage the carrier and guide the car along the desired direction. Interlaced non-touching fingers magnetically couple the carriers from one car to the other.

3,797,403
POWER ELECTROMAGNETIC SUSPENSION AND GUIDE SYSTEM FOR VEHICLES
Peter Schwarzler, Furstenfeldbruck; Gerhard Bohn, and Helmut Schauberger, both of Munich, all of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed June 30, 1972, Ser. No. 268,133
Claims priority, application Germany, July 9, 1971, 2134425
Int. Cl. B61b *13/08*
U.S. Cl. 104.148 MS **9 Claims**



An electromagnetic suspension and drive system, e.g., for a floating personnel carrier or other vehicle, wherein a T-section armature is carried by the vehicle and is provided along its shank with a magnetic suspending coil and along the crossbar of the T with a pair of magnetic guide coils and connected and arranged through the latter coils provided oppositely effective horizontal forces and operate in aiding relationship with the suspending coil. The magnetic flux path is closed through a U-shaped channel whose flanges flank the crossbar of the T and receive the armature between them while defining lateral and vertical air gaps with the armature.

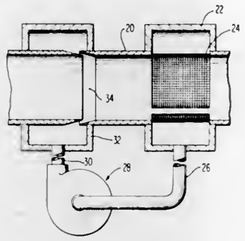
3,797,404
SYSTEM FOR OPERATING MINIATURE VEHICLES
Gordon A. Barlow, and Norman Kramer, both of Skokie, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 31, 1973, Ser. No. 328,464
Int. Cl. B60m *1/34;* **B61b** *13/12*
U.S. Cl. 104—149 **8 Claims**



A system for operating electrically propelled miniature vehicles along a roadbed having side-by-side current conductive lanes with substantially flush tread surfaces and for remotely controlling the vehicles in a manner to turn out and pass one another at the will of the operator as the vehicles are transferred freely from one lane to another. The vehicles are driven by propulsion motors mounted on the vehicle body, for

operating one or more driving wheels. Lever type flippers are mounted on the sides of the vehicles for movement outwardly in engagement with bordering side walls along the outer edges of the outermost lanes to urge the vehicle toward the opposite lane in response to a surge of current through a solenoid mounted on the vehicle and operatively associated with propulsion motor and the flippers.

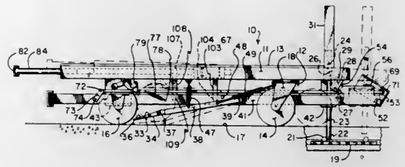
3,797,405
MASS TRANSPORTATION SYSTEM
Marion R. Carstens, Atlanta, and Homer J. Bates, Roswell, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.
Continuation-in-part of Ser. No. 856,566, Sept. 10, 1969, abandoned. This application May 4, 1971, Ser. No. 140,071
Int. Cl. B61b *13/12*
U.S. Cl. 104—155 **16 Claims**



A mass transit system for use in moving a load carrying vehicle along a predetermined route between a number of load handling stations. The mass transportation system includes an unobstructed tube transport means located along the predetermined route. A vehicle provided with antifriction support is conveyed through the tube transport means by the momentum of driving air provided by one or more pumping devices which extracts a fraction of the air flow and substantially immediately reintroduces the air into the tube to create or restore the necessary air momentum. The tube may be continuous or non-continuous and is characterized by uniform cross section and the fact that it provides the support for the vehicle. The vehicle is shaped in cross section so as to substantially fill the cross section of the tube but not completely, so as to allow driving air to flow continuously within the tube even though the vehicle may be traveling at a speed substantially less than the mean velocity of the driving air, as on acceleration or deceleration of the vehicle. The vehicle body is also shaped to provide high drag characteristics so that it may travel within the tube at substantially the same velocity as the driving air. Loading and unloading stations are provided in the system in open communication with the ambient atmosphere, thereby allowing ease of loading and unloading. Each of the pumping devices used for delivering the driving air to the tube transport means is positioned between loading and unloading stations and is capable of producing a high mass rate of air flow at very low static pressure and the loading and unloading stations for the vehicle are positioned at points within the tube system where the static pressure is at or near atmospheric pressure.

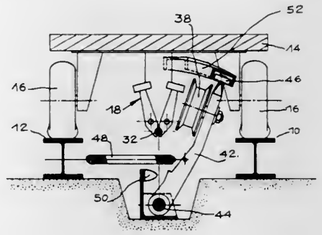
3,797,406
TOW LINE TRUCK AND BRAKE SYSTEM
Richard M. Biessener, Faribault, Minn., assignor to Nutting Truck and Caster Company, Faribault, Minn.
Filed Feb. 2, 1972, Ser. No. 222,799
Int. Cl. B61c *11/00*
U.S. Cl. 104—172 BT **17 Claims**

A truck for tow line use is provided with an improved brake system designed to stop the truck in response to engagement of a front bumper of the truck against an obstacle, while minimizing the force applied by the truck and bumper to the obstacle. The truck includes at least one brake member having a bottom floor-engageable surface and an upper wheel-engageable surface, with brake support means on the truck which supports the brake member in front of at least one of the wheels for relative movement between a retracted position ahead of the wheel and a braking position in which the brake member is engaged beneath the wheel. The brake support means includes a relatively light longitudinally movable brake



support member, and the front bumper is movably mounted thereon rather than directly on the truck itself. Control means responsive to engagement of the front bumper with an obstacle stops the forward movement of only the brake and its support member. Thus the wheel runs onto the brake member with a resulting cessation of forward motion due to the action of the brake member and weight of the truck, rather than the resistance of the obstacle. An anti-back-up device prevents premature rearward movement of the wheel and truck from the brake member. The truck also includes means for releasing the anti-back-up device.

3,797,407
DEVICE FOR HAULING VEHICLES WITH RETRACTABLE WHEELS HOLDING DOWN THE TRACTION CABLE
Roger Laurent, Chambery, France, assignor to Poma 2.000 S.A., Fontaine, France
Filed Dec. 8, 1972, Ser. No. 313,398
Claims priority, application France, Dec. 24, 1971, 71.46685
Int. Cl. B61b *7/10, 7/20*
U.S. Cl. 104—182 **7 Claims**



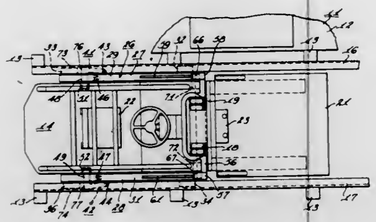
The invention relates to a device for the hauling of vehicles by a traction cable extended along the track.

The cable supporting and guiding wheels in the way of vehicles path, are fixed to mobile supports, the movement of which into a retracted position being imparted by the vehicle itself.

3,797,408
LIFT TRUCK STABILIZING APPARATUS

James R. Barber, Homewood, and Thomas J. Finlayson, Palos Hills, both of Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 12, 1973, Ser. No. 340,175
Int. Cl. B61f *9/00*
U.S. Cl. 104—246 13 Claims

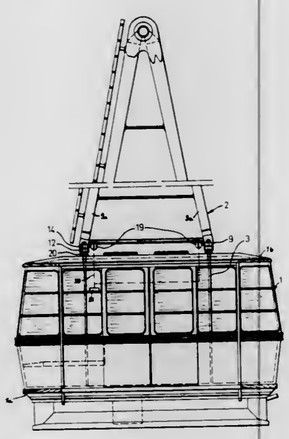


A lift truck is stabilized in the aisle of a material storage facility by a pair of trolleys which travel on parallel horizontal guide rails on opposite sides of the aisle. Releasable connecting means engage the lift truck as it enters the aisle to latch the trolleys to the lift truck as it operates within the aisle. On movement of the truck from the aisle the latch means automatically operate to disconnect the trolleys from the lift truck, the trolleys staying on the guide rails in the material storage facility.

3,797,409
RESILIENTLY SUPPORTED AERIAL CABLEWAY CAR

Anton Frech, Schongrund 21, 4600 Olten, Switzerland

Filed Nov. 26, 1971, Ser. No. 179,836
Int. Cl. B61b *3/00, 7/00, 7/10*
U.S. Cl. 105—148 6 Claims

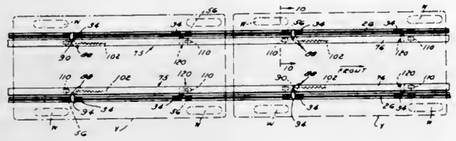


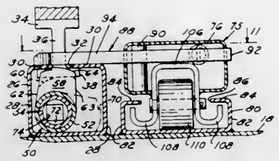
A cabin arrangement for an elevated transport system or cable car, such as an overhead railway or aerial cableway, wherein the resilient suspension device thereof is provided with at least one elastic pressure cell or pressure pickup means which completely or partially takes-up the weight of the cabin, and this pressure cell is connected with an indicator device.

3,797,410
LOADING AND SECUREMENT SYSTEM FOR RAIL CARS

Donald J. Blunden, Southfield, Mich., assignor to Whitehead & Kalis Company, River Ridge, Mich.

Filed June 13, 1972, Ser. No. 262,234
Int. Cl. B60p *7/08*; B61d *45/00*
U.S. Cl. 105—368 R 18 Claims



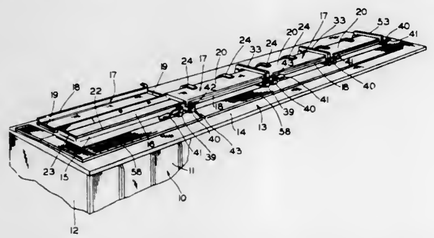


Apparatus for securing a plurality of vehicles on the deck of a transport such as a rail car. Guide rails on the deck are engaged by shoes mounted on the underframe of the vehicles to guide the vehicles during loading. Locking means operable from outside the rail car are provided simultaneously to engage the shoes and secure the vehicles on loaded position. The transport is loaded by moving it up to a loading dock which has shoe guide rails adapted to align with the guide rails on the rail car. A loader guided both on the dock and on the transport has dogs engageable with the shoes to advance the vehicles from the dock to the transport.

3,797,411
TROUGH HATCH OPERATING ARRANGEMENT

Ernest J. Nagy, Munster; William R. Shaver, Griffith, and Ronald W. Marsh, Michigan City, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 313,905
Int. Cl. B61d *39/00*
U.S. Cl. 105—377 8 Claims

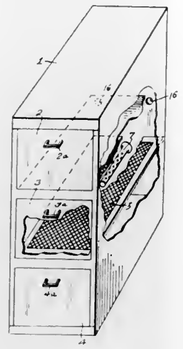


A hopper type railway car is provided with a longitudinally extending hatch opening having a plurality of longitudinally spaced covers movable from open to closed positions. The covers are adapted to overlie rectangular coamings defining each of the openings, with said covers being hingedly connected to the roof of the railroad car and including operating means for moving the covers laterally, initially from a closed position, thereby disengaging locking means whereby the covers may then be hingedly moved to open position. The operating means is actuated by holddown members which provide leverage for initiating a caming mechanism effective to provide for said lateral movement and also seal and lock the covers in a closed position.

3,797,412
APPARATUS FOR DESTRUCTION OF DOCUMENTS

Vincent J. DiPaola, Elkton, and Ralph H. Allen, Churchville, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 29, 1971, Ser. No. 184,755
Int. Cl. E05g *3/00*
U.S. Cl. 109—29 4 Claims

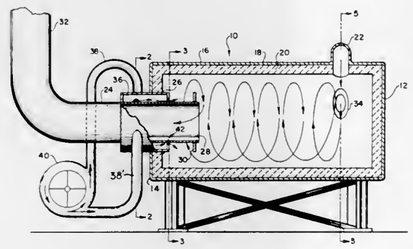


Apparatus and a method for fully destroying papers, packaged paper and other documents or combustibles in a safe.

3,797,413
INCINERATOR

Syed Aejaz Ali, and Orval Austin Doherty, both of Shelbyville, Ind., assignors to General Electric Company, Indianapolis, Ind.

Filed Apr. 23, 1973, Ser. No. 353,427
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R 10 Claims

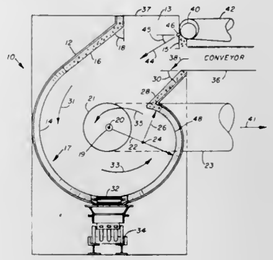


An incinerator for burning waste material having a combustion chamber comprising spaced end walls and a side wall through which a mixture of waste material and air is vortically moved and burned. The incinerator combustion chamber includes an exhaust flue port passing through one end wall to exhaust combustion gases, comprising a flue pipe extending substantially coaxially with the chambers longitudinal axis. The flue pipe is provided with a surrounding annular plenum chamber supplied with cooling gas which is discharged from the plenum chamber and flows over the surface of the section of the flue pipe within the combustion chamber.

3,797,414
CANTED VORTEX OPEN PIT INCINERATOR

Mary E. Ahrend, 1116 E. Ninth St., Ada, Okla.

Continuation-in-part of Ser. No. 85,094, Oct. 29, 1970, Pat. No. 3,713,402. This application Jan. 19, 1973, Ser. No. 325,204
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R 11 Claims



This disclosure describes an open pit incineration system for solid waste and refuse. It comprises a longitudinal chamber, the lower portion of which is substantially semicylindrical in shape, with two substantially parallel, sloping walls to an open top. A supply of high pressure air is provided and issues through a horizontal longitudinal slit orifice in the form of a continuous sheet of rapidly moving air. The slit orifice is mounted on top of the lower of the two walls and the air is directed across the gap between the two walls at an angle below the horizontal. The action of the high velocity sheet of air is to completely close off the top opening of the combustion chamber to the emission of products of combustion and to force them into a helically moving vortex of flame, hot air and products of combustion within the lower portion of the chamber. A grate is provided in the bottom of the chamber for receiving materials that are incapable of complete combustion. The hot gases resulting from the combustion are withdrawn axially from one or both ends of the chamber through a conduit to a heat exchanger for the generation of steam and the cooling of the hot gases, which then proceed by way of an electrostatic precipitator through the stack.

The input to the combustion chamber comprises shredded solid waste material, metal and ceramic particles which are carried by means of a horizontal conveyer along the edge of the lower wall and are dumped into the combustion chamber underneath the curtain of air issuing from the slit orifice.

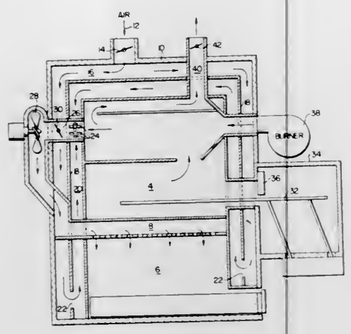
3,797,415
INCINERATOR WITH A PLURALITY OF OUTER WALLS AND A HOLLOW GRATE

John Young, Jr., Plymouth Rd., Lexington, Mass., and Barry Paul Maguire, 10 Hartsuff St., Rear, Rockland, Mass.

Filed Oct. 30, 1972, Ser. No. 301,748
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C 8 Claims

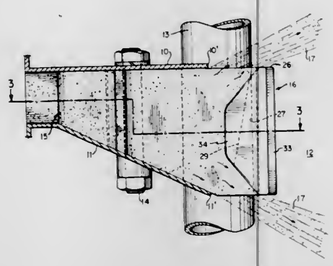
An incinerator having a post-combustion chamber elevated over a pre-combustion chamber, an oil or gas burner in the

post-combustion chamber, a perforated hollow grate at the bottom of the pre-combustion chamber, an ash box below the



hollow grate, and a plurality of outer walls around the combustion chamber and the ash box having air passages therein connected to the hollow grate.

3,797,416
SELF-LOCKING TUBE PROTECTOR AND DEFLECTOR BLOCK FOR BOILER TUBES
Glenn H. Lawson, 701 E. Main St., Madison, Ind.
Filed Apr. 10, 1973, Ser. No. 349,749
Int. Cl. F23c *5/00*
U.S. Cl. 110—28 R **8 Claims**

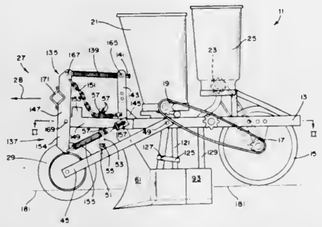


Self-locking tube protectors and deflector blocks are provided for protecting boiler tubes in the path of fuel injected between upper and lower fuel inlet plates having studs aligned with the tubes on the fuel inlet side thereof. A pair of cooperating tube protector sections are shaped at adjacent one ends thereof to substantially encircle a tube when installed. The inner surfaces of the protector sections have cooperating grooves to fit a stud, and tongue and groove means for locking the inlet ends of the sections together when installed. A deflector block fits over the tube ends of the protector sections and overlaps the crack between the ends. Mating tapered ear and groove joint sections are provided at the tube ends of the protector sections and on the deflector block for clamping the sections firmly against the tube when the block is installed. The deflector block has a recess on one lateral side and a tongue on the other predetermined to overlap the tongue and recess of deflector blocks on adjacent tubes when installed.

3,797,417
PLANTING DEVICE FOR TREE SEEDLING PLUGS
Philip F. Hahn, Eugene, Oreg., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Sept. 25, 1972, Ser. No. 292,118
Int. Cl. A01c *11/02*
U.S. Cl. 111—4 **13 Claims**

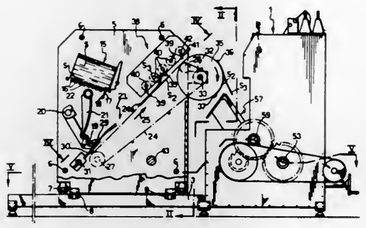
A manually operated tree planting device has a frame, including a base which has an aperture and is adapted to be placed against the soil, and a planting assembly that is transversely movable. The planting assembly includes a dibble and a planting tube, either of which may alternatively and selectively be aligned with the frame aperture. The dibble is first aligned with the aperture and inserted therethrough into the soil and then withdrawn to form the planting hole. Then the planting tube is aligned with the frame aperture such that a seedling may be dropped through the tube and aperture into the prepared hole.

3,797,418
MINIMUM TILLAGE PLANTER
Floyd R. Bridger, Jr., P.O. Box 836, Jonesboro, Ark.
Continuation-in-part of Ser. No. 16,468, March 4, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,732
Int. Cl. A01c *5/06*
U.S. Cl. 111—73 **5 Claims**



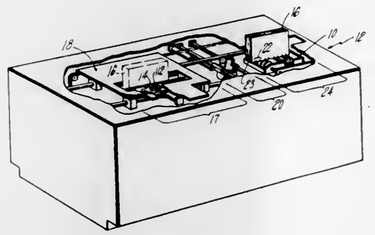
A device used to plant seeds into soil or sod which received no prior breaking or preparation, i. e., plowing, disking, or the like. The apparatus includes a unique, forward-orientated disk coulter, an intermediate-oriented seed opener which allows for uniform depth seed placement, a rearward orientated fertilizer opener for placing fertilizer into the sod opening a distance from each side of the placed seeds and a pair of trailing press drive wheels for driving the seed and fertilizer agitators and for pressing the sod substantially back to its original density, thus assuring positive seed to soil contact.

3,797,419
AUTOMATIC MACHINE FOR FEEDING AND SEWING SIGNATURES IN BOOKS
Lorenzo Depetris, Casale Monferrato, Italy, assignor to Smyth Europea S.p.A., Casale Monferrato (Alessandria), Italy
Filed July 13, 1973, Ser. No. 378,864
Claims priority, application Italy, July 18, 1972, 69329/72
Int. Cl. B42b *1/02*
U.S. Cl. 112—21 **11 Claims**



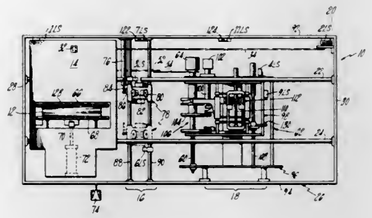
A book sewing machine having an incorporated automatic feeder is disclosed. The automatic feeder has two stacks of signatures and acts to remove one signature from each stack simultaneously. The two signatures are both opened and then placed directly astride a sewing saddle of the sewing machine. The sewing saddle carries means for adjusting the spacing of the two signatures, and means for holding the two signatures in place as the sewing saddle moves to the sewing position where the two signatures are both sewn in one operation and then passed for further processing. One embodiment incorporates an automatic paster which applies paste to the signatures adjacent their backbones prior to placing them on the sewing saddle.

3,797,420
THREAD OVERWRAP MECHANISM
Daniel I. Streeter, Glastonbury, Conn., assignor to The Smyth Manufacturing Company, Bloomfield, Conn.
Filed May 24, 1973, Ser. No. 363,666
Int. Cl. B42b *1/02*
U.S. Cl. 112—21 **12 Claims**



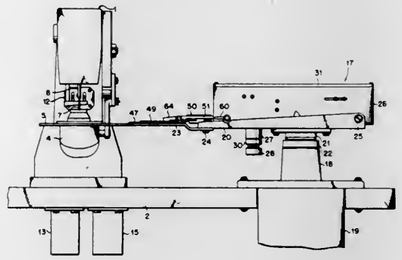
Mechanism usable with a book cleat sewer which is actuatable upon completion of thread sewing across a cleat in the spine of a book being sewn to positively ensure thread overwrap completely about the last end sheet in the cleat being sewn.

3,797,421
BOOK SEWING MACHINE HAVING REVERSING BOOK CLAMP AND TRANSPORT SLIDE
Guy L. Sanderson, Glastonbury, Conn., assignor to The Smyth Manufacturing Company, Bloomfield, Conn.
Filed May 24, 1973, Ser. No. 363,667
Int. Cl. B42b *1/02*
U.S. Cl. 112—21 **14 Claims**



Book making machine featuring a reciprocating book clamp and transport slide for conveying a book with its spine down to a saw station and a downstream sewing station to saw dovetailed slits across the book spine to form a book cleat and then lace thread through the pages of the cleat. This machine provides for the cleat forming and sewing in a single pass of the book clamp and transport slide between a home position upstream of the saw station and a reversing station downstream of the sewing station.

3,797,422
WORK PIECE FEEDING DEVICE FOR SEWING MACHINES OR THE LIKE
Katsuaki Sakawa, Chiryu, Japan, assignor to Brother Kogy Kabushiki Kaisha, Nagoya-shi, Japan
Filed Dec. 23, 1971, Ser. No. 211,455
Claims priority, application Japan, Dec. 24, 1970, 45-127573; Dec. 25, 1970, 45-125651; Dec. 26, 1970, 45-138362
Int. Cl. D05b *3/12*
U.S. Cl. 112—104 **5 Claims**



A feeding device for feeding a work piece to the throat plate of a sewing machines wherein a feed plate for feeding a work piece from its received position is kept floating relative to its support by resilient means, so that the work piece is smoothly supplied to the sewing machine.

3,797,423

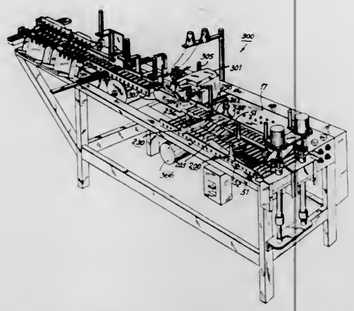
FABRIC TURNOVER, MATING AND SEWING DEVICE

Enrique Lopez; Robert D. Spidle, and Aubrey Glenn Beazley, all of El Paso, Tex., assignors to Farah Manufacturing Company Incorporated, El Paso, Tex.

Division of Ser. No. 44,710, June 9, 1970, Pat. No. 3,611,961. This application Oct. 1, 1971, Ser. No. 185,729 The portion of the term of this patent subsequent to Oct. 12, 1988, has been disclaimed.

Int. Cl. D05b *21/00*

U.S. Cl. 112—121.11 22 Claims



A device for conveying, inverting, mating and sewing garment workpieces is disclosed which senses the presence of a first workpiece near a first position, raises and captures the leading end of the first workpiece thereby permitting conveyor rollers covered with an elastomeric material to sweep the following end of the first workpiece under the captured leading end, releases the captured leading end of the first workpiece after an appropriate delay period whereafter the first work-piece is conveyed to a second position, senses the presence of the first workpiece at the second position and the presence of a second workpiece at a third position, holds and aligns the second workpiece at the third position, moves the first workpiece from the second position over a ramp onto the second workpiece at the third position, releases the held work-pieces and urges them toward a sewing area, and sews the two work-pieces together.

3,797,424

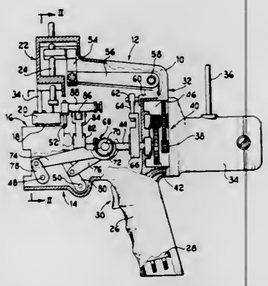
BUTT END STITCHING MACHINE

Giuseppe Renzo Cerioni, Milan, Italy, assignor to El Cu S.p.A., Milan, Italy

Filed Oct. 12, 1971, Ser. No. 187,952

Int. Cl. D05b *1/20*

U.S. Cl. 112—169 1 Claim



A butt end stitching machine adapted to carry-out sewing and cutting operations on fabrics and having a one-piece structure within which all machine operating components are arranged. A gun handle is provided in order to grip, direct and operate the machine. The operating components are arranged within the structure in such a manner that the handle lies on a vertical line extending through the center of gravity of the entire machine.

3,797,425

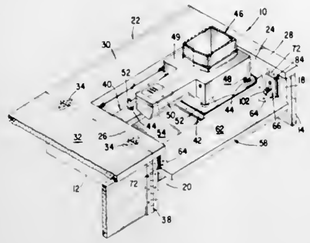
SEWING MACHINE CABINET

Robert S. Peets, Watchuung, N.J., assignor to The Singer Company, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,667

Int. Cl. D05b *75/00*

U.S. Cl. 112—217.1 5 Claims



A sewing machine cabinet adapted for use with free arm type sewing machines having a sewing machine support platform including a recessed lower support surface. The cabinet includes a front rail pivotable 180 degrees between a flat bed position in which the top surface of the rail is coextensive with the top of the cabinet and a second position in which the bottom surface of the rail is coextensive with the lower work support surface. A pair of brackets are secured to opposite sides of the bottom surface of the rail and are journaled on studs supported on brackets on opposite sides of the cabinet. A spring biased plunger device is provided on at least one side for locking the rail in either the flat bed or cylinder bed position.

3,797,426

CONTROLLED THREAD TENSIONER FOR SEWING MACHINES

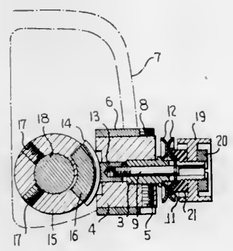
Wolf-Rudiger Von Hagen, Grotzingen, Germany, assignor to Union Special Maschinenfabrik G.m.b.H., Stuttgart, Germany

Filed Mar. 31, 1972, Ser. No. 240,208

Claims priority, application Germany, Apr. 22, 1971, P 21 19 592.6

Int. Cl. D05b *47/04*

U.S. Cl. 112—254 6 Claims



This disclosure relates to a controlled thread tensioner for sewing machines which includes a pair of oppositely movable tension discs, one of which is under the influence of a control bolt, and which control bolt has a portion thereof positioned adjacent a permanent magnet carried by a control shaft of the sewing machine for automatically shifting the position of the control bolt in timed relation to the operation of the sewing machine so as to vary the tension applied to thread by the tension discs.

3,797,427

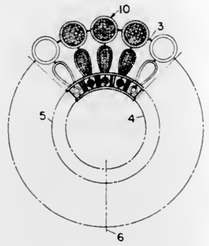
CIRCULAR EMBROIDERY-LACE ARTICLES

Othmar E. Metzler, Cliffside Park, N.J.

Filed May 5, 1972, Ser. No. 250,700

Int. Cl. D05c *3/00*

U.S. Cl. 112—266 9 Claims



An embroidery-lace article in the form of an annular motif including an outer circumferential edge, an inner circumferential edge shorter than the outer circumferential edge and a relaxed elastic thread located adjacent the inner circumferential edge. The article is manufactured by embroidering the motif along an essentially straight line with the elastic thread pretensioned to the length of the outer circumferential edge and subsequently relaxing the elastic thread to enable contraction of the thread to draw the motif into a curved configuration.

3,797,428

METHOD FOR MAKING CORNER OR EDGE PLATES FOR CASES, PACKING, CONTAINERS OR OTHER RECEPTACLES AND A PLANT FOR CARRYING THROUGH THE METHOD

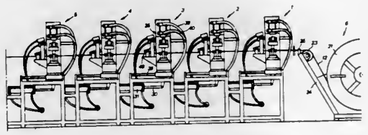
Hans Elov Nordgren, PL 4322, S-82800, Edsbyn, and Per Klockarns, PL 2292, S-82200, Alfta, both of Sweden

Filed Mar. 15, 1972, Ser. No. 234,836

Claims priority, application Sweden, Mar. 29, 1971, 4051/71

Int. Cl. B21d *49/00*

U.S. Cl. 113—1 R 34 Claims



This disclosure has to do with the forming of fittings for wood containers and the like from continuously fed strip material. Mechanism is provided for performing various stamping and working operations on this strip material in a manner to keep pace with the movement of the strip material and after each work operation is performed on the strip material, the tool performing the work operation is returned to its initial position and subsequent performance of a further work operation.

3,797,429

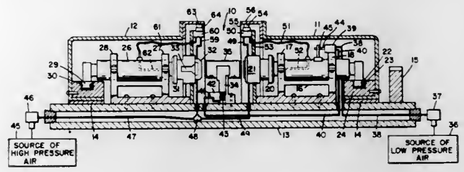
METHOD AND APPARATUS FOR NECKING AND FLANGING CAN BODIES

Wayne F. Wolfe, Belmont, Calif., assignor to United Can Company, Hayward, Calif.

Filed Feb. 22, 1973, Ser. No. 334,692

Int. Cl. B21d *41/00*

U.S. Cl. 113—1 G 6 Claims



A cylindrical can body is positioned between axially aligned necking and flanging dies which are forced together so that the dies force the can body ends completely into and onto the dies to neck and flange the can body ends. The dies are then pulled apart, with the can body being first clamped to the flanging die to pull the necked end of the can body from the necking die. The can body is gripped and held between its ends to allow the flanging die to be then pulled off the flanged end of the can body.

3,797,430

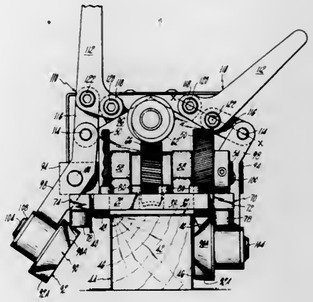
SEAMING TOOL

Robert Joseph Boudreau, South Windsor, Conn., assignor to The Smyth Manufacturing Company, Bloomfield, Conn.

Filed Nov. 2, 1972, Ser. No. 303,133

Int. Cl. B21d *39/02*

U.S. Cl. 113—55 7 Claims



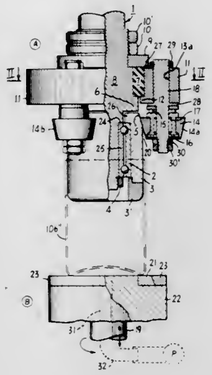
A pair of rollers are arranged in tandem below a frame movable along a piece of sheet material for progressively bending an elongated flanged edge of the sheet material into interlocking folded relation to an underlying sheet member. The rollers are pivotally supported on the frame for swinging movement toward and away from the frame between an operative position, wherein the rollers are disposed for a sheet bending operation, and a retracted rest position.

3,797,431

METHOD OF MANUFACTURING THE BODY OF A NECK-IN CAN AND AN APPARATUS USED THEREFOR

Takayuki Yoshimura, Tokyo, Japan, assignor to Daiwa Can Company Limited, Tokyo, Japan

Filed July 5, 1972, Ser. No. 269,275
Claims priority, application Japan, Aug. 6, 1971, 46-59019
Int. Cl. B21d *51/26*
U.S. Cl. 113—120 AA 4 Claims



In the manufacture of the body of an ordinary neck-in can, the metal blank obtained from the metal sheet is subjected to drawing and ironing to form a cylindrical body with a bottom end, which is then subjected to trimming along the peripheral edge of the upper opening whereby the burr projected from the edge by trimming is crushed down before said cylindrical body is passed to the subsequent step. An apparatus for crushing down the burr is also provided.

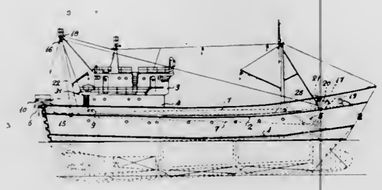
In this apparatus the burr is crushed down by means of the relative rotary movement between said cylindrical body having the burr formed and a roller provided for breaking down said burr.

3,797,432

BOAT FOR STERN FISHING WITHOUT A RAMP WITH TWO DECKS

Javier Rey Mermudez, Avda-Primo de Rineo, 1-13°, La Coruna, Spain

Filed Aug. 16, 1972, Ser. No. 281,208
Claims priority, application Spain, Nov. 26, 1971, 397399
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 A 11 Claims



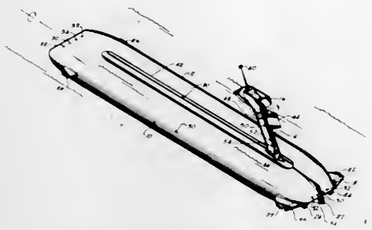
The subject of the present invention consists of a boat for fishing from the stern, without a ramp, with two decks, which represents something completely new and different in fishing boats for stern fishing as they are now known and used, and which, in spite of being of small tonnage, has the advantages of a large refrigerator ships.

3,797,433

SUBMARINE STABILIZATION

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasedena, Calif.

Filed Nov. 1, 1971, Ser. No. 194,753
Int. Cl. B63g *8/16, 8/18*
U.S. Cl. 114—16 R 7 Claims



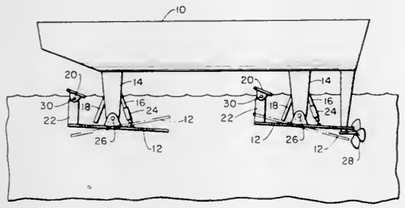
The sail or mast of a submarine is provided with means to overcome the tendency of the submarine to roll as a consequence of wave action, heaving and during turns. Submarine stabilization is preferably accomplished by means of a plurality of rudders at the trailing edge of the sail. The upper rudders provide the force required to compensate for roll, but introduce a steering component. The lower rudders turn in the opposed direction to about an equal degree to cancel out the steering component introduced by the upper rudder. Rudder compensation for roll may be augmented or supplanted by the use of fluid ejection ports vertically disposed along the port and starboard sides of the sail in the vicinity of the trailing edge of the sail.

3,797,434

HYDROFOIL CONTROL MEANS

Lyle E. Matthews, 3412 Minna St., Oxnard, Calif.

Filed Sept. 25, 1972, Ser. No. 292,030
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 H 2 Claims



An attitude control for a primary lifting hydroplane in the form of a control surface attached to the forward tip of the primary plane by a vertical support. The control plane maintains the primary plane at a fixed depth. Hydraulic dampers including stops control the rate and maximum amount of angular motion of the primary plane.

3,797,435

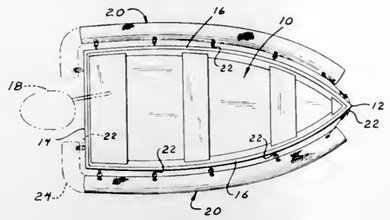
EMERGENCY FLOATATION APPARATUS FOR WATERCRAFT

Marcus H. Dunson, 15112 S. Halsted, Harvey, Ill.

Filed Oct. 27, 1971, Ser. No. 193,014
Int. Cl. B63c *9/02*
U.S. Cl. 114—68 8 Claims

Emergency floatation equipment for watercraft. The invention contemplates an inflatable, elongated float, which may be secured to the side of a watercraft and of sufficient size, when

paired with a similar float secured to the opposite side of the watercraft, is capable of supporting the same. A unique attachment system is contemplated whereby the weight of the



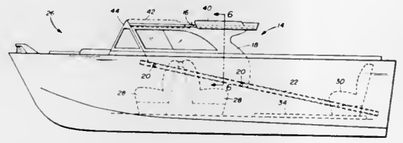
boat is substantially evenly distributed along the length of the inflatable float regardless of the weight distribution of the boat.

3,797,436

CONVERTIBLE BOAT TOP

Richard D. Moore, 920 B Ashbridge Dr., Essex, Md.

Filed Jan. 24, 1973, Ser. No. 326,292
Int. Cl. B63b *29/02*
U.S. Cl. 114—71 5 Claims



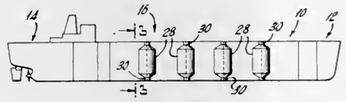
A convertible boat top is composed of a lightweight material and is designed to assume a plurality of positions on an open boat with a windshield assembly. In a forward position against the windshield assembly, the boat becomes a cabin boat. A slidable hatch on the top permits the tops of the cabin to be closed in bad weather and open in sunny weather. The top may be moved to a rear position with the hatch in the forward position thereon to provide a sleek runabout having an aft deck. With the hatch moved rearward on the rearwardly positioned top, seats in the boat are uncovered for use.

3,797,437

WATER BALLAST ARRANGEMENT FOR EXTERNALLY INSULATED TANKERS

Walter C. Cowles, Cobham, England, assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Nov. 22, 1971, Ser. No. 200,984
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 A 9 Claims



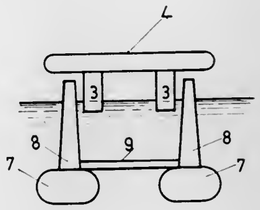
An arrangement of internal water ballast tanks for an externally insulated tanker wherein the ballast tanks are suitably sized and located within the cargo carrying midbody of the tanker so as to permit loading a quantity of sea water ballast to provide for satisfactory operation and sea kindliness of the ship. The ballast tanks preferably have a cylindrical configuration and are built into the internal structure of the ship. The tanks are insulated on the water side so that the tank structure will be at the same temperature as the adjacent ship structure, and are connected with suitable ballast loading and discharge facilities.

3,797,438

METHOD FOR THE CONSTRUCTION OF FLOATING UNITS OF GREAT DIMENSIONS

Jose Maria Marco Fayren, Vigo, Spain, assignor to Hijos De J. Barreras S.A., Vigo, Spain

Filed June 11, 1971, Ser. No. 152,057
Int. Cl. B63b *3/02*
U.S. Cl. 114—77 R 9 Claims



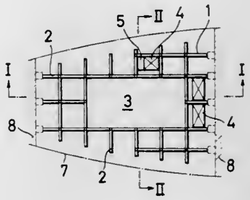
Method for constructing large floating units, like drilling rigs, comprising forming upright support columns on floating units and floating the floating units to a mounting site; ballasting the floating units with the upright columns thereon to temporarily submerge the units until only the tops of the columns are exposed; forming a rig carrying platform supported on floatable parallelepipedic bodies and floating the platform and bodies to the columns until the platform is over the submerged columns; deballasting the columns and floating units to cause the columns to rise into engagement with the platform and joining the columns and platform.

3,797,439

METHOD OF OUTFITTING AN ENGINE ROOM OF A SHIP

Shiro Maruyama, Yokohama; Ken Iwai, Chigasaki; Yasuo Yabuuchi, Yokohama, and Syoji Maki, Yamato, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

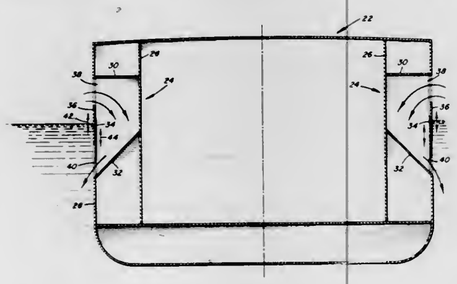
Filed July 27, 1972, Ser. No. 275,878
Claims priority, application Japan, Aug. 10, 1971, 46-60560
Int. Cl. B63b *3/02*
U.S. Cl. 114—77 R 5 Claims



A method of outfitting an engine room of framework section in the course of shipbuilding which comprises the sequential steps of assembling an inner structure of the engine room as a framework section on the ground, installing necessary

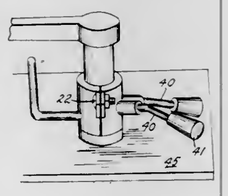
equipment for the engine room, other than the main engine and boilers, in the framework section, craning up the framework section incorporating the equipment onto a building berth, and joining the same to the adjoining hull section already erected on the berth.

3,797,440
OPEN HULL STABILIZER
Frans V. A. Pangalila, Peuleyen, Netherlands, assignor to Flume Stabilizations Systems, Inc., Hoboken, N.J.
Filed Nov. 26, 1971, Ser. No. 202,257
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **10 Claims**



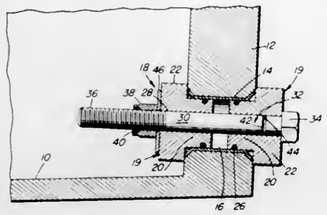
A passive stabilizer operated directly by the action of the external waters in which a vessel floats. The port and starboard sides of the hull of a double hull water-going vessel are opened to the external waters in two positions. The uppermost and larger of the openings serve as inlets for the water in which the vessel floats; and the lower and smaller of the openings serves as drainage ports for the expulsion of the water. Behind each of the sets of openings, and between the inner and outer hulls of the vessel, a water-housing chamber is defined. During the roll of the vessel, caused by wave action, either the port or the starboard chamber fills with water. In these harnessed positions, the water serves to develop a moment tending to stabilize the vessel against roll. Apparatus is provided for adjusting the size of the hull openings. With such a tank system, the operating efficiency is optimized without having to tune both the water inlet and the water outlet.

3,797,441
TILLER CONTROLS FOR SMALL BOATS
John Burnett, 95 Roseville Rd., Westport, Conn.
Filed Apr. 17, 1972, Ser. No. 244,389
Int. Cl. B63h *25/00*
U.S. Cl. 114—172 **2 Claims**



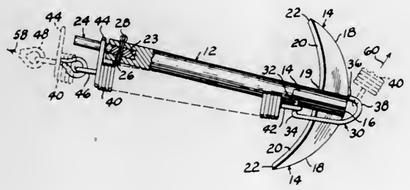
Devices for temporarily locking the tiller of small boats in fixed relation relative to the principal axis of the hull to enable the helmsman to leave the tiller for short-time intervals to trim a sail or perform other duties, during which interval the boat is maintained substantially on a predetermined course. Each of the disclosed embodiments includes means engaging a relatively fixed part of the hull, and second means selectively clamping either the rudder post or the tiller in any of a plurality of selected relative positions.

3,797,442
ACCIDENT PROOF, TAMPER PROOF BOAT DRAIN PLUG
Thomas Earle McRae, 18150 Oleta Dr., North Miami Beach, Fla.
Filed Apr. 27, 1973, Ser. No. 354,951
Int. Cl. B63b *13/00*
U.S. Cl. 114—197 **8 Claims**



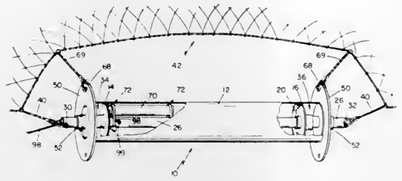
This device is a boat transom drain hole plug that is accident proof and tamper proof, at least against a single individual in that it takes the cooperation of at least two individuals to remove this plug. It comprises a pair of apertured, flanged adapters fitting in opposite sides of the boat transom drain hole and held in position by a threaded bolt therethrough and an elastic stop nut threaded thereon. The cylindrical portions of the adapters fit snugly within the drain hole, or within the metal sleeve lining the drain hole, if one is present. O-rings are set in and at least slightly extend from circumferential recesses in each cylindrical portion to seal against the drain hole wall or the metal sleeve lining the drain hole wall. To prevent any possible leakage through the adapter apertures, the bolt is also provided with a sealing O-ring extending slightly from a cylindrical recess in the bolt stem adjacent the bolt head, and a washer may be used between the elastic stop and the adjacent flange of the adjacent adapter. As thus set up, the drain plug cannot possibly loosen accidentally, and it can not be removed or vandalized by a single individual. It takes two individuals, one inside and one outside the boat to install or remove this boat drain hole plug.

3,797,443
BOAT ANCHOR
Nils S. Woolsey, and Wade Van Blair, both of Tulsa, Okla., assignors to Quadall Company, Inc., Tonkawa, Okla.
Filed Jan. 2, 1973, Ser. No. 320,017
Int. Cl. B63b *21/46*
U.S. Cl. 114—206 R **1 Claim**



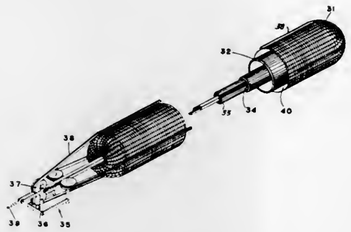
An anchor is provided with an elongated resilient element disposed substantially parallel with the longitudinal axis of the shank. One end of the resilient element is provided with a ring connected with an anchor line and separably connected with one end of the shank. The other end of the resilient element is loosely connected with the anchor crown in such a manner that when one end of the resilient element is separated from the anchor shank a lifting force is applied to the anchor crown for freeing an anchor wedged in a submerged obstruction.

3,797,444
TOWING GUIDE
Harry E. Stubbs, Four Bird Hill Rd., Lexington, Mass.
Filed Apr. 19, 1971, Ser. No. 135,052
Int. Cl. B63b *21/00*
U.S. Cl. 114—235 B **16 Claims**



A towing guide having support structure within the periphery and extending longitudinally beyond the rotor, with a tow attachment means longitudinally outward from each end of the rotor and bearing means for the rotor between the attachment means thereby providing a single-beam towing guide free of braces spanning the rotor for direct application of towing forces to the opposite ends thereof. The towing guide has a stationary end baffle mounted on a rotor support and extending radially beyond the rotor to impede endwise flow therearound, the baffle and the rotor having closely spaced, generally parallel opposing surfaces providing an extended narrow gap to permit rotation of said rotor while impeding water flow therethru between the exterior and interior of the rotor.

3,797,445
TRANSPORTER FOR USE IN WATER
Harry Zeimer, Jerusalem, Israel, assignor to The State of Israel, Jerusalem, Israel
Continuation-in-part of Ser. No. 738,746, May 8, 1968, abandoned. This application Jan. 18, 1971, Ser. No. 107,396
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **3 Claims**

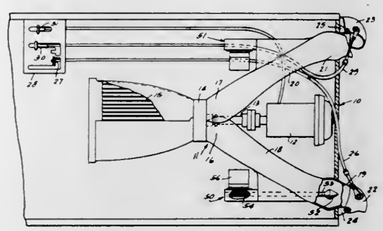


This invention relates to a submersible transport apparatus comprising a flexible hollow generally toroidal envelope having inner and outer surfaces, said inner surface being extrovertible toward said outer surface at the leading end of the apparatus and said outer surface being simultaneously introvertible toward said inner surface at the trailing end of the apparatus, and transport means for displacing said envelope axially through a fluid medium, said transport means including a plurality of guide elements with endless surfaces engageable and movable with the walls of said envelope for guiding said walls in the direction of travel of the envelope in said fluid medium and for imparting to the envelope a traction, which together with the frictional forces acting on the envelope as a result of movement through the fluid medium causes said envelope to develop a combined sliding and rolling motion with respect to the external fluid medium.

3,797,446
MOBILE POWER UNIT
Lyle G. P. Cox, and Ralph J. Cibula, both of General Delivery, Gladstone, Manitoba, Canada
Filed Dec. 19, 1972, Ser. No. 316,574
Int. Cl. A63c *11/10*
U.S. Cl. 115—6.1 **20 Claims**

A source of power drives the device on land or water. A pair of elongated handles extend forwardly of the device between which the operator is positioned. Water or snow skis, wheel skates or skis, a togobban platform and wheels and the like are worn or used by the operator depending upon the medium upon which the device is used. A travel surface activated assembly automatically shuts off the source of power and provides braking of the unit thus preventing the unit from running over the operator in the event that the operator falls. The actuator assembly operates either if the operator falls accidentally or, alternatively, if he lowers the handles so that the actuator engages the surface. The entire unit is designed to be easily folded or disassembled so that it can be carried in the trunk of a car or the like.

3,797,447
INBOARD PROPULSION SYSTEM FOR A BOAT
Robert A. Stubblefield, 755-5th Ave., Salt Lake City, Utah
Filed Aug. 3, 1972, Ser. No. 277,817
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R **12 Claims**



An inboard propulsion system for a boat utilizing a water jet propulsion characterized by a pair of spaced nozzles each provided with individually controlled deflecting hoods to enable providing both a reverse thrust for backing the boat and to selectively reverse the water jet of a single nozzle to provide a turning force for steering the boat. Preferably, each of the nozzles is provided with a servo system which varies the effective opening of the nozzle in response to changes in the pressure differential between the intake pressure to the main impeller unit and the discharge pressure of the impeller unit to attempt to maintain a constant quantity flow from the nozzles independent or regardless of any variations in the intake pressure of the impeller unit.

3,797,448

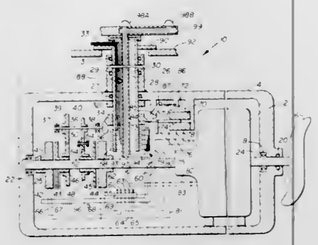
TROLLING MOTOR WITH STEERING MEANS

Howard A. Cramer, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 238,327, March 27, 1972, Pat. No. 3,723,839. This application Mar. 19, 1973, Ser. No. 342,411

Int. Cl. B63h *21/26*

U.S. Cl. 115—18 E 10 Claims



This disclosure describes an improved electric trolling motor system for driving small boats. The motor which drives the propeller also drives a gear train through electrical clutches. Gears are provided to separately cooperate with a third gear means to rotate the trolling motor with respect to a fixed support tube fastened to the boat. By connecting one or the other clutch to a battery, the direction of the motor axis can be rotated to the right or to the left.

Included also is a solenoid operated brake which locks the drive means between the support tube and the motor so that when the clutches are not energized the motor is locked in direction with respect to the support tube. A second smaller tube is positioned axially in the longitudinal bore through the support tube. The lower end of the small tube is attached to the motor assembly, and the upper end carries a radial arm, by means of which the direction of the motor axis can be indicated.

3,797,449

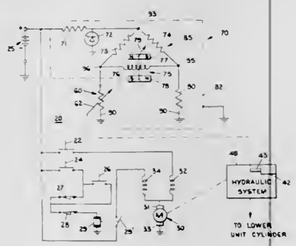
TRIM INDICATOR AND CIRCUIT THEREFOR

William R. Carpenter, and Richard M. Sponaas, both of Muskegon, Mich., assignors to Medallion Instruments, Inc., Spring Lake, Mich.

Filed Nov. 8, 1971, Ser. No. 196,325

Int. Cl. B63h *5/12*

U.S. Cl. 115—41 HT 4 Claims



A trim or tilt angle-indicating system for providing a visual indication of the position angle of the outdrive unit in an inboard-outboard boat propulsion system including an electrical meter coupled in a bridge circuit supplied power by a regulated voltage supply. One leg of the bridge circuit comprises a variable resistor which has a wiper arm coupled to the outdrive unit. As the trim angle of the outdrive is varied, the resistance of the variable resistor changes, to thereby unbalance the bridge circuit. The resulting electrical current flow through the meter deflects a meter needle to indicate that the trim angle of the outdrive unit on a dial is associated with the meter.

3,797,450

EMERGENCY SIGNAL FLAG

Lloyd E. Frisbee, 20055 Hiawatha, Chatsworth, Calif.

Filed Jan. 8, 1973, Ser. No. 322,005

Int. Cl. B60q

U.S. Cl. 116—28 R 3 Claims

A signal flag apparatus is disclosed herein having an elongated tube storing a shaft with a flag secured along one end thereof. The tube houses resilient member forciably urging the shaft and flag out of the tube in a fully deployed condition. A push button device holds the shaft and flag in a storage position within the tube and upon actuation, permits the resilient member to project the shaft and flag out of the tube. A pull cord is attached to the end of the shaft which when pulled, causes the shaft and flag to be withdrawn into the tube for storage and reset purposes. A bracket pivotally mounts the tube on an appropriate portion of a vehicle such as a boat.

3,797,451

WEAR WARNING DEVICE FOR ROTATING APPARATUS PROVIDED WITH AN AXIAL THRUST BEARING

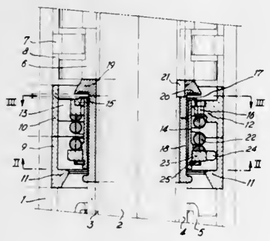
Wladimir Tiraspolsky, Issy-les-Moulineaux, and Roger Francois Rouviere, Venelles, both of France, assignors to Turboservice S.A., Issy-les-Moulineaux, France

Filed Oct. 16, 1972, Ser. No. 297,641

Claims priority, application France, Oct. 25, 1971, 71.38174

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 Q 9 Claims



A wear warning device for rotating apparatus provided with an axial thrust bearing, more particularly for drilling turbines, comprises a valve provided in the fluid circulation passages of the turbine, said valve being movable between an open position and a throttling position. A holding member is provided for normally retaining said valve in its open position. A helical spring is provided between said valve and a stationary member for urging said valve towards its throttling position. The holding member is rigid with the stator or rotor part of the turbine, while another member having an abrasive surface is connected to said rotor or stator part, respectively. The original distance between said abrasive surface and said holding member is substantially equal to the admissible wear clearance of the axial thrust bearing. When the wear limit is substantially reached, said abrasive surface cuts through said holding member in order to release said valve. Therefore, the valve is moved to its throttling position under the action of said spring and a pressure surge is transmitted to the surface as a warning signal.

3,797,452

MOTOR DRIVES FOR VACUUM DEPOSITION APPARATUS

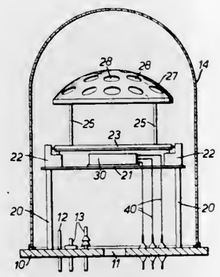
Christopher David Dobson, 157 Linden Ct., Newbridge, Monmouthshire, England

Filed Feb. 24, 1972, Ser. No. 228,904

Claims priority, application Great Britain, Mar. 2, 1971, 5744/71; Jan. 17, 1971, 2146/71

Int. Cl. C23c *13/08*

U.S. Cl. 118—49 9 Claims



Vacuum deposition apparatus including a base (**10**), a vacuum vessel (**14**), a rotary workholder (**23, 25, 27**), auxiliary services (**12, 13**) passing through the base, and a linear induction motor (**30**) for driving the rotary workholder. The stator of the induction motor may be included in a sealed case (**43**) or it may be formed as a solid metal core (FIG. **6**) without a case. Additionally a tubular induction motor (**62, 63**) may be provided for feeding a metal wire (**61**) from a spool (**60**) within the vacuum vessel.

3,797,453

APPARATUS COATING SHEETED MATERIAL WITH A TACKY SUBSTANCE

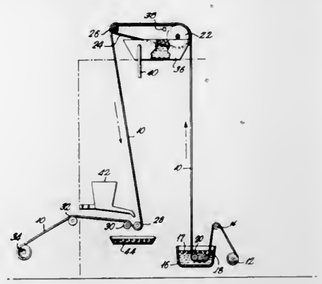
Anthony R. Rizzo, Lynn, Mass., assignor to Afco Products Inc., Somerville, Mass.

Division of Ser. No. 66,104, Aug. 21, 1970, Pat. No. 3,681,121, Continuation of Ser. No. 580,656, Sept. 20, 1966, abandoned. This application Mar. 15, 1972, Ser. No. 234,776

Int. Cl. B05c *11/12*

U.S. Cl. 118—69 5 Claims

An apparatus for treating a continuous web of material which has been coated with a tacky substance having means for moving the web along a first path having an upward vertical component to permit the substance to dry at least partially and to lose at least a portion of its tackiness. Means are provided for changing the direction of travel of the web to a second path having a downward vertical component and includes an absorbent surface positioned to contact the web and



change the direction of travel. The absorbent surface is capable of absorbing a fluid which prevents the adherence of the partially set tacky substance to the absorbent surface.

3,797,454

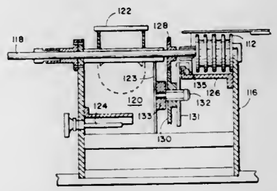
ADHESIVE APPLICATOR

Peter Kalikow, 870 United Nations Plaza, New York, N.Y.

Division of Ser. No. 178,764, Sept. 8, 1971, Pat. No. 3,747,480. This application Dec. 20, 1972, Ser. No. 316,830

Int. Cl. B05c *1/02*

U.S. Cl. 118—247 3 Claims



Cam-activated pressure wheels press desired portions only of the blank against continuously revolving adhesive-applicator wheels as the conveyor moves the blanks thereover. Means driving the applicator additionally rotates a vertically disposed disc which is partially immersed in an adhesive supply and whose upper portions lie closely adjacent to the applicator container whereby the adhesive is carried from said supply and scraped off the disc to be deposited in the container.

3,797,455

APPARATUS FOR FORMING A SELF-LOCKING THREADED COUPLING

Harry Scheffer, Brackwede; Dieter Schuster, Bielefeld, and Paul Linders, Brackwede, all of Germany, assignors to Bollhoff & Co., Brackwede/Westphalia, Germany

Division of Ser. No. 73,091, Sept. 17, 1970. This application Mar. 31, 1972, Ser. No. 240,192

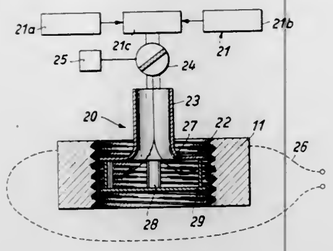
Claims priority, application Germany, Sept. 30, 1969, 19492274

Int. Cl. B05b *7/24*

U.S. Cl. 118—308 12 Claims

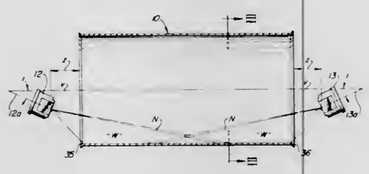
The invention pertains to apparatus for forming a self-locking threaded coupling wherein the threads of the coupling are covered with a layer of thermoplastic synthetic material and the thickness of the layer varies about the circumference of the threaded surfaces to avoid shearing of the synthetic material when the components constituting the threaded coupling are threaded together. The apparatus of the invention constitutes means for applying the synthetic thermoplastic material to the threaded component by employing a gaseous carrier such as air wherein the synthetic material is

blown upon the threaded component having the synthetic material affixed thereto. As only preselected portions of the threaded surfaces are to be covered by the synthetic material, the apparatus includes spaced shields for shielding parts of the threaded components from the blown synthetic material, and



the apparatus of the invention may be used to coat either interiorly or exteriorly threaded surfaces. The apparatus includes supply and mixing chambers and timed valve control means regulating the duration that the blown synthetic material is placed upon the threaded components.

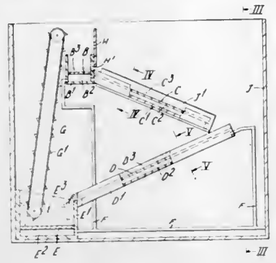
3,797,456
APPARATUS FOR COATING THE INTERIORS OF HOLLOW BODIES
Edwin F. Hogstrom, North Olmstead, Ohio, assignor to Nordson Corporation, Amherest, Ohio
Division of Ser. No. 16,733, March 5, 1970, Pat. No. 3,640,758. This application Nov. 26, 1971, Ser. No. 202,465
Int. Cl. B05b *7/08*
U.S. Cl. 118—316 **10 Claims**



Apparatus for coating the interior cylindrical surface of objects such as metal cans for food, beverages and other substances which need protection against injurious reaction with or pollution from contact with the material of the can. Airless spray coating of such surfaces revolving at high speed by stationary spray nozzles external of the can. The nozzles project impinging airless sprays having desirable patterns through respective ends of open ended can cylinders into longitudinally elongated contact with the interior surface.

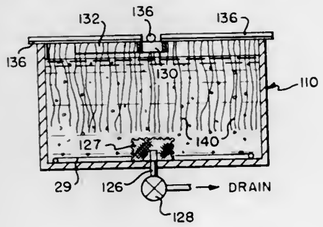
3,797,457
COATING OF SURFACES WITH POWDER
Roger Brian Bushnell, 49 Parkland Grove, Ashford, England
Filed Mar. 8, 1971, Ser. No. 121,945
Claims priority, application Great Britain, Mar. 16, 1970, 10950/70
Int. Cl. B05b *5/00*
U.S. Cl. 118—630 **7 Claims**

This invention relates to the surface-coating of a metal or other article or articles with powder and comprising an inclined sheet made of material porous to air or other gas and down which the powder is caused to flow, air or other gas being blown through such sheet to cause turbulence above the sheet to assist the downward flow of the powder, the powder particles being electrostatically charged so that they will be attracted from the space above the inclined sheet by the article or articles to be coated when such articles are moved past the turbulent space above the inclined sheet, the length and position of the inclined sheet being such that every part of the sur-



face or surfaces to be coated passes closely adjacent to the space over the inclined sheet. Any powder which is not attracted away from the space over the inclined sheet and escapes from the bottom of such sheet is caused to pass into a main powder reservoir from which the powder is conveyed to the top of the inclined sheet to flow down such sheet.

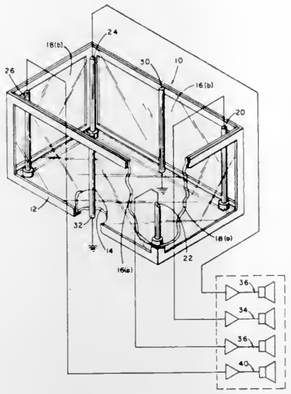
3,797,458
APPARATUS FOR GROWING CRUSTACEANS
John J. Day, and Paul S. Hirschman, both of Ft. Lauderdale, Fla., assignors to Ocean Protein Corporation, New York, N.Y.
Division of Ser. No. 96,137, Dec. 8, 1970, Pat. No. 3,724,423, which is a continuation-in-part of Ser. No. 889,819, Dec. 24, 1969, Pat. No. 3,658,034. This application Sept. 11, 1972, Ser. No. 287,903
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 **13 Claims**



Apparatus and method for providing optimum conditions for the growth and maturation of crustaceans during the post-larval period, which includes at least one tank having strand type habitats therein for the crustacea. A series of interconnected tanks is provided, with a tank subsequent to the one having the strand habitats including compartments for the crustacea.

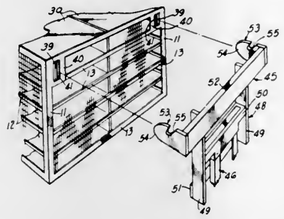
3,797,459
ELECTRIC FISH TANK
Daniel J. Harris, 54 Blue Ridge Ln., West Hartford, Conn.
Filed May 25, 1972, Ser. No. 256,985
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **9 Claims**

A fish tank is presented for observation of electrically active fish by the detection of electric or electromagnetic emanations from the fish and conversion to an audio output. A configuration of grounded electrodes effectively divides the tank into a plurality of zones, and other electrodes positioned in the zones, are connected to high gain audio amplifiers whereby



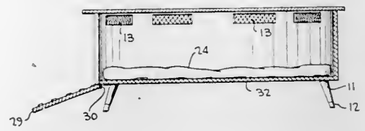
electrical emissions of the fish are converted to audio output. The intensity of the detected emanations indicates the relative proximity of the electrically active fish to the other electrodes within their respective zones.

3,797,460
POULTRY HANDLING SYSTEM
Milton O. Blankenship, Canton, Ga.
Division of Ser. No. 107,771, Jan. 19, 1971, Pat. No. 3,741,417. This application June 6, 1972, Ser. No. 260,310
Int. Cl. A01k *31/00*
U.S. Cl. 119—17 **1 Claim**



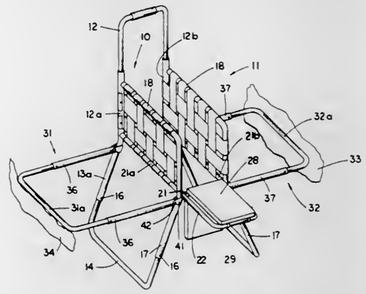
A receiving station having an upwardly open operable conveyor surface for conveying poultry to be processed from one location along a predetermined path to a second location is provided with an adjustable support platform means movable between operable and inoperable positions for effecting a transfer of poultry by gravity from a container means onto the conveyor surface in response to the platform being moved to the operable position. Padded guide means is provided on an opposite lateral side edge of the conveyor means from the adjustable platform means for absorbing the impact of poultry deposited thereon and for effecting a guided movement of the deposited poultry onto the conveyor means. The conveyor means is operable for effecting a transfer of the poultry deposited thereon from a first location adjacent the operable platform to a second location adjacent suspension means used for conveying poultry through a processing operation. Special container means is provided for transporting poultry from poultry growing facilities to the receiving station. The container means is detailed to be supported on the platform means and for movement to the angular oriented operable position for effecting a transfer of poultry by gravity from within the container means onto the conveyor and padded guide means.

3,797,461
PET HOUSE
Earl W. Breeden, Waynesboro, Va., assignor to Marie J. Garnett, Harrisonburg, Va.
Division of Ser. No. 17,224, March 6, 1970, Pat. No. 3,618,568. This application Nov. 1, 1971, Ser. No. 194,112
Int. Cl. A01k *01/00*
U.S. Cl. 119—19 **1 Claim**



Pet house in the form of an attractive piece of furniture which can be readily opened to a pet house usable in a person's living quarters.

3,797,462
DOG STANCHION FOR AUTOMOBILES
Gary A. Davis, 6353 Monitor Ln., Indianapolis, Ind.
Filed May 29, 1973, Ser. No. 364,973
Int. Cl. B60r *7/04*
U.S. Cl. 119—96 **3 Claims**

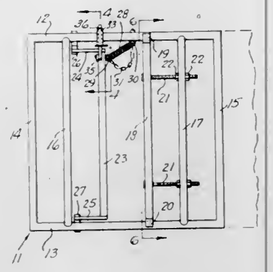


Disclosed is stanchion for stabilizing medium or large size dogs riding in a passenger automobile. The stanchion has spaced side panels spanned by a transverse member at the panels' front end. The panels have support legs of adjustable length which diverge outwardly, and extending sidewardly and outwardly from each panel is a telescoping U-shaped bracing member which is spring loaded to a maximum extended position. The bracing members engage the sidewalls of the automobile in which the stanchion is installed.

3,797,463
LIVESTOCK TRAP AND SORTER
David N. McCrery, Jr., 1302 E. Broadway, Monmouth, Ill.
Filed Jan. 19, 1973, Ser. No. 324,985
Int. Cl. A01k *29/00*
U.S. Cl. 119—155 **8 Claims**

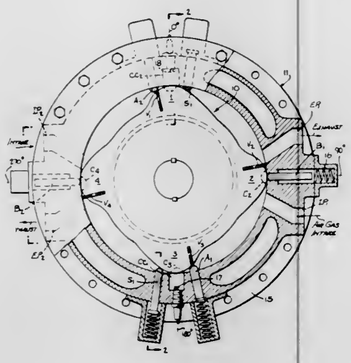
An animal trapping and sorting gate assembly consisting of a rectangular frame having vertical spaced rails, one inner vertical rail being horizontally adjustable and the adjacent inner vertical rail being mounted on top and bottom horizontal arms pivoted on a common vertical axis to the top and bottom horizontal elements of the frame. The pivoted vertical rail is biased toward a centered position coplanar with the frame, by a spring. A pin may be inserted through the top horizontal ele-

ment of the frame to limit swinging movement of the pivoted vertical rail to only one direction from its centered position so



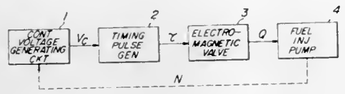
that the gate assembly may be employed with an enclosure to allow animals to enter the enclosure but to allow only animals under a predetermined size to leave the enclosure.

3,797,464
BALANCED ROTARY COMBUSTION ENGINE
Harold G. Abbey, 75 Prospect St., East Orange, N.J.
Filed Dec. 6, 1971, Ser. No. 205,197
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.33 **8 Claims**



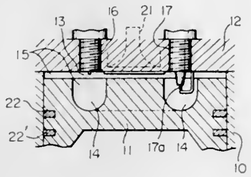
A rotary internal combustion engine of symmetrically balanced construction. The engine includes a stator having a circular chamber provided with a pair of diametrically-opposed combustion cavities having igniters therein. Concentrically mounted within the stator is a rotor having at least one pair of lobes. The stator chamber is effectively divided into two distinct sections by means of gas-separating vanes which are disposed at diametrically-opposed positions along an axis at right angles to the common axis of the combustion cavities, the gas-separating vanes continuously engaging the surface of the rotor. Associated with each vane is an exhaust port through which spent gases are forced out by a lobe advancing toward the vane, and an air-gas intake port through which a fuel mixture is admitted for compression by a lobe moving away from the vane.

3,797,465
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES
Nobuhito Hobo, Inuyama, and Norio Omori, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken, Japan
Filed June 24, 1971, Ser. No. 156,439
Claims priority, application Japan, July 4, 1970, 45-58456; July 4, 1970, 45-58457
Int. Cl. F02m *51/00*
U.S. Cl. 123—32 EA **5 Claims**



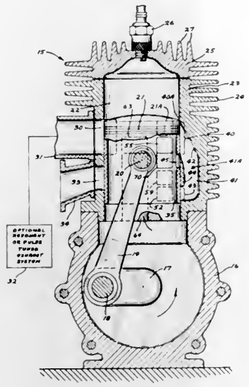
A fuel injection system for internal combustion engines is disclosed, in which there are provided fuel injection patterns for engine starting and for full-load engine operations. Cold starting of the engine is facilitated by injecting fuel according to the fuel injection control pattern required by the engine at the time of starting, and once after the engine has been started or when engine has been warmed up the fuel injection is made according to the fuel control pattern required for full-load operation, so that no black smoke generates even if the engine is rotated at a low speed with the full-load, thereby ensuring optimum fuel supply over the entire engine speed and engine load ranges without sacrificing the engine output for full-load operation of the engine.

3,797,466
FUEL INJECTION INTERNAL COMBUSTION ENGINE
Shyuya Nambu, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Tokyo, Japan
Filed July 21, 1971, Ser. No. 164,770
Claims priority, application Japan, Sept. 8, 1970, 45-78656
Int. Cl. F02b *9/10*
U.S. Cl. 123—32 ST **3 Claims**



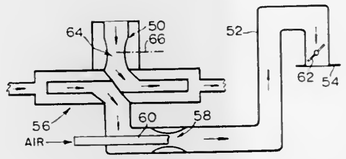
To make available a fuel internal combustion engine which can be driven with a relatively lean combustible mixture to reduce concentrations of toxic hydrocarbons, carbon-monoxides and nitrogen oxides in engine exhaust gases without impairing combustion efficiency of the engine, the engine is provided with an improved combustion chamber which consists of a usual space usually used as the combustion chamber and an additional space formed in an end wall of a piston. A fuel injection valve and a spark plug spaced from the valve are located in alignment with this additional space so that a major portion of the supplied fuel is distributed to the additional space so as to produce therein a relatively rich combustible mixture which can be readily ignited by the spark plug whereby a relatively lean mixture produced in the usual space of the combustion chamber is ignited by the aid of the flames resulting from the combustion of the rich mixture.

3,797,467
TWO CYCLE ENGINE SCAVENGE PORTS
William L. Tenney, Crystal Bay, Minn.
Filed Feb. 9, 1972, Ser. No. 224,756
Int. Cl. F02b *33/00*
U.S. Cl. 123—73 AA **15 Claims**



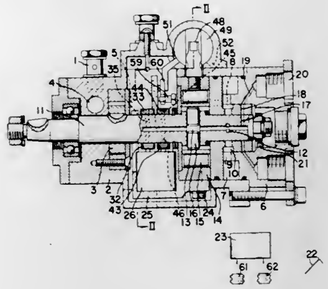
In a two cycle engine of the type which utilizes the underside of the power piston as a scavenging pump piston and which has the scavenge ports located in the lower end of the cylinder, the provision of a scavenge port or ports of extra height but having normal effective port timing as to opening to the scavenge pump system, additional timing control being effected by means of a port or ports located in the piston side wall.

3,797,468
FUEL SYSTEM OF INTERNAL COMBUSTION ENGINES
David Fisher, 22 Beechurst Rd., Liverpool L25, 3QA, England
Filed Aug. 29, 1972, Ser. No. 284,485
Int. Cl. F02m *31/10*
U.S. Cl. 123—133 **4 Claims**



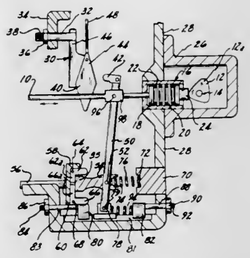
A heat exchanger is incorporated between the carburetor and inlet manifold of an internal combustion engine to enhance fuel vaporization and therefore reduce fuel consumption and harmful exhaust emissions. The heat exchanger is preferably connected into the cooling system of the engine. In a development, an auxiliary air bleed is provided upstream of the heat exchanger to convert vapourized fuel into a fog to further enhance efficient combustion.

3,797,469
DISTRIBUTOR-TYPE FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES
Masayoshi Kobayashi, Kawagoe; Yoshio Ohtani, and Mitsunobu Abe, both of Higashi-Matsuyama, all of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 3, 1972, Ser. No. 240,506
Claims priority, application Japan, Apr. 30, 1971, 46-28061; Apr. 6, 1971, 46-20690
Int. Cl. F02m *51/00*
U.S. Cl. 123—139 E **8 Claims**



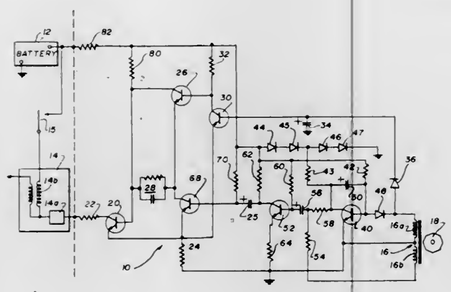
A distributor-type fuel injection pump for internal combustion engines, comprising at least one electrical actuator so moving together with the internal cam ring and so controlled from a control circuit operating with input signals derived from the rotating speed and accelerator position that the movement of said electrical actuator is imparted to the sleeve located around the rotor to determine the effective injection stroke, thereby making the injection quantity capable of being freely varied.

3,797,470
FUEL REGULATING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE
Norman G. Beck, Wheaton, Ill., assignor to Teledyne Industries, Inc., Los Angeles, Calif.
Filed Feb. 10, 1972, Ser. No. 225,216
Int. Cl. F02d *1/04*
U.S. Cl. 123—140 R **3 Claims**



A fuel regulating system including provision for automatically adjusting the fuel supply as a function of increasing or decreasing engine speed. A movable sleeve member actuable by the action of a centrifugal type governor actuates a control lever which in turn regulates the quantity of fuel delivered to the engine. The control lever is further attached to a manual throttle of the cam type with an intermediate spring plunger to provide for operator adjustment of the fuel. Additionally, there is provided a pair of adjustable stops engageable with the lower end of the control lever to provide respectively low idle speed and high idle speed limits.

3,797,471
BREAKERLESS TRIGGER CIRCUIT WITH VARIABLE DWELL FOR IGNITION SYSTEMS
Gunter Schuette, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation-in-part of Ser. No. 44,140, June 8, 1970, abandoned. This application Apr. 14, 1972, Ser. No. 244,028
Int. Cl. F02p *3/02*
U.S. Cl. 123—148 E — 2 Claims

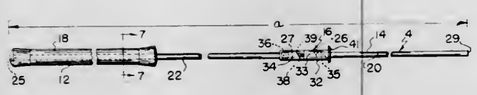


A triggering circuit for an ignition system to develop electric signals which correspond to the closing and opening of breaker points. A transistor which controls the current flow through the primary winding of a standard ignition coil is in a quiescent off condition when the engine is not being cranked or turning. Only upon cranking of the engine will the transistor be rendered conductive for a period of time, corresponding to the dwell angle of the system, to apply given-width pulses to the primary winding of the ignition coil. The termination of the pulses produces spark voltage at the secondary winding of the ignition coil. Means are provided to automatically increase the dwell angle of the system at a predetermined engine speed.

ERRATUM

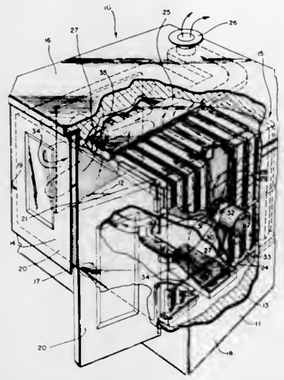
For Class 123—142.50 E see: Patent No. 3,798,072

3,797,472
SHUTTLECOCK AND LAUNCHING APPARATUS INCLUDING LENGTHENING COUPLER
George L. Knisely, Jr., 43151 Dellefield Rd., Elyria, Ohio
Filed Feb. 7, 1972, Ser. No. 223,934
Int. Cl. A63b *71/02*
U.S. Cl. 124—5 — 7 Claims



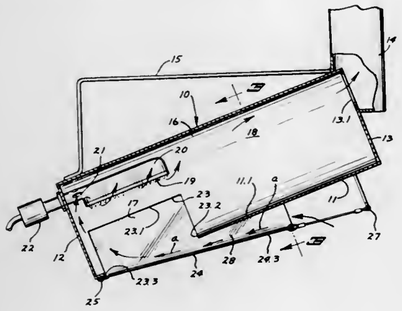
A game apparatus including a launching member adapted to be operated by a player and a projectile member separably mounted on the launching member for launching by the player from one position adjacent the player to another position remote therefrom. The launching member comprises an elongated, resilient pole and a projectile member is of a shuttlecock-like construction being mounted for sliding movement along the length of the pole for launching from one end thereof toward the remote location. A target assembly is mounted remotely from the player being arranged for scoring registration with the projectile member. The target assembly includes a base having a target member detachably mounted thereon which is adapted to be detached from the base when struck by the projectile member after launching by the player.

3,797,473
FORCED CONVECTION OVEN
Paul A. Mutchler, University City, Mo., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 5, 1973, Ser. No. 376,660
Int. Cl. F24c *5/16*; A21b *1/26*
U.S. Cl. 126—21 A — 6 Claims



A forced convection oven utilizing two blower rotors mounted on opposed walls of the oven cavity adapted to rapidly and efficiently cook food items. The use of two rotors reduces the space requirements within and without the oven for the forced convection components, reduces the velocity of air required to be circulated within the oven cavity and reduces the air circulation path within the cabinet. The blower rotors are powered by air motors which are not adversely affected by high ambient temperature conditions encountered adjacent the oven.

3,797,474
FUEL FIRED SPACE HEATER
John E. Eichenlaub, 9321 Franklin Ave., West, Minneapolis, Minn.
Filed May 18, 1973, Ser. No. 361,519
Int. Cl. F24c *3/04*
U.S. Cl. 126—85 R — 14 Claims

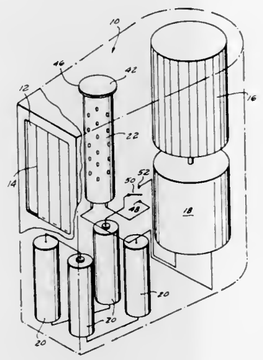


A fuel fired space heater directing infrared in a downward direction from a radiant confined within a combustion chamber at the lower end of an elongate inclined housing, an enlarged combustion gases discharging chamber above said combustion chamber and delivering the combustion gases to an outlet, the housing having a radiant heat discharging port beneath said combustion chamber, and a flexible panel of a material highly transmissive of infrared and also being inclined with the lower edge of the inclined panel secured to the housing adjacent the radiant heat discharging port and the upper side portion of the panel being spaced from the housing or supplied by an air intake passageway, but confronting the entire port to enclose the port and deliver combustion air downwardly along the inner face of the panel for preventing deposit of dust and delivering cool combustion air for cooling the panel and supplying air to the fuel fired radiant.

Space heaters for extremely dusty spaces such as turkey houses where a substantial amount of litter is on the floor usually require an extreme amount of maintenance so as to remain functional, primarily because of the dust that must be contended with in such installations. In turkey brooders, a substantial amount of the dust is airborne of which 20 percent by weight is in continuous suspension and 80 percent is sedimentary so as to settle on everything that has a somewhat horizontal surface.

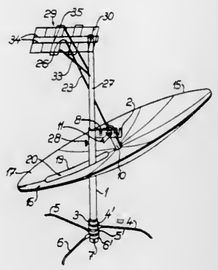
Insurance and other applicable codes vary from place to place and the nature of the fuel fired heating installation will be controlled accordingly. It has been a problem to accommodate the installation codes of heaters as well as to accommodate the dust problem which is always present and which is of primary importance in the design or selection of a heater for a particular installation.

3,797,475
PORTABLE CORDLESS HAIRDRYER
Thomas Bartley Hughes, Newcastle upon Tyne, England, assignor to Ronson Corporation, Woodbridge, N.J.
Filed Sept. 12, 1972, Ser. No. 288,440
Claims priority, application Great Britain, Sept. 29, 1971, 45439/71
Int. Cl. A61f *7/00*
U.S. Cl. 126—206 — 3 Claims



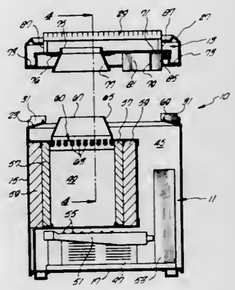
A portable cordless hairdryer comprising a heater unit to produce an exothermic reaction at a controlled rate and battery operated blower means to direct air heated by the heater unit onto hair to be dried.

3,797,476
SOLAR HEATING DEVICE
Adnan Tarcici, 13, Avenue de Bude, 1202 Geneva, Switzerland
Filed Mar. 19, 1973, Ser. No. 342,365
Int. Cl. F24j *3/02*
U.S. Cl. 126—270 — 9 Claims



A solar heating device comprising an upright tubular post, a rigid support member protruding perpendicularly from the post, and a generally paraboloidal reflector having a rigid arm extending along the axis of the reflector from the center thereof towards the focal point. A pivot perpendicular to a free end of said arm is selectively pivotally mounted and secured in one of a plurality of notches in said support member to provide a compensation for the lateral displacement of the focal point as the reflector is tilted. A height adjustable grid mounted on a tube slidably received within the post enables the support of an object to be heated. A rod indicating the focal point of the reflector can be disposed along the axis thereof.

3,797,477
CONVERTIBLE GAS HEATING APPARATUS
Robert M. Ramey, North Hollywood, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Jan. 10, 1972, Ser. No. 216,586
Int. Cl. F22b *37/36*
U.S. Cl. 126—307 A — 24 Claims



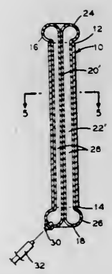
A convertible heating appliance is disclosed in which a common boiler unit is adapted to universally receive either a grate vent assembly or a stack assembly. As a result, the boiler unit can be packaged individually and stored for subsequent utilization with either assembly. The boiler comprises a cubical housing formed from four rectangular sidewalls. The interior of the boiler includes a combustion chamber having a heat exchanger and a flue collector mounted thereon. The flue collector comprises a shortened truncated hood which is adapted to sealingly register with a mating hood extension formed on the grate vent assembly or the stack assembly. A

plurality of vanes are peripherally spaced about the top periphery of the four sidewalls. Beside operating as air spoilers for the heater inlet, the vanes function as the primary means of supporting the grate vent or stack assembly.

The grate vent assembly comprises an apertured cover plate having the mating hood extension attached to the bottom side thereof directly below the aperture. Baffle plates are attached to the outer edges of the cover plate to form a rectangularly shaped baffle. The cover plate is adapted to be mounted over the boiler housing so that the hood extension mates with the truncated flue hood of the boiler. The rectangularly arranged baffle plates are adapted to be attached to the peripherally spaced vanes mounted on the boiler housing.

The stack assembly also comprises an apertured cover plate having the mating hood extension attached to the bottom side thereof directly below the aperture. A stack is mounted on the top side of the cover plate to extend over the aperture for providing a draft pasageway for the combustion exhaust. Either a draft hood or vent cap is attached to the top of the stack, depending on whether the boiler is to be used indoors or out. The cover plate also comprises peripheral side edges which are adapted to be attached to the peripherally spaced vanes mounted on the boiler housing.

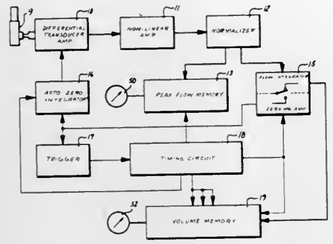
3,797,478
MULTI-FUNCTIONAL VALVE FOR USE IN THE URETHRA
Michael Adrian Walsh, 81 Witherbee Ave., Pelham Manor, N.Y., and Edward F. Costigan, 348 Central Ave., Scarsdale, N.Y.
Filed July 11, 1972, Ser. No. 270,866
Int. Cl. A61b *19/00*; **A61m** *25/00*
U.S. Cl. 128—1 R **6 Claims**



A valve adapted to be positioned in the channel of the urethra for the maintenance of such channel at a predetermined size in a substantially sterilized condition relative to bacteria, such valve controlling the flow of urine from the bladder through the channel of the urethra to the atmosphere.

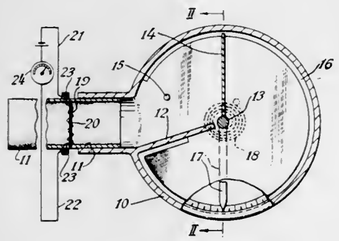
3,797,479
SPIROMETER
Martin H. Graham, Berkeley, Calif., assignor to Comprehensive Health Testing Laboratories, Inc., San Francisco, Calif.
Filed Apr. 14, 1972, Ser. No. 244,202
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **4 Claims**

A spirometer including improved pneumotach and electronic circuitry for obtaining normalized linear output measuring forced vital capacity and maximum expiration flow rate with automatic zeroing feature before test. Display means are included to provide the patient with an immediate indication



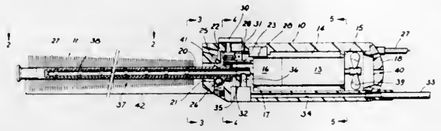
during a test of the patient's rating compared to normal. Automatic zeroing circuitry and a starting circuit responsive to initial exhalation are also included.

3,797,480
APPARATUS FOR INDICATING THE RATE OF FLUID FLOW
Garnet Montague Eveleigh Williams, London, England, assignor to Ferraris Development & Engineering Company Limited, London, England
Filed May 28, 1971, Ser. No. 148,077
Claims priority, application Great Britain, May 29, 1970, 26140/70
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 **8 Claims**



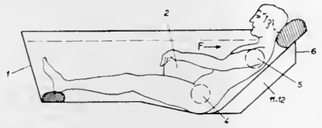
Apparatus for indicating fluid flow rate which includes a thermistor carried by a mesh and arranged for connection in an electrical circuit including an indicating instrument, the time dependent pattern of variations in the rate of flow of fluid through the mesh being indicated by the indicating instrument because the resistance of the thermistor varies with the fluid flow rate. The thermistor can be calibrated by a comparison of its output signals with the pressure differential across the mesh for one fluid flow rate. The element may be connected into the electrical circuit by leads having the properties of a hot wire anemometer element, the leads being disposed on opposite sides of the mesh and arranged to indicate the direction of fluid flow through the mesh. A peak flow meter having mechanical means for measuring the peak rate of flow of air blown by a human subject, has a thermistor carried by its gauze mesh filter and arranged to give an indication of the time dependent pattern of variations in the rate of flow of air blown by the subject.

3,797,481
HYGIENIC CLEANING DEVICE FOR THE ANAL AREA OF THE HUMAN BODY
Barbara Jean Doran, 7319 Brompton, B 216, Houston, Tex.
Continuation-in-part of Ser. No. 99,503, Dec. 18, 1970. This application Nov. 22, 1971, Ser. No. 200,960
Int. Cl. A61h *9/00, 19/00, 21/00, 35/00, 37/00*; **A47k** *7/04, 7/08*
U.S. Cl. 128—65 **7 Claims**



A hand-held device for hygienical cleaning of the anal area of the human body including elongated cleaning heads mounted on a housing in a side-by-side relation, and a motor carried by the housing to drive the elongated heads in opposite directions about their longitudinal axes.

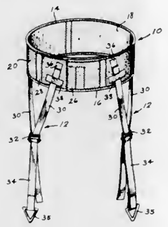
3,797,482
AUTOMATIC DEVICE FOR SUBAQUEOUS MASSAGE
Michel Nicollet, 6, rue (Bas-Rhin), Strasbourg, France
Filed Mar. 23, 1972, Ser. No. 237,341
Claims priority, application France, Mar. 26, 1971, 71.11629
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **10 Claims**



An automatic device for subaqueous massage, comprising a bath or a basin, massaging elements which emit jets or currents of water and are placed or fixed detachably or rigidly on the walls and/or the bottom of the bath or basin, and an assembly formed by means for supplying the bath with water.

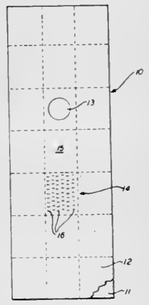
The apparatus can be used equally for the treatment of invalids or of persons in perfect health.

3,797,483
PELVIC TRACTION BELT
Inez Feldman, Etna Green, Ind., assignor to Orthopedic Equipment Company, Inc., Bourbon, Ind.
Filed June 14, 1972, Ser. No. 262,535
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **5 Claims**



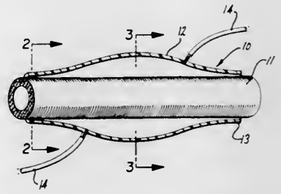
A pelvic traction belt which includes a waist encircling member having one or more tensioning straps releasably connected thereto. Each strap includes hook-defining connectors carried at one end portion of the strap. The hook-defining connectors are engageable upon contact with the outer surface of the waist encircling member and are constructed so as to resist separation from the waist encircling member when the strap is placed under a tensioning load with the waist encircling member being worn by a patient.

3,797,484
CYSTOSCOPY SHEET
Richard E. Ericson, Nashua, N.H., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed June 7, 1972, Ser. No. 260,680
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **5 Claims**



A cystoscopy sheet having a slitted area spaced from the fenestration in a position to permit drainage of liquid through the slits while solids are deposited on the surface of the sheet for removal and examination.

3,797,485
NOVEL DRUG DELIVERY DEVICE FOR ADMINISTERING DRUG INTO BLOOD CIRCULATION IN BLOOD VESSEL
John Urquhart, Malibu, Calif., assignor to Alza Corporation, Palo Alto, Calif.
Filed Mar. 26, 1971, Ser. No. 128,303
Int. Cl. A61m *5/00*
U.S. Cl. 128—213 **13 Claims**

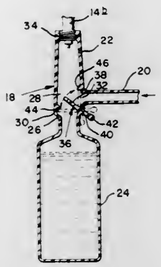


A novel drug delivery device for administering a drug into the blood circulation comprising a means for positioning a drug supply on the adventitial surface of an intact blood vessel for diffusing the drug into the blood in the blood vessel.

3,797,486
INTRAVENOUS INFUSION ASSEMBLY
Robert S. Shaps, 1652 Taylor St., San Francisco, Calif.
Filed Jan. 2, 1973, Ser. No. 320,183
Int. Cl. A61m *5/00, 1/00*
U.S. Cl. 128—214 R **4 Claims**

An improvement for intravenous surgical needle assembly that is implanted in the patient for a relatively long period of

time for intermittent intravenous injections. The improved assembly includes a chamber or reservoir holding a supply of a second fluid to be introduced through the intravenous needle, usually an anti-coagulant, and a valve to selectively close off the second fluid's circulation therethrough while allowing the



principal fluid to flow intravenously; and alternatively close off the principal fluid flow while allowing the second fluid to circulate from the reservoir in and through the surgical needle, usually for the purpose of preventing coagulation in and about the tip of the needle.

3,797,487

HYPODERMIC SYRINGE WITH CLUTCH FOR ASPIRATION

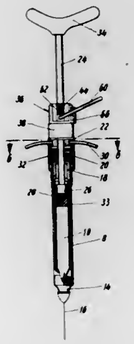
Gunther Schmidt, Eschwege, Germany, assignor to M. Woelm, Eschwege, Germany

Filed Oct. 27, 1971, Ser. No. 192,990

Claims priority, application Germany, Oct. 29, 1970, 2053096; Apr. 22, 1971, 2119508

Int. Cl. A61n *5/22*

U.S. Cl. 128—218 R **16 Claims**



A hypodermic syringe by which aspiration as well as injection can be effected, for example for the purpose of testing to see if the cannula has been inserted into a correct tissue of the patient. The syringe includes an operating lever for engaging a clutch acting between the piston rod or plunger of the syringe and a slide mounted co-axially on the piston rod and slidable thereon in a housing formed by part of the body of the syringe. The clutch can be released or engaged by the user while he is gripping the piston rod with the same hand, and thereby he can readily control the aspiration volume.

3,797,488

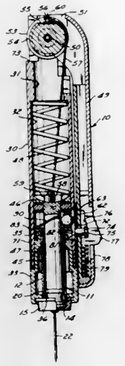
AMPOULE APPLICATOR WITH ONE-WAY CLUTCH

Alfred A. Hurschman, Hudson, and Leslie R. Udell, Cuyahoga Falls, both of Ohio, assignors to Ampoules, Inc., Macedonia, Ohio, by said Alfred A. Hurschman

Filed July 10, 1972, Ser. No. 270,145

Int. Cl. A61m *5/22*

U.S. Cl. 128—218 F **19 Claims**



An ampoule applicator comprising a hollow, cylindrical body having a chamber at one end for mounting a medicament-containing hypodermic ampoule having a depressible portion for injecting a volume of medicament into a patient. The applicator also includes a spring-biased force-applying member for actuating the ampoule. The force-applying member may be retracted against the bias of the spring by a cocking lever which rotates a pulley at one end of the applicator. A flexible cable is fixed at one end to the force-applying member and is fixed at its other end to the pulley so that, as the pulley is rotated, the cable is wrapped about the pulley and the force-applying member is retracted. A one-way check mechanism is provided between the force-applying member and the applicator body to permit retraction of the force-applying member but to prevent movement toward the ampoule during retraction. The one-way check mechanism includes a slot in the applicator body having tapered sidewalls which converge toward the ampoule-mounting end of the applicator and a ball which is positioned between the force-applying member and the body. The ball is spring-biased into light frictional contact with the force-applying member and the converging sidewalls of the slot, and is operable to roll along the slot toward the ampoule-mounting end of the applicator by forward movement of the force-applying member and into tight frictional contact with the force-applying member to prevent movement of that member toward the ampoule. The force-applying member is released by inserting a pin in the slot to move the ball away from the ampoule-mounting end of the applicator.

3,797,489

HYPODERMIC INJECTION DEVICE WITH SHOCK ABSORBING SPRING

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology, Inc., Bethesda, Md.

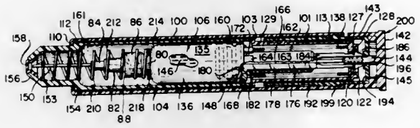
Filed Feb. 10, 1972, Ser. No. 225,123

Int. Cl. A61m *5/20, 5/24*

U.S. Cl. 128—218 F **6 Claims**

A hypodermic injection device is provided comprising a cylindrical holder closed at one end and slidably carrying an ampoule with attached cannula facing the closed end of the holder, medicament is provided in the ampoule between the cannula and the piston in the ampoule, a gun spring assembly

is associated with the holder and in operative association with the ampoule to force the ampoule and attached cannula forward thus driving the cannula out of the closed end of the



holder and into the locus of injection, and a counterbalancing spring is positioned in the holder between the closed end thereof and the cannula end of the ampoule to counteract the gun spring force.

3,797,490

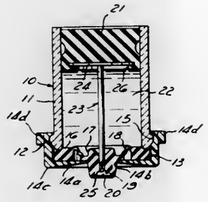
HYPODERMIC AMPOULE WITH SKIN TENSIONING CLIP

Alfred A. Hurschman, and Thomas P. Schiller, both of Streetsboro, Ohio, assignors to Ampoules, Inc., Macedonia, Ohio

Division of Ser. No. 114,493, Feb. 11, 1971, Pat. No. 3,735,761. This application Aug. 24, 1972, Ser. No. 283,581

Int. Cl. A61m *5/28*

U.S. Cl. 128—218 M **14 Claims**



Hypodermic ampoules of the contained-needle type, and combinations of such ampoules with so-called "applicators" for actuating the ampoules to make injections are disclosed. Each of several ampoule forms has at least one cylindrical, medicament-containing chamber and a plunger closing one end thereof. A hollow needle is fixed to the plunger and is initially contained within such a chamber. The other end of the ampoule is sealed by a diaphragm which is pressed against a beaded end portion of a cylinder and is sealed thereto by a cup-shaped clip which snaps over the beaded end portion to thereby compress the diaphragm against the end portion. The clip has a peripheral rim about a recessed bottom end which stretches the patient's skin to facilitate the injection. According to one aspect of the invention, such an ampoule is designed to perform a subcutaneous injection. According to a further aspect of the invention, such an ampoule is designed to perform an intramuscular injection. According to a still further aspect of the invention, the ampoule includes multiple chambers for premixing a medicament with at least one other medicament and injecting the mixture, either subcutaneously or intramuscularly. Applicators designed to receive and hold the several forms of ampoules and to actuate them as required by their particular forms and functions provide several applicator-ampoule combinations of novel structure and functions.

3,797,491

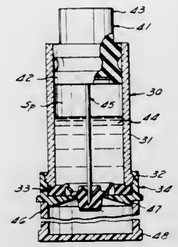
METHOD OF PERFORMING AN INTRAMUSCULAR INJECTION

Alfred A. Hurschman, Streetsboro, Ohio, assignor to Ampoules, Inc., Macedonia, Ohio

Division of Ser. No. 114,493, Feb. 11, 1971, Pat. No. 3,735,761. This application Aug. 24, 1972, Ser. No. 283,504

Int. Cl. A61m *5/28*

U.S. Cl. 128—218 DA **1 Claim**



Hypodermic ampoules of the contained-needle type, a method of assembling and filling such ampoules, and combinations of such ampoules with so-called "applicators" for actuating the ampoules to make injections are disclosed. Each of several ampoule forms has at least one cylindrical, medicament-containing chamber and a plunger closing one end thereof. A hollow needle is fixed to the plunger and is initially contained within such a chamber. The other end of the ampoule is sealed by a diaphragm which is pressed against a beaded end portion of a cylinder and is sealed thereto by a cup-shaped clip which snaps over the beaded end portion to thereby compress the diaphragm against the end portion. The clip has a peripheral rim about a recessed bottom end which stretches the patient's skin to facilitate the injection. According to one aspect of the invention, such an ampoule is designed to perform a subcutaneous injection. According to a further aspect of the invention, such an ampoule is designed to perform an intramuscular injection. According to a still further aspect of the invention, the ampoule includes multiple chambers for premixing a medicament with at least one other medicament and injecting the mixture, either subcutaneously or intramuscularly. Applicators designed to receive and hold the several forms of ampoules and to actuate them as required by their particular forms and functions provide several applicator-ampoule combinations of novel structure and functions.

3,797,492

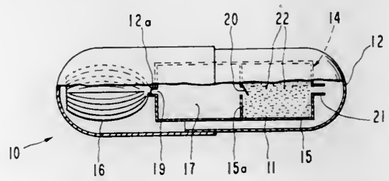
DEVICE FOR DISPENSING PRODUCT WITH DIRECTIONAL GUIDANCE MEMBER

Virgil A. Place, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Dec. 27, 1972, Ser. No. 318,900

Int. Cl. A61m *5/00*

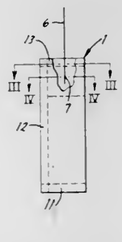
U.S. Cl. 128—260 **13 Claims**



A drug product dispensing device is comprised of a product compartment having a metering means for dispensing its

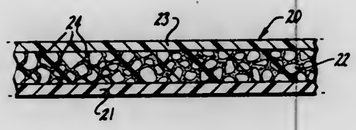
product in a body cavity, and a propellant compartment communicating with the product compartment for producing a propellant. In one embodiment, a self actuated valve is positioned between the product and the propellant compartment for directing the flow of propellant into the product compartment. In another embodiment, a slidable piston is positioned in the product compartment for receiving the flow of propellant moving into the product compartment. A collapsed bag is joined to the propellant compartment with the bag capable of being inflated by a propellant from the propellant compartment to maintain the device in a product receptive area. The device is optionally housed in a bioerodible container and released therefrom prior to its dispensing a product. In both embodiments of the device, product is moved through the metering means by propellant either moving through the valves or against the piston to urge product through the means.

3,797,493
SINGLE USE CONTAINER, ESPECIALLY FOR PHARMACEUTICAL MATERIAL
Everett C. Saudek, 1613 Timberlane Dr., Portage, Mich.
Filed Nov. 20, 1970, Ser. No. 91,495
Int. Cl. A61m *7/00*; **B65d** *33/38*
U.S. Cl. 128—260 **19 Claims**



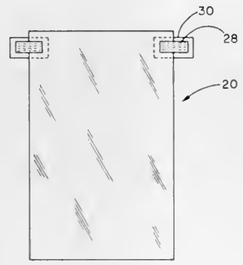
Single use container, especially for a pharmaceutical material. A heat sealable envelope is formed with the material to be dispensed inserted therein. A cord, which is looped or knotted, is positioned with the loop or knot within the envelope and the cord is arranged to extend outwardly thereof. Pulling of the cord outwardly of the envelope causes the loop or knot to rupture a portion of the envelope and the material can then be squeezed therethrough for use as desired.

3,797,494
BANDAGE FOR THE ADMINISTRATION OF DRUG BY CONTROLLED METERING THROUGH MICROPOROUS MATERIALS
Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. Nos. 812,116, April 1, 1969, Pat. No. 3,598,122, and Ser. No. 812,117, April 1, 1969, Pat. No. 3,598,123, and Ser. No. 150,085, June 4, 1971, Pat. No. 3,731,683. This application Aug. 9, 1971, Ser. No. 169,976The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. A61l *15/06*
U.S. Cl. 128—268 **7 Claims**



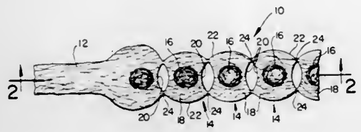
A bandage for use in the continuous administration of drugs to the skin or mucosa, comprising a backing member defining one exterior surface, a surface of pressure-sensitive adhesive defining a second exterior surface, and disposed therebetween a reservoir containing drug formulation confined therein. The reservoir can comprise a distinct layer of the bandage or a plurality of microcapsules distributed throughout the adhesive surface, and in either case the drug can be confined within an interior chamber of the reservoir or distributed throughout a reservoir matrix. The drug passes through drug release rate controlling microporous material which continuously meters the flow of drug by viscous or diffusive transfer to the skin or mucosa at a controlled and predetermined rate over a period of time.

3,797,495
PRESSURE SENSITIVE ADHESIVE TAPE AND DISPOSABLE DIAPER
George F. Schmidt, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Feb. 1, 1973, Ser. No. 328,731
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **10 Claims**



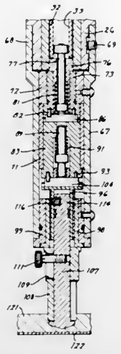
Pressure sensitive adhesive tape having a backsized, reinforced fibrous backing, a pigmented, plasticized polyvinyl chloride backsize, a release coat of silicone rubber, and an aggressively tacky adhesive of a block copolymer of isoprene and styrene tackified with a polyolefin and plasticized with an extended oil. Particular utility as a disposable diaper fastener is disclosed.

3,797,496
POST-EXTRACTION PADS
Vincent R. Loiacono, New London, Conn., assignor to Physio Medics, Inc., New London, Conn.
Filed May 6, 1972, Ser. No. 251,017
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 **21 Claims**



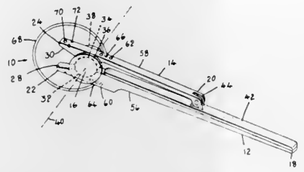
An anatomically contoured post-extraction pad made by compressing a piece of absorbent material to form an absorbent portion surrounded by a marginal portion of substantially greater density. The marginal portion is cut to generally complement facial contours of teeth adjacent an alveolus or tooth socket, whereby the pad is retained by and between the aforesaid teeth with its absorbent portion disposed in the alveolus. Assemblies of series connected pads may be provided for use in multiple extraction.

3,797,497
DRILL LIKE DRIVING DEVICE
Paul E. Crim, Portage, and Wayne Warfield, Kalamazoo, both of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed Feb. 28, 1972, Ser. No. 229,680
Int. Cl. A64b *17/16*; **F16h** *37/06*
U.S. Cl. 128—310 **4 Claims**



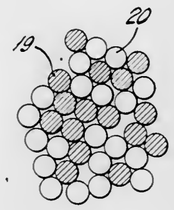
A driving device including a right-angle handpiece assembly having a casing containing an input shaft, an output shaft and means drivingly connecting same. A bone drill attachment is connectible to the handpiece assembly and includes a cylindrical extension mountable upon the output end of the casing and concentric inner and outer drill bits which project from said extension. The inner drill bit is connectible to the output shaft by a pair of clutch mechanisms which are normally spring-biased into a disconnected position. The outer drill bit normally rotates with the inner drill bit but is permitted to move axially and angularly relative to the inner drill bit through a predetermined distance. The cutting end of the inner drill bit extends axially beyond the cutting end of the outer drill bit. Alternately, a wire driving attachment can be connected to the handpiece assembly and includes a chuck structure mountable upon the output end of the casing and drivingly connectible to the output shaft. The chuck structure has a continuous opening therethrough which aligns with a through opening in the casing for receiving therein an elongated member, such as a wire.

3,797,498
PIVOTAL SURGICAL CLIP
David Joseph Walsh, Mississauga, and Harry Sydney Kerr, Willowdale, Ontario, both of Canada, assignors to Kerr Instruments Limited, Willowdale, Ontario, Canada
Filed June 29, 1972, Ser. No. 267,554
Claims priority, application Canada, June 9, 1972, 144289
Int. Cl. A61b *17/12*
U.S. Cl. 128—325 **14 Claims**



This invention relates to a surgical clip which may be attached to a blood vessel to block or restrict the flow of blood through the blood vessel. The clip comprises first and second elongated opposed members, pivot means located between the two opposed members which permit relative pivotal movement of the two members in a common plane, adjustable spring means urging the two opposed members to pivot about the pivot means to a closed position, and an enlongated blade member pivotally connected to the forward end of one of the two opposed members. The blade member has one elongated blade surface and the other opposed member has a second matched blade surface, between which the blood vessel is clamped. The fact that the blade member is pivotally connected to one of the opposed members permits the blade member to rotate slightly in the plane of the first and second opposed members to more evenly distribute the compressive force of the spring means across the blood vessel in the closed position. This avoids pinching of one portion of the blood vessel, and substantially reduces the possibility of injury or damage to the blood vessel. One of the blade surfaces has a channel with a uniform concave cross-section extending along a portion of its length. The wall of the clamped blood vessel bulges into the channel to securely laterally retain the clip on the blood vessel. A second embodiment of the invention has lips on opposite ends of one of the blade surfaces to maintain the blade surfaces in a predetermined spaced relationship, in the closed position.

3,797,499
POLYLACTIDE FABRIC GRAPHS FOR SURGICAL IMPLANTATION
Allan K. Schneider, Wilmington, Del., assignor to Ethicon, Inc., Somerville, N.J.
Division of Ser. No. 36,797, May 13, 1970, Pat. No. 3,636,956. This application Oct. 6, 1971, Ser. No. 187,039
Int. Cl. A61l *15/04*, *17/00*
U.S. Cl. 128—334 R **6 Claims**

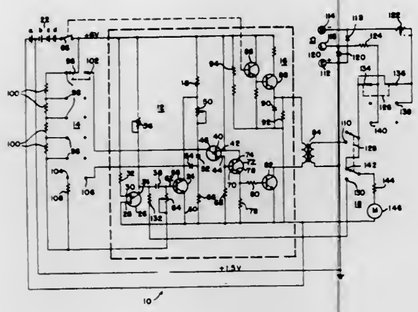


Absorbable surgical sutures that are dimensionally stable within the body may be prepared by the extrusion of polylactide polymer, including copolymers of L(−) lactide with up to 35 mole percent of glycolide. Said polymers are characterized by an inherent viscosity of at least 1.0, and the extruded filaments are oriented by drawing at a temperature of about 50° to about 140° at a draw ratio of up to 11×, and annealed. Sutures so prepared have a tensile strength of from 25,000 p.s.i. to 100,000 p.s.i.

3,797,500
MANDIBLE STIMULATOR
James D. Porter, Seattle, Wash., assignor to Dr. Bernard Jankelson, Seattle, Wash.
Filed Dec. 29, 1969, Ser. No. 888,271
Int. Cl. A61n *1/36*
U.S. Cl. 128—422 **14 Claims**

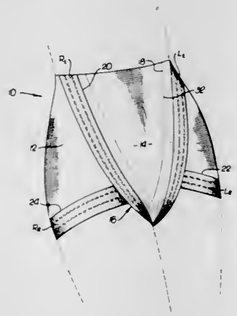
The mandible stimulator includes a pulse burst generator including a first solid state oscillator which modulates a second solid state oscillator. A coupling switch device between the two oscillators is connected to a pulse control circuit to vary

the number of pulses in each output burst. The pulse generator controls the output from an amplitude control circuit



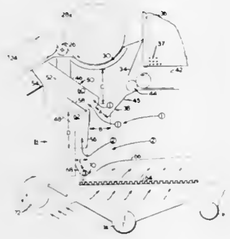
through an output transformer to an output electrode assembly. A test circuit is connected to measure the current flow through the output electrodes.

3,797,501
PANTY GIRDLE
Flavia Di Tullio, New York, N.Y., assignor to Munsingwear, Inc., Minneapolis, Minn.
Filed Dec. 26, 1972, Ser. No. 317,934
Int. Cl. A41c *1/02*
U.S. Cl. 128—528 **6 Claims**



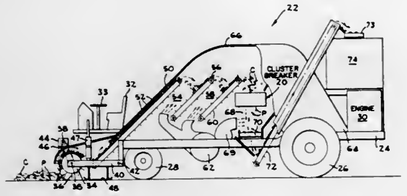
This improved panty girdle comprises a pair of leg forming components which define the skeletal structure of the girdle. The components each comprise a band of material having one end turned and closed upon the band to form a "*d*" and a "*b*" shaped configuration. The looped portions of the bands are joined together to form a conformable and comfortable crotch region, with the tail pieces of the components extending generally diagonally upwardly at places on the waistband located in juxtaposed relationship to the bony protuberance of the hip bone. A central control panel is inserted between the upwardly extending tail pieces, and a back panel completes the garment with frontally extending portions. The leg forming elements are made of stretch yarn and the remaining portion of the girdle is formed of two way stretch material. A balance of control is achieved between the stretch yarn band and its anchoring arrangement along with the stretch characteristics of the main body of the girdle.

3,797,502
PNEUMATIC CLASSIFIER FOR ROTARY THRESHING MACHINE
William B. Reed, and Floyd W. Bigsby, both of Saskatchewan, Canada, assignors to Western Roto Thresh Ltd., North Saskatoon Saskatchewan, Canada
Filed Mar. 9, 1972, Ser. No. 233,259
Claims priority, application Canada, Mar. 2, 1972, 136064
Int. Cl. A01f *12/24*
U.S. Cl. 130—27 R **4 Claims**



A pneumatic two-stage aspirator is provided for threshing machines to remove material other than grain from grain. The aspirator is placed below the concave of the threshing cylinder and a fan and baffle means create two levels of air suspension below the concave and through which the grain and chaff must fall. The material other than grain that is not removed in the first or upper level of air suspension is subjected to a further pneumatic suspension at the lower or second level.

3,797,503
CLUSTER BREAKER
Willy G. A. Dentant, St. Niklaas, and Gustaaf M. Persoons, Merksem, both of Belgium, assignors to International Machinery Corporation S.A., St. Niklaas-Waas, Belgium
Filed July 31, 1972, Ser. No. 276,868
Int. Cl. A01g *19/00*
U.S. Cl. 130—30 R **11 Claims**

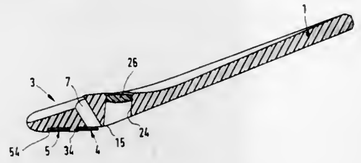


Pod type vegetables are deposited singly and in clusters on a cluster breaker composed of a plurality of layers of spaced guide tracks. Endless conveyors guided by the tracks in their associated layers have cluster engaging pins projecting upwardly therefrom and have certain adjacent runs in the same layers moving in opposite directions. Pairs of driven cutters straddle each conveyor run at its downstream end for cutting each cluster into pieces allowing the individual pieces to fall downwardly for collection and allowing partial clusters cut from a larger cluster in the upper layer to fall downwardly to straddle a conveyor run in the next lower level for further separation.

3,797,504
SMOKING ARTICLES
Ivor Wallace Hughes, and Sydney James Green, both of London, England, assignors to Brown and Williamson Tobacco Corporation, Louisville, Ky.
Continuation of Ser. No. 885,615, Dec. 16, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 215,116
Int. Cl. A24d *01/02*
U.S. Cl. 131—15 B **1 Claim**

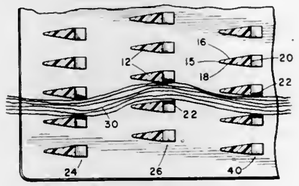
A smoking article is disclosed wherein a constant supplementary air supply is afforded to the rear of the burning coal and through the combustible wrapper. The wrapper is modified to effect this by being treated with sodium or potassium chlorate in two longitudinally extending areas 40mm long and 5mm wide disposed rearwardly of the end to be lit. The concentration of the chlorate salt in the treated areas is from 0.1 to 0.7 mg per square centimeter. During smoking, the treated areas in the vicinity of the burning coal open to provide external air ingress apertures for the stated purpose.

3,797,505
PLANING INSTRUMENT FOR CALLOUSED SKIN
Heinz Gilhaus, Eichendorff-Strasse 9, 565 Solingen, Germany, and Maxence Villiers, 28, rue du Grenier St. Lazar 7/, 75 Paris, France
Filed Aug. 7, 1972, Ser. No. 278,484
Claims priority, application France, Aug. 10, 1971, 71.29190; Germany, Mar. 29, 1972, 2215376
Int. Cl. A45d *29/04*
U.S. Cl. 132—76.4 **16 Claims**



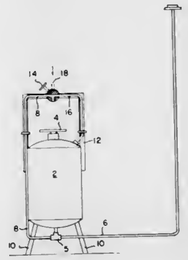
A planing instrument for corns in which a cutting blade is held by a clip to a planing head. The clip is of U-shaped section with side pieces which are sufficiently large to be readily gripped in one hand to remove the clip for blade replacement purposes. A transverse slot is formed in the planing head adjacent the blade and a portion interconnecting the planing head with a handle is formed with a lens. The head, interconnecting portion and the handle are formed of clear plastics to enable the planing operations to be viewed easily by a user of the instrument.

3,797,506
HAIR CLEANING IMPLEMENT
Arnold Otto Winfried Reinsch, 131 Carousel Ln., Del Mar, Calif.
Filed Oct. 27, 1972, Ser. No. 301,465
Int. Cl. A45d *24/04*
U.S. Cl. 132—137 **7 Claims**



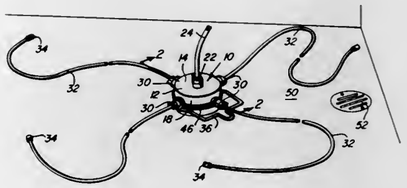
An implement for cleaning, massaging and grooming of the hair and scalp using a plurality of rows of tapered teeth. The teeth in cross-section have a sharply cutoff base portion which cooperates with the tapered sides of the teeth to produce a cleaning action on hair drawn over the teeth, and cause the foreign material on the hair and scalp to be deposited on the base portions of the teeth. The foreign material is removed from the instrument by drawing a flat tool across the base portions of the teeth in each row. The teeth are inclined from the perpendicular to the body of the implement to cause the hair to be drawn into the implement as it is utilized. Adjacent rows of teeth are staggered and spaced by at least one tooth width to increase the cleaning action.

3,797,507
APPARATUS FOR CLEANING ENGINES
Kenneth R. Jackson, Rt. 1, Box 50, Zillah, Wash.
Filed Sept. 30, 1971, Ser. No. 185,169
Int. Cl. B08b *3/08, 9/00*
U.S. Cl. 134—102 **3 Claims**



An apparatus for cleaning automobile engines or the like wherein solvent is forced into the lubrication system of the engine and drained through the bottom of the oil drain pan. Following the forcing of a fluid solvent through the engine a vaporized solvent is then used to reach portions not penetratable by liquids. The fluid and vapor are alternated until the engine is clean at which time oil is forced into the entire engine. The oil is introduced by the same apparatus used for cleaning and assures the introduction of lubrication to all parts when the engine is again started.

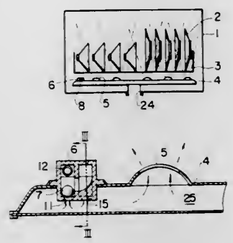
3,797,508
PORTABLE POOL CLEANER
Alexander J. Jacobs, 202 Orange Grove, San Fernando, Calif.
Filed Sept. 16, 1971, Ser. No. 181,057
Int. Cl. B08b *3/02, 9/00*
U.S. Cl. 134—167 R **8 Claims**



A portable cleaner for swimming pools has a housing with walls defining a chamber, and ballast arranged in the housing for permitting the housing to be freely supported on a bottom surface of a pool. The housing walls define an inlet opening for passing a fluid into the chamber, and a plurality of orifices and outlet openings for passing the fluid from the chamber. A diverter, which advantageously forms the ballast, is arranged in the housing chamber for diverting the fluid from the inlet

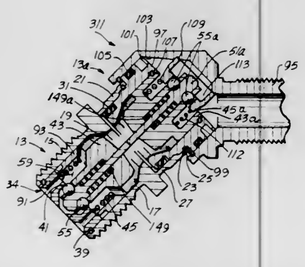
opening toward the outlet orifices and openings. The housing is provided with quick-disconnecting-type fittings for connecting supply and sweep hoses thereto, with the latter discharging fluid therefrom and causing agitation of the pool water.

3,797,509
TABLE WARE WASHER
Soichi Fukuzawa, and Ryoichiro Oshima, both of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 30, 1971, Ser. No. 176,068
Claims priority, application Japan, Aug. 28, 1970, 45-74867
Int. Cl. B08b *3/02*
U.S. Cl. 134—178 **7 Claims**



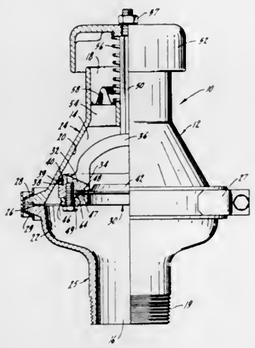
A device for alternately changing the swing direction of the nozzle arm provided with a plurality of nozzles and installed in a table ware washer; said device comprising two channels for conveying liquid to be jetted from said nozzles to swing the nozzle arm, each channel comprising a liquid inlet compartment and a liquid jet nozzle compartment, said two compartments being disposed opposite to each other with respect to the axis of the nozzle arm (e.g., when the nozzles of one channel are directed right with respect to the nozzle arm axis, the nozzles of the other channel are directed left with respect to the nozzle arm axis) so that the liquid flowing in said two channels is shut out alternately by the use of a ball. Thus, said device is capable of alternately changing the liquid jet direction and thereby changing the swing direction of the nozzle arm alternately.

3,797,510
CRASHWORTHY VALVE
Jorge Torres, Newbury Park, and George W. Lane, Camarillo, both of Calif., assignors to Purolator, Inc., Rahway, N.J.
Filed Oct. 28, 1971, Ser. No. 193,354
Int. Cl. F16k *17/40*
U.S. Cl. 137—68 **19 Claims**



A crashworthy valve comprising a valve body having a passage therein, a valve seat in the passage, a valve element mounted for movement in the passage and biased toward a closed position in which it is in engagement with the valve seat to close the passage. A coupling interconnects the valve body to a member which is adapted to carry fluid. The valve element is normally retained in an open position in which the valve element is spaced from the valve seat by at least a predetermined distance. The valve element is automatically released for movement to the closed position in response to relative axial movement between the valve body and the member of less than said predetermined distance.

3,797,511
COMBINATION PRESSURE-VACUUM RELIEF VENT-VALVE
Roger M. Selby, Munster, Ind., assignor to Union Tank Car Company, Chicago, Ill.
Filed Jan. 3, 1972, Ser. No. 214,905
Int. Cl. F16k *17/16*
U.S. Cl. 137—71 **6 Claims**

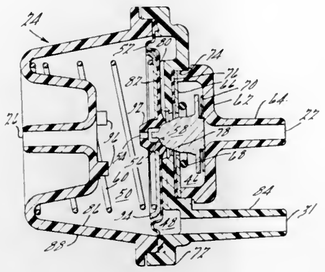


A combination pressure-vacuum relief vent-valve for use in preventing excess pressure or vacuum within a railway tank car. The vent-valve includes a valve chamber having a first end adapted to communicate with the interior of the tank and a second end adapted to communicate with the atmosphere. Valve plug means is positioned within the valve chamber having a first position preventing fluid communication therethrough and a second position permitting fluid communication therethrough. The plug means is spring biased towards its first position in a manner which permits the plug means to assume its second position, and thereby relieve vacuum in the tank, only when the pressure differential between the first and second ends of the chamber exceeds a predetermined value. The plug means further includes a frangible element associated therewith to relieve excess pressure build up in the tank.

3,797,512
VACUUM REDUCER VALVE
Frank J. Martin, Ann Arbor, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 14, 1973, Ser. No. 340,991
Int. Cl. G05d *11/00*; **F02d** *5/02*
U.S. Cl. 137—116.5 **4 Claims**

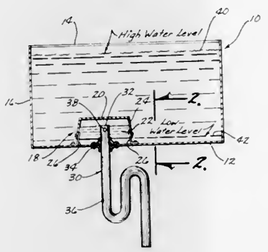
A three-chamber vacuum reducer valve is used in the distributor spark advance control system to provide a source of vacuum for advancing the spark firing during engine overheat conditions. The source of vacuum is greater than the ported spark vacuum found upstream of the throttle plate in a carbu-

retor intake and less than the manifold vacuum. One input to the reducer is the manifold vacuum and the other input is at-



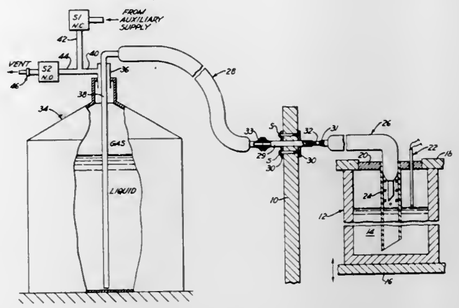
mosphere pressure which are combined by means of a regulator in the valve for producing an output vacuum which is reduced from the manifold vacuum.

3,797,513
DOSING SYPHON
Thamon E. Hazen, Ames, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa; by said Hazen
Filed Sept. 11, 1972, Ser. No. 287,672
Int. Cl. F04f *10/02*
U.S. Cl. 137—132 **6 Claims**



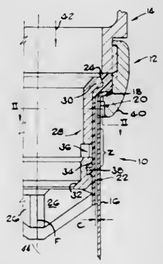
A dosing syphon for hydraulic transport of livestock and poultry wastes is disclosed. The dosing syphon comprises a fluid reservoir having a bell compartment means therein which is spaced from the bottom portion of the fluid reservoir. The bell compartment has a closed upper portion and a lower portion in communication with the interior of the housing for receiving fluid from the interior thereof. A substantiallly vertical conduit having an open upper end is positioned within the bell compartment and extends downwardly and outwardly through the housing. The vertical conduit includes a trap element for capturing a quantity of fluid therein. The vertical conduit has a fluid charging opening formed therein at the upper end therein above the bottom portion of the bell compartment so that a supply of fluid will be available to the trap while the fluid level rises within the bell compartment but before the fluid flows into the upper end of the compartment so that a constant supply of fluid will be available in the trap element.

3,797,514
AUTOMATED FILLER AND LEVER CONTROLLER FOR LIQUID NITROGEN
Robert E. Byers, New Kensington, and John Schmitt, Jeannette, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed June 27, 1972, Ser. No. 266,536
Int. Cl. B67d *5/54*
U.S. Cl. 137—212 **8 Claims**



A system of supplying a liquid to a relatively small use vessel, such as a point of use inside an instrument, from a relatively large supply vessel remote from the use vessel, such as a large flask external to the instrument. The invention comprises a fluids conduit system controlled by a circuit operated by changing liquid level in the use vessel to pressurize the supply vessel to thereby flow liquid over to the use vessel. The circuit includes an RC portion to set the length of time that liquid flows.

3,797,515
VACUUM BREAKER
Andreas Buhler, Krugersdorp, South Africa, assignor to Castle Brass Works (Proprietary) Limited, Factoria, Luipaardsvlei Transvaal Province, South Africa
Filed Aug. 30, 1972, Ser. No. 284,967
Claims priority, application South Africa, Aug. 30, 1971, 71/5788
Int. Cl. F16k *45/00*
U.S. Cl. 137—218 **2 Claims**



A vacuum breaker which has an inner member through which liquid flows, the inner member having a restricted outlet, a resiliently flexible sleeve closely fitting around the inner member, and a casing surrounding, with clearance, the sleeve. A ring of openings is formed in said member, and the sleeve and member sealingly engage with one another both upstream and downstream of the openings. When the interior of the member is under pressure, the sleeve is "bulged" outwardly into sealing contact with the casing by fluid passing through the openings. This cuts-off the communication which other-

wise exists, via said clearance, between air vents provided in the casing upstream of the openings and the interior of the breaker downstream of the outlet from the tubular member and sleeve. The outlet from the sleeve is normally closed by a plurality of flaps of the sleeve which are resiliently biased to their closed condition.

3,797,516

SYSTEM FOR CONTROLLING THE GAS PRESSURE IN A CLOSED GAS RECIRCULATION INSTALLATION

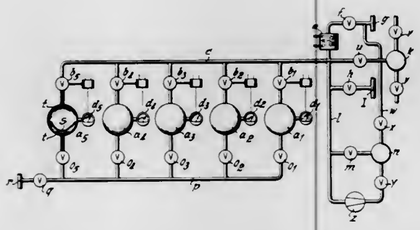
Siegfried Forster, Alsdorf, and Karl-Uwe Schneider, Betzdorf, both of Germany, assignors to Kernforschungsanlage Lulich Gesellschaft mit beschankter Haftung, Julich, Germany

Filed Sept. 13, 1971, Ser. No. 179,897

Claims priority, application Germany, Sept. 18, 1970, 2046078

Int. Cl. F16k *49/00*

U.S. Cl. 137—340 **18 Claims**



A system for controlling a closed gas-circulation installation, such as a gas-cooled nuclear reactor connected with a gas turbine for driving an electric generator, in which a bank or battery of pressure accumulators can be successively connected with the high-pressure side of the installation by individually set pressure-responsive valves for successive charging to different pressure levels when a charging valve common to the manifold of the accumulators is operated. When a discharging valve is operated, the manifold is connected to the low-pressure side of the installation and the accumulators successively discharge in stages. The system is used to control the rate of operation or to compensate for variations in the rate of operation of the turbine.

3,797,517

SELF-PROPELLED IRRIGATION APPARATUS

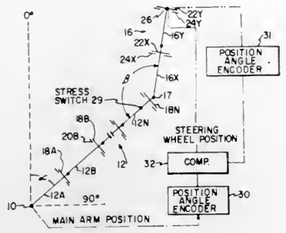
Robert J. Kircher, and Richard D. Setty, both of Sterling, Colo., assignors to Sterling Square Sprinkler Company, Inc., Sterling, Colo.

Filed Oct. 24, 1972, Ser. No. 300,426

Int. Cl. B05b *9/02*; **E01h** *3/02*

U.S. Cl. 137—344 **4 Claims**

Self-propelled irrigation apparatus for watering non-circular areas includes a main arm assembly pivoted at one end and supported at intervals by self-propelled support towers. An extension arm assembly, mounted on self-propelled support towers having steerable wheels, has one end pivotally connected to the free end of the main arm assembly for irrigating portions of the field outside the circular area traversed by the main arm. Electrical control means are provided to rotate the extension arm assembly relative to the main arm assembly as the latter rotates by turning the steerable wheels of the exten-



sion arm. The control means comprises a reversible motor energized by a circuit including banks of switches, the settings of which correspond, respectively, to the angular position of the main arm and the direction in which the steerable wheels are turned.

3,797,518

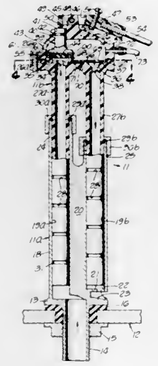
ADJUSTABLE HEIGHT BALLCOCK ASSEMBLY

James P. Holm, Fullerton; Rolland P. Van Gerpen, Los Angeles, and Maurice E. Paradis, Brea, all of Calif., assignors to Kirkhill Inc., Downey, Calif.

Filed Aug. 9, 1972, Ser. No. 279,201

Int. Cl. F16k *31/18*

U.S. Cl. 137—434 **16 Claims**



A ballcock assembly fabricated of a plastic material, in which the standpipe is unitized to include both the water supply line and tank delivery line, and is sectionalized to provide upper and lower sections telescopically interconnected for variable height adjustment to meet the different installation requirements necessitated by a variety of types and sizes of toilet flushing tanks.

The upper section of the standpipe carries a valve housing for a float-operated valve with an inlet flow throttling mechanism that operates in successive stages to first cause a greater than normal submergence of the float, and secondly to release the float for operation with a snap-action to move the valve to fully closed position.

Further, the assembly embodies innovations for substantially reducing the operational noises.

3,797,519

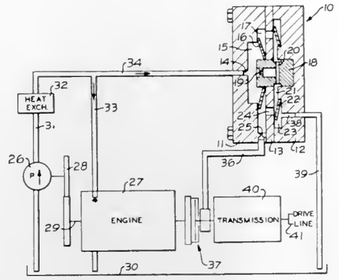
MULTISTAGE FLOW CONTROL VALVE

Thomas E. Allen, Mustang, Okla., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 5, 1971, Ser. No. 195,967

Int. Cl. F16k *15/08, 15/14*

U.S. Cl. 137—512 **7 Claims**



A multistage flow control valve utilizes a plurality of Belleville springs as valving elements which are positioned in a housing and responsive to successive predetermined pressures to divert fluid to selective successive outlets.

3,797,520

FLUID OPERATED LOGIC ELEMENTS

Simeon Lekarski, Saint-Cloud; Pierre Hardy, and Leon Hardy, both of Paris, all of France, assignors to Jean Gachot, Enghien-Les-Baines, France; a part interest

Filed June 30, 1971, Ser. No. 158,218

Claims priority, application France, July 2, 1970, 70.24652

Int. Cl. F16k *15/00*

U.S. Cl. 137—517 **1 Claim**

Fluid-operated logic elements are disclosed which comprise a compartment, a plurality of fluid passages communicating with the compartment and a member which is movable within the compartment by fluid from one of the passages to control the intercommunication between passages.

The member is magnetic and is arranged to coact magnetically with other magnetic means associated with the compartment to define at least one stable position for the member in the compartment. The number and relative positions of passages and the number of stable positions of the member determine the logical function of the element.

The elements can be combined in various ways to provide logic systems.

3,797,521

DISPENSING CLOSURE FOR PARENTERAL FLUID CONTAINER

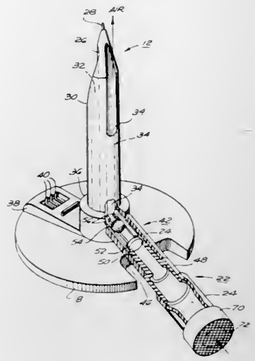
Olin B. King, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Filed Aug. 2, 1972, Ser. No. 277,243

Int. Cl. F16k *15/04, 15/14*

U.S. Cl. 137—525.7 **14 Claims**

The closure device has a novel, virtually leak-proof check-valve in its breather tube which allows air or other fluids to flow into the dispensing bottle to replace liquid which has been dispensed from the bottle, but does not allow liquid to flow out. The check-valve has a flexible disk which is seated against a valve-seat by a weighted ball. The ball travels inwardly away from the valve-seat and outwardly towards the valve-seat on longitudinal splines which form tracks on which the ball rolls. The weight of the ball forces the flexible disk against the seat until external pressure exceeds internal pressure by a moderate amount. Then, the ball moves upwardly



along the tracks, the disk lifts off of the valve-seat, and air or other fluids under pressure are allowed to enter the bottle. The valve-seat is formed by a sharp raised edge around the fluid passage hole. At the innermost ends of the splines are projections forming a stop for the ball. The other ends of the splines form a stop for the disk. When the ball rests against the disk, it depresses its center portion inwardly to form a tight seal against the raised ridge of the valve seat.

3,797,522

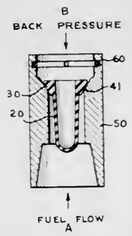
ANTI-KNOCK FLOW VALVE

William A. Carleton, Pine City, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 76,921, Sept. 30, 1970, abandoned. This application July 27, 1972, Ser. No. 275,594

Int. Cl. F16k *15/14*

U.S. Cl. 137—528 **1 Claim**



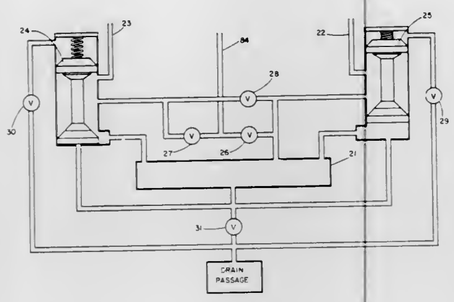
An automatic check valve operable to permit flow of a fluid through a passage in one direction and to prevent flow in the opposite direction with means for relieving back pressure is provided. The valve is fabricated from a flexible material and is of unitary design with an expandable tubular body which has a closed upstream end that tapers toward an open circular thick-walled downstream end. The tubular body of the valve expands to absorb shock waves generated by the valve under the influence of back pressure thereby eliminating the noise produced by the sonic hammer effect.

3,797,523

LOW PRESSURE DROP WATER SOFTENER VALVE ASSEMBLY WITH DUAL PISTONS

Earl P. Brane, 9470 Ulmerton Rd.; Douglas K. Brane, 280 Fourth St., N.W., both of Largo, Fla.; Robert E. Marsh, 5521 Willow View, Racine, Wis., and Hilton H. Hammond, 6644 Gulfport Blvd., St. Petersburg, Fla.

Filed Sept. 11, 1972, Ser. No. 288,116
Int. Cl. B01d *29/38*
U.S. Cl. 137—599.1 8 Claims



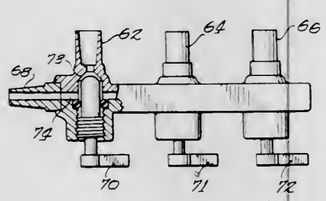
A water softener valve assembly for directing water flow for the softening of water and for the regeneration of the water softener tank. A housing has a pair of slidably mounted pistons which are movable to open and closed positions directing the flow of water. In the open position, the incoming hard water is directed to the soft water tank with a minimum length of travel and bends. Subsequent to the softening, the water is directed through the assembly and to the user. Various control valves are provided for directing brine into the water softener tank and for refilling the brine tank with water for regeneration of the water softener tank. During regeneration, the incoming hard water is directed through a bypass passage and immediately to the outlet in a hard condition preventing interruption of water flow to the user. Control valves are provided for controlling the movement of the pair of pistons.

3,797,524

FLUID METERING DEVICE

Edward T. Sanelli, Buffalo Grove, Ill., assignor to Reedmer Plastics Inc., Franklin Park, Ill.

Filed June 15, 1972, Ser. No. 263,153
Int. Cl. F16k *19/00*
U.S. Cl. 137—606 4 Claims



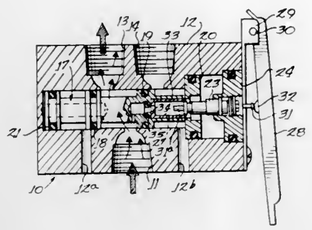
Metering apparatus for receiving fluid from one or more sources and delivering the fluid at a controlled rate through one discharge outlet. The apparatus is particularly useful for administration of parenteral solutions. Where the apparatus has a plurality of inlet ports, the flow of fluid through each port is capable of precise and separate control.

3,797,525

PILOT VALVE

Mathias J. Lieser, Chicago, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,527
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.6 2 Claims



A pilot valve construction is illustrated having a single inlet port and first and second outlet ports selectively to be in fluid communication with the inlet. A cylindrical bore passes through the valve body and a cylindrical slide element having enlarged diameter portions, acting as sealing walls, is slidable within the cylindrical bore so that fluid flow can pass through a shuttle chamber formed by two of the enlarged diameter portions. The slide element has one end thereof operatively associated with a fluid flow control chamber which receives a fluid pressure from the inlet port through a bleed passage. This causes the slide element to be shifted to a predetermined position. Upon venting or otherwise changing the pressure within the control chamber, the slide element will shift to a second position thereby changing the fluid flow from the first outlet port to a second outlet port. Fluid flow control means is associated with the control chamber to vary the pressure therein to cause movement of the slide element

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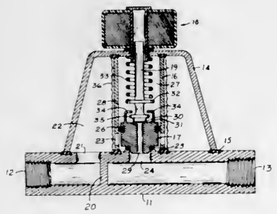
3,797,526

CAGE VALVE WITH PILOT AND MECHANICAL OPERATING MEANS

Edwin B. Champeon, R.R. Box 126, Port Byron, Ill.

Filed Aug. 21, 1972, Ser. No. 282,334
Int. Cl. F16k *31/40*
U.S. Cl. 137—630.14 3 Claims



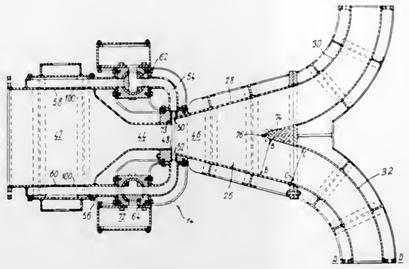
A valve of the cage type has a pilot control seal connected to a solenoid assembly for operation by usual pilot means for medium and high pressure systems and in addition has a lost-motion connection between the solenoid assembly and a control piston that contains the pilot control seal. After the pilot control seal is operated, the solenoid assembly applies force through the lost-motion connection to move the control piston to an open position to provide positive control when the pressure is too low to operate the valve by pilot means only.

3,797,527

LATERAL THRUST UNITS

Donald Cyril Bain, Gawcott, England, assignor to National Research Development Corporation, London, England

Filed Feb. 7, 1972, Ser. No. 224,075
Claims priority, application Great Britain, Feb. 10, 1971, 4377/71
Int. Cl. F15c *3/00*
U.S. Cl. 137—832 12 Claims



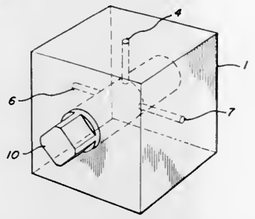
A digital rapid response lateral thrust unit in which the deliberately unstable nature of the design is overcome by bleeding off relatively large proportions of the incoming liquid flow for reintroduction as control jets. These jets are effective to divert the liquid flow to one or other of two tapering outlet ducts, the split flow zero thrust condition being achieved by cutting off the supply of control fluid and connecting together the discharge slots for the control jets. Use of the unit as a simple flow diverter in a liquid transfer assembly is also described.

3,797,528

VARIABLE FLOW FLUIDIC TRANSDUCER

Adolf F. Beckert, St. Paul, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Feb. 7, 1972, Ser. No. 222,416
Int. Cl. F15d *1/00*; G01b *13/00*
U.S. Cl. 138—46 3 Claims



A variable resistance fluidic transducer having a housing forming a generally cylindrical chamber, a spool positioned within the chamber, a circumferencial channel formed in the spool, an input port through said housing for supplying fluid to a metering slot formed in the spool, the metering slot cooperating with the channel, and a pair of outlet ports through said housing and cooperating with said channel for receiving the fluid and providing a differential output.

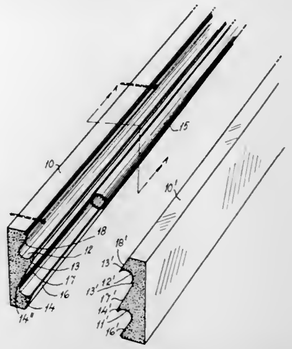
3,797,529

SUPPORTING AND INSULATING DEVICE FOR A PIPING SYSTEM

Sven Runo Vilhelm Gebelius, Fridhemsgatan 27, 112 40 Stockholm K., Sweden

Filed Dec. 17, 1971, Ser. No. 209,187
Int. Cl. F16l *9/22, 3/22*
U.S. Cl. 138—111 1 Claim

A supporting and insulating device for pipes comprising a pair of elongated, thermally insulating elements having joining faces presenting one or more lengthwise running grooves shaped to complement one another completely to embrace the pipe or pipes when the elements are placed together about the pipe or pipes, each of said groove or grooves being hook



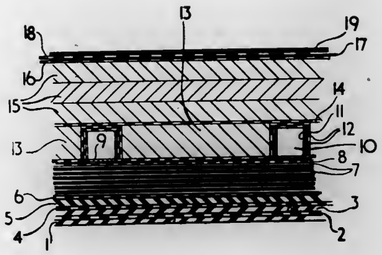
shaped in cross section and individually capable of supporting and locating a pipe inserted in the groove once the element has been fixed in position and prior to the other element being attached to it.

3,797,530

HOSE PIPES

John Ambrose, and Edmund J. Shephard, both of Brimsby, England, assignors to Dunlop Holdings Limited, London, England

Filed Apr. 12, 1971, Ser. No. 133,011
Claims priority, application Great Britain, Apr. 15, 1971, 17855/71
Int. Cl. F16l *11/00*
U.S. Cl. 138—137 7 Claims



A flexible hosepipe for carrying slurry or solid particles provided with a lining comprising a first layer of hard, abrasion and cut-resistant rubber and a second cushioning layer of soft rubber behind the first layer. The hosepipe may be self floating and each length may have end fittings connected during the assembly of the hose, of which the following is a specification.

3,797,531

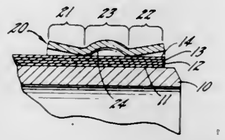
CLAMP AND REINFORCING RING FOR PIPE WRAPPING

Vernon R. Fencl, Northbrook, Ill., assignor to Grotnes Machine Works, Inc., Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 227,797
Int. Cl. F16l *9/04*
U.S. Cl. 138—147 3 Claims

A clamping and reinforcing ring for a pipe wrapped with high strength metal strapping. The clamping and reinforcing

ring comprises a unitary metal annulus which is fitted over the wrapped pipe, and having a concave inner surface in the central portion of the annulus. When the wrapped pipe is expanded in the radial direction, the concave portion of the annulus is deformed to increase the radius of curvature and



thereby produce a spring force pressing radially inwardly on the wrapped pipe. One or both peripheral portions of the annulus are bent outwardly away from the surface of the wrapped pipe to facilitate fitting of the ring over the wrapped pipe.

3,797,532

FILLING THREAD CLAMPING DEVICE FOR A SHUTTLELESS WEAVING MACHINE

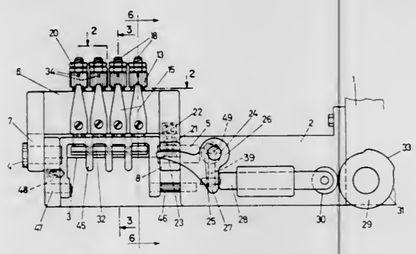
Paul Haltmeier, Brugg, Switzerland, assignor to Georg Fischer AG, Brugg, Brugg, Switzerland

Filed Sept. 23, 1971, Ser. No. 183,006

Claims priority, application Switzerland, Sept. 24, 1970, 14256/70

Int. Cl. D03d *47/34*

U.S. Cl. 139—194 **10 Claims**



A filling thread clamping device for a shuttleless weaving machine with selective filling insertion of the loop insertion principle, for periodical, simultaneous clamping of a plurality of filling threads between their stationary supply packages and the warp shed during each filling insertion, with a fixed and movable clamping part, actuated by the weaving machine in the cycle of the filling insertion.

3,797,533

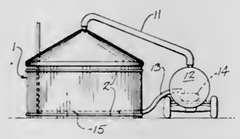
FOOD TREATMENT PROCESS AND APPARATUS

John J. Mackin, Jr., 907 E. Mason St., Green Bay, Wis.

Filed July 3, 1972, Ser. No. 268,492

Int. Cl. B65b *1/00*

U.S. Cl. 141—1 **5 Claims**



Brine treated cucumbers and the like are removed from the treating vat by flushing with additional brine from a receiving tank and providing a suitable transfer passage from the vat to the tank.

The vat has a generally conical cover sealed with the sides and with an outlet connection for a pipe to conduct overflow brine and cucumbers to a receiving tank.

3,797,534

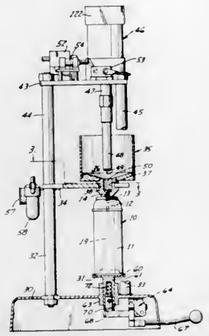
POWER OPERATED MEANS FOR FILLING AEROSOL CANS

Richard H. Skidmore, Lyndhurst, Ohio, assignor to Sprayon Products Inc., Bedford Heights, Ohio

Continuation of Ser. No. 803,665, March 3, 1969, abandoned. This application Feb. 1, 1971, Ser. No. 111,720

Int. Cl. B65b *3/12*

U.S. Cl. 141—3 **13 Claims**



An apparatus and method for filling aerosol cans containing a liquid propellent with a material to be dispensed in which a power operated piston is employed to force the material into the aerosol can through a discharge valve of the can. A substantially uniform force is applied to the piston to insure that essentially uniform quantities of material are injected into the can with each stroke of the piston.

3,797,535

FILLING PIPE-FREE FILLING STRUCTURE WITH SEPARATE CONDUITS FOR THE TENSION AND RETURN GAS AND FOR WITHDRAWING EXCESS FLUID

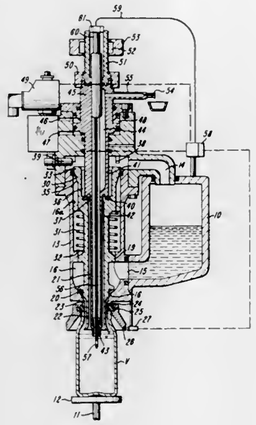
Klaus Kaiser, Bad Kreuznach, Germany, assignor to Seitz-Werke & GmbH, Bad Kreuznach, Germany

Filed Feb. 18, 1971, Ser. No. 116,464

Claims priority, application Germany, Feb. 20, 1970, 2007896

Int. Cl. B65b *31/06*

U.S. Cl. 141—46 **5 Claims**



A filling device for filling containers, such as bottles, in which a return conduit extends into the container being filled

and leads therefrom to a discharge region. A liquid level detecting element is disposed at the lower end of the return conduit and senses the rising liquid level in the container and controls the supply of liquid thereto.

3,797,536

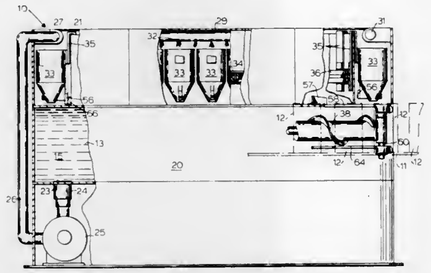
HIGH-SPEED LIQUID DISPENSER

Peter J. Pinto, Union City; Donald M. King, Alameda, and Roy B. McCarthy, San Leandro, all of Calif., assignors to Leslie Salt Co., San Francisco, Calif.

Filed Sept. 2, 1971, Ser. No. 177,366

Int. Cl. B67c *3/20*; **B67d** *5/02*; **B65b** *3/06, 3/32*

U.S. Cl. 141—134 **12 Claims**



A high-speed device for dispensing a volumetrically measured liquid charge into each of a series of containers. A continuous chain moves a series of dispensing units around a closed path that overlies a container conveyor line. Each unit measures its charge and spills any excess back to the supply. Each conveyed container is aligned with one dispensing unit and moves with it in alignment along a straight path; the container actuates an outlet from the unit through which the liquid is dispensed into the container.

3,797,537

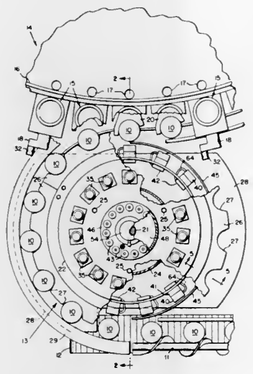
NO-CAN NO-FILL FEEDING STAR WHEEL

Adelmar Faessler, Rochester, and Stewart E. Engle, Fairport, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,588

Int. Cl. B65b *57/02*

U.S. Cl. 141—142 **17 Claims**



A no-can no-fill mechanism is incorporated in a star wheel which feeds containers to a rotating filling wheel. A fluidic sensor, a cam, and control means for moving the cam are positioned at each pocket on the star wheel. The cams are normally in position to open filling valves on the filling wheel. When one of the pockets does not pick up a container at the normal point, the sensor and control means at that pocket move the corresponding cam to an inoperative position, so that a filling valve will not be opened at an empty filling station on the filling wheel.

3,797,538

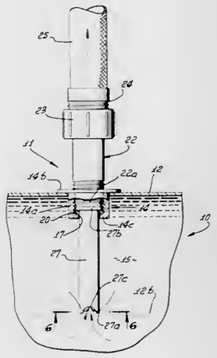
FILLER-SIPHON ASSEMBLY FOR A WATER BED

Carlos A. Mollura, 2824 Del Oro Ln., Fullerton, Calif.

Filed Aug. 9, 1971, Ser. No. 170,216

Int. Cl. A47c *17/86, 27/00*; **A61g** *7/00*; **B67d** *5/02, 5/37*

U.S. Cl. 141—313 **3 Claims**



A filler-siphon assembly for a water bed includes an adapter body bonded to the mattress and extending through an opening therein. A hose connecting nipple and clamp nut thread into the adapter body to fill the bed, and cooperate with a notch-ended dip tube inserted through the adapter body into the mattress interior to empty the bed. A plug is tool-inserted into the adapter body to seal the water bed when filled.

3,797,539

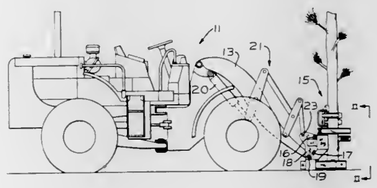
PULPWOOD HARVESTER

Raymond L. Moser, Tremont, and Dorrance Oldenburg, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 829,882, June 3, 1969, abandoned. This application Sept. 30, 1971, Ser. No. 185,377

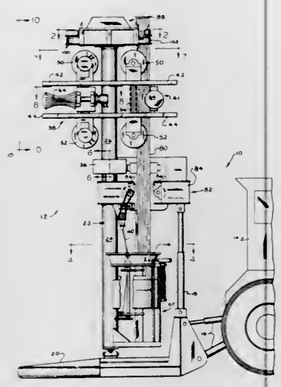
Int. Cl. A01g *23/08*

U.S. Cl. 144—3 D **19 Claims**



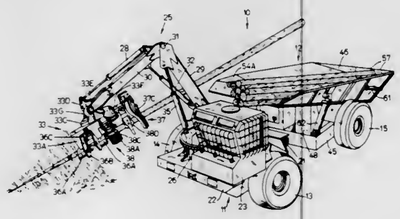
A pulpwood harvester mounted on a vehicle and comprising a set of delimbing blades, a set of rollers for moving a tree trunk past the delimbing blades, and a cut-off blade for severing the trunk near the ground.

3,797,540
TIMBER HARVESTING MACHINE
Robert L. Propst, 2347 Londonderry Ave., Ann Arbor, Mich.
Filed Apr. 10, 1972, Ser. No. 242,732
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D 13 Claims



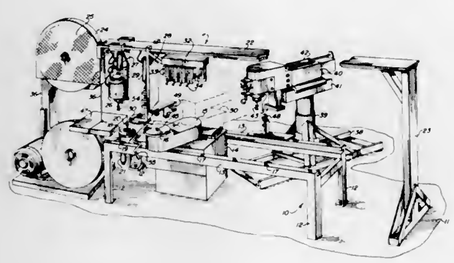
A machine for converting standing trees into logs of predetermined length comprising a tree severing and processing assembly mounted on the front end of a vehicle. The assembly includes a tree severing unit located close to the ground, an upright mast, tree gripping and feeding assemblies rotatably mounted on the mast, tree delimbers on the mast corresponding to the gripping and feeding assemblies, a tree cutoff unit, and a log storage rack arranged so that the assembly has a tree severing station and a tree processing station. At the tree severing station, the tree is severed from the ground, and lifted while being maintained in a vertical position. The severed tree is then rotated about the mast to the processing station where it is fed downwardly through a delimbing unit which functions to remove limbs from the tree and past the cutoff unit which functions to cut the tree into log lengths. The thus formed logs are then stored temporarily in the log storage rack and periodically ejected therefrom for use, such as in a pulp paper plant.

3,797,541
MACHINE FOR HARVESTING AND ACCUMULATING TREES
John Kurelek, Brantford, and Victor E. Locker, St. George, Ontario, both of Canada, assignors to Koehring Company, Milwaukee, Wis.
Filed Dec. 15, 1972, Ser. No. 315,564
Int. Cl. A01g *23/08*
U.S. Cl. 144—3 D 14 Claims



A tree harvesting machine of the articulated type having a boom mounted tree-processing means at its front end and a felled tree accumulating box at its rear end. The tree-processing means is selectively rotatable on the boom and comprises selectively operable releasable gripping means, severing means, propelling means and delimbing means. The accumulating box comprises an upwardly tilted trough open at its front end and log directing means in the form of a downwardly sloped ledge are provided adjacent the open end of the trough. A tailgate is provided at the rear end of the trough. The forward end of the box is upwardly movable by hydraulic cylinders to increase trough tilt during unloading. In the method of operation, a standing tree is grasped by the gripping means, severed from its trunk while upright, tipped forwardly to felled position by rotation of the gripping means so that its severed or butt end faces the box, and moved axially rearwardly and upwardly by the propelling means over the log directing ledge near the box, while the limbs are simultaneously removed by the delimbing means. When the center of gravity of that portion of the severed tree which is to be loaded in the box has moved past the ledge, the severing means are operated to cut off the said portion of the tree which portion tips over the ledge and falls into the box. The machine is usable to harvest entire trees with only the upper end being topped. Or, a tree may be cut into desired lengths as it is moved by the propelling means.

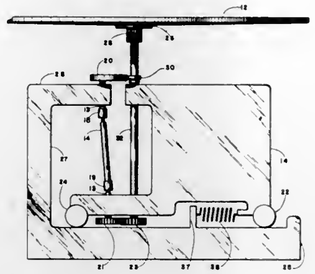
3,797,542
REEL FLANGE MANUFACTURING MACHINE
Paul R. Wood, 4098 No. 35th Ave., Phoenix, Ariz.
Filed Oct. 10, 1972, Ser. No. 296,236
Int. Cl. B27c *9/04*
U.S. Cl. 144—4 10 Claims



A reel flange manufacturing method and machine for simultaneously cutting, shaping and grooving blanks into finished reel flanges.

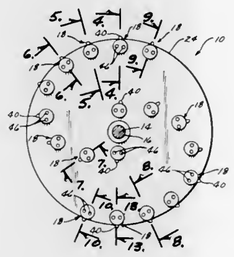
3,797,543
MATERIAL SHAPING PLATFORM WITH MULTIPLE OR EXCHANGEABLE TEMPLATES
Friedrich Peter Schell, 4313 San Bernardino Ave., Las Vegas, Nev.
Continuation-in-part of Ser. Nos. 129,507, March 30, 1971, and Ser. No. 198,727, Nov. 15, 1971, abandoned. This application Dec. 30, 1971, Ser. No. 214,007
Int. Cl. B27c *5/02*
U.S. Cl. 144—145 10 Claims

A rotatable and reciprocating device for supplying material workpieces to be shaped to a shaping tool comprises a platform to which the workpieces are attached, a template disposed adjacent the platform, a guide member abutting the template, and a biasing means cooperating with the platform for constantly maintaining the template and guide member in abutment. In one embodiment, the guide member or template are attached to an axle for the rotatable platform while the other of these members is secured to a stationary member. In



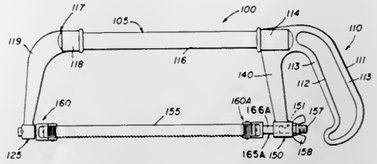
another embodiment, a plurality of template surfaces are attached directly to the platform and arranged in a vertical stack relative to the platform surface or arranged horizontally thereon. A further embodiment includes a pivotal carriage.

3,797,544
CUTTER DISC
Alonzo Ver Ploeg, Rt. No. 1, Pella, Iowa
Filed July 21, 1972, Ser. No. 274,082
Int. Cl. B27g *13/04*; A01g *23/06*
U.S. Cl. 144—235 10 Claims



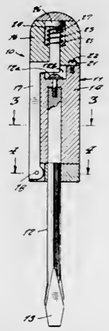
A stump cutting machine includes a rotatable cutter disc having a plurality of cutter tools on opposite sides thereof and each of the tools includes a bit holder having half sections for clamping the shank of a bit therebetween in a slot formed in the mating face of one of the half sections. The mating faces of the half sections are in a plane extending at an angle to the disc such that the bit extends at an angle to the disc and radially outwardly from the disc center axis of rotation. The bit holder may be turned between two positions 180 degrees apart and the bit will extend outwardly relative to the disc in one position and inwardly relative to the disc in the other position. A pair of bolts extend through the holder half sections and the disc to connect two holders on the disc on opposite sides thereof. The depth of the slot perpendicular to the face thereof is less than the thickness of the bit shank to assure clamping action by the two half sections when drawn tightly together. The bits include a cutting head having a depth limiting shoulder such that all bits extend uniformly into the bit holders at equal distance and are limited by the shoulders engaging the outer edge of the holder.

3,797,545
BLADE HOLDER
Raymond C. Dreier, Chicago, Ill., assignor to Dreier Brothers Inc., Chicago, Ill.
Division of Ser. No. 228,224, Feb. 22, 1972. This application Mar. 15, 1973, Ser. No. 341,365
Int. Cl. B27b *21/02*
U.S. Cl. 145—33 A 4 Claims



A blade holder for a handsaw construction for holding a saw blade having an aperture in one end thereof, the handsaw construction including a longitudinally extending saw frame having a handle at the rear end thereof and a front leg at the front end thereof and a rear leg intermediate the front leg and the handle, tensioning means on at least one of the legs for securing thereto the other end of the saw blade and a blade holder on the other of the legs for securing thereto the one end of the saw blade, the blade holder including a first clamping member engaged by the other leg and having a first clamping surface with an elongated opening therein, the first clamping surface supporting the saw blade thereagainst with the aperture therein overlying the opening, a second clamping member shiftably mounted on the first clamping member and having a second clamping surface for cooperation with the first clamping surface to hold the saw blade therebetween with a finger on the second clamping surface extending therefrom, movement of the finger toward the one leg camming the first and the second clamping surfaces toward each other and against the associated saw blade, the second clamping member being movable between a saw blade receiving position and a saw blade clamping position, operation of the tensioning means to tension the saw blade moves the finger and cams the clamping members to the clamping positions thereof with the saw blade clamped therebetween. The second clamping member may be mounted on the first clamping member for pivotal or shiftable movement with respect thereto.

3,797,546
LEVERAGE OPERATED SCREWDRIVER
Andrew T. McGee, c/o George Spector, 3615 Woolworth Bldg., 233 Bdwy., New York, N.Y.
Filed June 6, 1972, Ser. No. 260,212
Int. Cl. B25g *1/00*
U.S. Cl. 145—61 L 4 Claims



A screwdriver of improved design and which is of the type wherein the screwdriver handle consists of two sections placed

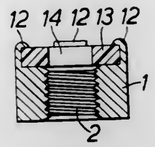
with ends adjacent each other, one section being secured to the screwdriver shank and the other being sidewardly pivotable to form a leverage arm to exert a stronger turning force on the tool.

3,797,547

METHOD OF PRODUCING A LOCKING NUT WITH AN INSERT

Katsumi Shinjo, 8,6-Chome, Asahi Minamidori, Nishinariku, Japan

Filed May 10, 1971, Ser. No. 141,687
Int. Cl. F16b *39/284*
U.S. Cl. 151—7 3 Claims



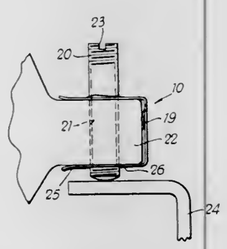
A method of producing a locking nut with a resilient insert on its face is disclosed. An ordinary four-sided nut is pressed between a die provided with a flared opening, and a punch provided with a tapered lower end to match the shape of the die. Each corner of the nut is drawn to produce outwardly opening thin tabs, which tabs are subsequently folded over an insert placed on the nut.

3,797,548

SPRING CLIP

Barry Roger Michael Barnett, West Drayton, England; Clifford Alexander Seckerson, deceased, late of Iver Heath, England; Teresa Agnes Seckerson, and Michael Alexander Seckerson, both of Iver Heath, England, assignors to TRW Inc., Cleveland, Ohio

Filed July 13, 1972, Ser. No. 271,333
Claims priority, application Great Britain, July 29, 1971, 35694/71; Jan. 17, 1972, 2141/72
Int. Cl. F16b *37/04*
U.S. Cl. 151—41.75 5 Claims



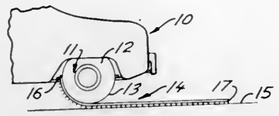
A threaded fastener passing through a bore in a member is axially loaded by a spring metal clip. The clip has two spaced, substantially parallel arms joined by a vertical web and the arms have aligned fastener receiving openings formed therethrough. The clip is mounted on the member with the openings in the arms disposed at opposite ends of the bore. One of the arms is divided into two sections by a slot passing through the opening therein and into the web. The sections of the latter arm are engaged by the threaded fastener and spread apart both radially and axially and thereby exert a vibration resisting tension on the threaded fastener.

3,797,549

DETACHABLE TREAD DEVICES FOR AUTOMOBILE TIRES

Friedel Lieberum, 211 St. Patrick's Ave., North Vancouver, B.C., Canada

Filed June 12, 1972, Ser. No. 262,003
Int. Cl. B60c *27/06*
U.S. Cl. 152—175 7 Claims



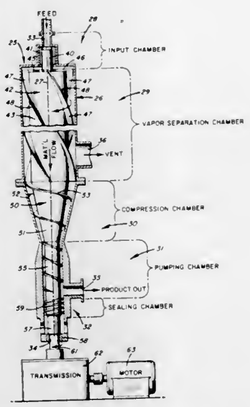
Detachable tread device adapted to be releasably secured to tires to improve traction thereof. Device has flexible base having sufficient length to encircle tread face of tire and has projecting means extending from one surface adapted to run on road surface, and has suction means extending from opposite surface adapted by deformation to be brought into operative engagement with, and to grip, tread face of tire, thus releasably securing tread device to tire. Overlap of ends is tapered to provide smooth join between ends. Device is fitted to tire by lying device flat on road surface aligned with tire with suction means face upwards, so that, when side edges of tread device straddle tire symmetrically, tread device is secured to tire by rolling tire over tread device.

3,797,550

WIPED FILM DEVOLATILIZER CONSTRUCTION

George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 171,988
Int. Cl. B01d *1/28*
U.S. Cl. 159—2 E 7 Claims



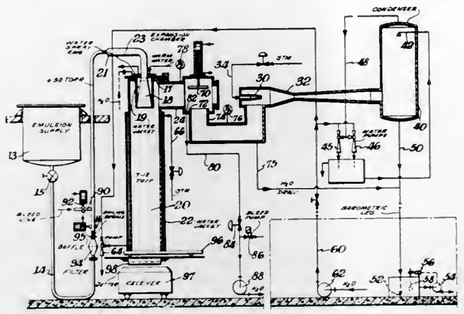
A wiped film devolatilizer adapted for processing relatively viscous melts is provided wherein a melt is end center fed to, and bottom removed from, a vapor separation chamber. Volatiles separated are cocurrently moved with melt through the vapor separation chamber before venting. The rotating members are preferably driven on a common axis by an end located power head. Melt hang up in the separation chamber is minimized or eliminated in the melt feed region; foaming problems are minimized in the vapor vent region; and devolatilizer weight distribution may be such that structural fabrication problems are minimized.

3,797,551

SOLIDIFICATION OF GELATIN EMULSIONS

Peter Herzhoff, Leverkusen; Hans Gref, Cologne-Stammheim; Fritz Maus, Cologne-Flittard; Kurt Browtzki, Opladen; Josef Friedsam, Langenfeld; Willi Wasser, and Wolfgang Schweicher, both of Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 21, 1971, Ser. No. 164,565
Int. Cl. B01d *1/16, 17/00*; B02c ; F26n *3/12*; B01d *19/00, 1/22*; B28
U.S. Cl. 159—3 17 Claims



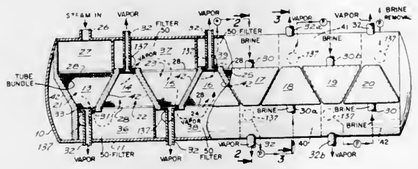
Warm dilute aqueous gelatin emulsions are readily and speedily concentrated and solidified by sucking a stream of such emulsion through a passageway into an expansion chamber evacuated to 7–12 Torr to cause the incoming emulsion to boil and spray solidified droplets of emulsion onto the walls of the chamber in bubble-free form. The solidified emulsion runs down from the walls with or without the help of warming means and/or directing streams of gas, to collect and solidify.

3,797,552

MULTIPLE EFFECT EVAPORATORS

Kurt F. Frank, Pomona; David D. Kays, Claremont, and John W. Kruse, Jr., La Canada, all of Calif., assignors to Aerojet General Corporation, El Monte, Calif.

Continuation of Ser. No. 10,231, Feb. 10, 1970, abandoned. This application Oct. 24, 1972, Ser. No. 299,933
Int. Cl. B01d *1/26, 3/02*
U.S. Cl. 159—17 C 12 Claims



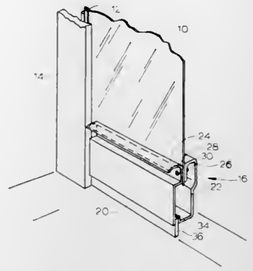
A multiple effect evaporator according to the present disclosure comprises a housing divided into a plurality of evaporator effects each effect having a bundle of heat transfer tubes disposed therein. The bundles are arranged so that the vapor flow is transverse or normal to the axis of the housing and in opposite directions in adjacent effects. Preferably, the bundles are arranged in such a configuration, e.g. a trapezoid, that the area of vapor flow in the bundles decreases in the direction of vapor flow. In one embodiment of the evaporator of the invention the tube bundles of adjacent effects are aligned along a central longitudinal portion of the shell and together form a substantially continuous bank of tubes with the tube bundle bank being interrupted by traversely-located baffles which baffles provide walls between the respective tube bundles of adjacent effects.

3,797,553

SELECTIVE POSITIONING MEANS FOR CURTAIN ASSEMBLY

Phillip Mitchell Elliott, 411 N. 7th St., St. Louis, Mo.

Filed July 17, 1972, Ser. No. 272,227
Int. Cl. E06b *9/08, 9/17*
U.S. Cl. 160—267 3 Claims



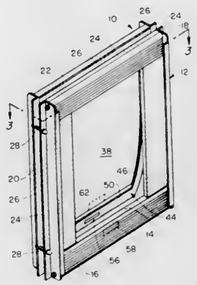
A selective positioning means for a curtain assembly is disclosed as having a one-piece curtain element which is mounted on a spring-biased shaft and a rigid bar associated withthe curtain element wherein the selected positioning means is associated with the rigid bar and is arranged to overcome the spring-biased shaft in the selected positioning of the free end of the curtain element at desired locations.

3,797,554

PET DOOR STRUCTURE

Frances H. Johnson, P.O. Box 643, Northridge, Calif.

Filed June 9, 1972, Ser. No. 261,193
Int. Cl. E06b *3/80*
U.S. Cl. 160—354 5 Claims



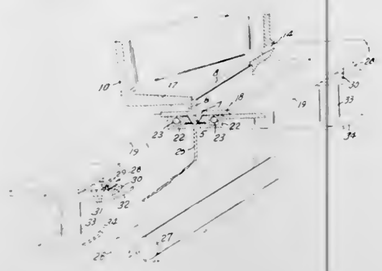
A pet door structure having an open frame to which is swingingly secured a door, the upper edge of the frame comprising an elongated element which is cane shaped in cross-section, the free end of the cane shaped element extending toward the interior of said frame, a first connection means located between the door and the frame adjacent the upper surface of the door permitting such to swing loose in either direction with respect to the frame, a substantially U-shaped border element attached to the elongated element by a second connecting means, the border element to swing only in one direction along with the door and remain in contact with the frame during swinging movement of the door in the opposite direction.

3,797,555

METHOD FOR CONTINUOUS CASTING OF METAL STRIPS

Christopher John English, Hudson, Quebec, Canada, assignor to Noranda Mines Limited, Toronto, Ontario, Canada

Filed Dec. 14, 1971, Ser. No. 207,843
Claims priority, application Canada, Sept. 30, 1971, 124136
Int. Cl. B22d *11/12*
U.S. Cl. 164—89 15 Claims



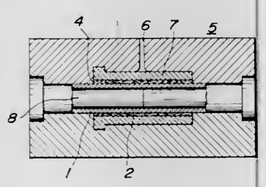
There is provided a method and an apparatus for continuous casting of metal strip. According to this new system, molten metal is introduced into a tundish which has at its bottom a downwardly projecting open ended graphite mould which is directly connected with the tundish. The tundish is preheated to maintain the molten metal at a desired temperature and the molten metal is allowed to flow from the tundish into the mould at a controlled rate. Cooling water is directly applied onto the lateral walls of the mould so as to solidify the metal therein and then it impinges directly onto the metal strip emerging from the mould. An intermittent withdrawing mechanism is used to withdraw the metal strip at speeds of up to and in excess of 30 in./min.

3,797,556

METHODS OF PRODUCING ACCURATE BORE SURFACES

Tameichi Imagawa, No. 8564-Choma Sakuragi-Cho, Ohmiya, and Kaname Kitsuda, No. 28-47 Matsukaze-Cho, Hiratsuka, both of Japan

Filed Oct. 18, 1972, Ser. No. 298,775
Int. Cl. B22d *19/08*
U.S. Cl. 164—95 2 Claims



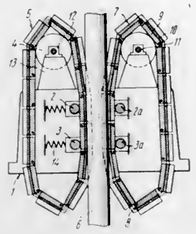
A method of producing a hard, thermal- and wear-resistant bore surface in the inner periphery of a cylinder made of metals, for example, aluminum or its alloy by means of a spray coated layer applied to an accurately finished surface of a hollow cylindrical support member. The spray coated layer applied to the hollow cylindrical support member is used as a hollow mold core. This hollow mold core is incorporated into a casting mold so as to form mold cavity into which is poured molten aluminum or its alloy. The hollow cylindrical support member is removed from the casting to expose the inner surface of the spray coated layer. The exposed inner surface of the spray coated layer is transplanted from the hollow cylindrical support member to the casting and defines an accurate bore surface.

3,797,557

DEVICE FOR INGOT WITHDRAWAL FROM MOULD DURING CONTINUOUS CASTING OF METALS

Aron Yakovlevich Tseitlin, ulitsa Volkova, 5, kv. 66; Sergei Sergeevich Tikhonov, ulitsa Metallurgov, la, kv. 6; Oleg Viktorovich Martynov, ulitsa Pervomaiskaya, 2, kv. 31; Mikhail Nikolaevich Makarov, ulitsa Metallurgov, 35/7, kv. 7; Vladimir Nikolaevich Ordinartsev, ulitsa Stoletova, 5, kv. 1; Jury Nikolaevich Ordinartsev, ulitsa Bunkernaya, 20; Semen Maximovich Gorlov, ulitsa Kutuzova, 106a, kv. 28; Vladimir Alexeevich Bashkov, ulitsa Bardina, 3, and Anatoly Georgievich Sitnov, ulitsa Metallurgov, 80a, kv. 42, all of Tula, U.S.S.R.

Filed Feb. 10, 1972, Ser. No. 225,135
Int. Cl. B22d *11/12*
U.S. Cl. 164—282 7 Claims



In the continuous casting of metals, secured on the pulling members of endless chains which serve to withdraw an ingot from a mould are shaped insert pieces which are in direct contact with the ingot. These shaped pieces make it possible to withdraw the ingot without distorting its profile.

3,797,558

METALLIC RECUPERATOR AND METHOD OF OPERATING SAME

Heinz Jacobs, Geldern, Germany, assignor to Kleinewefers Industrie-Companie GmbH, Krefeld, Germany

Filed Jan. 26, 1972, Ser. No. 220,835
Claims priority, application Germany, Feb. 1, 1971, 2104532
Int. Cl. F23l *15/04*
U.S. Cl. 165—1 6 Claims

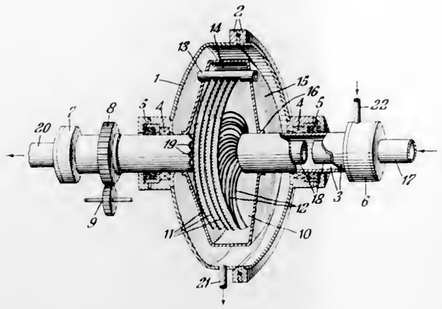
A metallic recuperator structure comprising one or more recuperators each comprising an annular chamber defined by an inner cylinder and an outer cylinder surrounding the inner cylinder, a heat absorbing medium being forcibly drawn through the annular chamber while the heating medium passes through the inner cylinder.

3,797,559

ROTARY HEAT EXCHANGER AND APPARATUS

Richard S. Paul, Grand Island, and David W. Weiler, Lancaster, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 31, 1969, Ser. No. 849,251
Int. Cl. F28b *1/04*
U.S. Cl. 165—1 4 Claims



The invention described herein may be manufactured and used by or for the Government for governmental purposes without payment of any royalty thereon.

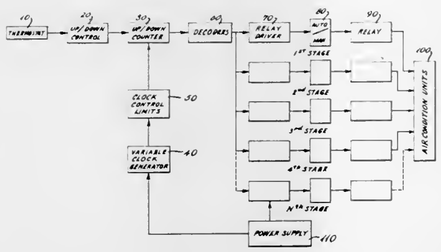
Heat transfer to a condensing vapor is conducted in a rotating exchanger comprising a tightly-nested array of involute-shaped passages coated internally with a thin porous layer of bonded metal particles.

3,797,560

CONTROL SYSTEM FOR ENVIRONMENTAL CONDITIONING UNITS

Isaac Zaharoni, 3109 Oakhurst Ave., Los Angeles, Calif.

Filed June 21, 1972, Ser. No. 264,821
Int. Cl. F25h *29/00*
U.S. Cl. 165—26 18 Claims



A solid state environmental control system which approximates the temperature demand curve by sequentially activating a plurality of environmental conditioning units at a given time interval while the demand exists and sequentially deactivating said units in reverse order upon cessation of said demand or upon a temperature demand of the opposite magnitude. An up-down counter controlled by solid state logic in response to temperature demands activates and deactivates the appropriate environmental unit in conjunction with a solid state logic decoder.

3,797,561

OIL TANKS AND COOLERS

Kenneth William Clark, and Clifford Stanley Woodward, both of Bristol, England, assignors to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain & Northern Ireland, London, England

Filed Sept. 20, 1971, Ser. No. 182,090
Claims priority, application Great Britain, Oct. 2, 1970, 46925/70
Int. Cl. G05d *23/00*
U.S. Cl. 165—37 9 Claims

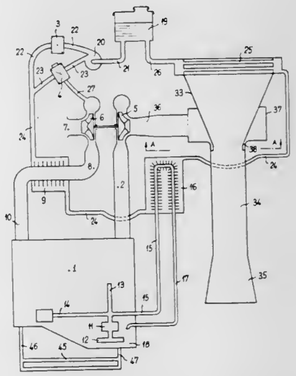
A ducted fan gas turbine engine has a flow splitter in the fan duct which is hollow to define an oil tank, and is double-walled to define a passage between the external wall of the oil tank and an outer wall. Hot oil is directed along the passage and the external surface of the flow splitter acts as a surface cooler in the relatively cool fan air flow. Direct communication is provided between the oil cooler passage and the interior of the tank thus minimising exterior pipework.

3,797,562

COOLING SYSTEMS OF SUPERCHARGED DIESEL ENGINES

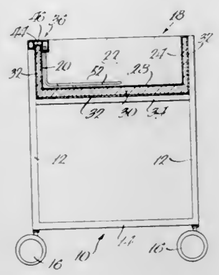
Maurice G. Brille, Suresnes, and Yves E. Baguelin, Billancourt, both of France, assignors to Societe Anonyme De Vehicules Industriels Et D'Equipements Mecaniques Saviem, Suresnes (Hauts de Seine), France

Filed Apr. 26, 1971, Ser. No. 137,318
Int. Cl. B60h *1/00*
U.S. Cl. 165—39 4 Claims



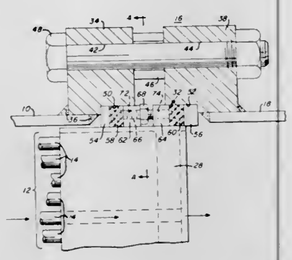
This invention applicable notably to supercharged Diesel engines consists essentially in utilizing the engine exhaust gas having already worked in the turbine of the supercharging turbo-compressor for inducing in a pump the air necessary more particularly for partially cooling the lubricating oil and the engine supercharging air.

3,797,563
PORTABLE FOOD SERVICE EQUIPMENT
Carter Clifford Hoffmann, Lake Forest, and Richard R. Berger, Antioch, both of Ill., assignors to Carter-Hoffmann Corp., Mundelein, Ill.
Filed Nov. 18, 1971, Ser. No. 200,133
Int. Cl. F25b *29/00*
U.S. Cl. 165—48 5 Claims



Portable food service equipment adapted to be used in cafeterias or the like and which may be alternately used for food heating or cooling purposes. The exemplary embodiment includes a wheeled cart mounting an open topped container adapted to receive food. The container includes mounting means for alternately mounting electrical heating elements or the cooling coils of a refrigerating unit. The refrigerating unit is designed so that a portable compressor portion thereof may be supported by the cart wholly within the confines of the cart.

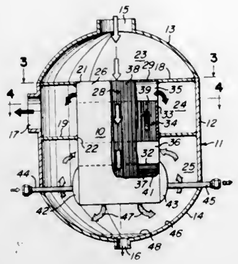
3,797,564
ADJUSTABLE SOFT PACKING SEAL
Harry C. Dickinson, 3137 Cleveland Ave., Michigan City, Ind.
Filed Apr. 17, 1972, Ser. No. 244,635
Int. Cl. F28f *7/00*
U.S. Cl. 165—82 4 Claims



A soft packing seal means for use in a rigid flange connection in fluid carrying piping and more particularly to piping having internal tubing carrying a separate fluid other than that carried in the piping, said seal means being externally adjustable without disturbing the rigid flange connection and providing visual means of detecting leakage.

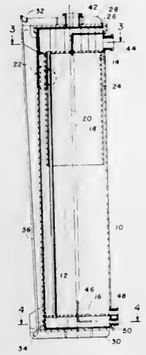
3,797,565
REFRIGERATED GAS DRYER
Joseph F. Fernandes, Centerville, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Nov. 22, 1971, Ser. No. 200,947
Int. Cl. F28b *1/00, 9/00*
U.S. Cl. 165—111 12 Claims

A refrigerated air or like dryer in which apparatus to perform the several functions of such a dryer are combined in a unit of small, compact size. A heat exchange device is uniquely constructed to perform both the principal cooling and the precool-reheat functions. A housing in an enclosing relation to



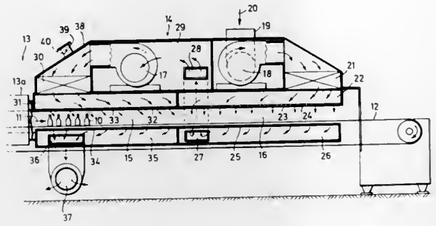
the heat exchange device induces separation and drainage of liquid from the cooled gas, eliminating the need for external separator means and attendant connections.

3,797,566
HEAT EXCHANGER
Paul Credoz, Denain; Jacques de Cremoux, Douchy Les Mines, and Jacques Gaffet, Denain, all of France, assignors to Fives Lille Cail, Paris, France
Filed Apr. 13, 1973, Ser. No. 350,692
Int. Cl. F28b *9/10*
U.S. Cl. 165—114 4 Claims



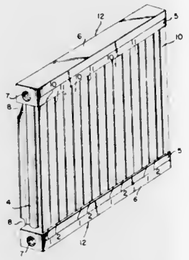
A heat exchanger of the tube-and-shell type is equipped with a tube bundle eccentric relative to the upright axis of the shell. The upper part of the tube bundle is enveloped by a cylindrical, coaxial skirt depending from the fixed, upper tube sheet. Steam is admitted to the widest portion of the crescent-shaped, annular space between the shell and the skirt and deflected to ward the lower ends of the tubes. The non-condensable gases are vented near the axis of the bundle. Partitions in the liquid chambers or heads cause the liquid to be heated to flow downward in the tube nearest the common axis of the bundle and skirt and thereafter alternatingly upward and downward in tubes gradually more remote from the axis of the bundle.

3,797,567
CONTINUOUS STERILIZING APPARATUS
Gunter Wolf, Karlsruhe-Waldstadt, and Wilfried Willing, Sinnersdorf, both of Germany, assignors to H. Strunck & Co. Maschinenfabrick, Cologne-Ehrenfeld, Germany
Filed Feb. 29, 1972, Ser. No. 230,363
Claims priority, application Germany, Mar. 15, 1971, 2112375
Int. Cl. F24h *3/02*
U.S. Cl. 165—120 7 Claims



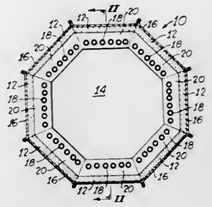
An apparatus for sterilizing objects along a continuous transport means by using heat stations, and a plurality of cooling stations applying sterilized air to the objects, whereby the cooling stations are separated into more than one cooling zone in the direction of movement of the objects and each zone has an individual supply line for the cool air, whereby the cooling temperature is reduced from zone to zone in the direction of movement of the objects in order to eliminate thermal stresses from occurring in the material of the objects.

3,797,568
RADIATOR
Alfred Kormann, Bucher Strasse 2, 8011 Eglharting near Munich, Germany
Filed Aug. 16, 1971, Ser. No. 172,014
Claims priority, application Germany, Aug. 14, 1970, 2040590
Int. Cl. F24h *3/00*
U.S. Cl. 165—131 3 Claims



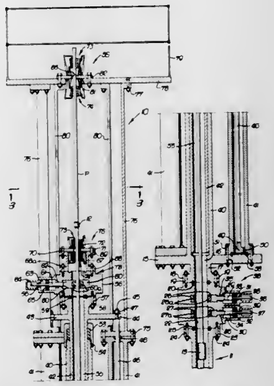
A radiator has a plurality of vertical pipes with longitudinally co-extensive radiating surface extensions. The extensions are generally T-shaped in cross-section with the base of the T being joined to the pipe. Extensions are joined at opposite sides of an oval pipe. The pipes are joined by headers, and the resulting radiator has a rectangular shape with a plurality of spaced vertical rectangular members.

3,797,569
CAGE TYPE RADIATION RECUPERATOR
Siegfried R. Meder, Pittsburgh, and Thomas E. Dixon, Allison Park, both of Pa., assignors to The American Schack Company, Inc., Pittsburgh, Pa.
Filed Mar. 29, 1973, Ser. No. 345,872
Int. Cl. F28f *3/12*
U.S. Cl. 165—169 6 Claims



A cage type radiation recuperator has a plurality of preconstructed, interengageable, congruent panel sections that form a closed flue chamber for the passage of flue gas therethrough. Each of the panel sections includes a plurality of conduits supported in spaced parallel relation adjacent the panel sections by brackets mounted transversely on the panels. Hot flue gas from a combustion furnace enters the flue chamber and radiantly transfers energy to the cold air circulating through the conduits. The cold air supplied by an air inlet duct and heated by the flue gas passes the length of the flue chamber through the conduits into an air outlet duct where the air is delivered for subsequent use at an elevated temperature. The waste flue gas is then discharged from the flue chamber through an outlet duct connected thereto.

3,797,570
SNUBBING APPARATUS
Kurt Leutwyler, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.
Filed May 8, 1972, Ser. No. 251,211
Int. Cl. E21b *41/00*
U.S. Cl. 166—77 8 Claims

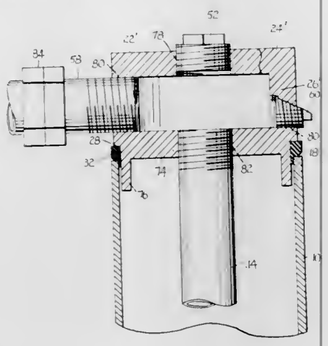


Snubbing apparatus for elevating and lowering an elongated tubular structure from and into a well bore while maintaining a seal between the tubular structure and the well head, wherein the tubular structure is releaseably engageable by traveling slip and traveling blowout preventer devices and by stationary slip and stationary blowout preventer devices, alternately, to elevate and lower the tubular structure, without causing movement of the tubular structure through the closed stationary blowout preventer device.

3,797,571
PUMP SUPPORT ADAPTER

James H. Hamar, 8336 S.W. 23rd St., Portland, Oreg.

Filed Mar. 20, 1972, Ser. No. 236,367
Int. Cl. E21b *33/03*
U.S. Cl. 166—88 5 Claims

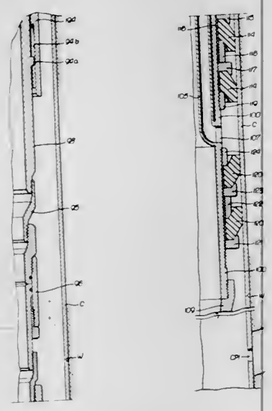


A pump support adapter including a housing enclosed at its top and sides but open at the bottom and arranged to seat on the top edge of a well casing for supporting a vertical well pipe and pump hanging in the casing. The housing has a gasket on its lower edge to provide sealing engagement with the well casing and contains a connector portion having bottom open inlet means arranged to be connected to a vertical well pipe. The connector portion also includes one or more laterally extending outlet means in communication with the inlet means. These outlet means are arranged to be connected to discharge pipes. The housing has attaching means on its upper side arranged to be connected to lift mechanism for raising and lowering the housing in the well casing. The housing also includes a vent for venting the well and a fitting for receiving electrical lines.

3,797,572
APPARATUS FOR SELECTIVE FORMATION TREATMENT

Henry X. Mignotte, Gretna, La., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Aug. 28, 1972, Ser. No. 284,340
Int. Cl. E21b *23/06, 33/124*
U.S. Cl. 166—127 20 Claims

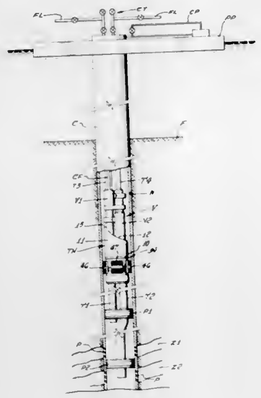


A selective formation treatment tool has a retrievable packer adapted to be set in a well casing above perforations in the casing, and a washing or treating fluid tool has opposed packers for progressively isolating the vertically spaced individual perforated casing sections as the washing or treating tool is progressively moved upwardly to confine the flow of fluid from the tool into the formation through the successive perforations.

3,797,573
FULL OPENING SAFETY VALVE

Talmadge L. Crowe, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Division of Ser. No. 243,806, April 13, 1972. This application Sept. 5, 1972, Ser. No. 286,151
Int. Cl. E21b *33/10*
U.S. Cl. 166—224 S 25 Claims



A full opening single or dual safety valve for wells, in which each valve assembly has a rotary ball valve having a flow passage as large as the flow passage through the valve body. The ball valve is installed in the body through a side window which is closed by a member which cooperates with the ball valve to move the latter between open and closed positions. The dual safety valve has releasable latch means for holding the safety valve in a receptacle of a tubing hanger which supports producing tubing strings in the well.

3,797,574
MISCIBLE OIL RECOVERY PROCESS

David G. Feuerbacher, Bellaire, and Mary K. H. Smith, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,542
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 11 Claims

A process for recovering petroleum from a subterranean petroleum containing formation by flooding with a surfactant wherein the adsorption of surfactant by the formation rock is inhibited by treating the formation with a preflush slug of a water soluble quaternary ammonium salt such as tetramethylammonium chloride prior to injecting the surfactant. Preferably, treatment is accomplished by injecting an aqueous solution of water soluble quaternary ammonium salt into the formation in an amount sufficient to satisfy substantially all of the adsorption capacity of the formation matrix followed by injection of an aqueous solution of the surfactant into the formation. The quaternary ammonium salt and the surfactant solution can be subsequently displaced through the formation by any convenient aqueous drive fluid including water.

3,797,575
ADDITIVES FOR TEMPORARILY PLUGGING PORTIONS OF SUBTERRANEAN FORMATIONS AND METHODS OF USING THE SAME

Walter R. Dill; Jiten Chatterji, and John A. Knox, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

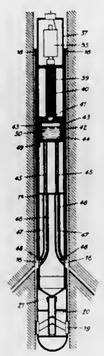
Filed June 19, 1972, Ser. No. 264,117
Int. Cl. E21b *33/138, 43/27*
U.S. Cl. 166—282 14 Claims

The present invention relates to additives for forming fluid loss or diverting agents in aqueous treating fluids used in the treatment of subterranean formations. The additives are combined with the aqueous treating fluid to bring about the precipitation of finely divided solids therein having desired size characteristics.

3,797,576
METHOD AND APPARATUS FOR BREAKING UP ROCKS CONTAINING LIQUID OR GASEOUS HYDROCARBONS BY MEANS OF EXPLOSIVES

Jean Paul Azalbert, Ablon-sur-Seine, and Adrien Giraud, Paris, both of France, assignors to Compagnie Francaise des Petroles, Paris, France

Filed May 21, 1971, Ser. No. 145,666
Int. Cl. E21b *43/00*
U.S. Cl. 166—299 7 Claims



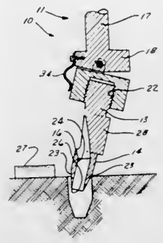
Oblique holes are drilled into a formation from a well bore hole, packed with explosive charges, and simultaneously detonated. The holes are drilled at the same level and angle with respect to the bore hole, and are evenly spaced around its periphery. An implementing apparatus includes a tool carrier that is lowered into the bore hole and anchored in place, a flexible shaft drilling tool that is lowered into the carrier, and a packing tool for placing the charges.

3,797,577
TURF PERFORATING TOOL

Marvin L. Killion, 510 Pontiac Dr., Gretna, Nebr., and Richard R. Williams, Ithaca, Nebr.

Filed June 13, 1972, Ser. No. 262,330
Int. Cl. A01b *45/02*
U.S. Cl. 172—22 10 Claims

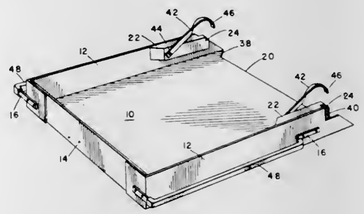
A turf perforating tool for use with conventional turf perforating equipment, the tool having a hinge plate secured to a reciprocating shaft, a hinge mechanism interconnecting the plate to a cap, and a cutting element having a core passage formed therein and threadably secured to the cap, wherein the cutting element is substantially vertically disposed during the core cutting process but will pivot slightly during the core removing process thus substantially preventing the compaction of soil around the hole formed by the tool.



3,797,578
PLUG CATCHER FOR GREEN AERATOR

Alfredo Velasquez, 9038 Gorge Ave., Santee, Calif.

Filed May 1, 1972, Ser. No. 249,185
Int. Cl. A01b *45/02*
U.S. Cl. 172—22 1 Claim



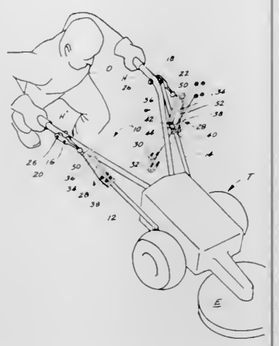
A plug catcher for temporary collection of the small plugs of turf as extracted by a turf-aerating machine, the catcher being characterized as particularly easy to attach and remove from the gleaning edge, that is, the front or leading edge, of the catcher only a small fraction of an inch from the ground, this distance being regulated effectively by locating this edge closely adjacent to the ground contact points of the rear supporting wheels of the aerator machine. The catcher is essentially a platform and is illustrated as having a wall making the same box-like and it is substantially balanced upon ground-contacting casters with the front end releasibly latched onto the axle of the aerator and dimensioned to extend below the axle, immediately to the rear of the aerator's plug extractors, so that the aforementioned gleaning edge brushes the grass of the fairway turf, being positively held in this turf-engaging position, to sweep the extracted plugs into the box-like enclosure of the catcher. Handling the aerator and catcher is ordinarily a two-man job and two axle-engaging latch hooks, one at each side, are provided for attaching and handling the catcher, which when loaded with extracted turf plugs is lifted from the aerator machine and ordinarily emptied into a truck or cart.

3,797,579

MOVING-IMPLEMENT CONTROL-GUARD SYSTEM

George H. Bilger, Monkton Rd., Monkton, Md.

Filed Aug. 2, 1972, Ser. No. 277,063
Int. Cl. A01b *33/00*; A01d *35/12*; G05g *1/00*
U.S. Cl. 172—42 5 Claims



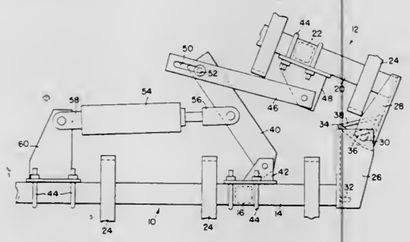
A moving-shield system for implement controls including a pushrod-mounted inclined deflector fin having an angle causing it to overhang and follow the movements of a pushrod control lever.

3,797,580

FOLDABLE AGRICULTURAL IMPLEMENT

Robert Richard Roth, Rock Island, Ill., assignor to Deere & Company, Moline, Ill.

Filed Feb. 28, 1972, Ser. No. 229,668
Int. Cl. A 1b *49/00, 19/04*
U.S. Cl. 172—311 7 Claims



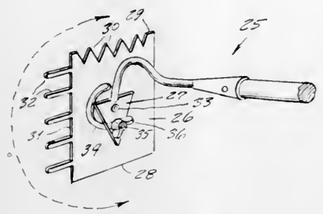
A wheeled spring tooth harrow has pivoted wing frames, each of which is movable between operating and transport positions by a hydraulic wing fold mechanism which folds the wings through 155° or more from a position in alignment with the main frame. The wing fold mechanism includes a pair of links having a lost-motion connection which, as the wing is being folded to the transport position, permits the wing to free-fall from a balanced position at approximately 110° closed through approximately 15° and, as the wing is being opened to an operating position, permits the wing to free-fall from the balanced position through approximately 20°. When the wing is in the operating position, the lost-motion connection permits the wing to float through approximately 35° to follow ground contour.

3,797,581

GARDENER'S HELPERS CUTTING HOE

Robert E. Holloway, c/o George Specter, 3615 Woolworth Building, 233 Broadway, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,074
Int. Cl. A01b *1/00*
U.S. Cl. 172—372 1 Claim



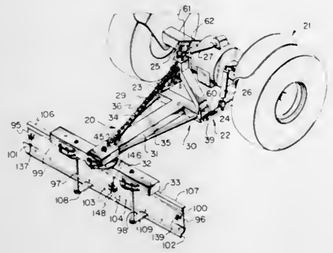
An agricultural hand implement for hoeing a ground, the device incorporating a flat blade attached at right angle to a socket receivable on the end of an elongated handle and the blade leading edge being toothed so to effectively cut down weeds.

3,797,582

BACK FILL ATTACHMENT FOR A DRAFT VEHICLE

James L. Couch, Route 3, Box 169, Ocean Springs, Miss.

Filed Oct. 30, 1972, Ser. No. 301,764
Int. Cl. A01b *59/043*
U.S. Cl. 172—451 23 Claims



A back fill attachment is provided for a draft vehicle. The attachment is especially useful to back fill soil removed from trenches in the laying of gas lines, water lines, electric lines and other conduits. The attachment also may be used to back fill soil removed from excavations made for general construction purposes, and to level or contour soil in land filling or landscaping operations. In one preferred embodiment, the attachment comprises an adjustable back fill blade which is adapted to be attached to a tractor having a three point hitch. The blade may be adjusted in a number of positions and the attachment is sufficiently versatile to meet a variety of different back filling, leveling, and contouring requirements.

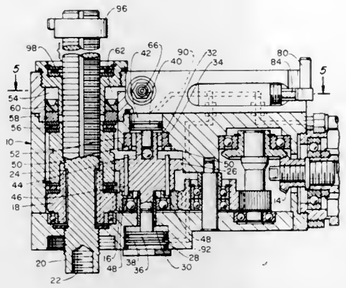
3,797,583

POSITIVE FEEDING STRUCTURE FOR TOOLS INCORPORATING PRESSURE CONTROLLED FEED MEMBER

Robert C. Quackenbush, Glendale, Calif., assignor to Arthur B. Quackenbush, Glendale, Calif., a part interest

Filed Nov. 24, 1972, Ser. No. 309,147
Int. Cl. B23b *47/24*
U.S. Cl. 173—4 12 Claims

A feed member telescopes and is threadably engaged with a rotatably driven spindle arranged for moving the spindle axially in a feed stroke upon the feed member rotating faster than the spindle and in a retraction stroke upon the feed member remaining stationary. The feed member is also arranged axially movable along the spindle a limited distance between first and second positions controlled for remaining stationary in the first position and rotating faster then the spindle to, at and from the second position. A fluid actuated piston reacts against the feed member controlled to urge the feed member



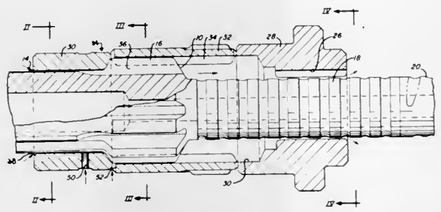
axially toward and normally retain the same in the second position at the commencement and during the spindle feed stroke, the feed member causing the spindle feed stroke upon reaching the second positon and causing the retraction stroke upon the return to the first position so that when the spindle in the feed stroke meets resistance against spindle axial movement overcoming the action of the fluid piston, the feed member returns from second to first position for start of the retraction stroke.

3,797,584

STRIKING BAR

Edward A. Bailey, R.F.D. No. 2, Box 37, Newport, N.H., and James F. Ordway, 10 Floyd Ave., West Lebanon, N.H.

Filed Mar. 31, 1972, Ser. No. 240,170
Int. Cl. E21b *1/00*; B25d *17/20*
U.S. Cl. 173—105 12 Claims



A striking bar of a type utilized in a percussive tool such as a hammer rock drill, and more particularly a striking bar assembly having improved passageway means therein for providing lubricating fluid intermediate the striking bar and the encompassing supporting bushings.

3,797,585

APPARATUS FOR GENERATING A PRESSURE WAVE IN AN ELONGATED BODY OPERATIVELY CONNECTED TO A DROP HAMMER

Berger Ludvigson, Sadra Vagen 38, 412 54 Goteborg, Sweden

Filed Oct. 18, 1972, Ser. No. 298,494
Claims priority, application Sweden, Oct. 18, 1971, 13134/71
Int. Cl. B25d *9/00*; E21b *11/02*; A47c *27/08*
U.S. Cl. 173—131 9 Claims

When driving piles into the ground the drop hammer should act upon the head of the pile through the intermediation of an elastically deformable cap. The resistance of the ground will vary from one occasion to the other and will furthermore often vary during the driving of an individual pile. This makes it desirable to change the elastic properties of the cap, which

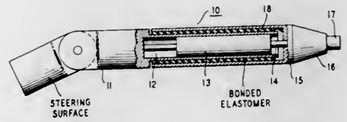
to that end is designed to enclose a body of gas and a body of liquid, means being provided for adjusting the volume and the pressure of the gas by governing the flow of liquid from one chamber to another within the cap.

3,797,586

MOLE WITH DECOUPLED NOSE AND BODY

James Christopher Coyne, New Providence; Robert Gordon McCoy, Whippany, and Arnold Ray Smith, Chester, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 20, 1971, Ser. No. 209,814
Int. Cl. E21b *1/06*
U.S. Cl. 173—133 2 Claims



The penetrating forward nose of a Mole is structurally decoupled from the body in this invention to reduce fatigue and shock effects on the body. The nose and body are connected through a compliant sleeve in one embodiment. In a second, the nose is slidably mounted on the body outer shell, and subanvil means are interposed between the hammer and nose.

3,797,587

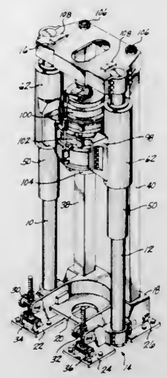
SLEEVE CYLINDER POWERED DRILLING MACHINE

Harold T. Klein, Bellevue, Wash., assignor to The Robbins Company, Seattle, Wash.

Filed Jan. 3, 1972, Ser. No. 214,813
Int. Cl. E21c *5/11*
U.S. Cl. 173—152 13 Claims

Rotary drilling equipment mounted on a traveling frame is moved up and down along a guide column by means of a first cylinder which surrounds and travels along the guide column

and a second cylinder which surrounds and travels along the first cylinder. The guide column means is interconnected



between a head frame and a base frame. The guide column means, the head frame and the base frame all together form a rigid closed box frame structure.

3,797,588

ICE DRILL WITH ADJUSTABLE CUTTING EDGES

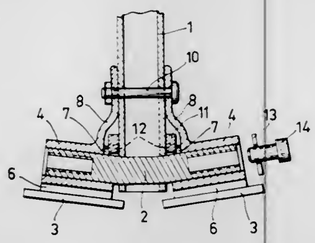
Arvid Jonsson; Jonas Erland Jonsson, and Per August Malmen, all of Malung, Sweden, assignors to AB Arjon, Malung, Sweden

Filed Apr. 25, 1972, Ser. No. 247,366

Claims priority, application Sweden, Apr. 28, 1971, 5482/71

Int. Cl. F25c *5/04*

U.S. Cl. 175—18 **13 Claims**



An ice drill mounts a pair of cutters on a pair of sockets rotatably supported on a bar connected transversely to the end of a drill shaft. The angular orientation of the sockets, and hence the cutters, on the bar may be adjusted by rotating an adjustment member which engages a notch on each socket. Rotation of the adjustment member causes rotation of the sockets in opposite directions but with equal angular displacement thereby maintaining equal cutting angles for the two cutters.

3,797,589

SELF GUIDING FORCE APPLICATOR

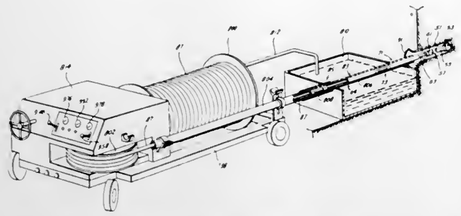
Jackson M. Kellner, and George Abraltys Alther, both of Midland, Tex., assignors to Smith International, Inc., Midland, Mich.

Continuation of Ser. No. 189,845, Oct. 18, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,628

Int. Cl. E21b *3/12, 19/08;* **E21c** *9/00*

U.S. Cl. 175—94 **18 Claims**

A self guiding force applicator includes a tubular mandrel to deliver fluid to drilling means. A piston carried by the mandrel moves in a cylinder to which fluid is supplied to force mandrel or cylinder in or out. The mandrel and cylinder are connected by spline means to prevent relative rotation while allowing relative axial motion. Releasable anchor means anchors either cylinder or mandrel to wall of bore hole dependent upon whether mandrel or cylinder is to be moved. The mandrel anchor means is disposed at the outer end of the force applicator to serve as a guide means when in the released position



during drilling. Also at the outer end of the mandrel is a manifold for connecting conduits and passages in the mandrel to an outer end of the force applicator. The hose line is wound on an out-of-hole winch mounted on a trailer cart. Launching means for the force applicator and drilling means, together with supply and control means for the anchor means, piston and cylinder means, and the drilling means, is also mounted on the car.

3,797,590

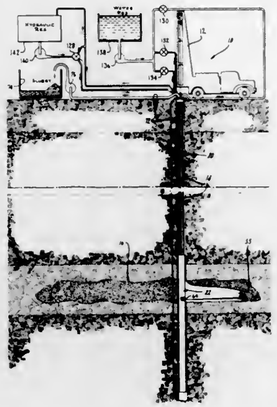
UNDERGROUND MINING SYSTEM

William R. Archibald, San Anselmo, and John J. Gilbert, San Francisco, both of Calif., assignors to Marcona Corporation, San Francisco, Calif.

Filed Jan. 16, 1973, Ser. No. 324,168

Int. Cl. E21c *45/00*

U.S. Cl. 175—213 **6 Claims**



Hydraulic underground mining system adapted to operate through a small diameter well bore and into a subterranean body and including a mining capsule carried on the lower end of an elongate support structure. The mining capsule includes a liquid jet nozzle at its upper end for forming a laterally directed jet stream to impact material in the ore body and to pulp the same into a slurry. An orifice having a grate for preventing entry of excessively large material is positioned below the jet so that freshly pulped slurry flows into the orifice, the latter being connected to an elongate positive displacement pump mounted below the orifice. Suitable hydraulic power means are provided for operating the pump and for progressively moving the jet stream to at least a portion of an arc. Fixed liquid jets are also provided at the pump inlet for flushing and priming and to the lowermost portion of the capsule and to facilitate movement of the apparatus in the well bore.

3,797,591

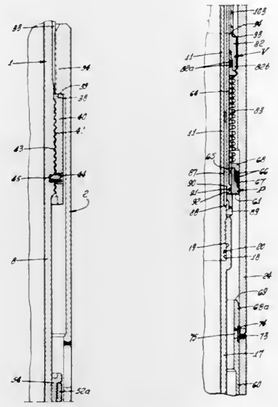
TRIGGER MECHANISM FOR DOWN-HOLE ADJUSTABLE HYDRAULIC FISHING JAR

William O. Berryman, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Feb. 6, 1973, Ser. No. 330,034

Int. Cl. E21b *1/06, 1/10*

U.S. Cl. 175—296 **23 Claims**



A down-hole adjustable hydraulic fishing jar for removing stuck objects from a well bore in which hydraulic fluid within a compression chamber by-passes a compression piston through an unrestricted flow passage normally closed by a valve. The valve is instantaneously opened by a trigger mechanism adjustable down-hole to vary the tension on the running-in string required to trigger the valve to the open position. The jar is operative repetitively in any selected adjusted condition. An adjusting rig is assembled with the trigger to have limited freedom of rotation during jarring operations and to rotatively drive the trigger to enable adjustment.

3,797,592

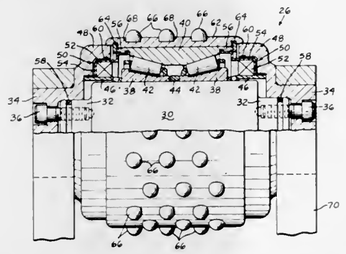
STABILIZING ROLLER

Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Nov. 21, 1972, Ser. No. 308,411

Int. Cl. E21b *17/10*

U.S. Cl. 175—325 **7 Claims**



A stabilizing roller, especially for a raise boring head, in which an outer sleeve having cemented hard metal carbide elements inserted therein is mounted by an anti-friction bearing arrangement on a massive central shaft. The stabilizing roller is adapted for being disposed vertically at the periphery of a raise boring head for guiding the head during cutting operations.

3,797,593

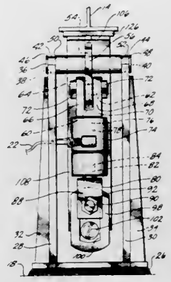
HEAVY DUTY INDUSTRIAL SCALE

Fred Miller Conley, Highland, Calif., assignor to Dudley & Conley Scale Co., Inc., Colton, Calif.

Filed Dec. 14, 1972, Ser. No. 315,214

Int. Cl. G01g *19/02*

U.S. Cl. 177—134 **10 Claims**



A weighbridge of a heavy duty industrial scale is supported by mounts which indicate applied load by a transducer which is loaded in pure tension. Each mount has a girder chair for supporting an I-beam. A pair of parallel arms extend from this girder chair downwardly to a first cross pin. The cross pin is force coupled to a link which in turn is force coupled to a clevis above the pin through a clevis pin. The pin coupling to the link and the link coupling to the clevis allows free rotational movement of each part with respect to the other. The clevis is tension coupled to the bottom of a load transducer. A similar series linkage is provided between the transducer and ground to complete force transmission to ground, except that this linkage is orthogonal to the first described linkage.

3,797,594

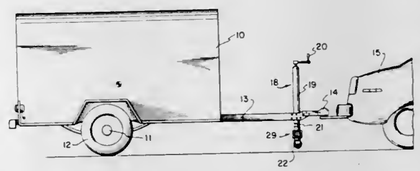
TRAILER TONGUE WEIGHT SCALE

James L. Chaffee, 4308 San Bernardino Ave., Las Vegas, Nev.

Filed July 20, 1973, Ser. No. 381,115

Int. Cl. G01g *19/08, 5/04*

U.S. Cl. 177—136 **4 Claims**



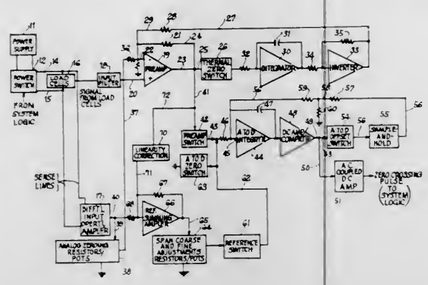
Apparatus carried by the tongue of a trailer to indicate the tongue weight load and thereby assist in distributing the weight of the cargo during the loading of the trailer to provide optimum conditions for the trailer and the propelling vehicle.

3,797,595

SYSTEM FOR DIGITAL WEIGHING WITH ZEROIZING FOR THERMAL EFFECTS

Chieh-Kung Yin, Grayslake; Roy W. Klein, Hoffman Estates, and Bernard A. Johnson, Deerfield, all of Ill., assignors to Mangood Corporation, Chicago, Ill.

Filed Dec. 11, 1972, Ser. No. 313,965
Int. Cl. G01g *23/14, 3/14*
U.S. Cl. 177—164 **14 Claims**



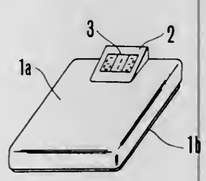
A system for digital weighing, by utilizing an analog voltage of load cells representative of the weight of a load to be weighed, includes an analog-to-digital converter with a preamplifier and an integrator, a switch to connect the load cells to a power supply, means to turn off and on the switch, means to generate and store a signal based at least in part on the thermal voltage output of the load cells when the switch is off, and means to utilize that signal during the use of the analog-to-digital converter in a subsequent weighing operation when the switch is on. Preferably the system uses an analog-to-digital converter having a switch to couple the preamplifier to the integrator for a period of time and a switch to couple thereafter a reference voltage to the integrator during operation of the conversion. While these three switches are off, another switch is on. It couples the output of the preamplifier to a compensating circuit with a feedback to the preamplifier of opposite polarity voltage compensating for the thermal voltage of the load cells and the offset voltage and current of the preamplifier. The switch to the compensating circuit is off when the other switches are on.

3,797,596

DIGITAL DISPLAY BODY-WEIGHT METER

Mikiharu Tanji, Watarai-gun, and Masanori Yamagiwa, Ise City, both of Japan, assignors to Ise Electronics Corporation, Ise, Mie Prefecture, Japan

Filed June 28, 1973, Ser. No. 374,334
Claims priority, application Japan, June 30, 1972, 47-77463[U]; June 30, 1972, 47-77464[U]; June 30, 1972, 47-77465[U]; June 30, 1972, 47-77466[U]; June 30, 1972, 47-77467[U]; June 30, 1972, 47-77470[U]
Int. Cl. G01g *3/14*
U.S. Cl. 177—210 **7 Claims**



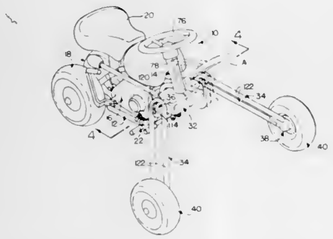
A digital display body-weight meter includes a positioning means to bring a code disc having a logic code arrangement to standstill at the termination of its rotation according to the descent of a footstool such that a detecting means to detect a logic code is located at the center of one of a plurality of logic codes, whereby reliable measurement signal may be obtained from the detecting means. It also includes means to bring the detecting means into contact with the logic code arrangement on the code disc after the termination of the rotation of the disc, whereby wear of brush and conductor can be eliminated and also good contact therebetween and reliable read-out of signal may be ensured.

3,797,597

FOLDING MOTORIZED VEHICLE

S. Albert Young, Birmingham, Mich., assignor to Harold J. Rineman, Southfield and Richard L. Rineman, Brighton, both of, Mich., part interest to each

Filed Dec. 1, 1972, Ser. No. 311,331
Int. Cl. B62d *3/14*
U.S. Cl. 180—1 F **21 Claims**



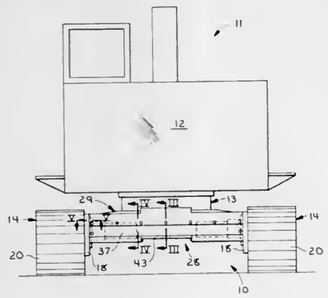
A portable motorized or powered vehicle which is compactly folded for translation in a trunk or storage chamber of a conventional motor vehicle. Compactness of the powered vehicle is achieved by pivoting the front wheel supporting legs simultaneously rearwardly, and swinging the front wheel legs on each side inwardly toward the vehicle frame for securement thereto, so that the wheels assume a tucked-in posture closely adjacent the frame and just forwardly of the rear wheels, the vehicle frame being compactly arranged about the power engine which is positioned substantially medially of the framing structure.

3,797,598

GUARD ASSEMBLY FOR TRACK DRIVE MOTORS

John C. Wanner, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 3, 1972, Ser. No. 240,606
Int. Cl. B62d *21/18, 11/04*
U.S. Cl. 180—6.48 **14 Claims**



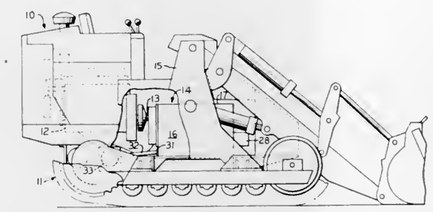
A guard assembly comprises separable upper and lower covers detachably mounted on the frame of a track-type vehicle to form tunnel portions for shielding and protecting the drive motors and attendant conduits thereof. The lower cover comprises a centrally disposed member having its forward end hingedly mounted on the frame by a pair of hook members to facilitate removal and installation thereof. The rearward end of the member has towline attachment means formed thereon and a shear block arrangement is disposed between the member and the frame to transmit towing forces directly to the frame.

3,797,599

PUMP DRIVE FOR HYDROSTATIC DRIVE LOADERS

James M. Kostas, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 22, 1971, Ser. No. 210,779
Int. Cl. B60k *17/28*
U.S. Cl. 180—53 R **7 Claims**



A vehicle driven by hydrostatic motors includes a removable compartment in an accessible location remote from the vehicle engine which contains swivel disc pumps, and shafts and gears driving the pumps, arranged to be driven by the vehicle engine. The shafts are supported on bearings disposed in pillow blocks for easy removal from the compartment.

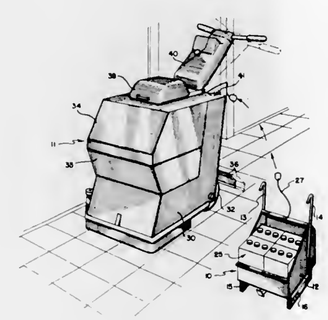
An implement pump is also mounted on the compartment wall to be driven by a common drive shaft with the pumps, allowing the implement pump to utilize maximum engine power when required.

3,797,600

POWER PACK MOUNT

Earl L. Miner, Moran, Kans., assignor to Lawlor Industries, Inc., Addison, Ill.

Filed Apr. 21, 1972, Ser. No. 246,273
Int. Cl. B60k *5/10;* **B60l** *11/02, 11/18*
U.S. Cl. 180—64 M **22 Claims**



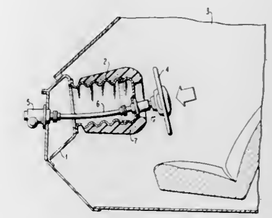
A power pack mount having a generally rectangular-shaped box-like frame with a pair of arms fixedly secured to the opposite sides thereof, in a substantially vertically disposed position. The ends of the arms are adapted to be attached to a pair of rearwardly and downwardly shiftable pivot point attachments on the vehicle in which the power pack mount is installed, whereby the power pack mount can be easily removed from and replaced within the vehicle.

3,797,601

SAFETY STEERING FOR MOTOR VEHICLES

Bela Barenyi, Maichingen, and Hermann Renner, Magstadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed May 26, 1972, Ser. No. 257,099
Claims priority, application Germany, May 28, 1971, 2126666; May 28, 1971, 2126668
Int. Cl. B60k *27/00;* **B60r** *19/00;* **B60k** *37/00*
U.S. Cl. 180—78 **27 Claims**



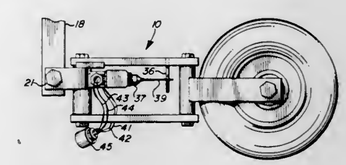
A safety steering arrangement for motor vehicles with a plastically deformable structural part arranged between a steering hand wheel and the front wall of the vehicle; the steering wheel is thereby rotatably supported in the end of the plastically deformable structural part facing the passenger space while the steering movements are transmitted from the hand wheel to a steering gear by way of an intermediate member which is relatively stiff in torsion yet yielding in the deformation direction of the plastically deformable part.

3,797,602

VEHICLE GUIDANCE SYSTEM

Harry H. Sumida, 10717 Antelope Dr., Lemoore, Calif.

Filed July 13, 1972, Ser. No. 271,417
Int. Cl. B62d *61/00*
U.S. Cl. 180—79.1 **3 Claims**



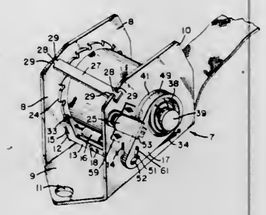
Apparatus is provided for automatically guiding a vehicle along a predetermined path in response to steer right, steer left, and steer without change signals obtained from trailing wheel apparatus following a precut trench. The trailing wheel is supported by a carriage assembly which is horizontally doubly-articulated and also pivotally connected to the vehicle for vertical travel. The carriage assembly includes a pair of limit switches and a vertically oriented pin normally positioned between the feeler arms thereof. Should the vehicle deviate sufficiently to one side of the predetermined path fixed by the precut trench, the carriage assembly shifts in such a manner that the pin touches one of the switch feeler arms to actuate the corresponding switch. An electrical signal developed therefrom institutes motor driven corrective action to the vehicle steering system, which corrective action is

released once the pin is again oriented between the pair of feeler arms and touching neither. In the exemplary embodiment, the system is utilized to guide a farm tractor which may be provided with means to automatically cut guide trenches for a succeeding pass within an area where earth is being worked.

3,797,603
ELECTROMAGNETICALLY CONTROLLED SAFETY BELT RETRACTOR

Yogendra Singh Loomba, Roseville, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 6, 1972, Ser. No. 269,349
Int. Cl. B60r *21/10*
U.S. Cl. 180—82 11 Claims

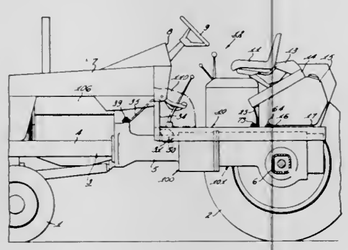


A reel type retractor for a safety belt having the feature that an electromagnet, normally activated, and holding a cam member by virtue of an armature attached thereto, maintains a pawl out of latching engagement with the reel, thereby permitting free extension of the belt. Any interruption of the current to the electromagnet permits the reel to rotate the cam, releasing a cam follower attached to the pawl bar, and allowing the biased pawl bar to rotate into locking engagement with the reel. Current interruption can be effected by the opening of a pressure switch responsive to the hydraulic pressure in a vehicle's braking system, by the opening of an inertial switch responsive to a change in velocity of the vehicle to which the switch is attached or by both types of switches working in series.

3,797,604
INSULATED MOUNTING FOR PLATFORM AND CAB

Owen R. Davis, Waukesha, Wis., assignor to Allis-Chalmer Corporation, Milwaukee, Wis.

Filed Dec. 12, 1972, Ser. No. 314,340
Int. Cl. B62d *39/00*
U.S. Cl. 180—89 R 10 Claims

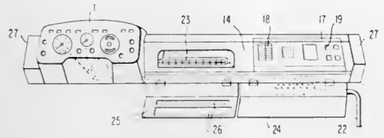


A vehicle having a chassis mounted unsprung on a plurality of wheels with a platform mounted on resilient means seated on planar surfaces formed on the chassis of the vehicle and fastening means to resiliently suspend the platform in this position.

3,797,605
INSTRUMENT PANEL FOR MOTOR VEHICLES, ESPECIALLY TRUCKS

Karl Letzel, Sindelfingen; Helmut Stober, Doffingen, and Elmar Nickel, Sindelfingen, all of Germany, assignors to Daimler-Benz AG, Stuttgart-Untertuerkheim, Germany

Filed June 2, 1972, Ser. No. 259,237
Claims priority, application Germany, June 4, 1971, 2127686
Int. Cl. B60k *37/02*
U.S. Cl. 180—90 38 Claims

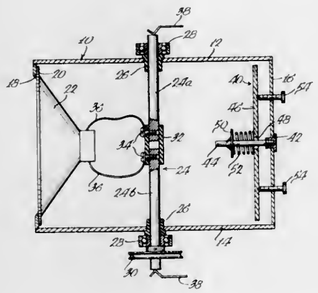


An instrument panel for motor vehicles, especially for trucks which includes a covering adapted to be mounted on a railing of the driver cab and which is equipped with instruments serving for the monitoring and actuation of the vehicle, of which at least one instrument is an indicating instrument driven travel-dependent by way of a flexible shaft; at least a large portion of the monitoring and actuating instruments—with the exception of the indicating instrument driven by way of the flexible shaft—are combined within an instrument carrier as a pre-assembled unit while the indicating instrument driven by way of the flexible shaft is connected with the railing of the driver cab independently of the instrument carrier and is covered off by a part of the covering which belongs to the instrument carrier and which is provided with a corresponding aperture.

3,797,606
BALANCING MEANS FOR A ROTATING SPEAKER SYSTEM

John W. Edwards, Lake Zurich, Ill., assignor to Hammond Corporation, Deerfield, Ill.

Filed Feb. 12, 1973, Ser. No. 331,686
Int. Cl. H04r *1/28*; G10k *13/00*
U.S. Cl. 181—27 A 8 Claims

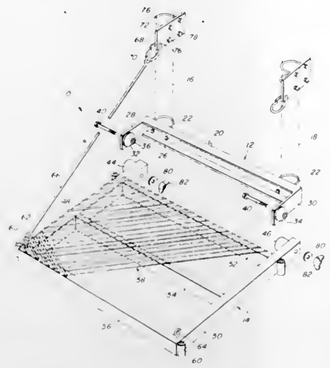


A rotating speaker system comprising a rotating cylindrical housing having a speaker therein on one side of the axis of rotation and an adjustable counterbalance on the opposite side of the axis of rotation externally adjustable for both static and dynamic balance.

3,797,607
PORTABLE WORKING PLATFORM

Louis J. Gargasz, 29 Hippocrates St., Famagusta, Cyprus

Filed Oct. 5, 1972, Ser. No. 295,289
Int. Cl. E04g *5/08*
U.S. Cl. 182—82 6 Claims

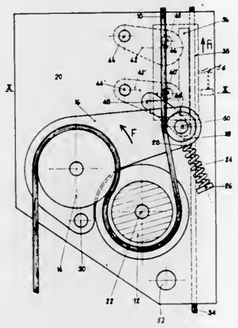


A portable platform is provided for use where stable working stages are required but which must be removed when not in use. The assembly is comprised of a bracket portion that is normally fixed to an upright support and a platform portion which is detachably connected to the bracket portion. The connecting coupling between the platform portion and the bracket portion includes cooperating male and female mating cones secured by bolts and nuts to provide a stable connection.

3,797,608
SCAFFOLDING WINCH

Joseph Virdis, Lausanne, Switzerland, assignor to Pomagalski SA, Fontaine, France

Filed Mar. 22, 1972, Ser. No. 236,922
Claims priority, application Switzerland, Mar. 26, 1971, 4524/71
Int. Cl. E04g *3/10*
U.S. Cl. 182—112 7 Claims

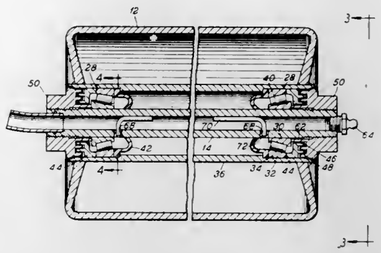


The invention relates to an apparatus for raising and lowering a scaffolding platform along a support cable and a safety cable. The safety cable gripping means enters automatically into action when the support cable become slack and an articulated lever for pressing the cable in a grooved pulley rotates into an inactive state.

3,797,609
LUBRICATING METHOD AND APPARATUS

Francois X. Bertaud, Aurora, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 102,490, Dec. 29, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,057
Int. Cl. F16c *13/00*
U.S. Cl. 184—7 R 27 Claims



In an assembly having a hollow shaft or spindle and means mounted on the shaft by anti-friction bearings, lubricant for the bearings is supplied through the shaft. Means are provided to establish a pressure drop between the interior of the shaft and each of the bearings, the established pressure drop having a magnitude in excess of the pressure drop existing between the ends of the shaft to insure substantially simultaneous lubrication of each of the bearings.

3,797,610
PIGMENTS

William Windle, Lobbs Folly, Sawles Rd., St. Austell, Cornwall, England

Continuation-in-part of Ser. Nos. 84,951, Oct. 28, 1970, abandoned, and Ser. No. , , which is a continuation-in-part of Ser. No. 712,242, March 11, 1968, abandoned. This application Nov. 24, 1972, Ser. No. 309,503
Claims priority, application Great Britain, Mar. 14, 1967, 12009/67
Int. Cl. C09c *1/02*
U.S. Cl. 106—306 5 Claims

A method of preparing a stable suspension of a natural calcium carbonate pigment in water which comprises (*a*) forming an aqueous suspension containing from 70 to 85 percent by weight of natural calcium carbonate pigment, the natural calcium carbonate pigment comprising not more than 1 percent by weight of particles having an equivalent spherical diameter larger than 53 microns, and a dispersing agent which is a water-soluble anionic polymer, and (*b*) thoroughly agitating said suspension in the presence of the dispersing agent until at least 5 horsepower hours of energy per long ton of natural calcium carbonate pigment has been dissipated in the aqueous suspension.

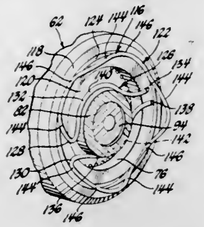
3,797,611
SPRING AND SPRING INSTALLATION

Harmon C. Hurt, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,081
Int. Cl. F16d *55/02*
U.S. Cl. 188—71.8 7 Claims

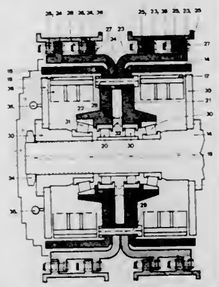
A disc brake adjuster mechanism of the type using a threaded adjuster nut and nested pistons having a clutch

therebetween, with a marcel spring having two active sections acting between a surface on one of the pistons and surfaces on



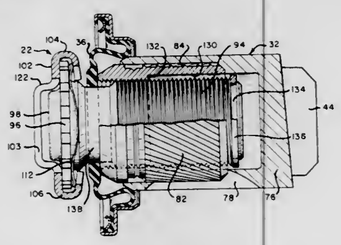
the other piston and the adjuster nut, respectively, to maintain brake adjustment when the brake is either pressure or mechanically actuated.

3,797,612
BRAKING DEVICE FOR VEHICLES
Andre Carias, 23, Avenue de Mendiguren, Nice (Alpes Maritimes), France
Filed July 13, 1972, Ser. No. 271,418
Claims priority, application France, July 13, 1971, 71.25730; July 7, 1971, 71.24601
Int. Cl. F16d *51/44*
U.S. Cl. 188—79 **7 Claims**



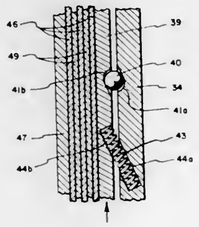
The invention relates to a braking device for vehicles which provides the driver with two completely independent means of braking so that he is able to use either one or the other according to the temperature reached by one of the means as the result of preceeding applications of the brake.

3,797,613
AUTOMATIC ADJUSTER WITH LIMITING DEVICE
Charles W. Nehr, Bloomfield, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Oct. 19, 1972, Ser. No. 299,072
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 GE **1 Claim**



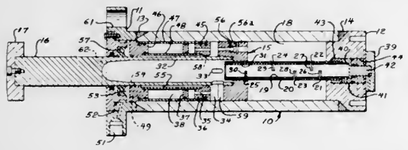
An adjusting wedge type brake actuator in which the degree of self-adjustment is so limited that an axially expansible plunger cannot be expanded to the point at which the connection between its parts becomes so weak that it is subject to sudden failure under load. An outwardly projecting snap ring located in a groove at the end of the adjusting stud engages the adjusting screw to limit the adjustment. This self-limited automatically adjusted brake actuator gradually becomes ineffective during lining wear after the adjustable plunger has reached its limit of adjustability rather than suddenly when the actuator no longer can withstand the loads applied thereto.

3,797,614
AUTOMATIC UNIDIRECTIONAL BRAKE
Frank V. McCay, Jr., Salt Lake City, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah
Filed Sept. 2, 1971, Ser. No. 177,217
Int. Cl. B60t *7/2*
U.S. Cl. 188—134 **6 Claims**



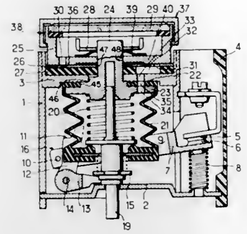
A brake is cooperatively operable with a clutch having an extended, open-ended drum rotating with an input shaft. A brake hub, spaced concentrically about the shaft at the drum's open end, carries a reactor plate and a first set of friction plates splined thereto, and the hub is capable of only limited rotation relative to a stationary reaction plate facing the reactor plate because of bearing balls interposed between the plates in complemental ramp seats. The clutch drum carries a second set of annular friction plates splined in its extended end to sandwich between the first set of friction plates. The clutch drum and second set of friction plates rotate freely about the hub in the driving direction but, upon reversal of rotation, frictional drag between the friction plates slightly rotates the hub to move the balls up their ramps to wedge the reactor plate away from the reaction plate, whereupon the reactor plate urges the first set of friction plates to clamp the second set to stop drum rotation.

3,797,615
IMPACT CUSHIONING DEVICE
Harold E. Stembridge, 600 E. Greenwood Ave., Mount Prospect, Ill.
Filed Oct. 6, 1972, Ser. No. 295,558
Int. Cl. F16f *9/19*
U.S. Cl. 188—285 **3 Claims**



An impact cushioning device including a hydraulic fluid cylinder, piston rod unit, the unit being equipped with an orifice tube having exponentially related slots for varying the flow of fluid resulting from impact, the fluid flow resulting from impact being used to compress a compressible fluid separated from the hydraulic fluid by means of an accumulator piston.

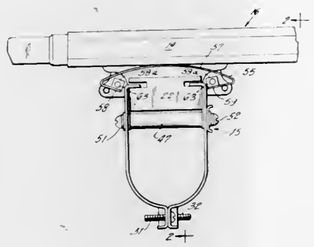
3,797,616
PNEUMATIC TIMER
Andre Georges Faffart, and Claude Paul Vinot, both of Nanterre, France, assignors to La Telemecanique, Nanterre, France
Filed Feb. 2, 1972, Ser. No. 222,819
Claims priority, application France, Feb. 8, 1971, 71.04132
Int. Cl. F16f *9/04*
U.S. Cl. 188—298 **2 Claims**



An open-circuit pneumatic timer of the type comprising an air intake filter, a timing device having a throttling channel, a bellows and connecting openings, wherein the filter is housed in a regulator shaped like a circular cupel, the bottom of which rests directly on the throttling channel and is provided with an opening cooperating with the said channel.

In this very simple and reliable timer, the distance covered by the fluid, outside the area where throttling is required, is kept to a minimum.

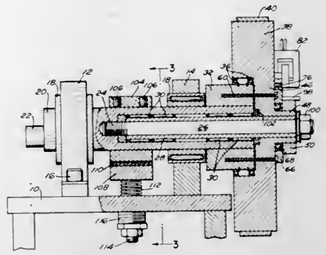
3,797,617
TROLLEY COLLECTOR HAVING REPLACEABLE GROUNDING STRAP
Ralph C. Clement, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed May 15, 1972, Ser. No. 253,540
Int. Cl. B60l *5/40*
U.S. Cl. 191—49 **16 Claims**



A trolley collector is provided with a pair of grounding elements constructed of resilient, electrically conductive material to engage and wipe across the outside surface of a trolley duct housing from which the collector is suspended.

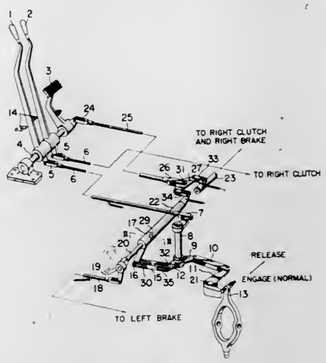
3,797,618
CLUTCH AND BRAKE ASSEMBLY
Carl G. Peterson, Smithfield, R.I., and Sulo A. Aijala, Attleboro, Mass., assignors to Carl G. Peterson Co., Smithfield, R.I.
Filed Aug. 25, 1972, Ser. No. 283,921
Int. Cl. F16d *67/02*
U.S. Cl. 192—12 BA **7 Claims**

A clutch and brake assembly of particular utility where a single-revolution clutching action is desired, although not limited thereto, wherein a single helical coil spring is utilized to effect both the desired clutching and braking operation. Means are provided for causing the spring to either wind or



unwind. In the former situation, the spring acts as a brake by coupling the driven shaft to a fixed hub. In the latter situation, the spring acts as a clutch by coupling the driven shaft with a rotating drive wheel.

3,797,619
OPERATIONAL CONTROL SYSTEM FOR VEHICLE STEERING CLUTCHES AND BRAKES
Yasuo Suzuki, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan
Filed Oct. 2, 1972, Ser. No. 293,912
Int. Cl. F16d *67/02*
U.S. Cl. 192—13 R **1 Claim**

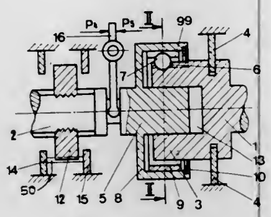


Left and right steering clutches of a vehicle are released and corresponding brakes are then applied by respective linkages respectively actuated by left and right steering levers, and a third linkage including a force equalizer and actuated by a single brake pedal applies equal braking force simultaneously to the left and right brakes independently of the operation of the steering clutches.

3,797,620
FRICTION CLUTCHES
Richard Haller, Ueberlandstrasse 240, Dubendorf, Switzerland
Filed Aug. 4, 1972, Ser. No. 277,993
Claims priority, application Switzerland, Aug. 6, 1971, 11591/71
Int. Cl. F16d *43/21, 13/16*
U.S. Cl. 192—56 R **4 Claims**

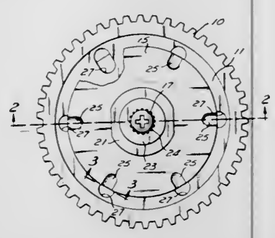
The invention provides a friction clutch having a driving member with a concentrically disposed cylindrical male end configuration, and a driven member with a cylindrical female

end configuration. A cylindrical prestressed coupling element which is split by a gap is interposed between the end configurations for frictional driving engagement with one of the end configurations. A coupling ball engages opposed seats afforded by the gap in the coupling element and the surface on the other of said end configurations. These seats are relatively inclined such that relative axial movement of the end configurations while the clutch is engaged causes disengagement of



the clutch by relieving the force urging the coupling element into frictional driving engagement with the respective end configurations. The gap in the coupling element may be directed obliquely and the other seat for the coupling ball may be provided by a trough-shaped elongated groove on the periphery of the male end configuration with outwardly diverging side wall end abutment surfaces on the said configuration.

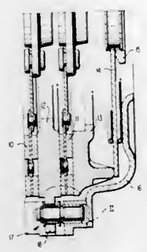
3,797,621
SLIP CLUTCH
Randall V. James, Watertown, N.Y., assignor to The Scott & Fetzer Company, Lakewood, Ohio
Filed Nov. 17, 1972, Ser. No. 307,467
Int. Cl. F16d *7/02*
U.S. Cl. 192—56 **3 Claims**



In a torque-limiting slip clutch, spring discs engage opposite sides of a gear wheel web and are keyed to a shaft for the wheel. Spaced protuberances are struck into the rims of the spring discs and engage slots formed in the wheel web. The central portions of the spring discs are clamped against the wheel and the rim portions are free of clamping.

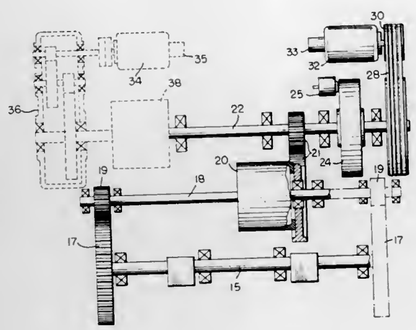
3,797,622
ADJUSTING MECHANISM FOR THE INTERMEDIATE PLATE IN TWO DISC CLUTCHES
Gunter Worner, Rommelshausen, and Peter Schrape, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Dec. 17, 1971, Ser. No. 209,311
Claims priority, application Germany, Dec. 19, 1970, 2062764
Int. Cl. F16d *13/75*
U.S. Cl. 192—111 A **19 Claims**

A readjusting mechanism for the intermediate plate in two-disk clutches intended in particular for motor vehicles, in which the intermediate plate is connected with the driving clutch part by way of spring bands or the like so as to be non-rotatable with respect thereto but axially displaceable against spring action; means are also provided for the readjustment of the intermediate plate corresponding to the wear at the clutch disks which include bolts distributed uniformly over the circumference and extending parallel to the axis which are



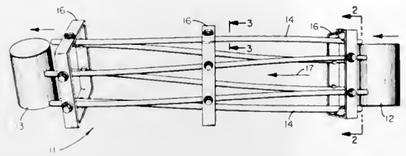
retained force-lockingly in the driving clutch part and extend through corresponding bores in the intermediate plate; the bolts guide the intermediate plate axially between two abutments with a play which at least approximates the vent play of the clutch, whereby the force-locking engagement can be overcome by the actuating force of the clutch but not by the return spring system of the intermediate plate.

3,797,623
MECHANICAL PRESS AND METHOD OF OPERATION
Charles J. Gregorovich, and Robert W. Adams, both of St. Marys, Ohio, assignors to The Minster Machine Company, Minster, Ohio
Continuation-in-part of Ser. No. 238,166, March 27, 1972, abandoned. This application Oct. 13, 1972, Ser. No. 297,442
Int. Cl. F16d *67/04*
U.S. Cl. 192—146 **20 Claims**



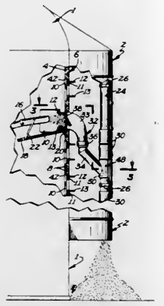
A mechanical press having a conventional speed drive and particularly characterized in the provision of a slow speed drive arrangement which can be made selectively effective and a control arrangement for inching the press when it is actuated by the conventional drive and also when it is actuated by the slow speed drive. Interlocks are provided to prevent either of the drives from becoming effective when the other drive is in effective condition.

3,797,624
CONVEYER GUIDE
Johnnie L. Powell, Turlock, and Carl L. Doyle, Modesto, both of Calif., assignors to Mandrel Industries, Inc., Houston, Tex.
Filed Jan. 13, 1972, Ser. No. 217,551
Int. Cl. B65g *11/10*
U.S. Cl. 193—25 R **4 Claims**



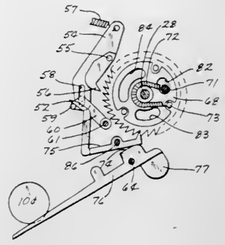
For articles such as rectangular or cylindrical containers or cans, a conveyor guide of the chute type has a number of parallel rails affixed to transverse rib members at intervals along the path of the articles, the ribs in one example being hoop-like rectangular frames arrayed to enclose the moving articles with rails on all the lateral sides. The rails are affixed by means of clamping fasteners each of which is secured to the adjacent rib by a bolt piercing the rib normal to the direction of the path. The fastener can rotate on the bolt so as to permit alignment of the rail at an angle to the rib. Thus at bends in the path, or places where the guide twists to change the vertical orientation of the articles, the rails may be smoothly curved to conform to the path without crimping at the fasteners. The rails are made of springy resilient material to assist this effect. The fasteners are relieved, at least on the side facing the ribs, to improve the clamping effect when the bolts are tightened.

3,797,625
SILO CHUTE WITH SEPARATE DISCHARGE TUBE
Raymond R. Price, Rochester, Minn., assignor to Rochester Silo, Inc., Rochester, Minn.
Continuation-in-part of Ser. No. 166,679, July 28, 1971, Pat. No. 3,709,345. This application July 27, 1972, Ser. No. 275,759. The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.
Int. Cl. B65g *11/02, 65/36*
U.S. Cl. 193—34 **9 Claims**



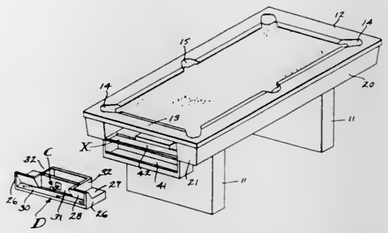
A clean access and service passage is provided within a silo chute by mounting an elongated discharge tube having a plurality of vertically spaced openings therein in an upright manner within the silo chute and utilizing this discharge tube to convey ensilage outwardly from the interior of the silo. For this purpose, a vertically adjustable transfer conduit is selectively positioned to extend between one of the access door openings in the silo wall and one of the discharge tube openings.

3,797,626
CREDIT REGISTER MECHANISM
Henry J. Albright, West Des Moines, Iowa, assignor to Fawn Engineering Co., Des Moines, Iowa
Filed Jan. 2, 1973, Ser. No. 320,304
Int. Cl. G07f *11/00*
U.S. Cl. 194—2 **4 Claims**



An improved coin-actuated credit register mechanism of the type useful in vending machines and the like and having a plurality of register wheels for cumulatively registering credits in response to deposit of one or more coins and in which the register wheels are controlled by pivoted lever arms adapted to function in response to deposit of appropriate coins. The lever arms are connected for pivoting movement, and are maintained in and returned to a normal position by counterweights attached thereto, which counterweights are of a mass such that the lever arms are pivoted against the force of the counterweights by the weight of a proper coin bearing against the upper surface of coin-contacting fingers of the lever arms. A suitable lever and counterweight is provided for each denomination of coin to be utilized in the mechanism, and an arcuate member moves in response to rotation of a unit register wheel to inactivate one or more lockout means, the lockout means being adapted to block operation of an associated vending machine until sufficient credits are accumulated on the credit register.

3,797,627
POOL TABLE BALL DISPENSER
Raymond J. Baker, 3136 Yale Ave., Marina Del Rey, Calif.
Filed July 12, 1972, Ser. No. 272,493
Int. Cl. G07f *17/32*
U.S. Cl. 194—41 **15 Claims**



A ball dispensing unit for coin operated pool tables wherein pocketed balls are collected inaccessibly behind a picture window by a slide tray and dispensed simultaneously by manual operation of a coin control governed by a primary anti-cheat means and displacing the slide tray to drop the balls into a crib; dropping of additionally pocketed balls being prevented by secondary anti-cheat means witholding pocketed balls from the slide tray. The ball crib remains accessibly opened, while both the primary and secondary anti-cheat means remain inaccessibly protected and tamper proof.

3,797,628

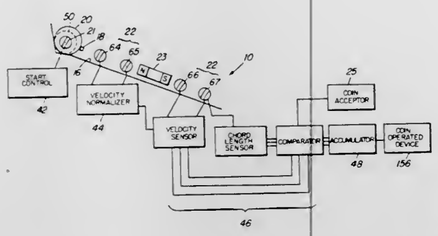
DEVICE AND METHOD FOR TESTING COINS EMPLOYING VELOCITY DETERMINING MEANS

Guy L. Fougere, Lincoln, and John L. Rothery, Marblehead, both of Mass., assignors to Arthur D. Little Inc., Cambridge, Mass.

Continuation of Ser. No. 91,871, Nov. 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 812,127, Jan. 1, 1969, abandoned. This application Mar. 17, 1972, Ser. No. 235,807

Int. Cl. G07f *3/02*

U.S. Cl. 194—99 80 Claims



A coin selector is disclosed which determines the denomination of a coin and which includes improved means for examining characteristics dependent upon the velocity of a moving coin which has been subjected to a magnetic field, means for examining characteristics dependent upon a chordal dimension of the coin and circuit means for comparing the resultant information with predetermined information characteristic of acceptable coins.

3,797,629

MOSAIC PRINTING HEAD

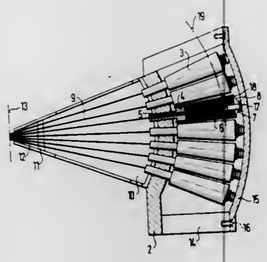
Erich Moser, Deisenhofen, Germany, assignor to Firma RENA Buromaschinenfabrick GmbH & Co., Munchen, Germany

Filed Apr. 20, 1971, Ser. No. 135,614

Claims priority, application Germany, Apr. 24, 1970, 7015426

Int. Cl. B41j *3/10*

U.S. Cl. 197—1 R 8 Claims



A mosaic printing head for a line-dot printing system. A plurality of punch rods project through magnetic cores of a series of electromagnets and are fixedly connected to the armatures of such electromagnets. The total lengths of all rod-armature units are preferably equal. A single abutment, preferably spheroidal, locates the initial position of all rod-armature units. The normal spacing of the armature from the magnetic core in its initial de-energized, position is preferably slightly greater than the stroke of the rod-armature unit.

3,797,630

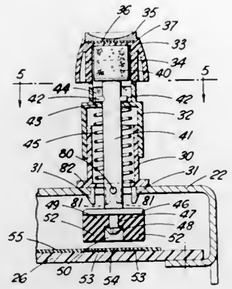
KEYBOARD FOR ELECTRONIC CIRCUIT

Sammy Zilkha, Esher, England, assignor to Alphanumeric Holdings Limited, Surrey, England

Filed July 12, 1971, Ser. No. 161,611

Int. Cl. B41j *5/08*

U.S. Cl. 197—98 10 Claims



An electronic keyboard assembly is formed essentially of three parts, an integrated circuit using high input impedance metal oxide semi-conductors, a printed circuit board electrically connected to the integrated circuit and a number of key assemblies located above the printed circuit board. In a preferred construction, the key assemblies are not electrically connected to the printed circuit board, each key having a conductive element forming, when the key is depressed, a capacitive bridge coupling two conductors on the printed circuit board.

3,797,631

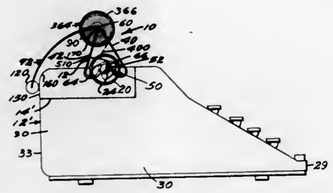
PAPER ROLL SUPPORT FOR TYPEWRITERS

Ruth B. Crone, 418 S. 38 Ave., Omaha, Nebr.

Substitute for Ser. No. 797,651, Feb. 7, 1969, abandoned. This application Oct. 18, 1972, Ser. No. 298,672

Int. Cl. B41j *15/00*

U.S. Cl. 197—133 R 7 Claims



A paper roll support for attachment to a typewriter having saddle means for engaging horizontal shafts on the right and left hand sides of a typewriter for forming a part of the support, another part of the support being a means for engaging the upright surface of the backside of the carriage of a typewriter.

3,797,632

PHASE COMPENSATED MULTIPLE MOVING HEAD INSPECTION APPARATUS

Darius O. Riggs, Ottawa Lake, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

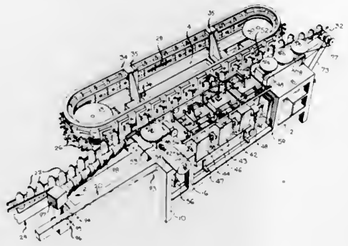
Division of Ser. No. 209,144, Dec. 17, 1971, Pat. No. 3,198,883. This application May 11, 1973, Ser. No. 359,246

Int. Cl. B23q *5/22*

U.S. Cl. 198—19 7 Claims

Apparatus and method for driving three article inspection stations out of phase with one another for inspecting moving

articles with a minimum expenditure of drive power. In this invention, three inspection station drive mechanisms are utilized. Each of the three drive mechanisms is an identical unit utilizing a cam to produce an oscillating output from an arm, the cam being driven by a continuously rotating input shaft. Each of the three units are coupled in series in a linear array and driven by a common drive motor. A split coupling is used to connect the three drive units together, allowing the phase of the cams contained within the unit to be set independently. The oscillating arms are set out of phase with each other by approximately 120°. The oscillating output arms drive article inspection stations on which are mounted inspection apparatus. The motion of the article inspection stations is such that, as articles are precessed past each station, the station tracks the article for a period of time at a constant velocity



and inspects the article for various attributes, the station then returning to its starting point at a velocity greater than its inspecting velocity to pick up and track the next container presented to it. This function is performed by all three inspection stations on each article that passes through the inspection apparatus. By driving the three drive units out of phase with one another, the power needed to accelerate one unit may be furnished, in part, from the deceleration of another unit in the series drive train. Thus, the total power required to drive the apparatus is reduced and the fluctuations within the system caused by relatively high transfers of power from acceleration to deceleration is reduced, thereby allowing the operation of the system without the use of an energy storage element, such as a flywheel, to help absorb these large fluctuations in power requirements.

3,797,633

WEIGHING APPARATUS

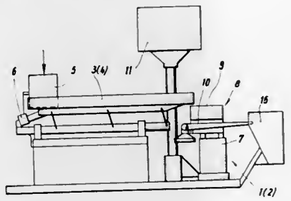
Adolf Stambera, Stuttgart, Germany, assignor to Fr. Hesser Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany

Filed Dec. 13, 1971, Ser. No. 207,331

Claims priority, application Germany, Dec. 9, 1970, 2060490

Int. Cl. B65g *69/00*

U.S. Cl. 198—39 4 Claims



A weighing apparatus for relatively bulky food, or the like, in which the material is conveyed in excess of a unit quantity to a dual conveyor system carried by a scale, the material is weighed and the electronically controlled conveyors discharge the desired quantity of the material into a collecting hopper.

3,797,634

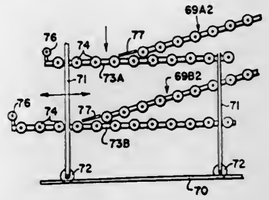
ADJUSTABLE PLURAL CONVEYOR

Owen L. Field, c/o Claser Bros., 4800 S. Bogle Ave., Corona del Mar, Calif.

Division of Ser. No. 873,185, Nov. 3, 1969, Pat. No. 3,616,944. This application Feb. 3, 1971, Ser. No. 112,338

Int. Cl. F16d *13/04, 23/00*

U.S. Cl. 198—43 1 Claim



A conveyor system for efficiently filling, checking, loading and delivering a variety of items of merchandise to a large number of customers using a plurality of trucks. Salesmen's orders, each covering a large number of separate items, are written on two different forms (Form A for cigarettes, Form B for cigars, e.g.). The forms are then collated in accordance with pre-established route lists, listing for each truck delivery the customer stops in order. Orders are filled by warehousemen in reverse order of the route lists, Form A orders on conveyor A and Form B orders on conveyor B, the merchandise being moved along to a station, where the orders are packed up and taken to an invoice clerk for billing. Conveyor A has an elevator which places it immediately on top of conveyor B. Each conveyor has a switch making it possible to switch the merchandise to either of two parallel, double-deck storage conveyors of extended length leading to separate loading docks. All merchandise for a particular truck is stored on one of these storage conveyors while being invoiced and is then checked and loaded into the truck in inverse order of delivery, the Form A merchandise on a telescopic loading conveyor fitting into the front of the truck above the Form B merchandise.

3,797,635

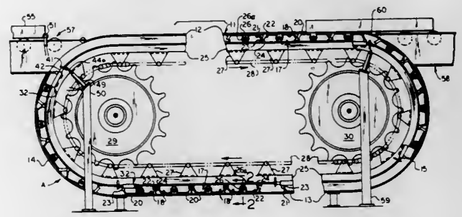
ACCUMULATOR TYPE SLAT CONVEYOR

Martin H. Boisen, Chula Vista; Steve Crevar, Jr., San Diego, and Robert T. Morris, El Cajon, all of Calif., assignors to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 30, 1972, Ser. No. 284,858

Int. Cl. B65g *37/00*; B61b *13/00*

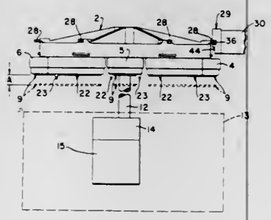
U.S. Cl. 198—75 12 Claims



An accumulating conveyor comprises a plurality of load supporting slat units, each of a length proportioned to the shortest load to be handled on the conveyor. Each slat unit is provided with a clutch, which normally grips a drive belt to advance its respective slat unit along the accumulator conveyor. A retractable stop pin is mounted in the path of the clutches, and when extended engages the clutch of an approaching slat

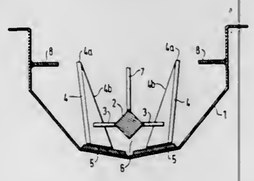
unit to free it from the drive belt. The stop pin is maintained in extended position by photo cell means activated by a light beam directed across the path of a load approaching on a feed conveyor. When the light beam is intercepted by an approaching load, it deactivates the photo cell and withdraws the stop pin, whereupon the clutch engages the drive belt and advances the slat unit to supporting position beneath the oncoming load. As long as the passing load continues to intercept the light beam, successive slat units continue to be advanced by their clutches to supporting position beneath the load. When the load passes the light beam, however, the latter again activates the photo cell, thereby extending the stop pin to clutch releasing position and arresting further feeding of slat units onto the accumulator conveyor until another load arrives in position to again intercept the light beam.

3,797,636
TURNTABLE STOPPING APPARATUS
Stuart G. MacDonald, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,412
Int. Cl. B65g *29/00*
U.S. Cl. 198—210 **8 Claims**



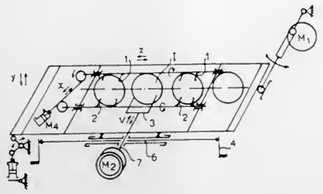
A turntable stopping apparatus is adapted for use with a turntable of the kind supported for rotation about a rotary axis and for translation along the same axis. The apparatus is provided with at least one engageable stop member connected to the turntable for synchronous movement therewith and with a catch member for engaging the stop member, as the turntable is rotated about the rotary axis, to stop the turntable in a certain position of rotation. The catch member is configured to release the stop member from engagement, on translation of the turntable along the rotary axis, for allowing further turntable rotation until the same or another stop member is engaged.

3,797,637
RECIPROCATING CONVEYORS
Ing Kurt Wissmann, 406 Vios-in Finchliln Mishlenhenwlg:25, Muhlenheuweg, Germany
Filed Dec. 28, 1971, Ser. No. 213,226
Int. Cl. B65g *25/08*
U.S. Cl. 198—221 **4 Claims**



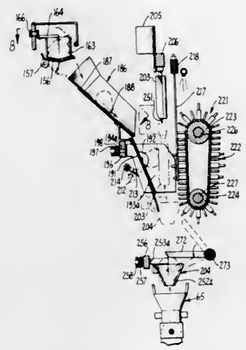
To overcome the problems associated with conveying metal chip, especially cast-iron chip, the reciprocating conveyor is provided with means whereby, on the return stroke of the conveying rod, a free passage, effective more particularly for fine chip, is left between the entraining means.

3,797,638
RECIPROCATING ARTICLE TRANSFER APPARATUS FOR MACHINE TOOLS
Bruno Bronzini, 18/4, Strada Alberoni, Turin, Italy
Filed June 17, 1971, Ser. No. 154,033
Claims priority, application Italy, July 31, 1970, 69647/70
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AD **2 Claims**



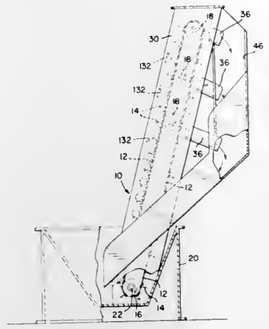
Reciprocating article transfer apparatus for machine tools, comprises a vertically reciprocable main frame, a horizontally reciprocable subframe carried by the main frame, and a plurality of forks mounted pairwise on the subframe for vertical swinging movement about spaced parallel axes so that pairs of forks swing vertically toward and away from each other to engage and release workpieces. Turnover means can also be provided between adjacent pairs of forks, for inverting workpieces between work stations.

3,797,639
MACHINE FOR ORIENTING PEARS
Laurence H. Smith, Lafayette, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.
Filed June 28, 1972, Ser. No. 267,017
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AA **14 Claims**



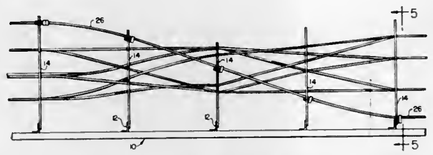
Means are provided for receiving the pears in bulk and for feeding these in single file to a pear orienting means which positions each pear in a vertical position in which the stem end of the pear is lowermost. In this position the pears are fed into a conical cup as shown at **65** in FIG. 3 in U.S. Pat. No. 3,018,179. Following placement in the vertically positioned conical cup, the pear is grasped by the pear gripping pads **71** after which the cup is moved 90° to a horizontal position in which the pear is moved toward a core tube on which it is impaled for peeling and coring by mechanism as shown in the aforementioned patent and in U.S. Pat. Nos. 3,055,408 and 3,058,502.

3,797,640
AUTOMATIC APPARATUS FOR ORIENTING AND FEEDING BOTTLES OR LIKE ARTICLES HAVING NECKS
Samuel S. Aidlin, 214 Beaumont St., and Stephen H. Aidlin, 3855 Shore Pkwy., both of Brooklyn, N.Y.
Filed Jan. 24, 1972, Ser. No. 220,312
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AA **10 Claims**



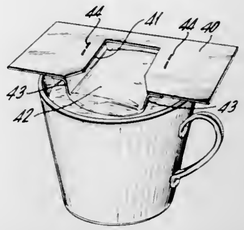
Automatic orienting and feeding apparatus for bottles with necks, or like articles, in which the bottles are picked up from a bin by an upwardly tilted escalator with shelves. The properly oriented bottles are blown off the shelves through an outlet opening into a chute adjacent the escalator top. The misoriented bottles are gripped by their thicker portion as they pass the outlet opening and are not blown off but are discharged after they pass the escalator top. In a modified embodiment the escalator is formed with a downwardly and rearwardly sloping portion and the initially misoriented bottles are blown off the shelves at that portion into a second chute in oriented position. Two or more escalators may be arranged in a bank to pick up from a common bin with their outlet openings offset relative one another so that their chutes do not block one another and deliver to a common conveyor belt.

3,797,641
CONTAINER TWISTING STRUCTURE FOR RINSER OR THE LIKE
John Nelson, Newington, and Robert J. Schultz, Portland, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.
Filed Sept. 13, 1971, Ser. No. 179,876
Int. Cl. B65g *11/20*
U.S. Cl. 193—43 A **6 Claims**



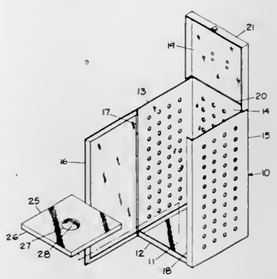
Containers are fed by line pressure through a plurality of resilient guide rods, which rods are bent to define a helical path for the containers, and novel means is provided for supporting these guide rods at bulkhead stations along this helical path. Each bulkhead has an opening through which the containers can pass, and a series of hexagonal openings provided adjacent the container opening in each bulkhead are adapted to receive soft plastic plugs which can be clamped in these hexagonal openings to support guide rod supporting members each of which is mounted in a predetermined angular relationship with respect to the plane of the bulkhead.

3,797,642
INFUSION PACKAGE
Reuven Dobry, Stamford, Conn., and Salvatore Casamassima, Floral Park, N.Y., assignors to Beech-Nut, Inc., New York, N.Y.
Filed Feb. 7, 1972, Ser. No. 223,933
Int. Cl. A23f *1/08;* **B65d** *85/70*
U.S. Cl. 206—.5 **5 Claims**



An infusion package such as a tea bag is suspended in a horizontal position at about or near the upper surface of the extracting liquid by attachment to a member which at least partly engages the rim of the extracting vessel. The member is adapted to permit rapid extraction of the package.

3,797,643
LANTERN TOTE
Robert W. Shupp, P.O. Box 273, Jefferson, Wis.
Filed July 28, 1972, Ser. No. 276,239
Int. Cl. B65d *51/28, 85/54*
U.S. Cl. 206—1 R **1 Claim**

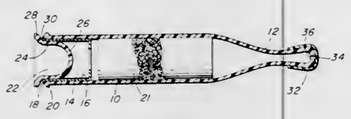


A tote for storing and transporting lanterns and carrying same either lighted or unlighted within the closed tote. The tote has three perforated fixed sides and a hinged fourth side or door and a hinged cover which can be latched down over the door. The carrying handle is insulated from the remainder of the tote and storage space is provided below a removable false bottom member on which the lantern rests.

3,797,644
FILTER
Herman L. Shaw, Miami Beach, Fla., assignor to Aquafilter Corporation, Miami, Fla.
Filed Apr. 21, 1972, Ser. No. 246,364
Int. Cl. B65d *79/00;* **B65b** *3/04*
U.S. Cl. 206—41 R **4 Claims**

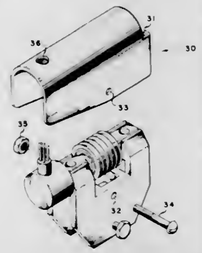
A cigarette holder-filter includes a cigarette receiving socket at one end and a mouthpiece at the other end. The interior of the holder includes a fibrous filtering material impregnated with water. The ends of the holder are sealed in a manner both to prolong substantially the shelf life of the unit

and to enable the holder to be filled fully with water. This is achieved by forming a minute air-escape hole in the otherwise sealed mouthpiece end of the filter to enable the interior of



the filter to be filled fully and excessively with water before the cigarette-receiving end is sealed. The hole is small enough to minimize evaporation of the water.

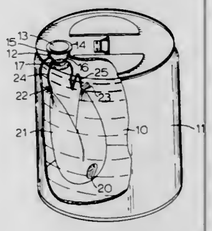
3,797,645
PROTECTIVE DEVICE
Daniel H. Forsyth, Marietta, Ga., and James M. Melvin, Jr., State Line, Miss., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed May 30, 1972, Ser. No. 258,083
Int. Cl. B65d *81/00, 85/00, 85/38*
U.S. Cl. 206—46 H **2 Claims**



This device is specifically designed and constructed to provide and maintain precision alignment of the mating parts of shear type transducers and thereby prevent lateral movement which causes damage to such transducers. These transducers are particularly prone to damage during their installation when torque is applied to the mounting bolts therefor.

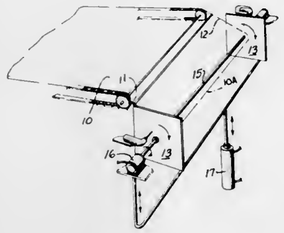
A uniformly controlled load is applied through the device to the transducer preventing lateral movement in excess of that of its designed limits to allow for installation alignment. Due to the preciseness of alignment, the device may also be used to retain the mating parts of transducers during fabrication as well as to serve as a container during shipment and storage to prevent damage to the transducer in handling, etc.

3,797,646
TWO-INGREDIENT CONTAINER SYSTEM
Frederick F. Horne, Carmel Valley, Calif., assignor to Airrigation Engineering Company, Inc., Carmel Valley, Calif.
Filed Oct. 5, 1971, Ser. No. 186,738
Int. Cl. B65d *81/32*
U.S. Cl. 206—47 A **1 Claim**



A two-ingredient container system. A drum for a main liquid, such as a solvent, has a bunghole at its upper end; a cap for the bunghole has a depending stem with a lower flange. A second ingredient, liquid or solid, is placed in a thin plastic tube of soft collapsible plastic and is tied by strings or similar means at both ends, and the strings are then tied to the stem of the cap. The tube-encased plastic is then put into the drum, either before or after the drum is filled with the main liquid. When the cap is taken off the bunghole, the strings are used to pull up one end of the tube sufficiently enough to be able to cut off that end and open it, and then the other end may be pulled up and used to shake the second ingredient into the liquid. The invention is particularly useful in combining materials such as dichlobenil with sodium methyl dithiocarbamate.

3,797,647
METHOD OF PACKAGING OF PIPE FABRICS
Daniel Frishman, 14 Castle Heights Rd., Andover, Mass.
Filed May 30, 1972, Ser. No. 258,124
Int. Cl. B65d *85/66*
U.S. Cl. 206—51 **3 Claims**

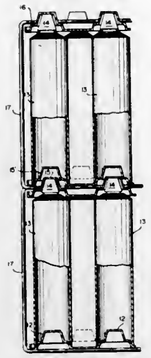


In this invention both edges of a pile fabric are simultaneously sewn, in the form of an Archimedean spiral, to rigid sheets such as heavy cardboard or plastic. A package for the storage and/or shipping of pile fabrics is formed of the following elements: 1) The rigid sheets to which the pile fabric is sewn form the side walls of the package. 2) A protective wrapper placed around the pile fabric is attached to the side walls. 3) The rigid sheets are held separated, so that the pile fabric does not sag, by (a) cardboard tubular separators, or (b) wooden sticks, or (c) the protective wrapper, or (d) a combination of these.

3,797,648
PACKAGE OF COLLAPSIBLE TUBES AND TRAY THEREFOR
John Arthur Shaw, Abbotsford, South Wales, Australia, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 19, 1972, Ser. No. 245,480
Claims priority, application Australia, Apr. 20, 1971, 4667/71
Int. Cl. B65d *77/26*
U.S. Cl. 206—277 **6 Claims**

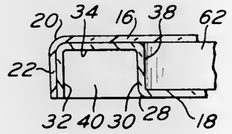
A package of collapsible tubes comprising a tray at top and bottom of a plurality of similarly oriented tubes arranged side by side in parallel alignment, each tube having a cap closing one end and the other end open, each tray having a plurality of indentations and corresponding protrusions, the caps of said tubes being in the indentations of the top tray and the protrusions on the bottom tray extending into the open ends of the tubes and giving support against accidental deformation in a

radial direction, and means to retain the trays together against the ends of the tubes. Two or more assemblies are stacked in a



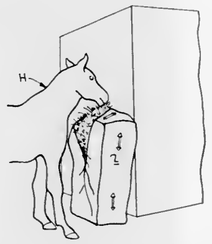
carton with the protrusions of one assembly extending into the corresponding indentations of another assembly. The tray per se is also part of the invention.

3,797,649
COIN HOLDING DEVICE
Louis A. Ringle, Wilmington, Del., assignor to Franklin Mint Corporation, Franklin Center, Pa.
Filed Jan. 5, 1972, Ser. No. 215,598
Int. Cl. B65d *1/34, 41/02;* **G07d** *9/00*
U.S. Cl. 206—0.82 **3 Claims**



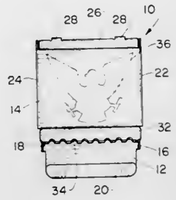
A coin holding device having opposed members which enclose the coin and hold it therebetween. The opposed members have means for engagement with the display device in which the coin may be stored.

3,797,650
SHOW-TOTE BALE BAG
Julia R. O'Brien, and Gary F. O'Brien, both of 626 Union City Rd., Greenville, Ohio
Filed Feb. 29, 1972, Ser. No. 230,304
Int. Cl. A45c *3/00;* **B65d** *71/00*
U.S. Cl. 206—83.5 **1 Claim**



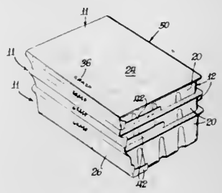
A bale of hay is provided with a weather proof canvas covering. The covering is form fitting and provides access to the enclosed bale of hay from two sides and one end by use of a zipper. Additionally, the covering has some means to facilitate handling of the enclosed bale of hay.

3,797,651
MATCH BOOK HOLDER
James Adams Van Meter, 15357 Magnolia Blvd., Van Nuys, Calif.
Filed Jan. 6, 1972, Ser. No. 215,881
Int. Cl. B65d *11/00;* **A24f** *27/00*
U.S. Cl. 206—107 **1 Claim**



A device to retain a book of matches wherein the match book is located directly adjacent a base plate with the lower edges of the match book frictionally wedged within a U-shaped lip of the base plate, the match book is confined against lateral movement by upstanding sides connected to the base plate, a cover is hingedly connected to the upper edge of the base plate, the cover is to frictionally lock with the sides when in the closed position.

3,797,652
NESTED STACK OF STERILE SHIELDED CONTAINERS
Sheldon R. Chesky, Rolling Meadows, Ill., assignor to The Kendall Company, Walpole, Mass.
Division of Ser. No. 121,080, March 4, 1974, Pat. No. 3,730,338. This application Sept. 29, 1972, Ser. No. 293,638
Int. Cl. B65d *71/00*
U.S. Cl. 206—229 **6 Claims**



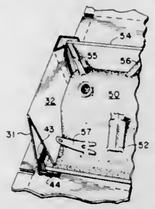
A nested stack of sterile shielded containers wherein each container includes a hollow sterile tray to retain sterile articles therein, with the tray including, a top for access to the articles, a bottom, and at least one side wall connecting the top and the bottom. A shield including a flexible sheet covers at least a portion of the tray top and one side wall, and the sheet is sufficiently large to prevent contamination of the tray or articles during grasping of the shield by a user's hands. Each shield, except for the one covering the uppermost tray in the stack, is partially retracted into the top of its respective tray by the nested bottom portion of the tray thereabove.

3,797,653

SHIPPING CONTAINER FOR BATHTUBS

James R. Goodsite, Sandusky, Ohio, assignor to Westvaco Corporation, New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,510
Int. Cl. B65d *5/44, 81/00, 85/64*
U.S. Cl. 206—320 1 Claim



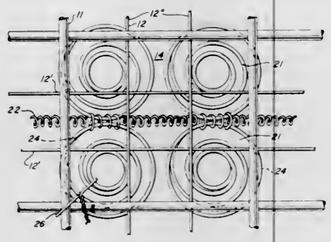
A shipping container is described for large, heavy plumbing fixtures, such as bathtubs and the like. The container includes a pair of reinforced and folded end frames that are positioned at each end of the bathtub, and, a continuous wrapper element which encloses the bathtub. The wrapper is secured to the sides of the end frames and includes top, bottom and side panels which extend around the bathtub to provide a durable, convenient, and inexpensive shipping container.

3,797,654

SHIPPING CONTAINERS

Rex S. Spiller, Sheboygan, Wis., assignor to Spiller Spring Company, Sheboygan, Wis.

Filed Jan. 10, 1972, Ser. No. 216,666
Int. Cl. B65d *7/20, 71/00, 85/62*
U.S. Cl. 206—326 5 Claims



A container particularly suitable for the shipment of compressed coil springs having a pair of crate sides each side comprising a coarse and a fine mesh grid, wherein the coarse mesh grid provides the strength necessary to maintain the spring units in the compressed state and the fine mesh grid prevents the contents from protruding through said crate sides.

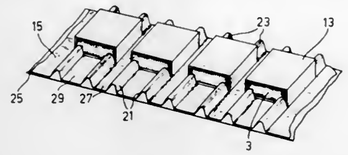
3,797,655

PACKAGE CONTAINING ELECTRIC COMPONENTS

Salomon Boone, and Frans Van Der Heiden, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,968
Claims priority, application Netherlands, Sept. 25, 1971, 7113223
Int. Cl. B65d *73/02*
U.S. Cl. 206—330 4 Claims

A package containing electric components in which the body of the components is placed in a cavity of a profiled paper strip and are prevented from moving in the transverse direction of the strip by parallel ribs. The cavities and the ribs are located on the same side of the profiled strip and are covered by a second smooth paper strip which is connected to the profile strip by means of several adhesive connections, one



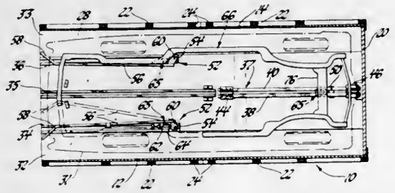
on each side of the cavities. The connection wires are enclosed by the two strips throughout their length and circumference. The package is very flexible in the longitudinal direction and has a great rigidity in the transverse direction.

3,797,656

VEHICLE POSITIONING AND RESTRAINT APPARATUS

Elwyn L. Kitchen, Jr., Troy, and Walter Cwycyshyn, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 12, 1972, Ser. No. 296,757
Int. Cl. B60p *7/08*; B61d *45/00*; B65d *25/62*
U.S. Cl. 206—335 4 Claims



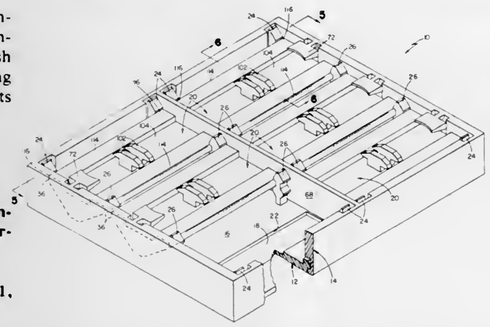
A vehicle positioning and restraint apparatus having a latch mechanism and parallel guide rails which slidably receive and support tie-down devices attached to the underside of a vehicle and allow the vehicle to float on its own suspension while being transported by a carrier.

3,797,657

PACKAGE

Richard J. Petrillo, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Apr. 27, 1972, Ser. No. 248,086
Int. Cl. B65d *7/00, 57/00, 85/62*
U.S. Cl. 206—356 16 Claims



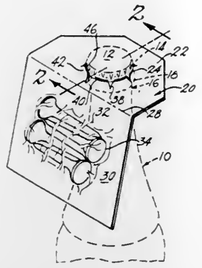
Dispenser package for razor blade units, the package having resilient recessed lugs for receiving and retaining opposite sides of the blade units.

3,797,658

PACKAGE ATTACHMENT FOR CONTAINERS

Bobbie D. Peacock, c/o Ma Industries Inc., 2350 Sylvan Rd., East Point, Ga.

Filed Oct. 14, 1971, Ser. No. 189,334
Int. Cl. B65d *23/12, 79/00*
U.S. Cl. 206—484 9 Claims



A card package for attachment to soft drink bottles and the like to hang and carry a premium item such as golf tees. The method of making the film card package comprises on a large sheet of chipboard, cardboard or the like punching at spaced locations a plurality of lines intersecting at the center and forming the diameter of a circle. Then laying the premium items such as golf tees at each location punched and thereafter heat and vacuum sealing a sheet of film over the face of the sheet and over the premium items and the intersecting lines after which the individual cards are die punched out from the board at the same time punching out a circular disc with the center of the intersecting lines as the center of the circle which leaves a hole with the film over the cut portion of the lines along the edge of the hole in the card. The film around the hole is resilient and elastic and when stretched in place over a soft drink neck pulls the edge of the hole tightly against the neck of the bottle beneath the cap securing the card tightly in place against the bottle. This provides a measure of security against accidental displacement as well as discouraging improper removal by patrons prior to purchase.

3,797,659

MODULAR SCREEN

John H. Kauffman, Richland Center, Wis., assignor to Herbert S. Simpson, Trust and Bruce L. Simpson, Trustee, both of Chicago, Ill.

Filed Nov. 29, 1972, Ser. No. 310,393
Int. Cl. B07b *13/04*
U.S. Cl. 209—85 14 Claims

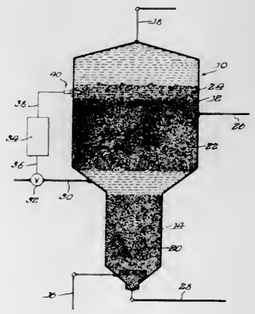
A modular screen for classifying materials comprising a screen cloth supported on a frame, said frame comprising a plurality of modular side frame sections and a pair of cross members at opposite ends interconnecting the outer ends of the end ones of said modular side frame sections; each of said side frame sections having a pair of precisely parallel enlarged opposite end faces adapted to be secured to the end face of an adjacent section in end to end relation therewith whereby the area of the screen frame can be changed by the addition or subtraction of pairs of modular side frame sections.

3,797,660

ION EXCHANGE RESIN SEPARATION APPARATUS AND METHOD EMPLOYING SONIC MEANS TO SENSE RESIN LEVEL

Cole R. Miller, Medford Lakes, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Continuation of Ser. No. 878,784, Nov. 21, 1969, abandoned. This application June 23, 1972, Ser. No. 265,924
Int. Cl. B03b *11/00*
U.S. Cl. 209—499 5 Claims



A separation column and method for separating anion and cation exchange resins in an upwardly flowing stream of water employing ultrasonic level sensing means. The sensing means include first and second transducer means for respectively sensing and receiving an ultrasonic signal in the frequency range of 1 to 5 megacycles per second. In one embodiment of the invention, the level of resin within the column is sensed when the resin interrupts transmission of the ultrasonic signal at a probe. In a second embodiment, the ultrasonic signal is directed toward the surface of the resin, and the time delay for receipt of an echo is measured. This time delay, in turn, gives an indication of the level of ion exchange resin within the column.

3,797,661

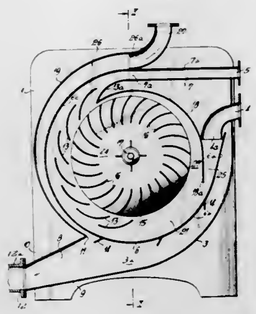
METHOD AND APPARATUS FOR SEPARATING GRANULES FROM A LIQUID

Heinrich Buzga, Grevenbroich, Germany, assignor to Maschinenfabrick Burkau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed May 4, 1972, Ser. No. 250,270
Claims priority, application Germany, May 26, 1971, 2126069
Int. Cl. B01d *29/40*
U.S. Cl. 210—73 10 Claims

Granules formed of a synthetic material by immersion in water, form a mixture with a large amount of water. The granules are separated from the water by a first stream of air produced by a rotary blower whose air stream presses the mixture against a sieve so that water is discharged through the sieve while the remaining wet granules are further transported

by the stream of air along the sieve where remaining water is removed through the sieve while tangentially directed second

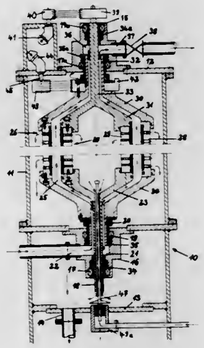


air streams produced by a blower wheel transport the granules from the sieve to an outlet for the granules, and are discharged on the other side of the sieve through a gas outlet.

3,797,662
PRESSURE-FILTERING APPARATUS AND FILTERING METHOD

Hans-Joachim Titus, Von-Hees-Strasse 5, 6148 Heppenheim, Germany

Filed Nov. 8, 1971, Ser. No. 196,370
Claims priority, application Germany, Nov. 9, 1970, 2054968
Int. Cl. B01d *21/26*
U.S. Cl. 210—78 **17 Claims**

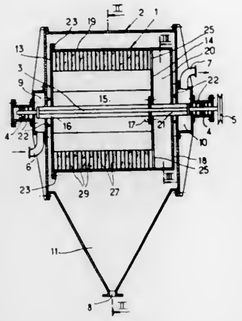


An apparatus and method for pressure-filtering suspensions inside a filter chamber to separate them into liquor and solids in a continuous operation, the apparatus consisting essentially of two concentrically journalled oppositely rotating filter drums forming an annular filter chamber between their walls, the pressurized suspension being fed into the filter chamber via a feed chamber and an axial, annular feed duct between the drum shafts, the dried product cake being similarly discharged via an axial, annular discharge duct between the drum shafts and a discharge chamber. The apparatus may include a washing zone in the filter chamber being supplied with pressurized washing liquid through the inside of the inner filter drum.

3,797,663
METHOD OF SEPARATING PARTICLES CONTAINED IN A LADEN FLUID, AND A DYNAMIC SEPARATOR FOR PERFORMING THIS METHOD

Lucien R. Bourdale, 30, Arehue Aristide Briand, Arpajon, France

Filed Nov. 22, 1971, Ser. No. 200,846
Claims priority, application France, Nov. 23, 1970, 70.41908
Int. Cl. B01d *21/26*
U.S. Cl. 210—78 **4 Claims**

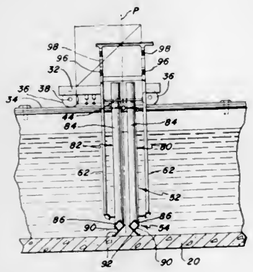


A method and apparatus for separating particles from a fluid, wherein the particle-laden fluid is subjected to centrifugal force to cause a radial movement of the particles and fluid adjacent a radial surface of a rotating filtering partition disposed at right angles to its axis of rotation. A suction is applied through the partition to cause an axial movement of the fluid through the partition for separating the fluid from the particles.

3,797,664
SLUDGE REMOVAL APPARATUS

Howard L. Pentz; Chandrakant Parkhani, both of Lansdale, and Frank Majeron, Philadelphia, all of Pa., assignors to FMC Corporation, San Jose, Calif.

Filed Jan. 12, 1972, Ser. No. 217,379
Int. Cl. B01d *21/02*
U.S. Cl. 210—83 **19 Claims**

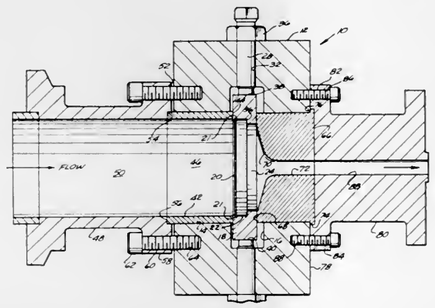


A method and apparatus for removing settled solids from the bottom of a sedimentation tank is disclosed in this application. The apparatus consists of a bridge that is supported for reciprocal movement on the tank and has eduction means for the settled solids depending therefrom. The drive means for the traveling bridge includes speed control means to vary the speed of the bridge to maintain a substantially uniform solids concentration in the sludge flowing through the eduction means at a substantially constant flow rate. In one embodiment, the eduction means consists of a plurality of transversely aligned inverted T-shaped tubes, each of which has a plurality of spaced openings along the bottom thereof. A deflecting plate is pivoted intermediate opposite edges below the openings and is moved between first and second positions to direct the sludge towards the openings in either direction of travel of the bridge. In an alternate embodiment, the eduction means consists of first and second longitudinally spaced inverted T-spaced eduction tubes, each of which has one set of openings and a deflecting plate fixed to the horizontal portion of the tube. One set of openings and a deflecting plate are directed towards one end of the tank while the second set of openings and the second deflecting plate are directed towards the opposite end so that one eduction tube collects sludge as the bridge travels in the one direction and the second eduction tube collects sludge as the bridge is traveling in the opposite direction.

3,797,665
SCREEN CHANGER

James P. Paquette, Sterling Junction, Mass., assignor to The Berlyn Corporation, Millbury, Mass.

Filed Nov. 20, 1972, Ser. No. 307,815
Int. Cl. B01d *29/00*
U.S. Cl. 210—236 **8 Claims**



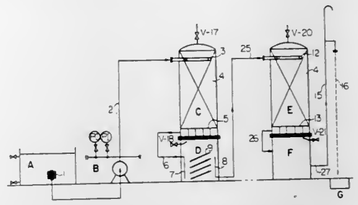
A screen changer wherein sealing pressure is obtained against a breaker plate and filter screen element by providing a screw adjustment from an external adapter which bears against a sealing bearing. The sealing bearing bears against a slide plate carrying the breaker plate to provide a simple and effective externally controllable sealing pressure engagement.

3,797,666
APPARATUS FOR SEPARATING FINE OIL DROPLETS AND SLUDGE SUSPENDED IN LIQUID

Toru Nakanishi; Junichi Matsui; Setsuji Yonehara; Masahiro Aoki; Kiyonori Ishiguro, all of Otsu; Tatsuo Satake, Nishinomiya, and Shingi Azuma, Osaka, all of Japan, assignors to Toray Industries, Inc., Tokyo and Toray Engineering Co., Ltd., Osaka, both of, Japan

Filed Aug. 10, 1971, Ser. No. 170,470
Claims priority, application Japan, Aug. 15, 1970, 45-71147
Int. Cl. B01d *17/04, 39/04*
U.S. Cl. 210—265 **4 Claims**

The invention relates to the separation of fine oil droplets and sludge suspended in liquid which is achieved by the provision of an apparatus comprising at least one pair of (a) a packing chamber characterized as being irregularly packed with small pieces cut from fiber web and (b) a settling chamber; the liquid was fed into the packing chamber (a) where the fine oil droplets coalesce and, at the same time, the

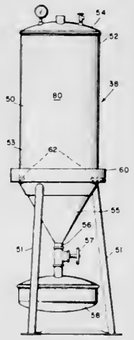


sludge is filtered out and then the liquid so treated was fed into the settling chamber (b) where the coalesced oil droplets are separated.

3,797,667
WHIRLPOOL SEPARATOR DEVICE

Robert L. Rod, Pacific Palisades, Calif., assignor to Monogram Industries, Inc., Santa Monica, Calif.

Filed Feb. 10, 1972, Ser. No. 225,268
Int. Cl. B01d *21/26*
U.S. Cl. 210—304 **4 Claims**



A whirlpool separator is described in which a charge of fluid is circulated at approximately 20 to 30 revolutions per minute in a container. Foreign matter having a specific gravity greater than one is thrown by centrifugal force to the periphery of the container. These heavier particles fall to the lowermost portion of the container for eventual discharge. Foreign oily material having a specific gravity less than one is forced to the top of the fluid and into the vortex created by the circulating fluid where it is removed by hydrophobic material located near the vortex. Small fines are removed by filtration.

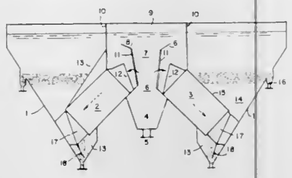
3,797,668
SEPARATION DEVICE

Jacob Pielkenrood; Willen Lee Bernard Ambrosius, and Willen Kooistra, all of Krommenie, Netherlands, assignors to Pielkenrood-Vinitex N.V., Assendelft, Netherlands

Continuation of Ser. No. 50,282, June 26, 1970, abandoned. This application Sept. 14, 1972, Ser. No. 288,964
Int. Cl. B01d *21/02*
U.S. Cl. 210—522 **16 Claims**

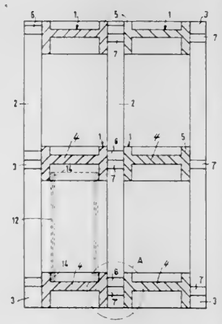
A device for removing different components from a liquid, comprising a supply and a discharge chamber between which one or more separators having sloping passages between corrugated plates, thoughs or tubes are provided, which device furthermore comprises additional means for accomplishing a supplementary separation of such components upstream

and/or downstream of the separator or separators, which additional means may comprise flotation and/or sedimentation chambers with means for adding flocculation and/or precipita-



tion agents to the liquid to be treated, and/or one or more additional separators arranged in such a manner that the liquid to be treated is flowing either in series or in parallel through these separators.

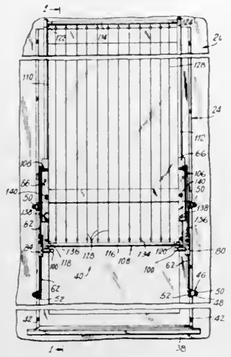
3,797,669
DEVICE FOR DISPLAYING CARPET SAMPLES
Peter Schacht, Tranustein Marienstr. 3, Ruhpolding, Germany
Filed Apr. 21, 1972, Ser. No. 246,331
Claims priority, application Germany, Apr. 23, 1971, 2120050
Int. Cl. A47f *7/17*
U.S. Cl. 211—44 **15 Claims**



This invention relates to a holder adapted to be mounted in a framework and to receive a carpet sample in the form of a roll comprising a base portion, wall means at the edge of said base portion and extending substantially normal to the plane of said base portion, and means on said holder whereby it may be mounted in a framework.

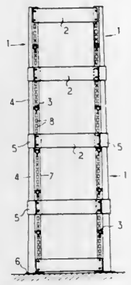
3,797,670
INDOOR LOADABLE OUTDOOR CLOTHES DRYER
Octavio D. Lavemour, 465 W. Broadway, New York, N.Y.
Filed Sept. 29, 1972, Ser. No. 293,341
Int. Cl. F26b *25/00*
U.S. Cl. 211—94 **12 Claims**

A dryer for articles such as clothes including brackets which are rigidly mounted on the inner or outer sides of an openable window of a dwelling. Associated with the brackets is an article hanging frame that can be swung between a vertical storage position parallel to a wall of the dwelling, either inside or outside of the window, and a horizontal operative position. In the operative position the frame can be slid horizontally between a location substantially within the dwelling and a location substantially outside the dwelling. When the frame is in operative position inside the dwelling wet articles to be aired easily can be loaded onto the same after which the frame is slid through the window to its external location where the articles can be dried or aired in fresh air and sun and with the aid of any wind that may be blowing, thereby facilitating and improving drying and airing, and preventing an increase of humidity and providing more available space within the dwelling.



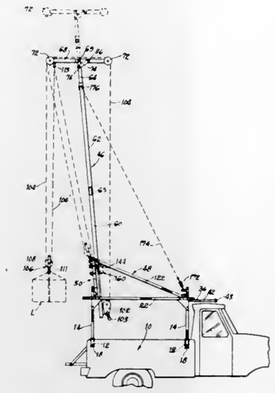
Thereafter the frame is slid back into the dwelling through the window for unloading the dried or aired articles. When the frame is in its vertical storage position it is inconspicuous and takes up very little living space.

3,797,671
COLLAPSIBLE STRUCTURE FOR A SHELVING ARRANGEMENT
Roger V. Sebilleau, "Kerheol", Avessac, and Kurt I. Eklund, 24, rue de la Guichardais, Redon, both of France
Filed May 12, 1972, Ser. No. 252,661
Claims priority, application France, May 12, 1971, 71.17078
Int. Cl. A47f *5/10*
U.S. Cl. 211—176 **11 Claims**



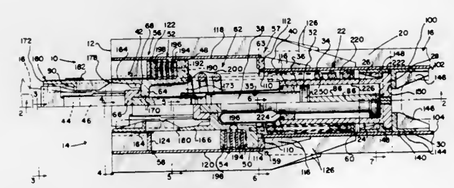
The present invention concerns a dismountable or collapsible storage rack structure from which metallic shelves can be assembled and, more especially, to shelves for pallets. Said structure includes vertical posts connected in pairs by crossbars to form rigid frames. Horizontal, load supporting beams are mounted in a manner adjustable to different heights between the posts of two adjacent parallel frames. Connecting means on the ends of said beams and on said posts provide for the rigid interlocking of the various components of the shelf structure.

3,797,672
APPARATUS ATTACHABLE TO A TRUCK BODY OR THE LIKE FOR USE FOR HOISTING OR LIFTING, OR AS AN ELEVATED SUPPORT
Howard H. Vermette, No. 7-143rd St., Hammond, Ind.
Filed Mar. 10, 1972, Ser. No. 233,582
Int. Cl. B66c *23/36*
U.S. Cl. 212—8 **18 Claims**



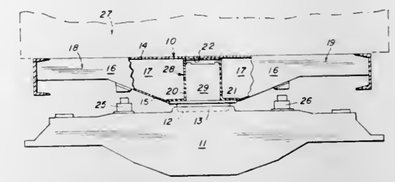
A unit formed of components which may be shipped in disassembled condition to occupy a minimum of space, yet may be readily assembled and attached to the truck body of a vehicle to provide a mobile unit having a main beam which may be moved from a horizontal transporting position to a substantially vertical or upright position so that said beam may be utilized to raise a load to a substantial height, or said beam may be used as a support whereby a person can stand thereon to perform certain operations requiring considerable height. When the unit is attached to the truck body it has the mobility of the truck and moves with the truck from one place to another and is always ready for instant use.

3,797,673
CUSHIONING ARRANGEMENT FOR RAILROAD CARS
David W. Daugherty, Jr., Downers Grove, Ill., assignor to Cardwell Westinghouse Company, Chicago, Ill.
Division of Ser. No. 91,383, Nov. 20, 1970, Pat. No. 3,713,546. This application May 26, 1972, Ser. No. 257,457
Int. Cl. B61g *9/16*
U.S. Cl. 213—8 **3 Claims**



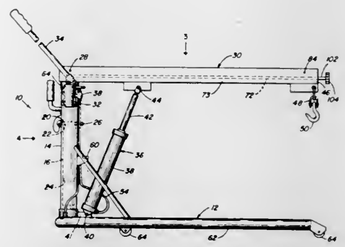
A cushioning arrangement for railroad cars that is of the "end of car" cushioning type and includes a hydraulic cylinder keyed to the car fixed center sill against buff and draft forces and having its piston rod secured to a slidably mounted coupler adapter member having flanges projecting from either side of same that each carry a resilient draft impact absorbing cushion that cooperates with fixed draft stops. A compression spring acts between the hydraulic cylinder and the adapter member to bias the ram to its neutral position after a buff stroke, and the adapter member flanges engage over solid buff limiting stops at the end of the buff stroke. The hydraulic cushion includes a combined programmed metering-pressure sensitive orifice and control arrangement that insures needed control over the ram to overcome train line tendencies.

3,797,674
CENTER BRACE FILLER AND CENTER PLATE ASSEMBLY
David J. Reynolds, Upper Arlington, Ohio, assignor to Buckeye Steel Castings Company, Columbus, Ohio
Filed May 11, 1971, Ser. No. 142,162
Int. Cl. B61f *1/14, 5/16;* **B61g** *7/10*
U.S. Cl. 213—57 **3 Claims**



A center brace filler for the center sill of a railway vehicle truck provides cross-walls which are integral with the sidewalls of the brace which lie against the walls of the center sill. The center brace is rigidly secured to the center bowl and is rigidly attached to the center sill with its upper extremities spaced from the top of the center sill.

3,797,675
CRANE
James M. Moore, 1929 Prospect St., National City, Calif.
Filed May 25, 1972, Ser. No. 256,809
Int. Cl. B65g *7/08*
U.S. Cl. 214—1 D **6 Claims**

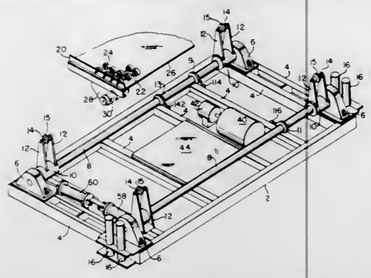


A crane including a base that supports telescoping upright members. A boom is pivotally carried on the extendible upright member upwardly. A fluid motor is pivotally connected with the boom and is adapted to to be moved, as a unit, to various heights.

3,797,676
ADJUSTABLE SHEAR BED
William G. McCarthy, 1235 Westlake Ave., North, Seattle, Wash.
Filed May 19, 1971, Ser. No. 144,824
Int. Cl. B66c *23/00*
U.S. Cl. 214—1 R **5 Claims**

A table for use in conjunction with a steel shear which is adapted to support a sheet or plate prior to shearing and further, serve as a bed for the pieces sheared. The table is movable between a raised position level with the shear bed and a lower position whereat the table is either level or tipped,

at the discretion of the shear operator. The table position is controlled by a pair of rams which rotate shafts which have secured thereto arms which support the table. When the rams



are moved through predetermined strokes the table remains level but if one of the rams is actuated through a longer stroke, the table tilts. The table is automatically cycled between the upper and lower positions by operation of the shear.

3,797,677

APPARATUS FOR DIVIDING A PILE OF NEWSPAPERS INTO SEPARATE PORTIONS

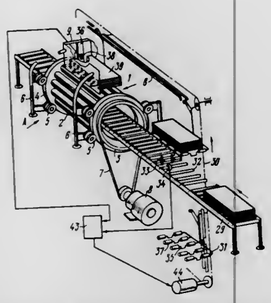
Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181; Nikolai Ivanovich Anikanov, ulitsa Bolshaya Bronnaya, 2/6, kv. 6, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow; Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev; Samuil Aronovich Goltsman, Borschagovskaya ulitsa, 8, kv. 12, Kiev; Alexandr Ivanovich Oleinik, ulitsa Mechnikova, 11, kv. 14, Kiev, and Mikhail Evseevich Frumkin, Naberezhnaya Novikova-Priboya, 9, kv. 34, Moscow, all of U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,384

Claims priority, application U.S.S.R., Feb. 11, 1972, 1742655

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 D **3 Claims**



In an apparatus for dividing a pile of newspapers into separate portions in which the members in the form of bodies of rotation have perforations in the peripheries thereof, connectable to a source of vacuum supply, and are arranged so that they define a drum received eccentrically internally of a larger drum defined by a series of rollers, in the area of the pile being divided, whereby in operation, the members in the form of bodies of rotation and the rollers engage alternatingly the lowermost newspaper in the pile, with a vertically displaceable receiving hopper adapted to accumulate therein the newspapers separated from the pile being mounted under the smaller drum, and a rollerway for delivering the separated portions of the pile from the apparatus and for feeding the piles to be divided into the apparatus located downwardly of the hopper.

3,797,678

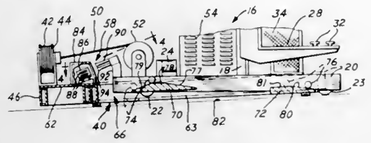
LOAD CARRIER AND TRANSFER CAR CONTROL

Raymond H. Richardson, Chicago, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Feb. 28, 1973, Ser. No. 336,885

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 B **10 Claims**



In a storage installation, an electrical connector couples the controller of the load carrier to the transfer car drive means and the controller on the load carrier operates the load carrier drive motor and also the transfer car drive motor, the latter being operated when the load carrier is positioned for transport by the transfer car and the connectors are coupled. The load carrier is elevated above the storage installation floor during transport by way of a downwardly inclined ramp which minimizes the elevation power requirements.

3,797,679

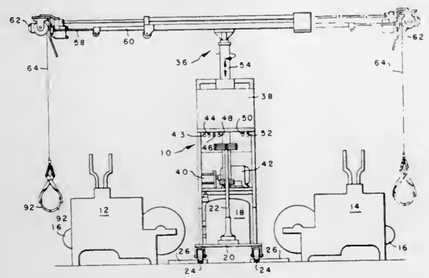
LOOM DOFF TRUCK

Carl P. Hunter, Red Springs, N.C., and Charles W. Kay, Anderson, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 30, 1971, Ser. No. 139,003

Int. Cl. B60p *1/54*

U.S. Cl. 214—75 H **2 Claims**



A loom doff truck to doff full rolls of fabric from a loom which eliminates a great deal of manual labor. The truck has a hydraulic control system which allows the operator to automatically move the lifting elements into position and to move the roll of fabric into the storage bin on the truck.

3,797,680

MECHANISM FOR TRANSFERRING AND COMPACTING REFUSE IN A REFUSE COLLECTION APPARATUS

James Dennis, Culpepper, Va., assignor to City Tank Corporation, Culpepper, Va.

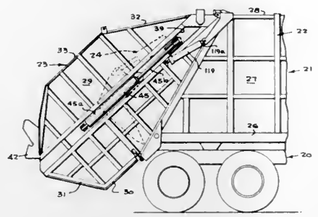
Filed Mar. 3, 1972, Ser. No. 231,700

Int. Cl. B65f *3/00*

U.S. Cl. 214—83.3 **11 Claims**

In a refuse collection apparatus having a refuse storage body and a refuse receiving hopper mounted on the rear end of the storage body, a mechanism for transferring refuse deposited in the hopper, into and compacting the refuse in, the storage body generally comprising a carrier assembly

disposed in the hopper and movable rectilinearly and longitudinally therein, a panel assembly pivotally mounted at the forward end thereof to the rearward end of the carrier assembly, means for moving the carrier assembly along the line of travel thereof in predetermined sequence, and means for pivoting the panel assembly relative to the carrier assembly in a predetermined sequence in cooperation with the carrier as-



sembly to provide a refuse transferring and compacting cycle, the panel assembly including a bottom plate member having a first planar section disposable in alignment with a bottom plate member of the carrier assembly, and a second planar section disposed at an angle to the first planar section, and a plurality of transversely spaced channel-shaped members rigidly secured to the upper side of said bottom plate member to provide resistance against bending stresses.

3,797,681

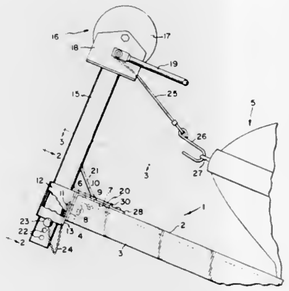
APPARATUS FOR MOUNTING A WINCH ON A TRAILER

Norman A. Brettrager, 5270 East St., Saginaw, Mich.

Filed Apr. 13, 1972, Ser. No. 243,653

Int. Cl. B60p *3/10*

U.S. Cl. 214—85.5 **5 Claims**



Apparatus for mounting a winch on a trailer comprises an upright body having its lower end slideably and removably accommodated in a sleeve mounted at one end of the supporting bed of a trailer. At its upper end the body carries a rotary winch and a force transmitting line that is adapted to be attached to an article that is to be supported on the trailer. Between its ends the body carries a laterally projecting foot which overlies the trailer bed, a brace extending between and being connected to both the foot and the body. Releasable latch means are carried at the lower end of the body to prevent inadvertent removal of the latter from the sleeve.

3,797,682

METHOD FOR LOADING PARTICULATE MATERIAL ONTO OPEN RAILWAY TRUCKS

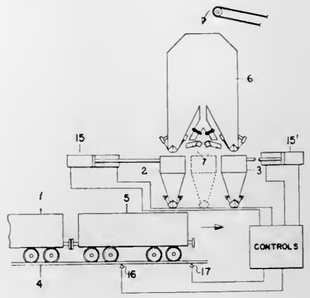
Johan De Beer, Randburg, South Africa, assignor to Edward L. Bateman Limited, Boksburg North, Transvaal Province, South Africa

Filed Apr. 17, 1972, Ser. No. 244,657

Claims priority, application South Africa, June 30, 1971, 71/4290; Dec. 14, 1971, 71/8387

Int. Cl. B65g *67/22*

U.S. Cl. 214—152 **6 Claims**



The invention is concerned with a method and means of loading open railway trucks with particulate material so that continually moving trucks are loaded to capacity, wherein the discharge point for the particulate material at the loading station is made to move initially with the truck being loaded, then maintained stationary and finally in a direction opposite to that of the truck.

3,797,683

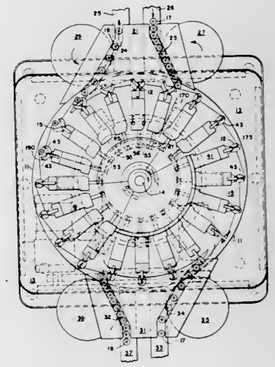
ROTARY EXTRACTOR METHOD AND APPARATUS

Anthony V. Simpatico, Palisades Park, N.J., assignor to Avon Products, Inc., Suffern, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,337

Int. Cl. B65g *65/02*

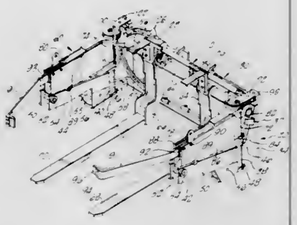
U.S. Cl. 214—301 **4 Claims**



A rotary extractor including a continuously rotatable turret having a plurality of transfer units mounted thereon for movement about the rotational axis of the turret with each of the transfer units having an axis extending radially of the turret. Each transfer unit has a pair of cam operated jaws for synchronously gripping a formed pomade such as lipstick which is to be extracted from its mold. A second cam is pro-

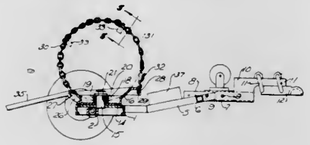
vided for raising the transfer unit with respect to the turret after the jaws have grasped the pomade thereby separating the pomade from its mold. A third cam means is provided for rotating the jaws, and therefore the pomade, 180° after the transfer unit has been raised. Once the jaws have been rotated, the transfer unit is lowered by the second cam means and the jaws opened thereby positioning the extracted pomade on a transport for further processing.

3,797,684
TRANSPORTING AND DUMPING APPARATUS
Vernon J. Brandt, 5712 Ave. 430, Reedley, Calif.
Filed May 2, 1972, Ser. No. 249,563
Int. Cl. B65g *65/00*
U.S. Cl. 214—313 **15 Claims**



An apparatus for handling large bin containers includes a frame assembly adapted to be fixably mounted on a vehicle and a bin carrying assembly pivotally attached to the frame assembly for movement between a bin transporting position and a bin dumping position. The bin carrying assembly is provided with forks for supporting a bin thereon and movable clamping arms to secure a bin thereto. A lock assembly locks the movable elements of the apparatus in various fixed arrangements to insure proper operation of the apparatus.

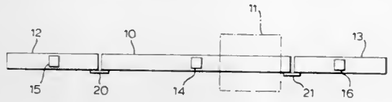
3,797,685
VEHICLE TOWING DEVICE
Darwin N. Frost, Box 428, Wapakoneta, Ohio
Filed July 3, 1972, Ser. No. 268,462
Int. Cl. B60b *29/00*
U.S. Cl. 214—334 **13 Claims**



A vehicle towing device comprising a wheeled trailer having an undercarriage mounting a bed for receiving a pair of wheels of the vehicle being towed, the bed having wheel receiving wells and wheel retaining means adapted to engage and lock the wheels of the towed vehicle to the bed, together with detachable ramp means for positioning the wheels of the towed vehicle on the bed of the towing device.

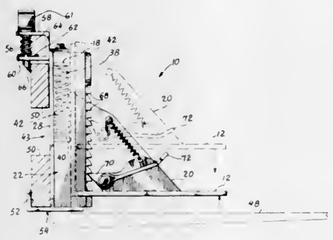
3,797,686
APPARATUS FOR CONVEYING PIPE LONGITUDINALLY
Harold F. Jarvis, Moffat, Canada, assignor to Shaw Pipe Industries, Ltd., Rexdale, Ontario, Canada
Filed July 5, 1973, Ser. No. 376,733
Int. Cl. B65h *51/00*
U.S. Cl. 214—338 **7 Claims**

Apparatus for conveying pipe longitudinally comprises a main conveyor section and first and second terminal conveyor sections positioned respectively to advance incoming pipe sections to the main conveyor section and to receive treated pipe sections from the main conveyor section, each conveyor section being adapted to locate the pipe sections continuously about a longitudinal axis while longitudinally advancing the sections at a selected feed. Each of the terminal conveyor sec-



tions is movable longitudinally by power means to effect coupling of the incoming pipe sections and detachment of the leading pipe sections, respectively, and is selectively operable to advance a pipe section carried thereby at the selected speed to permit such coupling or detachment, and to advance a pipe section at a speed greater than the selected speed prior to such coupling, or after such detachment.

3,797,687
FORK LIFT CLAMP
Joseph Silva, Richmond Hill, N.Y., assignor to Saul Freier, Richmond Hill, N.Y.
Filed Jan. 29, 1973, Ser. No. 327,794
Int. Cl. B66f *9/18*
U.S. Cl. 214—620 **6 Claims**

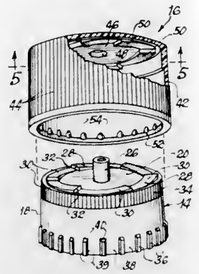


An adjustable pressure clamp adapted to mount above and between the tines of the fork of a fork lift truck whereby loads raised by the fork are secured thereon by the clamp. The clamp comprises a pressure plate joined to a slide which rides perpendicularly of the pressure plate in a channel provided for the purpose in a mounting bracket. The mounting bracket is provided with two U-shaped securing means which are oppositely disposed to oppositely engage structural cross-members of the fork lift assembly. The lower U-shaped securing means comprises an open channel while the upper U-shaped securing means comprises a sliding locking pin which permits removal of the clamp from the truck. Spring-loaded ratchet means are provided between the pressure plate and the mounting bracket to adjustably secure the pressure plate in any of a finite number of positions. The pressure plate is spring-urged to assist in release of loads.

3,797,688
SAFETY CAP UNIT
John C. Porcelli, Lincolnwood, and Efrem M. Ostrowsky, Highland Park, both of Ill., assignors to Federal Tool & Plastics, a division of VCA Corporation, Chicago, Ill.
Filed June 14, 1972, Ser. No. 262,742
Int. Cl. B65d *55/02*; **A61j** *1/00*
U.S. Cl. 215—9 **9 Claims**

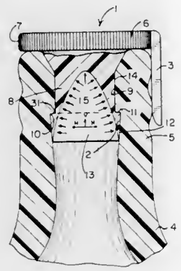
The invention relates to a safety cap unit for containers such as bottles and the like, whereby unauthorized removal of the

cap from the container is prevented. More particularly, it relates to a closure unit comprising an inner or closure cap which is used to close the open end of a container cooperatively connected with an outer or actuator cap superimposed over the inner cap, with interlocking means between the outer and inner caps to permit the two caps to be rotated in unison



to lock the inner cap as a closure for the container so that unlocking of the inner cap with respect to the container takes place only when the outer cap is moved axially upward relative to the inner cap so that there is an interengagement between the outer and inner caps. The outer cap has a top wall surface of such character as to permit it to flex or give sufficiently to permit interengagement of the outer and inner caps.

3,797,689
TAMPER-PROOF CLOSURE FOR A PRESSURIZED CONTAINER
Domas Adomaltis, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Sept. 29, 1971, Ser. No. 184,886
Int. Cl. B65d *41/20*
U.S. Cl. 215—42 **12 Claims**

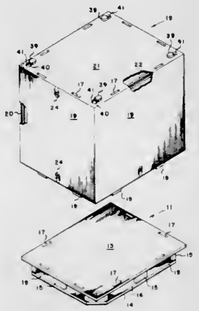


A tamper-proof closure having an area of least strength some distance down its neck is provided. The combination of the tamper-proof closure which also has an anchor portion and a bottle which has an internal lock shoulder is part of the invention. The bottom of the anchor is indented with a recess so that the pressure coming upward in the bottle neck presses the sides of the closure against the sides of the bottle to form a better seal between the closure and the bottle. The inner side of the closure recess and the inner edge of the external lock shoulder form an area of least strength so that when pressure is applied to lift the closure out of the bottle neck, the closure snaps along the area of least strength.

3,797,690
PREPARATION OF DEGRADABLE POLYMERIC MATERIAL
Lynn J. Taylor, Haslett, and John W. Tobias, E. Lansing, both of Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 8, 1971, Ser. No. 206,144
Int. Cl. B44d *1/02*
U.S. Cl. 220—1 R **10 Claims**

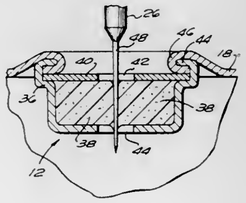
There is disclosed the preparation of a degradable polymeric material by applying a degradation-sensitizing reagent to the surface of a polymeric material and then diffusing the reagent into such surface.

3,797,691
MODULAR CARGO CONTAINER FOR TRANSPORT VEHICLES
John E. Williams, Jr., Chamblee, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed May 10, 1972, Ser. No. 251,969
Int. Cl. B65j *1/02*
U.S. Cl. 220—1.5 **10 Claims**



A container consists of a plurality of modules interconnected one to another to form a preselected, standard size assembly to permit the movement thereof through existing transportation systems as a unit. Break apart features between the several modules facilitate the handling and loading thereof at times other than during shipment. Also each module is so constructed as to permit folding for stacking and packing to minimize its space requirements when empty.

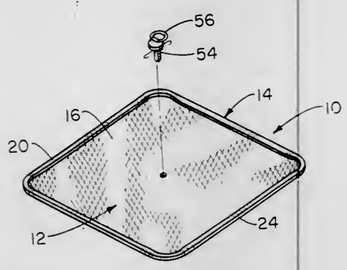
3,797,692
DRUM PROVIDED WITH PORT ASSEMBLY FOR GAS MONITORING
Cesar Santoni, Hamilton, Ontario, Canada, assignor to Greif Bros., Corporation, Delaware, Ohio
Filed July 28, 1972, Ser. No. 276,130
Int. Cl. B65d *39/00, 41/00*
U.S. Cl. 220—24 R **5 Claims**



An improved drum is provided with a port assembly adapted to permit internal gas monitoring without necessitating the opening or unsealing of the drum. The drum includes a

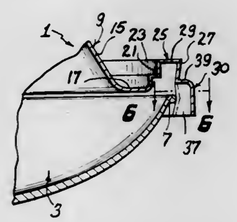
cup-shaped member having an open end sealingly mounted in an end closure or sidewall of the drum and a closed end extending into the drum interior. A passageway extends through the cup closed end into the cup interior. A plug of penetrable, self-sealing material is held in position in the cup covering the passageway. Means are provided to guide the needle of a test syringe through the plug and cup passageway into the drum interior.

3,797,693
POLYGONAL SHAPED FRY PAN COVER AND METHOD OF MAKING
Robert A. Baker, Santa Barbara, Calif., assignor to Aluminum Filter Company, Santa Barbara, Calif.
Filed June 28, 1972, Ser. No. 266,979
Int. Cl. B65d *51/16*
U.S. Cl. 220—44 A **10 Claims**



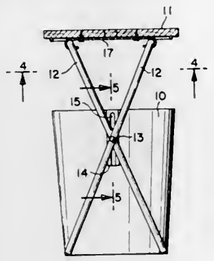
The apparatus and method of making a polygonal-shaped fry pan utensil which is to be located over the top of an open heating vessel such as a frying pan to prevent splatter from the heating vessel comprising forming a plurality of corners within a rigid edging material until the edging forms a closed configuration, placing the edge of the material and a screen assembly within a mold, the corner forming portions of the mold being smaller in width than the remaining forming portions of the mold, applying a uniform force to the mold resulting in cold working of the edging material into engagement with the screening assembly to securely bind such in a taut position, the corners of the edging being cold worked to a greater degree than the remaining portion of the edging to insure that the screening assembly will be held taut within the formed edging.

3,797,694
VENTABLE SEALED CONTAINER
Robert B. See, deceased, late of San Pedro, Calif., and Raymond C. Baird, Jr., Los Angeles, Calif., assignors to Barbara R. Alfred, (See), trustee, Los Angeles, Calif., by said Baird
Filed Sept. 2, 1970, Ser. No. 68,923
Int. Cl. B65d *51/16, 85/00*
U.S. Cl. 220—44 R **9 Claims**



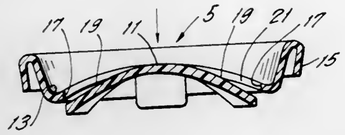
The cover of the container, which may also serve as a plate, is attached to the peripheral lip of the receptacle and is movable between a lowered position wherein the lip is seated in a channel recess sealing the container closed and a raised position wherein the lip is engaged in a V-shaped recess defined by the cover skirt. A plurality of venting ports in the form of U-shaped channels are formed at spaced intervals in the cover skirt and vent the interior of the container to the atmosphere when the cover is in the raised position. The cover is designed so that a predetermined degree of positive internal pressure will move the cover from the lowered sealed position to the upper vented position and the container may be resealed by applying downward pressure on the cover to move the lip of the receptacle past a restricted portion of the skirt and into the channel.

3,797,695
SEATING APPARATUS FOR PORTABLE CONTAINERS
Pui-Yee Law, 3207 Walnut Hill Apt. 2016, Irving, Tex.
Filed Apr. 21, 1972, Ser. No. 246,404
Int. Cl. A47c *7/00;* **B65d** *25/00*
U.S. Cl. 220—85 R **9 Claims**



A seating apparatus for portable containers comprising a pair of U-shaped support members pivotably coupled to the sides of the container, and movable vertically upwardly and downwardly thereon, and a removable seat, which may form the cover of the container, having at least one mounting bracket affixed thereto for engaging the support members and securing the seat during use.

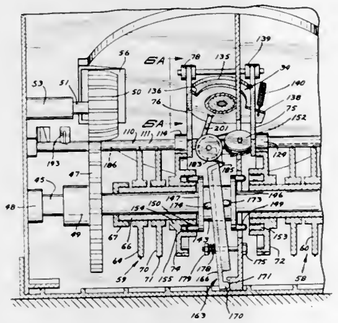
3,797,696
NON-SPILL CONTAINER CLOSURE
James W. Dibrell, Malibu, Calif., assignor to Nospil Limited, Los Angeles, Calif.
Filed Nov. 26, 1971, Ser. No. 202,076
Int. Cl. A47g *19/22*
U.S. Cl. 220—90.4 **1 Claim**



An improved non-spill drinking cup cover is formed in one section wherein a radially extending central web portion is joined a reentrantly-shaped rim section in the cover member. The juncture of the web portion with the rim section defines a relatively deep annular trough extending around the cover section in constant relationship with the outer periphery of the rim section. A plurality of slits in the web portion of the cover member define a plurality of radially extending fingers which are normally integral with the web portion of the cover member. The radially extending fingers are urged downwardly and away from the web portion of the cover member when a user presses down on any part of the central area of the web portion in the cover member and thus resiliently deforms the cover member. The downward extension of the radially extending fingers away from the web portion of the cover member exposes a series of liquid discharge slots in the web portion. The annular trough may then be filled with liquid, from the cup interior, discharged through slots in the web by conventionally tilting the cup, and the user may drink from any angular position on the rim of the annular trough. The cover member may be formed of thermoforming plastic or other thin flexible, resilient materials.

Sanitization of the closure drinking surface may be achieved by providing the external surface of the closure with a strippable sanitary coating of plastic film that may be stripped from the surface of the closure by a user just prior to consumption of the liquid content of the container.

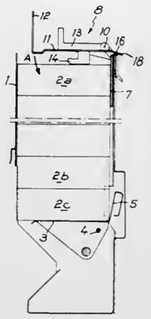
3,797,697
DUAL SUPPLY TAPE DISPENSING MACHINE
Ewald A. Arp, Hopkins, Minn., assignor to W. G. Larson, Edina and Sheldon D. Moody, Bloomington, both of, Minn.
Filed Nov. 17, 1972, Ser. No. 307,701
Int. Cl. B65h *35/02*
U.S. Cl. 221—13 **15 Claims**



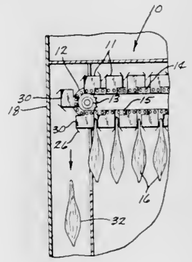
A tape dispensing machine adapted to selectively dispense a tape, as a tape of trading stamps, from a first tape supply or a second tape supply. First and second tape drive wheel means are rotatably mounted on an axle in proximity to a first and second tape supply. A shift assembly is operative to selectively move a clutch means between the first and second stamp drive wheel means. Manual drive means including finger controlled means for preselecting the quantity of stamps to be dispensed is drivably associated with either the first or second drive wheel means through the clutch means.

3,797,698
DEVICES FOR DISPENSING ARTICLES FROM A STACK OF ARTICLES
Jean Hemard, Paris, France, assignor to Societe Pernod, Paris, France
Filed Feb. 5, 1973, Ser. No. 329,443
Claims priority, application France, Feb. 22, 1972, 72.05979
Int. Cl. B65h *43/02*
U.S. Cl. 221—20 **4 Claims**

A device for dispensing articles comprises a vertical chute for a stack of articles. The chute is closed from below by a pivotal element which supports the stack. An arrester element is slidable along a slot in the wall of the chute and engages the uppermost article of the stack. When all the articles have been discharged, the head pivots to lock the element in its closed position.



3,797,699
ARTICLE HOLDING AND DISPENSING DEVICE
Francis A. Wittern, Des Moines, and Arthur N. Wirstlin, Altoona, both of Iowa, assignors to Fawn Engineering Corp., Des Moines, Iowa
Filed Feb. 17, 1972, Ser. No. 227,568
Int. Cl. G07f *11/00*
U.S. Cl. 221—85 **1 Claim**

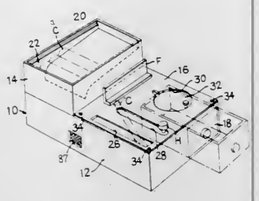


An article holding and dispensing device for use in vending machines or the like is disclosed. A plurality of elements are mounted in alignment on a continuous loop of a conveyor such that articles to be held and dispensed are held between adjacent elements on the lower portion of the continuous loop for individual delivery upon stepwise actuation of the conveyor. Each element has a rearwardly extending article engaging means such as a resilient pointed member adapted to cooperate with the next following element to hold an article therebetween until the element reaches a delivery position, whereupon the element moves away from the following element and the article held therebetween falls away for delivery.

3,797,700
SMOKING SET
Nobuo Murata, No. 4-4-1 Sendagi, Bunkyo-ku, Tokyo, Japan
Filed Dec. 20, 1972, Ser. No. 316,748
Int. Cl. A24f *47/00*
U.S. Cl. 221—145 **5 Claims**

A smoking set which comprises a cigarette storeage container, a feed means for delivering a cigarette, a gas jet means, an ignition means for igniting a gas jet, a pivoted cigarette holder, and a suction means for drawing air through the holder

to aid in lighting the cigarette and in which upon a single manual operation of an actuating means a cigarette is

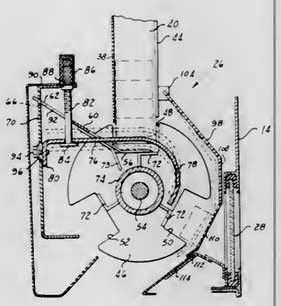


delivered to be inserted into the holder and automatically lighted by a flame produced from a gas jet which is also automatically discharged and ignited.

3,797,701
GUM AND MINT DISPENSER FOR MERCHANDISING MACHINE

Joseph P. Allocco, Mendham, and Bruce B. Landis, Long Valley, both of N.J., assignors to Rowe International Inc., Whippany, N.J.

Filed Jan. 17, 1972, Ser. No. 218,070
Int. Cl. G07f *11/52*
U.S. Cl. 221—155 **7 Claims**



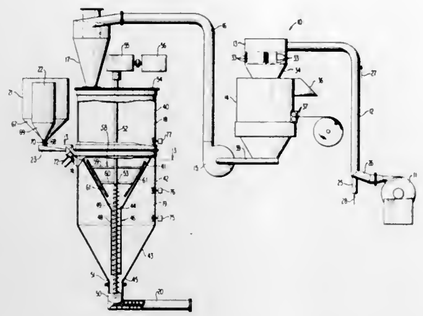
A merchandising machine gum and mint dispenser in which an adjustable member on the machine frame provides a bottom for the compartment of a rotary display and delivery wheel located below a column of articles of merchandise and provides a curved guide portion for an article carried from the bottom of the column to a display location and in which a freely suspended transparent guide flap guides the article in the course of its movement from the curved guide portion to the display location and supports the article at the display location in a position in which it can be viewed by a customer through a window in the cabinet door.

3,797,702
SCRAP RECOVERY AND FEED SYSTEM

Joseph D. Robertson, 980 Swathmore Dr., N.W., Atlanta, Ga.

Filed Mar. 29, 1971, Ser. No. 128,973
Int. Cl. B01f *7/20, 7/24*
U.S. Cl. 222—1 **8 Claims**

A scrap recovery and feed system wherein scrap plastic is recovered from a plastic manufacturing process, such as in the manufacture of sheet, film, formed or molded objects, and the scrap plastic is chopped up and fed back to the processing machine along with the base material, such as a virgin plastic material and various additives. The scrap is fed with an auger from an upper hopper toward the outlet opening of a lower

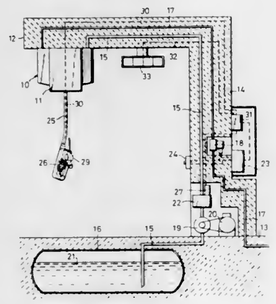


hopper containing the base material. The materials are mixed just prior to entry in the extruder or other processing machine.

3,797,703
FUEL SUPPLYING APPARATUS

Shunro Yamawaki, Tokyo; Naoki Makita, Yokohama, and Kazuhiko Hirose, Tokyo, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Feb. 14, 1973, Ser. No. 332,301
Claims priority, application Japan, Feb. 17, 1972, 47/16691
Int. Cl. B67d *5/30*
U.S. Cl. 222—26 **6 Claims**



A fuel supplying apparatus comprises a fuel supplying hose pipe adapted to be extended downward from a take-up reel disposed above a fueling service area for fueling vehicles, a first indicator provided on the hose pipe, a second indicator installed on a structure such as a building part, means for measuring the quantity of fuel supplied and transmitting the measured result as an electrical signal to the first and second indicators, and means for mechanically zero-resetting the indication of the first indicator and electrically zero-resetting the indication of the second indicator.

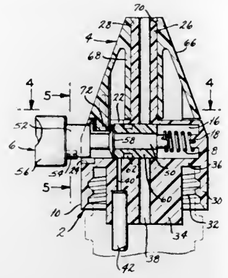
3,797,704
SAFETY CLOSURE

Dewey B. Dykes, Ballwin, Mo., assignor to Conserv Resources Inc., Ballwin, Mo.

Filed Oct. 17, 1972, Ser. No. 298,254
Int. Cl. B67d *5/22*
U.S. Cl. 222—41 **4 Claims**

A safety closure for a liquid container has a base provided with a dispensing channel which is opened and closed by a

spool-type valve element movable axially in the base. A rotatable cover locks the valve element in its closed position.

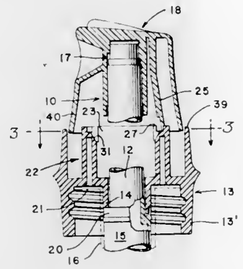


Both the valve element and cover must be turned to prescribed angular positions before the valve element can be moved axially to its open position.

3,797,705
LOCKING MEANS FOR SHIPPER TYPE LIQUID DISPENSERS

Rex C. Cooprider, Hacienda Heights, Calif., assignor to Diamond International Corporation, New York, N.Y.

Filed May 2, 1973, Ser. No. 356,370
Int. Cl. B65d *47/34, 83/14*
U.S. Cl. 222—153 **14 Claims**



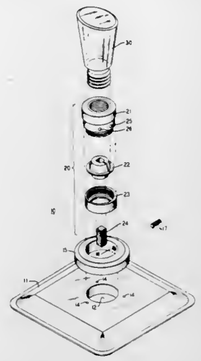
The actuator of the dispensing device which is movable through an opening in the closure cap of the container is provided with a generally stiff radially deflectible locking finger extending in the direction of the actuator movement with its free end adapted for radial deflection into and from an operative position in which the free end is in abutting engagement with the upper axial end of the annular abutment. In the released or inoperative position, the finger extends and is freely movable in a space provided between the actuator and the annular abutment which encircles it. Cooperating cam means on the finger and the abutment are operative in one direction of rotation of the actuator to urge the free end of the finger radially outwardly to locking position and are operative in the reverse direction of rotation of the actuator to urge the fingers radially inwardly toward released position.

3,797,706
PAINT AND ADHESIVE APPLICATOR

Leonard C. Mule, Garfield, N.J., assignor to Charles Fisher, Fairlawn; Peter J. Cossman, Denville and Linda Rembish, Lake Stockholm, all of, N.J.

Filed May 8, 1972, Ser. No. 251,322
Int. Cl. B67d *3/00*
U.S. Cl. 222—187 **6 Claims**

An applicator for applying paints or adhesives to a surface in various width stripes includes a guide member and a dispensing element. Different width stripes are obtained by positioning the external surfaces of the dispensing element in

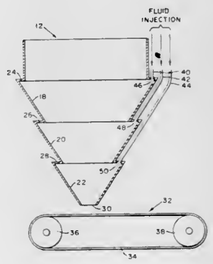


predetermined spatial relationships relative to the edges of the guide member.

3,797,707
BINS FOR STORAGE AND FLOW OF BULK SOLIDS

Andrew W. Jenike, Winchester, and Jerry R. Johanson, Chelmsford, both of Mass., assignors to Jenike and Johanson, Inc., Burlington, Mass.

Filed Apr. 20, 1971, Ser. No. 135,584
Int. Cl. B65d *83/06*
U.S. Cl. 222—193 **3 Claims**



Bins for storage and flow of bulk solids have stepped hopper surfaces adapted to increase and render constant the rate of flow at the hopper outlet. The stepped surfaces have friction and slope angles adapted to satisfy the criteria for mass flow, and provide spaces for injecting fluid at one or more perimetric interfaces with the moving solids.

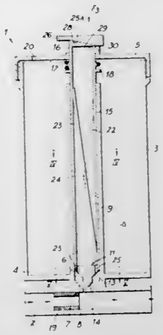
3,797,708
DISPENSER FOR DISCHARGING A QUANTITY OF A SUBSTANCE INTO A CONDUIT

Bohumil Sypal, Highview Crescent 48, Toronto 4, Canada

Filed Oct. 20, 1972, Ser. No. 299,396
Claims priority, application Belgium, Oct. 29, 1971, 774665
Int. Cl. B05b *7/28*
U.S. Cl. 222—193 **4 Claims**

The invention pertains to a dispenser by means of which a given quantity of a substance can be discharged into a conduit

wherein flows a fluid, said dispenser including a container having a discharge outlet, a connection between said outlet and

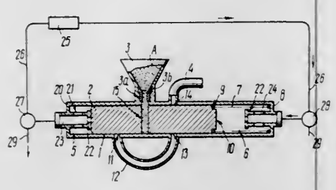


said conduit, releasable closure means for said outlet and a neck within said conduit close to said connection.

3,797,709
VOLUMETRIC METERING APPARATUS

Anatoly Ivanovich, Bratislavskaya ulitsa 26, kv. 22, Zverev, Kiev, U.S.S.R.

Filed July 12, 1972, Ser. No. 271,189
Claims priority, application U.S.S.R., July 12, 1971, 1675700
Int. Cl. B67d *5/54*
U.S. Cl. 222—194 **5 Claims**



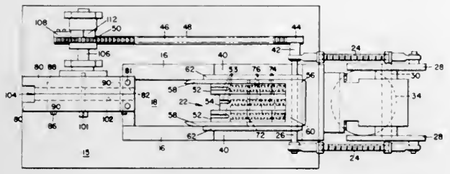
An apparatus is disclosed comprising a cylindrical body housing a plunger having a measuring space which, as the plunger is moved by compressed gas, in one of its extreme positions communicates with a feed hopper, while in the other extreme position of the plunger, the measuring space communicates simultaneously with a discharge standpipe and a plenum space in the body in order that the metered material may be blown out of the measuring space by compressed gas.

3,797,710
MACHINE FOR DISPENSING SHAPED AND PORTIONED CHARGES OF A FOOD PRODUCT

Arnold Soodalter, 134 Tanglewood Dr., Longmeadow, Mass.

Continuation-in-part of Ser. No. 222,559, Feb. 1, 1972. This application Oct. 25, 1972, Ser. No. 300,804
Int. Cl. G01f *1/04*
U.S. Cl. 222—219 **9 Claims**

Apparatus for the in seriatim dispensing of shaped and portioned charges of a moldable food product comprising a supply section including a hopper and an interconnecting charging chamber for the containment of the food preliminary to shaping and portioning, a pressure section for pressurizing the food within the chamber preparatory to and during the loading thereof into a metering section, the pressure section including primary and secondary pushers horizontally-reciprocable within the charging chamber toward and away from the metering section in compressing and relieving strokes respectively, the metering section including a charge-shaping drum rotatably confined within a housing and having a diametrically-disposed opening therethrough defining a pair of aligned radially-arranged pockets of alternately increasing and decreasing size according to the movement of a plug limitedly-reciprocable within the opening in the area intermediate the two pockets, the pockets of the drum each communicating through the housing in seriatim first as a receiving pocket with the charging chamber for shaping and measuring a charge of the food loaded thereinto from the charging

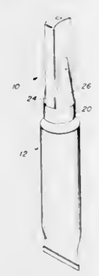


chamber responsively to the motivation of the pushers and second as a dispensing pocket with atmosphere for dispensing the shaped and portioned charge from the metering section into a suitable receiving means, with the compressing stroke of the pushers maintaining a tension on the food during loading into the receiving pocket and therefollowing during a momentary dwell period as rotation of the drum out of register with the charging chamber is initiated following which the pushers are retracted in relieving stroke as the food charged pocket is completely encapsulated by the cooperant drum and plug and housing is rotated into dispensing position as effected by the loading of the second-to-be-filled pocket and the resultant limited sliding movement of the plug within the drum opening.

3,797,711
DEVICE FOR METERING TOOTHPASTE OR THE LIKE

William R. Bowerman, 1824 Mississippi St., Lawrence, Kans.

Filed Oct. 24, 1972, Ser. No. 300,116
Int. Cl. B67d *3/00*
U.S. Cl. 222—219 **2 Claims**

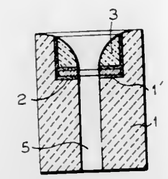


A metering device is provided for attachment to or as an integral part of the cap end of a tube of toothpaste or the like. The device comprises a cylinder open at both ends and a piston mounted for limited reciprocation within the cylinder. A bracket supports the cylinder for angular movement about an axis perpendicular to its long axis. The bracket is provided with a tapped passage which receives the threaded neck of the toothpaste tube and is adapted to communicate with either open end of the cylinder. Toothpaste discharged from the tube into one end of the cylinder will push the piston and any paste within the other end of the cylinder out through the opposite end of the cylinder in a metered amount and the piston closes off the end of the cylinder from air. The device is then rotated 180° for the next dispensing operation.

3,797,712
COMPOUND BODY NOZZLE FOR A CONTAINER HOLDING A LIQUID MELT

Hans-Joachim Kutzer, Wiesbaden-Rambach; Wolfgang Weinreich, Paderborn; Lothar Harmsen, Schloss Neuhaus, and Gerd D. Fricke, Paderborn, all of Germany, assignors to Didier-Werke AG, Wiesbaden, Germany

Filed Apr. 7, 1971, Ser. No. 132,134
Claims priority, application Germany, Apr. 23, 1970, 2019541
Int. Cl. B22d *37/00*
U.S. Cl. 222—566 **6 Claims**

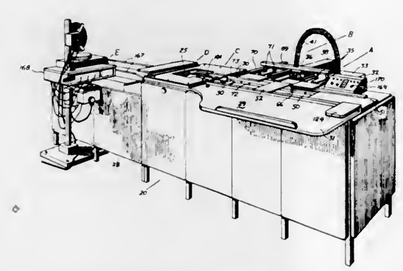


A container for a liquid melt has a nozzle with a flow passage. A refractory ceramic material supports the nozzle and an insert of highly wear resistant refractory material limits the flow passage of the nozzle. The insert comprises a shield body or bodies of oxide ceramic or cermet having a thickness of 5% to 20% of the diameter of the flow passage. The flow passage of the shield body is the same or less than the flow passage of the nozzle.

3,797,713
PACKAGING APPARATUS AND METHOD

Burmah D. Lawing, Charlotte, and Carol Dean Rankin, Lowell, both of N.C., assignors to Speizman Industries, Inc., Charlotte, N.C.

Division of Ser. No. 139,165, April 30, 1971, Pat. No. 3,742,676. This application Dec. 4, 1972, Ser. No. 312,044
Int. Cl. A41h *33/00*
U.S. Cl. 223—37 **17 Claims**



An apparatus and method for packaging hosiery in an automatic operation that sequentially folds the hosiery about an insert board, places the folded hosiery on an L-board, bags the L-board mounted hosiery, and seals the bags, with the hosiery advancing in a continuous lengthwise direction to and through the various operating stations. Hosiery is initially laid out lengthwise at a folding station at which the hosiery is partially folded automatically, with folding being completed as the hosiery advances lengthwise to a preliminary packaging station at which the folded hosiery advances onto an L-board and against the upstanding end flap thereof. The L-board mounted hosiery is advanced to a bagging station at which it is inserted lengthwise into a bag that is gripped to hold it stationary during hosiery insertion and is then ungripped to allow the bagged hosiery to advance to a bag closing station at which it advances against a stop that causes the hosiery to fully seat in the bag and positions the bag properly for sealing. After the bag is sealed it is turned over lengthwise by oscillation of a turning plate on which the bagged hosiery is received at the bag closing station, from which the bagged hosiery is removed after turning.

3,797,714
METHOD OF FORMING A RUFFLE OR THE LIKE

Dolores Cotugno, 3305 N. Ridgeway Ave., Chicago, Ill.

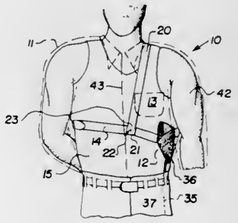
Division of Ser. No. 884,273, Dec. 11, 1969, Pat. No. 3,674,187. This application Apr. 21, 1972, Ser. No. 246,234
Int. Cl. A41h *43/00*
U.S. Cl. 223—46 **7 Claims**

A device for making ruffles, tufts, pompons or the like from such materials as cloth net, crepe paper, or tissue. The device has means adapted to be grasped by hand, means for supporting said material on which the material may be gathered, and means for temporarily retaining a fastening means. The device is adapted to be used in a method including the steps of placing the material over the supporting means of the device, gathering together the material thereon, passing the device through the gathered material until the fastening means extends through the material, and manipulating the fastening means so that the gathered material is held in its gathered condition and may be formed into the desired ruffle or the like.

3,797,715
NOVEL HOLSTER AND HARNESS

Sebastian R. Scialdone, 14 Winston Pl., Yonkers, N.Y.

Filed Feb. 23, 1972, Ser. No. 228,570
Int. Cl. F41c *9/00*
U.S. Cl. 224—2 B **14 Claims**

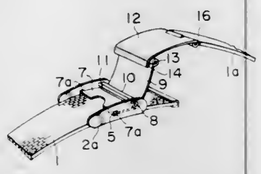


A concealable holster and harness may be worn under a shirt comfortably concealing a weapon in a holster which is easily accessible and avoids normal discomforts of continual wearing of a harness, holster and a weapon.

3,797,716
WATCH BAND

Kazunori Mochizuki, Tokyo, Japan, assignor to Mochizuki Manufacturing Company, Ltd., Tokyo, Japan

Filed Sept. 10, 1971, Ser. No. 179,431
Claims priority, application Japan, Oct. 24, 1970, 45-106001; Oct. 24, 1970, 45-106002
Int. Cl. A44c *11/02*
U.S. Cl. 224—4 D 2 Claims

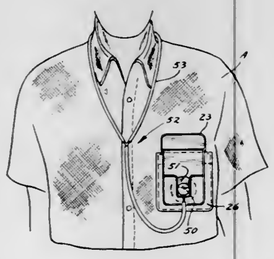


A watch band comprising a band element or elements adapted to carry a watch and present opposite free ends, and a clamp pivotally connected with one end of said free ends and adapted to removably receive the other of said free ends, wherein said clamp is of a type including two hinged plate elements adapted to be folded or unfolded for fitting the band around the wrist or releasing the band from the wrist, wherein said other free end of said band element is freely movable relatively to said clamp when said two hinged plate elements are unfolded and is firmly caught by said clamp at any desired position relative to said clamp when said two hinged plate elements are folded.

3,797,717
STETHOSCOPE RECEPTACLE

Ronald J. Collins, 1608 Independence Ave. North, Golden Valley, Minn.

Filed May 9, 1972, Ser. No. 251,688
Int. Cl. A45c *11/00*
U.S. Cl. 224—5 H 1 Claim



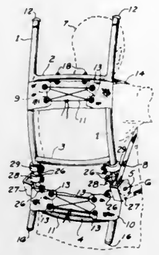
A receptacle to receive and retain therein the chest piece of a stethoscope comprising a supporting wall, a front wall carried by said supporting wall forming a pocket therewith, said front wall having a downwardly extending open ended slot therein centrally thereof, a substantially rigid bendable plate member adjacent edge portions of said slot and being laminated into said front wall and a rearward plate-like hanger carried by said supporting wall for insertion as into a pocket.

3,797,718
PACK FRAME HAVING PULLEY ADJUSTING STRAPS

Roland Plant, 17 Pearl St., Manchester, Conn.

Filed Nov. 20, 1972, Ser. No. 308,244
Int. Cl. A45f *3/10*
U.S. Cl. 224—25 A 8 Claims

This invention is concerned with a strap and pulley assembly mounted on a back pack frame. A back pack frame is a device that hikers employ to carry a load of supplies and/or equipment on their back. On the lower side of each of the frame members are mounted pulley assemblies. The straps that connect the frame to the person pass through the pulley assemblies and fasten to the front of the person's body. With

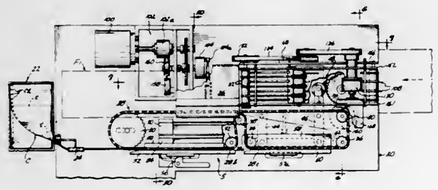


this invention, the weight on the pack is no longer carried solely on the back and shoulders, but the weight is more evenly distributed to other parts of the body. The pulleys have means for locating them in order to conform to the person's configuration. There is a separate bracket for locking the pulley means into fixed positions.

3,797,719
APPARATUS FOR BURSTING SECTIONALIZED ELONGATED STRIPS

Leonard H. Tall, 6308 S.E. 22nd St., Mercer Island, Wash.; Paul A. Catlstedt, 9055 Phinney Ave. North, Seattle, Wash., and Arlen J. Erickson, 211 N.W. 62nd St., Seattle, Wash.

Division of Ser. No. 133,885, April 14, 1971. This application Dec. 6, 1972, Ser. No. 312,714
Int. Cl. B65h *35/10*
U.S. Cl. 225—100 2 Claims



A bursting apparatus in which a first stretch of feed chain advances a carrier stock to a loading station and a second stretch advances the loaded section of carrier stock beyond the loading station where it is torn from the body of the carrier by effecting relatively longitudinal movement between the chain stretches preferably along a preformed score line. Positive engagement of pins on the feed chain with holes in the carrier stock permits feeding and tearing off the sections successively.

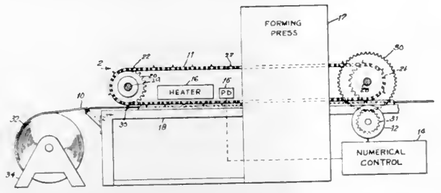
3,797,720
NUMERICALLY CONTROLLED WORK TRANSPORT FOR FORMING PRESS

Walter R. Gaudion, Reading, Mass., assignor to Ambrit, Inc., Wilmington, Mass.

Filed Aug. 1, 1972, Ser. No. 277,091
Int. Cl. B65h *23/18*
U.S. Cl. 226—33 4 Claims

A press for forming preprinted plastic shapes at high speed from a plastic web transported by a feedback controlled

hydraulic motor in which a registration mark relative to the preprinted design is detected and the hydraulic motor is

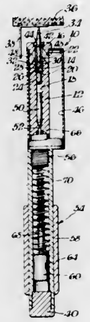


driven to a controlled stop at the press position in accordance with a ramp and count in a numerical control device.

3,797,721
EXPLOSIVE ACTUATED TOOL FOR DRIVING FASTENING STUD

Thomas E. Clumb, 5505 N. Illinois St., Indianapolis, Ind.

Filed July 20, 1972, Ser. No. 273,506
Int. Cl. B25c *1/10*
U.S. Cl. 227—9 8 Claims



Explosive actuated tool for driving element by explosive charge comprises barrel having bore therein for positioning element to be driven by tool. Muzzle is provided at one end of barrel, and explosion chamber communicates with bore for receiving percussion ignitable explosive charge whereby when explosive charge is ignited element positioned within bore is driven from muzzle of tool. Closed gas expansion chamber surrounds barrel and communicates with bore solely through plurality of passageways in barrel directly adjacent muzzle of tool so that high velocity gases produced upon ignition of explosive charge are directed into gas expansion chamber through passageways. Gas expansion chamber functions to receive and dissipate high velocity gases to thereby provide relatively silent operation of tool. Ejection structure associated with explosion chamber removes any spent explosive charges that remain after ignition.

3,797,722
APPARATUS FOR DISPENSING FASTENERS

Arnold Roberts Bone, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation-in-part of Ser. No. 169,413, Aug. 5, 1971, Pat. No. 3,759,435. This application July 28, 1972, Ser. No. 276,118
Int. Cl. B25c *1/00*
U.S. Cl. 227—67 2 Claims

Apparatus for dispensing fastener attachment members of the type having a filament with heads on both ends, the device including a casing, a needle projecting from the casing, the needle having a bore through which the fastener attachment member is adapted to be dispensed, a plunger or ejector adapted to force one head of the attachment member through the needle bore, the plunger advanced by the combination of a gear and sliding rack, the sliding rack in the form of a thin

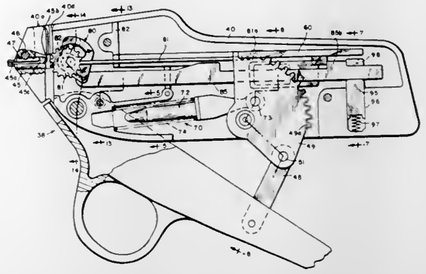
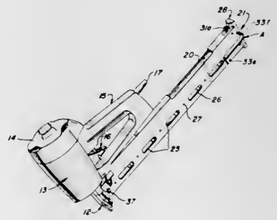


plate and in which the attachment members are fed before the needle and in front of the ejector by an indexing wheel advanced by a feed pawl with a slotted hole which allows it to rock in and out of engagement with the indexing wheel as it is moved back and forth.

3,797,723
FASTENER-DRIVING TOOL

Garry R. Perkins, Palatine, and James K. Goode, Jr., Cary, both of Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.

Filed Feb. 7, 1972, Ser. No. 224,113
Int. Cl. B25c *1/00*
U.S. Cl. 227—109 5 Claims



A powered fastener-driving tool is provided which includes a housing in which a driving piston is mounted for reciprocatory movement, and a fastener magazine extending laterally from said housing. The housing and magazine are of unitary construction. A nose section depends from the housing and is connected to one end of the magazine. The nose section is provided with a chamber into which fasteners are successively fed from the magazine. A fastener feed assembly is mounted on the magazine and is adapted to automatically feed the fasteners from the magazine to the chamber.

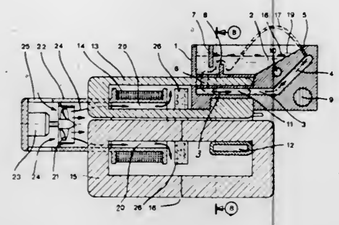
3,797,724
SOLDERING APPLIANCE

Karl Flury, Dietikon, and Rolf Zitt, Dubendorf, both of Switzerland, assignors to Kurt Schleumiger, Nennigkofen, Switzerland

Filed Oct. 18, 1971, Ser. No. 190,241
Claims priority, application Switzerland, Oct. 20, 1970, 15442/70; Oct. 27, 1970, 15921/70; Sept. 6, 1971, 13065/71
Int. Cl. B23k *1/08*
U.S. Cl. 228—37 23 Claims

The disclosure relates to a soldering apparatus including a solder receptacle in communication with a pumping zone. A

field magnet generates a magnetic field within a pumping zone while a current feed is passed through solder transversely the direction of the magnetic field. The combined action of the

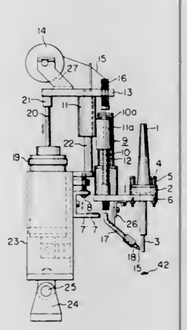


magnetic field and the current produces a force in the pumping zone which acts directly on the solder for movement in a given direction. The present apparatus is especially useful for trouble-free soldering of printed circuit boards.

3,797,725
AUTOMATIC SOLDERING MACHINE

Yubi Mori, Osaka, and Morihiro Hanakura, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaku-fu, Japan

Filed Apr. 11, 1972, Ser. No. 242,921
Claims priority, application Japan, Apr. 14, 1971, 46-24149; Apr. 14, 1971, 46-24150; Apr. 14, 1971, 46-24151
Int. Cl. B23k *1/00*
U.S. Cl. 228—41 **11 Claims**

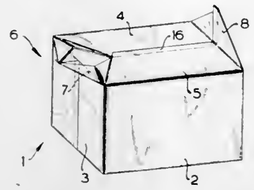


An automatic soldering machine is provided in which a solder wire feeding device comprises an outer cylinder and an inner cylinder coaxially slidably fitted therein for reciprocal motion, and a solder wire passes along the axes of the outer and inner cylinders. In the upper portion of the inner cylinder and in the lower portion of the outer cylinder are disposed solder wire clamping mechanisms in each of which a plurality of balls are so arranged as to be forced to move toward the solder wire surrounded by the balls thereby clamping the solder wire when the latter is moved in the direction opposite to the solder wire feed direction and to move away from the solder wire to release it when it is moved in the feed direction. When the inner cylinder is vertically reciprocated in unison with a solder wire supply reel, the solder wire is automatically and intermittently fed by a predetermined length under the cooperation of said two clamping mechanisms.

3,797,726
CONTAINER FOR LIQUIDS WITH AN OPENABLE POURING SPOUT

Wilhelm Reil, Bensheim-Auerbach, Germany, assignor to Altstadter Vorpackungs-Vertriebs GmbH, Buchnerweg-Pfungstadt, Germany

Filed Jan. 6, 1972, Ser. No. 215,841
Claims priority, application Germany, Jan. 11, 1971, 2100937; Apr. 29, 1971, 2121019
Int. Cl. B65d *5/72, 5/02*
U.S. Cl. 229—17 R **16 Claims**



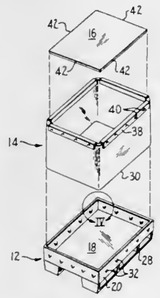
In a container for liquids a sealed connecting edge strip is provided in the top of the container and the edge strip can be opened to form a pouring spout. The connecting edge strip is formed by a pair of edge strips sealed together along a connecting seam spaced inwardly from the free edges of the edge strips. To facilitate opening the spout, a cut is formed in the connecting edge strip from its free edge toward the connecting seam with the cut extending obliquely of the connecting seam. The cut can extend through one or both of the edge strips. In one embodiment a perforated line extends alongside the connecting seam in one of the edge strips on the opposite side of the connecting seam from the free edge of the edge strip. The pouring spout is openable along the perforated line by pulling up on the connecting strip from the location of the cut toward the end of the connecting strip which forms the end of the pouring spout. In a second embodiment the cut is formed through both of the edge strips and an additional perforated line is provided in the other edge strip commencing at the obliquely arranged cut.

Further, in the second embodiment a cut line is provided in the outer surface of the one of the edge strips and it is spaced from and extends along the perforated line in that strip and, preferably, the cut line is located on the opposite side of the perforated line from the connecting seam.

3,797,727
COLLAPSIBLE CONTAINER AND ASSEMBLY METHOD THEREFOR

Benjamin A. Downing, Peoria; Earl B. Johnson, Morton, and Richard E. McClain, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 10, 1972, Ser. No. 233,553
Int. Cl. B65d *13/00*
U.S. Cl. 229—23 A **13 Claims**

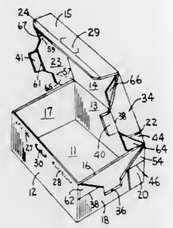


A collapsible container comprises a horizontally disposed pallet assembly having upstanding sidewalls releasably attached thereto by a plurality of perimetrically oriented barbs to define an open top storage compartment. Upon assembly, a flat bottom sheet is closely fitted within the sidewalls to urge them outwardly into locking engagement with the barbs. Reinforcement rails are also attached to top edges of the sidewalls by barbs.

3,797,728
TOP-OPENING CARTON HAVING AN UNIQUE END FLAP ARRANGEMENT

Kenneth T. Buttery, and Richard G. Haas, both of Parchment, Mich., assignors to Brown Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 139,657, May 3, 1971, Pat. No. 3,734,390. This application Jan. 3, 1972, Ser. No. 214,707
Int. Cl. B65d *5/22*
U.S. Cl. 229—36 **10 Claims**

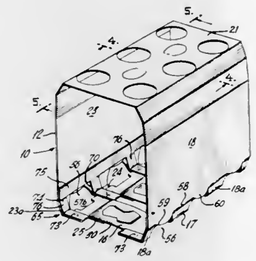


A top-opening, rectangular paperboard carton including top, bottom, front wall, rear wall, and end walls, together defining an enclosure and provided with an unique end flap arrangement which facilitates opening and reclosure of the carton.

3,797,729
BOTTLE CARRIER

George S. Holmes, Waldwick, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Oct. 29, 1970, Ser. No. 85,009
Int. Cl. B65d *5/02, 71/00*
U.S. Cl. 229—40 **8 Claims**

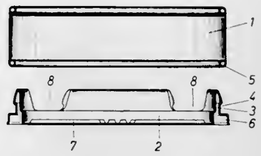


A wraparound bottle carrier provided with heel opening reinforcing means. The carrier including a bottom wall having interlocked inner and outer closure panels and side walls having heel openings at the base thereof. The reinforcing means being folded terminal portions of the inner and outer closure panels overlying the bottom wall and the adjoining portions of the side walls.

3,797,730
TWO PART BOX

Ella Zach, deceased, late of Ravensburg, Germany (by Gunther Zach, legal representative), assignor to Ludwig Zach Verpackungen, Ravensburg, Germany

Filed May 18, 1971, Ser. No. 144,493
Int. Cl. B65d *1/26, 41/18, 43/10*
U.S. Cl. 229—43 **6 Claims**

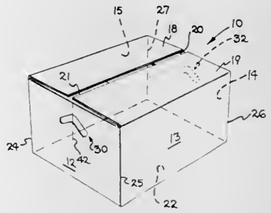


This invention relates to a two part box, particularly for holding cheese, comprising a base formed of a synthetic plastics material and having a bottom and a resilient peripheral side-wall, and closure means to close said base, said closure means comprising a lid formed of cardboard or like material and having a cover sheet with a stretchable wall extending therefrom, whereby the lid can be retained firmly on said base by interengagement between the wall of said lid and the sidewall of said base.

3,797,731
CARTON WITH IMPROVED HAND HOLES

Howard L. Weldon, Toledo, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio

Filed July 14, 1972, Ser. No. 271,658
Int. Cl. B65d *5/46*
U.S. Cl. 229—52 B **8 Claims**



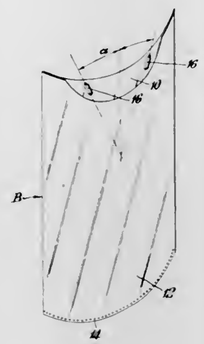
A carton with improved hand holes for facilitating lifting the carton, the hand holes being unusually resistant to tearing when the carton is lifted. In one aspect of the invention, the improved hand holes take the form of inverted V cutouts located on opposed sidewall panels of the carton. In another aspect of the invention, the improved hand holes take the form of at least one inclined, elongated, slot-shaped cutout located on each of two opposed sidewall panels of the carton. In both aspects of the invention, a longitudinal axis of the inclined cutout will intersect the plane of a bottom closure means for the carton at an acute angle measured between the extended longitudinal axis and the plane. Also in both aspects of the invention, the improvement in tear resistance results from distributing the lifting force as both a vertical and a horizontal load in the carton sidewall and from increasing the area of the carton over which the load or lifting force is distributed. Furthermore, in both aspects of the invention, the hand holes may be provided with flaps to keep them closed when not in use.

3,797,732

PLASTIC BAG HAVING ELONGATE APERTURES ANGULARLY DISPOSED

Martin J. Melin, Chicago, and Rodney L. Wallace, Brookfield, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,296
Int. Cl. B65d *33/00, 33/14*
U.S. Cl. 229—53 8 Claims



The rear wall of a bag for packaging food, particularly meat, which is remote from the closed end of the bag is provided with elongated apertures angularly disposed with respect to the longitudinal axis of the bag and to each other for mounting a stack of bags on a wicket.

3,797,733

SHOPPING BAG OF PLASTIC FOIL

Werner Ibing, Vejen, Denmark, assignor to A/S Rolles Fabriken, Vejen, Denmark

Filed Dec. 6, 1971, Ser. No. 204,923
Claims priority, application Denmark, Sept. 24, 1970, 4889/70
Int. Cl. B65d *33/02*
U.S. Cl. 229—55 3 Claims

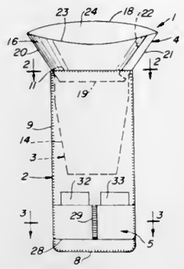
A shopping bag of plastic foil which in flattened condition is substantially rectangular having a rectilinear mouth at which hand grip means are provided. Spaced from the mouth edge and parallel with said edge one or more reinforcing lists are mounted to the bag side. Each of the lists consists of a strip having a profiled cross-section with a total thickness which is several times larger than the wall thickness of the strip.

3,797,734

DISPOSABLE BAGS

Richard L. Fleury, 5818 S. Massasoit, Chicago, Ill., and Donald E. Etes, Crystal Lake, Ill., assignors to said Fleury, by said Etes

Filed Feb. 4, 1972, Ser. No. 223,579
Int. Cl. B65d *31/14*
U.S. Cl. 229—62.5 6 Claims



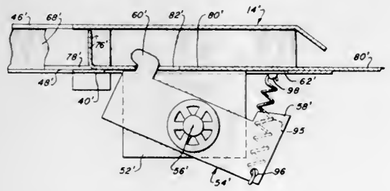
A collapsible, disposable bag for use in sick-rooms, and the like, having a valved construction for preventing reverse flow of material therefrom.

3,797,735

LOCKING COVER FOR COIN BOX

August M. Sciortino, 1838 Weeg Way, Park Ridge, Ill., and Charles R. Rissmann, Skokie, Ill., assignors to said Sciortiano, by said Rissmann

Filed Aug. 2, 1972, Ser. No. 277,245
Int. Cl. G07b *15/00*
U.S. Cl. 232—16 15 Claims



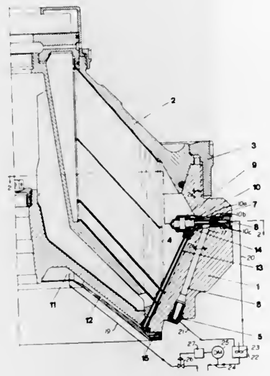
Locking coin box to be inserted into a coin-controlled vending machine in alignment with the coin chute to receive coins. The box has a cover locked onto the box with openings and a trigger mechanism including a spring pressed plunger movable to block the openings, the cover having a two position rocking latch cooperating with the plunger and operated by a rearward extension of the plunger. Initially, prior to installation into the machine, the plunger is cocked in open condition by the latch being in its first position. When the box is inserted into the machine, the extension engages a rear wall of the recess into which the box is inserted moves slightly forward and releases the latch from the first position uncocking the plunger to permit its movement but the movement requires the extension to move rearwardly. This movement is blocked by the rear wall. The latch cannot move into its second position so long as the box is in the recess of the machine. When the machine is serviced and the box, now containing coins, is removed, the extension is permitted to move rearwardly. This is done while the box is being withdrawn and without control or access by the serviceman. At the completion of movement, which occurs while the box is still substantially within the recess, the rocking latch is moved into its second position, locking the plunger into blocking position. The box can be unlocked by the proprietor of the machine. The proprietor unlocks the cover, removes the same, empties the box, releases the latch from its second position, pushes the plunger forward, manipulates the latch to its first or cocked position, returns the cover onto the box and locks it in place. The box can now be reinstalled in another machine by the serviceman.

3,797,736

METHOD AND APPARATUS FOR CONTROLLING THE CONCENTRATION FACTOR OF A DISCHARGE

Hubert Gunnewig, Oelde, Germany, assignor to Westfalia Separator AG, Oelde/Westf., Germany

Filed Apr. 7, 1972, Ser. No. 241,945
Int. Cl. B04b
U.S. Cl. 233—20 R 11 Claims



A centrifugal separator having a drum with concentrate discharge nozzles disposed at a shorter distance from the axis of rotation than the outer periphery of the separating chamber. The drum is provided with auxiliary discharge nozzles or bores disposed at the outer periphery of the separating chamber and leading radially outward. Valves are provided for the auxiliary discharge nozzles for closing and opening thereof in accordance with need for discharge of concentrate in excess of that discharged from the first-mentioned nozzles, and control means are provided for controlling the operation of the auxiliary nozzles in accordance with said need.

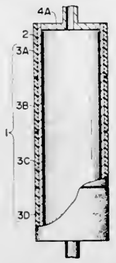
3,797,737

HIGH-SPEED ROTATION DRUM FOR USE WITH A CENTRIFUGAL SEPARATOR FOR GASEOUS MIXTURE

Kenzo Kadotani; Tokio Isogai; Yasushi Miyano, all of Hitachi, and Katsuhito Suzuki, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 10, 1971, Ser. No. 179,458
Claims priority, application Japan, Sept. 11, 1970, 45-79291
Int. Cl. B04b *1/00, 3/00*
U.S. Cl. 233—27 11 Claims

A drum structure adapted to be rotated at a high-speed for the centrifugal separation of gaseous mixture. The drum is of a composite structure comprising a first drum part and a second drum part disposed on the outer periphery of the first drum part. The latter is made of a metal which is resistant to the corrosion by the gaseous mixture while the second drum part is made of a plastic material reinforced with a large number of fibers wound and extending circumferentially. The second



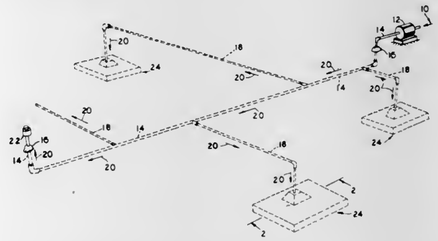
drum part is composed of a plurality of ring-like members each of which is shorter than the first drum part whereby the manufacture of the drum is simplified.

3,797,738

CONTROLLED WATER DISTRIBUTION SYSTEM AND METHODS

Davis Fitzhugh, Raspberry Ln., Augusta, Ark.

Filed Nov. 2, 1972, Ser. No. 302,996
Int. Cl. B05b *17/00*; B44d *1/08*
U.S. Cl. 239—1 11 Claims



Methods and apparatus are provided for sub-surface irrigation of areas of land of differing sizes, and in a manner in which small controlled amounts of water can be expelled more or less continuously into the soil over a relatively large area, along a supply line, for effective irrigation simultaneously with a substantial reduction in the total quantity of water used in comparison with prior arrangements for the same amount of land. The above is achieved by feeding through the supply line to one or more wick manifolds, which in turn continuously supply water distributors comprised essentially of a relatively hydrophillic substance which serve to absorb, hold and distribute the water supply in a slow, continuous manner to the soil being irrigated. In addition, provision is made for distributing a reasonably uniform quantity of water at a variety of points along the system, regardless of the terrain of the land being irrigated and in the absence of expensive land leveling procedures. The methods and apparatus herein are especially useful in relatively arid areas because the controlled distribution achieved limits the quantity of water needed for effective irrigation.

3,797,739

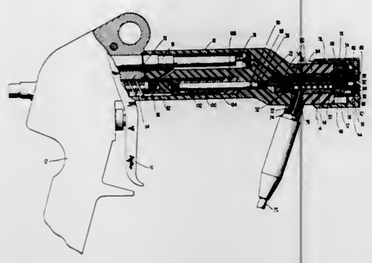
METHOD FOR ELECTROSTATICALLY DEPOSITING A FLUID

Philip L. Cowan, Basking Ridge, N.J., assignor to Electrogasdynamics, Inc., Hanover, N.J.

Division of Ser. No. 35,145, May 6, 1970, Pat. No. 3,693,877.
This application July 11, 1972, Ser. No. 270,721
Int. Cl. B05b *5/02*
U.S. Cl. 239—3 5 Claims

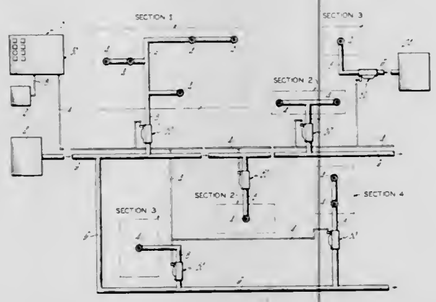
Improved methods and apparatus for charging atomized coating materials and maintaining an electrostatic depositing

field in the electrostatic deposition of coating materials. Improved charging is effected by the selectively directed passage of corona discharge current from a primary source thereof



through emitted coating material intermediate its point of emission and its locus of atomization to an electrically floating electrode element whose collection potential is maintained by a corona discharge emanating from an exposed end thereof.

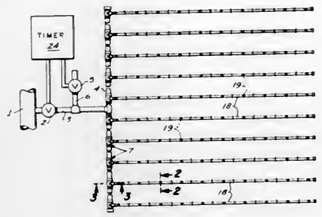
3,797,740
FLUID DISTRIBUTION SYSTEM OPERATED BY PRESSURE SIGNAL
Carl L. C. Kah, Jr., 778 Lakeside Dr., North Palm Beach, Fla.
Filed Jan. 24, 1972, Ser. No. 220,358
Int. Cl. B05b *17/04*
U.S. Cl. 239—11 **19 Claims**



A sprinkler system has a plurality of sprinklers connected to a main water supply. A control system includes main flow control valve units for controlling water flow to said sprinklers, said valve units being controlled by pressure signals of predetermined values from a pressure signal control means. Each valve unit includes a manually actuated valve and a pressure actuated valve.

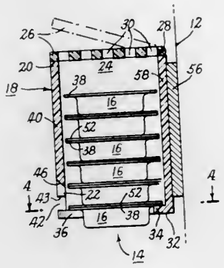
3,797,741
INTERMITTENT IRRIGATION SYSTEM
Lloyd Spencer, 220 Patrician Way, Pasadena, Calif.
Filed Jan. 18, 1973, Ser. No. 324,589
Int. Cl. B05b *1/30*
U.S. Cl. 239—11 **17 Claims**

An irrigation system having a plurality of emitter openings, each dimensioned to discharge water at a rate in excess of that required for drip or trickle irrigation, and a control means which permits intermittent flow for short intervals from the emitters to the effect that during the irrigation period the



average flow corresponds to the continuous flow rate from a drip irrigation system.

3,797,742
CONTAINER DISPENSER FOR PACKETS OF SOLID AIR TREATING AGENT
Charles W. Clark, Dumont, and William Perlberg, Wyckoff, both of N.J., assignors to Airwick Industries, Inc., Teterboro, N.J.
Filed May 30, 1973, Ser. No. 365,089
Int. Cl. A61l *9/04*
U.S. Cl. 239—57 **16 Claims**

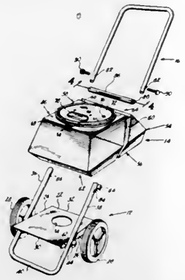


An air-treating device is disclosed in which a plurality of sealed packets containing a solid air-treating agent is supported in a hollow container having at least one opening through which individual packets are inserted or removed from the container. The individual sealed packets each have a removable wall portion or cover for exposing the air-treating agent contained therein, so that individual packets, stored in the container, can be selectively removed from the container and opened to expose the air-treating agent therein. The opened packets can then be replaced in the container, adjacent the opening therein, for support and storage in the container while the vapors from the solid air-treating agent in the opened packet escape from the container into the surrounding atmosphere.

3,797,743
UTILITY SPRAYER UNIT
William J. Kommers, Sioux City, Iowa, and Clarence E. Stewart, South Sioux City, Nebr., assignors to The Broyhill Co., Dakota City, Nebr.
Filed July 26, 1973, Ser. No. 382,674
Int. Cl. B05b *9/02*
U.S. Cl. 239—148 **12 Claims**

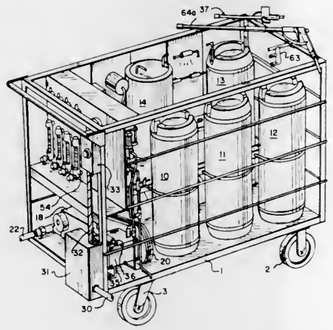
A corrosion resistant molded polyethylene tank for lawn and garden sprayable solutions is mounted to a manually propelled wheeled cart by a corrosion free attachment ar-

rangement. Opposed sides of the tank are provided with relatively deep angled grooves or tracks engageable with and slidable on opposed, rearwardly extending and upwardly inclined frame components on the cart so that the tank can only be mounted from the rear of the cart with proper registra-



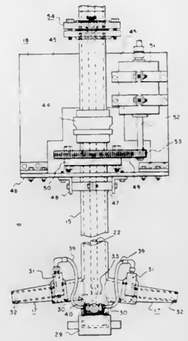
tion therewith assured. A removable stop between the frame components at the rear of the tank prevents tank displacement from the cart. A power spray mechanism is mounted to a support cover on the tank or, in a second embodiment, to a separate engine mount carried by the frame and seated against the stop.

3,797,744
PORTABLE CLEANING AND SANITIZING SYSTEM
Ward Harris Smith, 3142 S. Josephine, Denver, Colo.
Filed Nov. 20, 1972, Ser. No. 307,856
Int. Cl. B08b *13/00*
U.S. Cl. 239—172 **10 Claims**



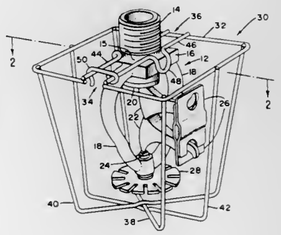
A wheeled frame, supporting a series of chemical tanks connected to the manifold, which includes a high pressure pump for a high pressure, low volume, or low pressure, high volume, cleaning and sanitizing capability. It has a metered and controlled selected chemical injection produced by a high pressure proportioning pump downstream of the high pressure water pump which pumps chemicals from the chemical tanks into the pressurized fluid stream. An additional capability is a metered and controlled oil injection into a high pressure air stream, which also has a drying capacity when oil is not metered into the system. The unit requires connections for electrical, power, and air which are locally available in the areas to be cleaned. Cleaning and sanitizing may be readily achieved by use of a detergent foam, then a high or low pressure chemical wash and followed by a sterilizing solution, and then by a clear-water low pressure rinse, all of which is followed by an oiling of clean equipment. Quick disconnect service terminals provide fast and easy set-up and take-down of the unit.

3,797,745
APPARATUS FOR SPRAYING REFRACTORY LINING
Jan F. Haus, 1861 Stage Court Dr., Allison Park, Pa.
Filed Jan. 24, 1973, Ser. No. 326,423
Int. Cl. B05b *3/00*
U.S. Cl. 239—227 **4 Claims**



A lining gun for spraying refractory lining on the interior of ladles and the like which includes two elongate concentrically disposed conduits through which dry refractory material and water are respectively passed at one end and sprayed through mixing nozzles at the opposite end. Each conduit includes a rotary coupling immediate its length and cooperates with a motor driven ring and pinion assembly which rotates the lower portion of the apparatus including the nozzles for circular spraying.

3,797,746
SPRINKLER GUARD
Robert J. Gray, and William R. Navin, both of Raynham, Mass., assignors to Hodgman Manufacturing Co., Inc., Taunton, Mass.
Filed Aug. 17, 1972, Ser. No. 281,517
Int. Cl. B05b *1/28*
U.S. Cl. 239—288.5 **9 Claims**

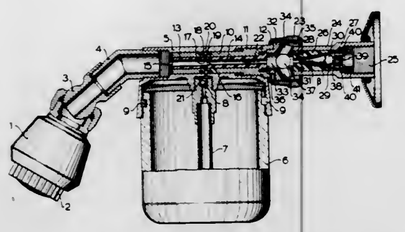


A wire guard for a pendent or upright sprinkler head, the guard being adapted for installation with one hand. Each of a number of depending wire stirrups lies in a plane with its ends fastened to a spreadable circumferential wire base loop. The base loop is discontinuous with a fastening and sprinkler head engaging means spanning the discontinuity. The base loop is resilient in a region opposite the discontinuity to permit the guard to be installed upon a sprinkler head.

3,797,747
DEVICE FOR ASPIRATING AND ADMIXING ADDITIVES INTO A STREAM

Gunter Buzzi, Schiltach/Schwarzwald, and Werner Lorch, Schramberg, both of Germany, assignors to Firma Hano Grohe KG, Schillach/Schw., Germany

Filed Sept. 22, 1972, Ser. No. 291,403
Claims priority, application Germany, Sept. 25, 1971, 2147931
Int. Cl. A62c *5/04*
U.S. Cl. 239—311 **21 Claims**

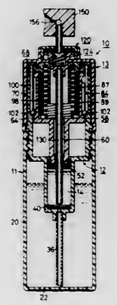


The additives are aspirated and admixed into a stream of liquid by means of an injector having a main bore, increasing in width in the flow direction, and suction bores communicating with the main bore. A liquid-return-flow interrupter is arranged at the inlet side of the injector and is in the form of a free jet air chamber communicating with the open air through corresponding openings and adapted to be bridged by the liquid concentrated into a fine jet by a nozzle bore. An acceleration chamber, converging in the flow direction, is arranged at the inlet end of the nozzle bore whose outlet end communicates with the free jet air chamber at the inlet side of the latter. An apertured disc is positioned at the inlet side of the acceleration chamber and is formed with a plurality of bores therethrough for flow of liquid to the acceleration chamber.

3,797,748
LIQUID SPRAYING DEVICE

Takamitsu Nozawa, and Takao Kishi, both of Tokyo, Japan

Filed Mar. 21, 1973, Ser. No. 343,191
Claims priority, application Japan, Mar. 30, 1972, 47-037544[U]; Mar. 30, 1972, 47-037545[U]
Int. Cl. B05b *1/32, 11/00*
U.S. Cl. 239—321 **12 Claims**

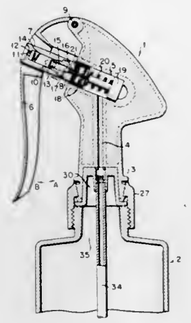


A refillable hand-operated liquid sprayer of the type which requires no container pressurizing gas nor other foreign propellant. It operates to pump a small quantity of liquid to be sprayed from a container to a small cylindrical chamber wherein the liquid is pressurized by the force of a coiled spring which is stressed during "cocking" stroke preparatory to spraying the liquid from the device. A cover unit is removably mounted on the open end of the container, and a spray head is rotatably mounted on the cover unit, the rotation of the head relative to the unit causing the spring to be compressed thereby sucking liquid up from the container into the chamber. A hollow stem made of rigid material such as metal or hard plastic is provided for communicating the chamber with a discharge valve and also serving as a guide for a piston which moves vertically within the cylindrical chamber. With this arrangement, there is little likelihood that the stem is caught in the spring thereby hindering further compression of the spring or resulting in severance of the stem, as is frequently the case with previous flexible hollow tube.

3,797,749
SPRAYER

Tetsuya Tada, 2-6, 3-chome, Nishinakanobu, Shinagawa-ku, Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,428
Claims priority, application Japan, Sept. 8, 1971, 46/69516
Int. Cl. B05b *9/04*
U.S. Cl. 239—321 **13 Claims**



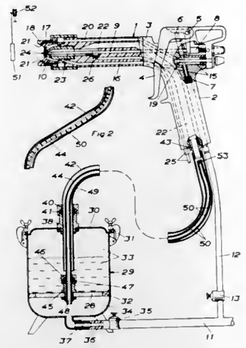
A sprayer comprises a sprayer body and a container connected to said sprayer body by means of screw connection. Said screw connection is achieved by threadly engaging a connecting cylindrical member or a nut snapped on the lower end of the sprayer body with the male screwed neck of the container, and a truncated conical member is inserted into the lower end of the sprayer body after said snap fitting of the nut and to prevent the nut disengaged from said male threaded neck.

3,797,750
POWDER SPRAYING APPARATUS

Kurt Herman Liedberg, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 9, 1972, Ser. No. 305,140
Claims priority, application Sweden, Nov. 12, 1971, 14498/71
Int. Cl. B05b *7/14*
U.S. Cl. 239—336 **16 Claims**

In a powder spraying apparatus the powder is brought into fluidized state within a pressure vessel and in a conveying main conduit. Fluidizing is accomplished by pressure fluid acting through a sinter metal bed in the vessel and through a perforated supplementary conduit in the main conduit. When a control valve is opened, powder will flow for atomizing and

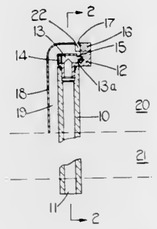


coating purposes in the manner of a liquid from the pressure vessel to spray guns.

3,797,751
SPRAYERS FOR LIQUIDS

Thomas Haddow, Padiham, and Eric Gates, Nelson, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 3, 1972, Ser. No. 268,892
Claims priority, application Great Britain, July 2, 1971, 31076/71
Int. Cl. B05b *7/00*
U.S. Cl. 239—426 **5 Claims**



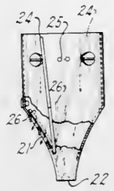
A liquid sprayer for use in a gas turbine engine, in which liquid is supplied through a tube to a passage extending transversely of the tube towards a slot adjacent an end wall of the passage. A conduit supplies air externally of the passage towards an end wall thereof which is defined by a surface aligned with the slot. An outlet for fuel and air mixed at said surface is provided in a side wall of the conduit adjacent said surface.

3,797,752
HAIR DRYER NOZZLE

Daniel Cercone, 212 Cedarville St., Pittsburgh, Pa.

Continuation of Ser. No. 25,378, April 3, 1970, abandoned. This application Nov. 15, 1971, Ser. No. 198,666
Int. Cl. A62c *31/00*
U.S. Cl. 239—443 **6 Claims**

This invention relates to a blower nozzle adapted to fit onto a hand dryer for drying human hair wherein the blower nozzle has a plurality of apertures along a side thereof for allowing gas to escape and has a restricted mouth. In this invention adjustable closure means are provided internally of said nozzle, which, when turned in one direction, allows free flow of heated air through the nozzle and when turned in another direction diverts a portion of the air away from the nozzle mouth and to and through apertures in the side of the nozzle. In a preferred embodiment of my invention the apertures are

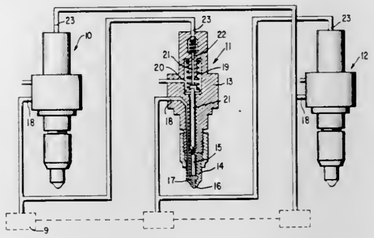


distorted so that air passing through the apertures is given a direction generally parallel to the axis of the nozzle instead of a direction generally normal to the axis of the nozzle.

3,797,753
LIQUID FUEL INJECTION SYSTEMS

Ivor Fenne, Greenford, and Douglas Gordon Burton, Weybridge, both of England, assignors to C.A.V. Limited, Birmingham, England

Filed Oct. 25, 1972, Ser. No. 300,858
Claims priority, application Great Britain, Oct. 28, 1971, 50066/71
Int. Cl. F02m *47/00*
U.S. Cl. 239—533 **5 Claims**



A fuel injection nozzle includes a valve member movable against the action of resilient loading by means of fuel under pressure supplied from an inlet. The nozzle also includes a piston which is operably connected to the valve member and which is subjected to fuel under pressure flowing by way of a valve controlled conduit. The fuel under pressure acting on the piston reinforces the action of the resilient loading. Conveniently the fuel is obtained from the inlet of the nozzle unit.

3,797,754
CONTINUOUS TUBE TRICKLE IRRIGATION

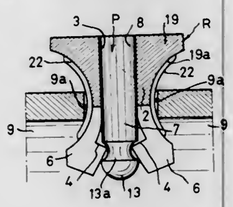
Lloyd Spencer, 220 Patrician Way, Pasadena, Calif.

Continuation-in-part of Ser. No. 274,078, July 21, 1972. This application June 21, 1973, Ser. No. 372,318
Int. Cl. B05b *15/00*
U.S. Cl. 239—542 **20 Claims**

A continuous tube trickle irrigator including a tubular member having longitudinally extending membrane forming

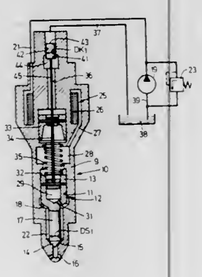
with the surrounding tubular member a main flow passage and a flush flow passage, the membrane having a series of longitudinally spaced inlet openings communicating between the main flow passage and the flush flow passage, and the tubular member having a series of outlet openings longitudinally offset from the inlet openings, to form between the openings a series of self flushing emitters which permit flush flow when the pressure in the main passage is below a predetermined minimum value, the membrane being collapsible in the vicinity of each outlet opening above such minimum pressure to form with the tubular member a series of trickle passages.

3,797,755
SPRINKLER NOZZLE
Satoru Saisho, Yokohama, Japan, assignor to Koyo Fastener Co., Ltd., Yokohama City, Japan
Filed Nov. 21, 1972, Ser. No. 308,351
Int. Cl. B05b *1/20*
U.S. Cl. 239—547 **10 Claims**



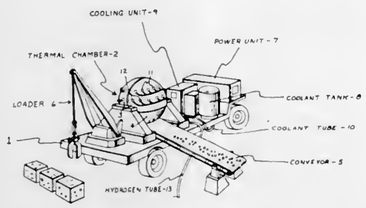
The present invention relates to an improved sprinkler nozzle for a simple sprinkling device for the purpose of irrigation of vegetables, flowers, trees growing in a green house.

3,797,756
ELECTROMAGNETICALLY ACTUATED FUEL INJECTION VALVE FOR INTERNAL COMBUSTION ENGINES
Willi Voit, Stuttgart, and Kurt Ziesche, Neckarrems, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
Filed Mar. 5, 1973, Ser. No. 338,305
Claims priority, application Germany, Mar. 3, 1972, 2210213
Int. Cl. B05b *1/30*
U.S. Cl. 239—585 **22 Claims**



An electromagnetically actuated fuel injection valve for internal combustion engines, the valve needle of which, guided in a bore of the valve housing, is connected to the armature of an electromagnet and is lifted from a valve seat when the electromagnet is energized, against the force of a return spring and against the direction of flow of the fuel which is fed under pressure from an external pressure source, thereby establishing communication between a pressure chamber adjacent the valve seat and a discharge nozzle outlet is described, wherein the valve needle is coupled to a compensating piston which is guided coaxially with the valve needle and the armature, in a fluid tight manner in the said bore. The compensating piston has a first frontal face which is pressure-relieved and a second frontal face which is exposed to the fuel pressure, and a cross sectional area which is so large that, when the injection valve is closed, the hydraulic forces acting on the valve needle in the directions of opening and of closing, are equal or at least approximately equal.

3,797,757
THERMAL BREAKING OF ROCKS
Robert G. Marshall, 8308 Lilac Ln., Alexandria, Va.
Continuation-in-part of Ser. No. 97,645, Dec. 14, 1970, abandoned. This application July 12, 1972, Ser. No. 271,321
Int. Cl. B02c *19/18*
U.S. Cl. 241—1 **11 Claims**



Sudden heat shock (thermal shock) and cooling cycles are used to break large stones into fragments of predetermined size, without conventional heavy and bulky crushing equipment.

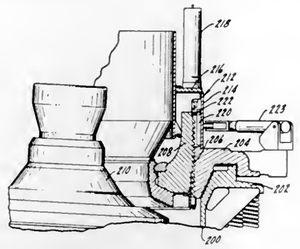
3,797,758
METHOD OF PRODUCING FINELY DISPERSED ALPHA CALCIUM SULFATE HEMIHYDRATE
Egon Cherdron, Limburgerhof/Pfalz; Manfred Haerter, Neuhofen/Pfalz; Fritz Fassle, Limburgerhof/Pfalz; Hans-Joachim Forster, Schwetzingen-Hirschacker, and Istvan Potencsik, Mannheim, all of Germany, assignors to Gebr. Giulini Gesellschaft mit beschrankter Haftung, Ludwigshafen a. Rhine, Germany
Filed June 16, 1972, Ser. No. 263,473
Int. Cl. B02c *19/00*
U.S. Cl. 241—29 **3 Claims**

A method for producing finely dispersed alpha calcium sulfate hemihydrate. The hemihydrate has a solvent retention of at least 0.85 milliliters toluene per gram. The method includes grinding alpha calcium sulfate hemihydrate to an average particle size below 4 microns and subjecting the resulting product to a disintegrating of agglomerations of particles in the product.

3,797,759
CRUSHER ADJUSTING SYSTEM
D. Carter Davis, Menomonee Falls; Ulhas S. Sawant, Sussex, and Francis Scaffidi, West Allis, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.
Filed Apr. 5, 1972, Ser. No. 241,312
Int. Cl. B02c *25/00, 2/00*
U.S. Cl. 241—30 **18 Claims**

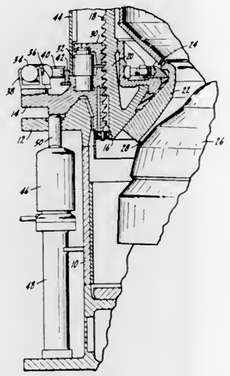
This is a cone crusher and method of adjusting it under load

by partially unclamping the bowl to an extent such that the bowl may be rotated but with some clamping pressure main-



tained so that the threads stay in full contact thereby avoiding any damage to the threads from the crushing blows.

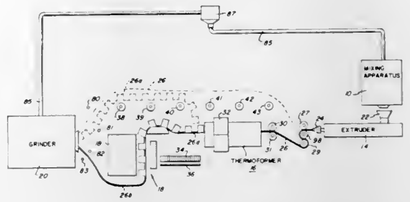
3,797,760
ADJUSTING CRUSHER UNDER LOAD
D. Carter Davis, Menomonee Falls; Ulhas S. Sawant, Sussex, and Francis Scaffidi, West Allis, all of Wis., assignors to Rexnord Inc., Milwaukee, Wis.
Filed Apr. 5, 1972, Ser. No. 241,313
Int. Cl. B02c *2/00*
U.S. Cl. 241—30 **21 Claims**



This is a cone crusher and method of adjusting it under load by partially unclamping the bowl to an extent such that the bowl may be rotated but with some clamping pressure maintained so that the threads stay in full contact thereby avoiding any damage to the threads from the crushing blows.

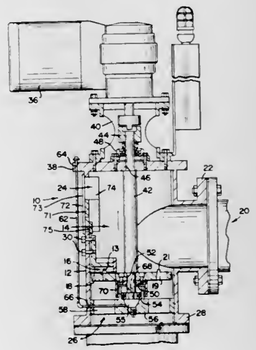
3,797,761
MATERIAL HANDLING SYSTEM FOR PLASTIC FILM
Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company, Chicago, Ill.
Division of Ser. No. 125,471, March 18, 1971, Pat. No. 3,733,160. This application Sept. 28, 1972, Ser. No. 293,070
Int. Cl. B02c *23/02*
U.S. Cl. 241—34 **2 Claims**

The system includes mixing apparatus, extruder, thermoformer, trimmer and grinder. Ground plastic from the mixing apparatus is fed directly to the extruder which provides a thin, continuous film of plastic. In the direct feed mode this film moves from the extruder directly into the thermoformer and then to the trimmer. Articles are formed in the film by the thermoformer and are cut from the film by the trimmer to leave a skeletal film which is fed directly into the grinder. In the bypass feed mode, film from the extruder or from the thermoformer is fed directly into the grinder. Novel mixing ap-



paratus is disclosed for mixing plastics of different bulk densities, such as ground film from the thermoformer, extruder and trimmer. Also, novel cutting apparatus is disclosed which reduces noise and overloading problems.

3,797,762
SEWAGE COMMINUTOR
Howard J. Wood, Largo, and James A. Greiner, Clearwater both of Fla., assignors to Engineered Products, Clearwater, Fla.
Filed July 24, 1972, Ser. No. 274,735
Int. Cl. B02c *13/31*
U.S. Cl. 241—36 **4 Claims**



An anti-clogging sewage comminutor comprising a housing including an inlet port formed in the side thereof and a surge port formed opposite an inlet port. In addition an outlet port is formed in the bottom thereof and a reversible motor is attached to the housing by a motor adapter. A cutter means comprising a circular rotor disc is disposed within the interior of the housing and a V-shaped double-edge cutter bar is connected to the interior wall of housing and extends outwardly therefrom in operative relation to each other. An outlet port is disposed beneath the cutter bar and rotor disc where by solid waste material pumped into the housing is reduced by the shearing action between the cutter bar and rotor disc and passed from the outlet port into the sewage line. The reversible motor changes whenever the rotor disc becomes jammed causing the rotor disc to reverse direction and oscillate until free.

3,797,763

APPARATUS FOR PROCESSING MATERIALS

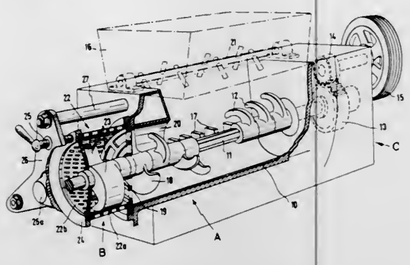
Walter Handle, Insel Reichenau; Rainer Handle, and Paul Latt, both of Constance, all of Germany, assignors to Firma Rieter-Werke Konstanz, Constance, Germany

Filed Jan. 7, 1972, Ser. No. 216,011

Claims priority, application Germany, Aug. 2, 1971, 2138562

Int. Cl. B02c *19/20*

U.S. Cl. 241—82.1 **5 Claims**



A material processing apparatus includes coarse and fine comminuting sections and a mixing section interposed therebetween. A common drive shaft is provided for the sections. Blade members are mounted on the drive shaft in the coarse and fine comminuting sections for pulverizing incoming material. The mixing section includes a tunnel portion, a screen member, and a helical blade mounted on the drive shaft for mixing incoming materials and pressing them through the screen.

3,797,764

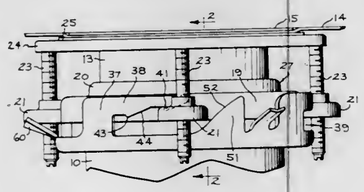
SELF-LATCHING WASTE FOOD DISPOSER MOUNTING ASSEMBLY

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 67,106, Aug. 26, 1970, abandoned. This application June 29, 1972, Ser. No. 267,490

Int. Cl. B02c *18/42*

U.S. Cl. 241—100.5 **9 Claims**



A sink mount support assembly for a waste food disposer includes a pair of annular members adapted to automatically engage with each other and latch a disposer in a first holding position relative to a sink drain sleeve when the disposer is axially aligned and lifted toward its installed position on a sink drain sleeve. The self-latching feature is accomplished by auto-rotation of one of the connecting members and serves to hold the disposer on the drain sleeve in a relatively loose arrangement whereby the disposer may be axially rotated to facilitate the connection of a drain line to the disposer's sump. Thereafter, the disposer may be more firmly fastened to the sink sleeve by manually further rotating the connecting member a short distance about the vertical axis of the assembly to a second, locked position. This completes the mounting operation, and the hopper of the disposer is thereby firmly sealed in drain flow communication with the drain sleeve. The assembly can be quickly disconnected as required by reversing the latter procedure and counter-rotating the connecting member.

3,797,765

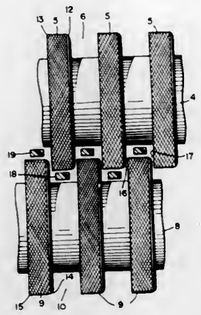
PAPER SHREDDER

Abe Samuels, Chicago, Ill., assignor to Speed-O-Print Business Machine Corporation, Chicago, Ill.

Filed May 9, 1972, Ser. No. 251,800

Int. Cl. B02c *7/04, 7/12*

U.S. Cl. 241—236 **6 Claims**



A shredding device for paper and other material capable of being torn having a pair of oppositely rotating rolls, each with a plurality of circular discs thereon axially spaced apart along the length thereof is provided wherein the discs on one roll are received within the spaces between discs on the other roll and spaced from the faces thereof, and one circumferential edge of certain ones or all of said discs has a radius to cooperate with sharp circumferential edges on an adjacent disc thereby tearing and shredding the material. Comb teeth are located in the spaces between adjacent discs and are floatingly mounted to prevent jamming of the material being shredded.

3,797,766

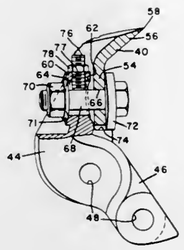
FORAGE HARVESTER CUTTERHEAD

John Joseph Hennen, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sept. 29, 1972, Ser. No. 293,672

Int. Cl. A01d *55/18*

U.S. Cl. 241—282.2 **7 Claims**



A forage harvester has a reel-type cutterhead having an axial shaft with a pair of disk-like radial members mounted on the shaft. A plurality of longitudinally extending, parallel, equiangularly spaced knives have flat generally radially extending inner portions and forwardly inclined outer portions with cutting edges at their outer ends generating a cylinder as the cutterhead rotates. Each knife is mounted on the cutterhead by means of a pair of support elements respectively attached to the respective radial members, each support element having a flat, generally radial seat against which the knife is clamped by a bolt extending through the knife and through a radial slot in the support element. Each knife is adjustable in a radial direction by loosening a nut on the bolt and sliding the bolt and the knife attached thereto along the support element slot, the adjustment being accomplished by rotating a cam mounted on the head of the bolt in engagement with an abutment on the support element. A radially extending set screw in the support element is engageable with the bolt to lock the bolt in the selected position.

3,797,767

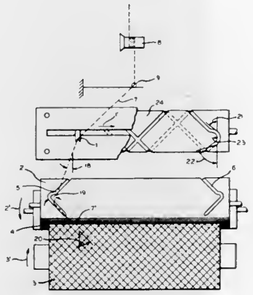
HIGH-SPEED CROSS-WINDING DEVICE

Heinz Schippers, and Erich Lenk, both of Remscheid, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Aug. 9, 1971, Ser. No. 170,009

Int. Cl. B65h *54/30*

U.S. Cl. 242—43 **3 Claims**



High-speed cross-winding apparatus with two traverse motion devices for winding elongated materials, especially continuous filaments, such as tapes and threads into packages, particularly at filament velocities exceeding 1,500 m/min. and embodying a first traversing device in the form of a reciprocable thread guide, and a second traversing device in the form of a pair of rotatable thread guide means taking over the thread traverse stroke near the respective ends of the traverse stroke of said first device, means for driving said first and second traverse motion devices synchronously with each other, and independent means for rotatably driving the package. The second, stroke reversal device temporarily accelerates stroke velocity above the stroke velocity of the first device before and/or after stroke reversal, and the guide groove of the first device has a greater pitch before and/or after stroke reversal and an enlarged radius of stroke reversal curvature.

3,797,768

THREAD-GUIDE CONTROL APPARATUS

August Ruegg, Wil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

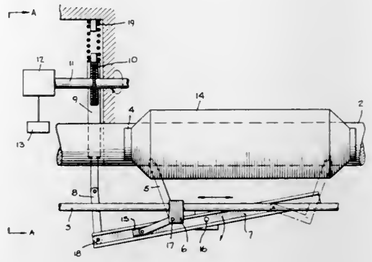
Filed Dec. 9, 1971, Ser. No. 206,332

Claims priority, application Switzerland, Dec. 22, 1970, 18933/70

Int. Cl. B65h *54/32*

U.S. Cl. 242—43.1 **1 Claim**

A thread-guide is reciprocated along a support rod opposite a bobbin to be wound and is pivoted by a guide rail rotatable by control means including drive means and a control shaft. The control shaft and support rod may extend along adjacent



a plurality of winding stations and the drive means may be common to all stations.

3,797,769

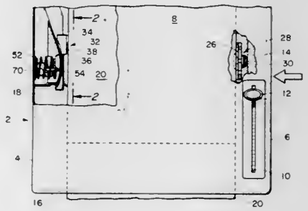
ROLL SUPPORTING APPARATUS FOR ROLL TOWEL DISPENSER

Council A. Tucker, Glendale, Calif., assignor to Towlsaver, Inc., Los Angeles, Calif.

Filed Nov. 11, 1971, Ser. No. 197,721

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.53 **26 Claims**



A combination support structure which provides for the support of a roll of paper toweling or the like in a manner that the roll is not easily displaced from its supported position and wherein one of the support members is pivotally mounted and positionable in locked or unlocked positions to provide ease of access for mounting the roll of paper toweling. The normal dispensing action of the paper toweling positions the one support member in the locked position. Additionally, because each of the supports is spring biased and the supports uniquely coact, the imposition of lateral forces on the cabinet housing which are transmitted to the supports does not displace the paper roll from its supported dispensing position because of the absorption and dissipation of those forces.

3,797,770

AUTOMATIC CASSETTE TAPE WINDING APPARATUS

Masayuki Hosoda, and Kimitaka Kassai, both of Tokyo, Japan, assignors to Otari Electric Company Ltd., Tokyo, Japan

Filed Mar. 30, 1972, Ser. No. 239,553

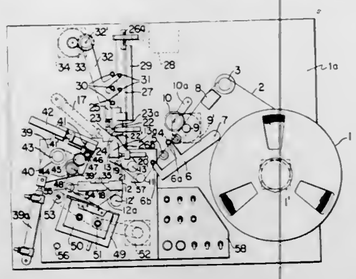
Claims priority, application Japan, Apr. 1, 1971, 46-19865

Int. Cl. B65h *19/20, 17/02*

U.S. Cl. 242—56 R **6 Claims**

In a tape winding apparatus the start of the recording is sensed to start the tape take-up rollers, a leader tape is spliced with the recorded tape and the recorded portion is automati-

cally wound into a cassette while the unrecorded excess portion of the leader tape is removed, the end of recording is



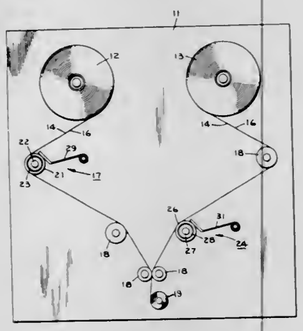
sensed and the tape is automatically cut, wound into the cassette and coupled with the leader tape.

3,797,771

METHOD AND APPARATUS FOR WINDING METALLIZED-TYPE CAPACITORS

Donald R. Brown, Downers Grove, and Otto T. Masopust, Jr., Claredon Hills, both of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,602
Int. Cl. H01g *13/02*
U.S. Cl. 242—56.1 **6 Claims**



Two capacitor forming strips are wound to provide a capacitor roll having a given capacitance value. The resistance, the capacitance, and the number of winding turns applied to the capacitor roll being wound are monitored during winding, the average required number of strip winding turns to provide a capacitance of the given value being known. A minus and a plus limit are assigned to the average required number of winding turns, and winding of the capacitor roll is terminated if either the monitored resistance of the capacitor is below a predetermined resistance value, if at the minus turns limit the capacitance value is greater than the given value, if at the plus turns limit the capacitance value is less than the given value, or if the capacitor reaches the given capacitance value when the number of turns wound on the capacitor roll is within the minus and plus limits of turns.

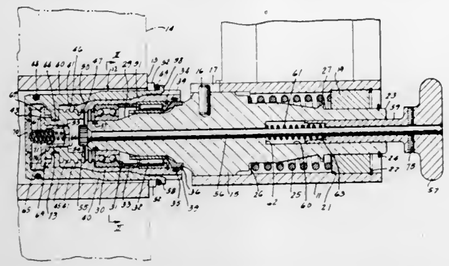
3,797,772

EXPANDIBLE CHUCK

Robert G. Lucas, Janesville, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 1, 1972, Ser. No. 230,681
Int. Cl. B65h *75/24*
U.S. Cl. 242—72.1 **17 Claims**

Expansible chuck supporting a roll of web material for winding or unwinding. The chuck is supported to be cantilevered from a winding station and has a spindle projecting from the support for the chuck and a chuck bearing housing freely rotatable on the spindle. The chuck bearing housing has external frusto-conical surfaces engaged by spaced internal frusto-conical segments on the insides of chuck leaves, guided in the chuck bearing housing for movement therealong. An externally threaded member has threaded engagement with internal threads in the chuck bearing housing and has connec-



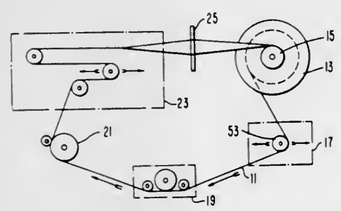
tion with the chuck leaves to translationally move the chuck leaves upon turning of the threaded member. A hand wheel and torque shaft are depressible along the spindle to interengage and turn the threaded member. A locking member carried by the threaded member is held from rotation relative to the chuck leaves by the chuck bearing housing, and is biased to interengage the threaded member and hold it from rotation relative to the chuck bearing housing, to hold the chuck leaves in position.

3,797,773

MAINTAINING RIBBON TENSION WITH TAPERED-SHUNT REED SWITCH CONTROL APPARATUS

Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 52,635, July 6, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,362
Int. Cl. B65h *77/00, 17/02;* **G03b** *1/04*
U.S. Cl. 242—75.43 **8 Claims**



Apparatus for maintaining tension in a ribbon which is being wound on an intermittently driven take-up spool. A reed switch having a tapered shunt is used to control a motor which drives the take-up spool. The motor is driven intermittently to maintain the ribbon tension substantially constant within predetermined limits.

3,797,774

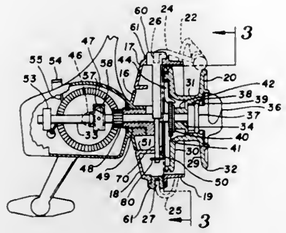
SEMI-AUTOMATIC BAIL STRUCTURE FOR OPEN FACE REELS

Richard Dumbauld, Oakdale, Iowa, assignor to Berkeley & Company, Inc., Spirit Lake, Iowa

Filed Aug. 7, 1972, Ser. No. 278,358
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.2 G **10 Claims**

An improved line bail structure for spinning reels wherein the line bail comprises a generally resilient semicircular arm

with a certain first predetermined normal diameter, and with means for coupling the arm to the reel rotor. The bail is resiliently coupled to the rotor through a plunger element which is adapted to control the rockable rotation of the bail between open and closed dispositions. Camming means are



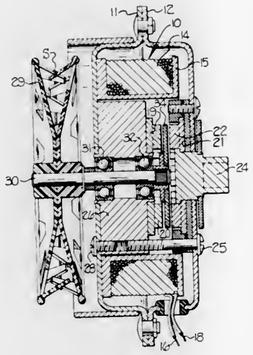
formed along the plunger to define the stable limits for the open and closed dispositions of the bail, and with a camming ramp being secured to the reel frame to automatically rockably shift the line bail from open disposition to closed disposition upon rotation of the rotor.

3,797,775

STRAND TENSION CONTROL

Eugene F. White, 600-South Church Streets, Monroe, N.C.

Filed Feb. 1, 1973, Ser. No. 328,502
Int. Cl. B65h *59/16*
U.S. Cl. 242—155 M **19 Claims**



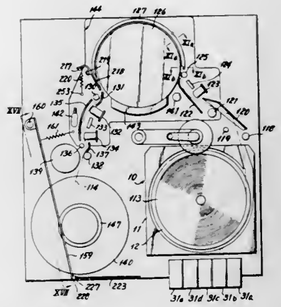
The tension in advancing strand materials is controlled by an apparatus in which the restraint imposed upon a strand engaging a pulley or cylinder is controllably varied by changes in the flux density of an electromagnetic field. Cooperating poles which direct the flux of the field are movable into and out of axial alignment and movable toward one another and apart, to facilitate accurate control over the flux density. The tension control apparatus is particularly applicable to textile yarn processing apparatus such as false twist texturing apparatus and to winding apparatus in which strand material is supplied from a creel.

3,797,776

AUTOMATIC TAPE LOADING TYPE MAGNETIC RECORDING AND REPRODUCING APPARATUS

Hiroyuki Umeda, Yokohama, and Shichiro Fukatsu, Chigasaki, both of Japan, assignors to Victor Company of Japan, Ltd., Tokohama, Japan

Filed Mar. 4, 1971, Ser. No. 121,008
Claims priority, application Japan, Mar. 6, 1970, 45/18940; Mar. 30, 1970, 45/41321
Int. Cl. G11b *15/66;* **B65h** *75/28*
U.S. Cl. 242—188 **12 Claims**



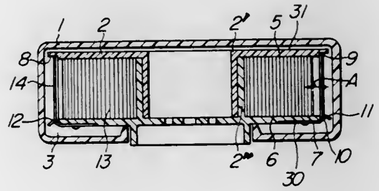
An automatic tape loading type magnetic recording and reproducing apparatus comprises means for detecting a leader of a predetermined length fed from a supply reel and stopping the feeding of the leader, an automatic take-up reel for automatically engaging and positively taking up the fed leader, and means for detecting the feeding of a tape following the leader and thereafter positively transporting the succeeding tape.

3,797,777

TAPE REEL AND TAPE REEL STORING MAGAZINE

Hiroo Hosono; Seiko Minamide, both of Osaka; Juichi Hukushima; Yoku Kudou, both of Neyagawa, and Shunichiro Kimura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 5, 1971, Ser. No. 131,351
Claims priority, application Japan, Apr. 8, 1970, 45/30294; Apr. 8, 1970, 45/30295; Apr. 8, 1970, 45/34189; Apr. 8, 1970, 45/34191; Aug. 24, 1970, 45/84518; Aug. 24, 1970, 45/84519; Aug. 24, 1970, 45/84521; Aug. 24, 1970, 45/84523; Sept. 18, 1970, 45/93362; Oct. 19, 1970, 45/104352; Nov. 30, 1970, 45/120034; Nov. 30, 1970, 45/120036; Nov. 30, 1970, 45/120054; Dec. 2, 1970, 45/120723; Dec. 2, 1970, 45/120724
Int. Cl. G11b *23/10;* **B65h** *75/28*
U.S. Cl. 242—197 **9 Claims**



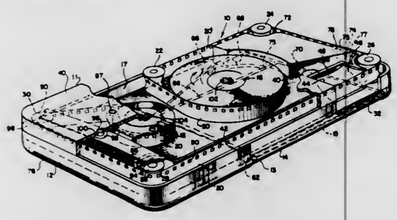
A tape reel or a tape reel storing magazine of the type in which a leader tape can automatically thread along a predetermined path defined on a recording and reproducing apparatus, said tape reel having a plurality of circumferentially spaced resilient pieces which are provided by a plurality of radial cutouts formed on the outer periphery thereof, said

resilient pieces serving to hold the leader tape on the outer peripheral portion of the reel in such a manner that the leader tape can easily be taken out of the reel when the tape is to be unwound.

3,797,778
COMPACT MOTION PICTURE FILM HANDLING CASSETTE AND CAMERA

Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 813,427, April 4, 1969. This application Nov. 4, 1970, Ser. No. 86,998
Int. Cl. G03b *23/02, 1/04;* **G11b** *15/32*
U.S. Cl. 242—199 **7 Claims**

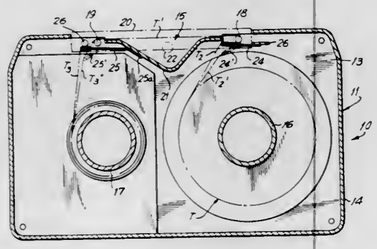


A compact multipurpose motion picture film handling cassette useful during exposure, processing and projection operations. An exposure station is located adjacent a corner of the cassette. This arrangement permits the cassette to be mounted in the handle section of a uniquely compact camera and, then subsequently, in a uniquely compact processor-projector unit. The cassette may also include a normally inoperative film processing station. A resilient member of the cassette extends in spaced relationship to idlers intermediate of the exposure station and the cassette's takeup reel and the cassette includes means to receive a force applying member into operative relationship with this resilient member. This resilient member automatically snubs the adjacent idlers when mounted in the camera and is adapted to selectively snub these same idlers when the cassette is in the processor-projector unit.

3,797,779
TAPE CASSETTE

Hanjiro Esashi, and Katsuyoshi Kawamata, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,279
Claims priority, application Japan, July 14, 1971, 46-62244[U]
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—199 **9 Claims**

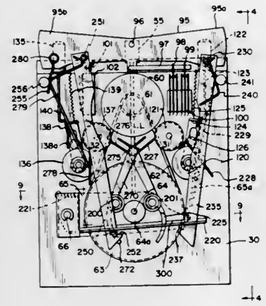


In a tape cassette for use in a magnetic recording and/or reproducing apparatus, and in which the tape is wound on, and extends between freely rotatable reels in the cassette housing having an opening across which a run of the tape is guided for access to the tape through such opening; slackening of the tape run as a result of free turning of the reels is avoided by providing resiliently flexible elements, preferably of plastic, each of which is fixed at one end within the housing and has its other free end engaged with a portion of the tape between a respective one of the reels and the tape run for urging the respective tape portion into a relatively tortuous path in which the tape is engaged by a fixed surface, which may be on a guide member or otherwise, and which imposes an increased resistance to movement of the tape into said tape run, and each resiliently flexible element is deflected in response to tension in the engaged tape portion to permit the latter to follow a relatively less tortuous path in which the resistance to movement of the tape is reduced to substantially free the tape for transfer between the reels.

3,797,780
TWO DIRECTIONAL TAPE CASSETTE PLAYER

Edwin S. Bara, Elmwood, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Continuation of Ser. No. 831,077, June 6, 1969. This application Jan. 17, 1972, Ser. No. 218,266
Int. Cl. G11b *5/00, 15/32, 23/04*
U.S. Cl. 242/200 **3 Claims**



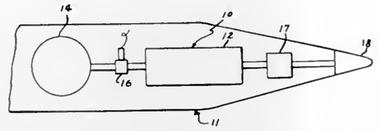
A tape cassette player having provision for slot loading of a cassette into tape playing position wherein an exposed length of tape extending between a pair of reels in the cassette is positioned along a tape path defined by at least one tape head and a tape drive wheel disposed in line along said tape path. The drive wheel engages a portion of the exposed length of tape against a non-rotatable part of the tape cassette to form a drive couple and feed the tape at a uniform speed. Operating mechanism including reel spindles drive the tape in either forward or reverse direction with mechanism responsive to the completion of tape travel, as evidenced by stopping of the tape reels in the cassette and the reel spindles, causing reversal of rotation of the tape drive wheel and of the drive to the reel spindles to cause the tape to commence travel in the opposite direction. The reversal of tape travel is caused by a sensing member which senses rotation of a tape reel and a reel spindle and which moves upon stoppage of the reel spindle to signal the tape reversal operation.

3,797,781
DECELERATION RESPONSIVE FLOW VALVE

James T. Hollis, Fountain Valley, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 30, 1972, Ser. No. 301,927
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SC **1 Claim**

A coolant fluid is supplied to a permeable nose tip of a reentry vehicle from a coolant reservoir through a flow control valve having a spool type piston and sleeve valve wherein the orifice area changes as a function of deceleration. A second

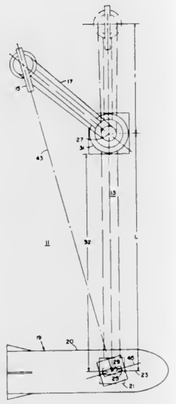


piston and sleeve valve is provided in the output of the flow control valve to maintain a constant pressure difference across the flow control valve.

3,797,782
MISSILE LAYING DEVICE

William W. Stripling; Harold V. White, and Joe S. Hunter, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,796
Int. Cl. F41g *11/00*
U.S. Cl. 244—3.16 **3 Claims**



A device including an arm with proximal and distal ends, a telescope, a connector disposed in pivotal relation between the proximal end and the telescope and provided with a mechanism in engagement between the telescope and arm for intersection of the distal end and the axis of said telescope during rotation thereof.

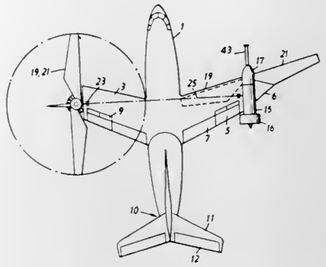
3,797,783
CONVERTIPLANE

Adrian V. Kisovec, 10 Waterford Way, Wallingford, Pa.

Continuation-in-part of Ser. No. 57,055, July 22, 1970. This application May 25, 1972, Ser. No. 256,651
Claims priority, application Great Britain, July 23, 1969, 37068/69
Int. Cl. B64c *27/22*
U.S. Cl. 244—7 A **13 Claims**

This invention combines rotating wings with a jet engine to provide helicopter type vertical lift and pure jet forward propulsion when the rotating wings are stowed in a manner to provide useful fixed wing lift.

This invention provides for a converticraft incorporating the advantage of low disc loading in the helicopter mode providing for vertical lift while retaining efficient forward flight characteristics including pure jet operation, high lift over drag ratio and high wing aspect ratio. A substantial portion of the rotor is used as a useful wing extension in high speed configuration and accordingly reduces parasitic weight. This is primarily accomplished by a tilt rotor jet engine assembly mounted on the outboard end of the center wing sec-

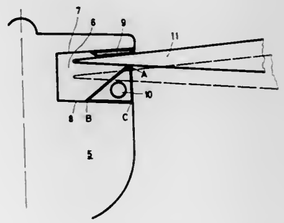


tion and having rotary wings to provide helicopter type lift. When the jet engine is rotated for forward thrust one of the two rotary wings is positioned to form an aerodynamically useful extension of the center wing section to reduce induced wing drag. The other rotary wing is stowed in the bottom of the center wing where it may be selectively and optionally used to increase airfoil camber when that is desirable as in low speed forward flight.

3,797,784
AUTOMATICALLY OPERATING DEVICE FOR SEALING A FUSELAGE RECESS OF AIRCRAFTS

Gunther Muller, Krailling, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Sept. 8, 1972, Ser. No. 287,268
Claims priority, application Germany, Sept. 13, 1971, P 21 45 618.8
Int. Cl. B64c *3/38, 5/12*
U.S. Cl. 244—46 **4 Claims**



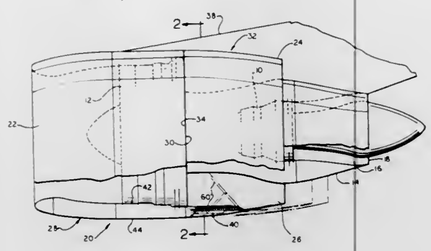
Sealing device for an aircraft fuselage. For adjustable wing aircraft whose wings retract into the fuselage under certain conditions of flight there is provided resilient sealing means at the upper and lower sides of the wing receiving recess for closing the recess and providing a smooth fuselage contour in all positions of the wing. The sealing means comprise a resilient tube arranged at each of the upper and lower edges of the recess and so proportioned to the size of the recess that they are pressed together under some appreciable pressure even when the wing is extended. In one form of the invention said sealing tube is comprised of spirally wound spring wire which if desired may be of multilayer construction, said multilayers being, if desired, wound in opposite directions. In other embodiments, the resilient tube may be enveloped by an elastic material for conforming the closure means to the contour of the aircraft.

3,797,785

THRUST MODULATING APPARATUS

Richard B. Baerresen, Bonita, and Richard H. Timms, San Diego, both of Calif., assignors to Rohr Industires, Inc., Chula Vista, Calif.

Filed Aug. 31, 1972, Ser. No. 285,339
Int. Cl. B64c *15/04*
U.S. Cl. 244—53 R 5 Claims



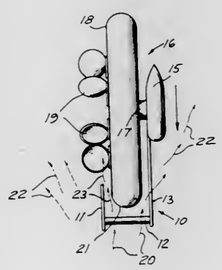
Fan jet engine has cowl surrounding engine and terminating in jet exhaust nozzle. Elongate shroud surrounds fan and engine to define annular passage for fan air terminating forward of exit end of nozzle. Aft portion of shroud is a separate sleeve movable axially to define a peripheral outflow gap for fan air. A ring of reverse thrust cascades is located in the gap, and a set of blocker doors are pivoted at their aft ends adjacent to the aft end of the cascade ring. In stowed position they overlie the inner side of the cascade ring and block lateral outflow. In deployed position they converge forward to block rearward flow of air and to divert it out through cascade ring. The sleeve in stowed position overlies the outer side of the cascade ring and prevents inflow, while its trailing edge is in the plane of maximum size of the core to define a convergent nozzle for cruising operation. The sleeve shifts partially aft to a position defining a larger nozzle exit area for takeoff and landing, with the blocker doors stowed and latched. Final deployment of the sleeve releases the latches and positively moves the doors to deployed position. Initial stowing movement of the sleeve positively stows the doors and positively secures the latches.

3,797,786

WIND-FORCED WHEEL TURNER

Albert M. House, 1018 Brookline Ave., Louisville, Ky.

Filed Apr. 7, 1972, Ser. No. 241,971
Int. Cl. B64c *25/40*
U.S. Cl. 244—103 S 2 Claims



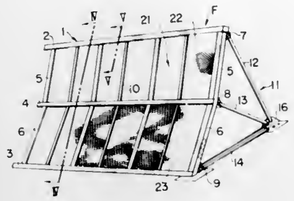
An improvement in impeller type wheel turner for aircraft landing wheels utilizes an air stream deflector near the leading surface of the tire.

3,797,787

JET ENGINE BLAST FENCE

Shosuke Watanabe, deceased, late of Tokyo, Japan (Naoko Watanabe, sole successor), assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 14, 1972, Ser. No. 244,097
Claims priority, application Japan, Apr. 17, 1971, 46-29783
Int. Cl. E04h *17/16*
U.S. Cl. 244—114 B 5 Claims



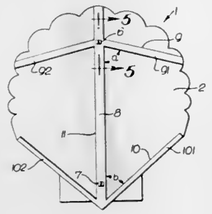
A jet engine blast fence comprising a blast shield plate made of an expanded metal, a retaining frame to which said blast shield plate is affixed and a base for fixing the retaining frame to the ground in such a manner that the retaining frame is inclined toward the jet blast, the said expanded metal having strands sloping upward in the lee direction, the said strands defining openings which are also horizontally clear so that a part of the blast is positively allowed to pass horizontally through said openings of the expanded metal and is raised upward by a part of the blast which part is deflected obliquely upward in the lee direction along the strands of the expanded metal.

3,797,788

KITE STRUCTURE

Jan Beijer, 800 Rio Grande, Pasadena, Calif.

Filed July 17, 1972, Ser. No. 272,130
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R 4 Claims



Kite structure in which the airfoil surface is supported by integrally formed ribs and foam backing material against waving or flapping of the surface in flight.

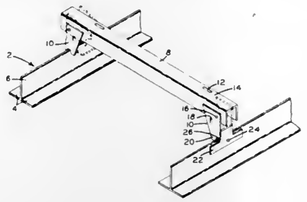
3,797,789

SUPPORT BAR FOR SUSPENDED CEILING LIGHT FIXTURE

Kenneth L. Wasson, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Mar. 22, 1972, Ser. No. 237,052
Int. Cl. F21r *3/02*
U.S. Cl. 248—214 3 Claims

Suspended ceiling systems are provided with light fixtures which are supported by the gridwork of the suspended ceiling system. Herein, a support bar is positioned relative to two adjacent main runner structures of a suspended ceiling system for the purpose of supporting one side of a light fixture. The



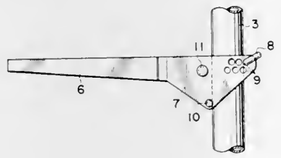
light fixture is hung from two adjacent support bars which are in turn supported by the main runner portion of the ceiling system.

3,797,790

DEVICE FOR HOLDING SUCH ARTICLE AS A TOWEL

Kazuo Iseki, Tokyo, Japan, assignor to Ohta Company Limited, Tokyo, Japan

Filed Apr. 10, 1972, Ser. No. 242,557
Int. Cl. F16b *21/12*
U.S. Cl. 248—221 2 Claims



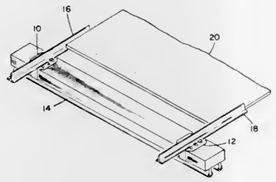
This invention relates to a device of a simple structure provided to embrace a fence of a veranda or a pipe in a room and to hold such article as a towel by the principle of a lever with the weight of the article and itself.

3,797,791

LIGHTING FIXTURE HANGING ASSEMBLY

Ernest L. Psencik, Itasca, Tex., assignor to Rangaire Corporation, Cleburne, Tex.

Filed Nov. 2, 1972, Ser. No. 303,102
Int. Cl. F16b *1/00*
U.S. Cl. 248—228 14 Claims



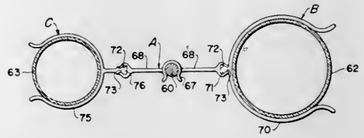
The specification discloses a lighting fixture hanging assembly which includes a first member having a flat surface with wings that extend from opposite sides thereof. The wings include hooks at the ends for lockably receiving a lighting fixture upon insertion of a lighting fixture between the wings. Four pairs of spaced apart apertures are formed through the flat surface of the first member. A second member includes a pair of spaced apart clips which may be disposed through any one of the four pairs of apertures in the first member. When the clips are disposed through the apertures, the clips are operable to be connected to an inverted tee support for a dropped ceiling, such that the lighting fixture is disposed relative to the tee support in any one of four positions. In the first position, the lighting fixture is disposed parallel to the tee support and in the second position the lighting fixture is disposed perpendicular to the tee support. In the third and fourth positions, the lighting fixture is disposed at acute angles to the tee support.

3,797,792

CLAMPING MEANS FOR PHYSIOLOGICAL FLUID INFUSION SYSTEMS

Constance C. Huber, 317 Fourth St., Oakmont, Pa.

Continuation-in-part of Ser. No. 1709, Jan. 9, 1970, abandoned. This application May 12, 1971, Ser. No. 142,590
Int. Cl. A47b *96/06*
U.S. Cl. 248—229 5 Claims



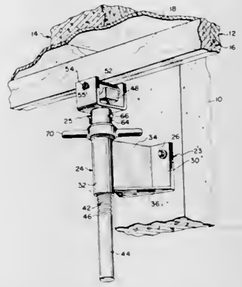
Clamping means for preventing bottles containing a physiological fluid from swinging and/or being dislodged from hooks on which they are suspended, resulting in possible breakage and injury to a patient. The clamping means is secured to an upright pole and encircles physiological fluid bottles suspended from hooked arms extending outwardly from the pole.

3,797,793

SHORING SCAFFOLD AND FORMWORK SUPPORT

Donald B. Moritz; David O. Wilson, both of Arlington Heights, and Francis B. Mueller, Downers Grove, all of Ill., assignors to Waco Scaffold & Shoring Co., Division of Bliss & Laughlin Industries, Inc., Schiller Park, Ill.

Filed June 19, 1972, Ser. No. 264,274
Int. Cl. A47f *5/10*; A47h *33/00*; E04g *17/16*
U.S. Cl. 248—295 24 Claims

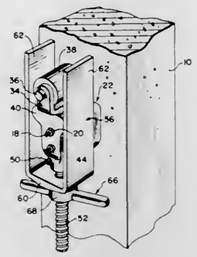


Relative adjustable roller and rigid support for formwork and scaffolding in which vertically oriented jack screw assemblies disposed either at the top or bottom of a shore member are adjustable to vary the supported height and position of the shore member with either a rolling or rigid contact, or both, with respect to a work area or a weight bearing horizontal or inclined surface. Engagement is also by roller means located at the working ends of jack screws which operate automatically with their level adjustment to hold the rollers against rotation in weight carrying relationship while the formwork is in its elevated position.

3,797,794
ROLL OUT FORMWORK SUPPORT

Bill M. Lane, Los Angeles, Calif., assignor to Waco Scaffold & Shoring Co., Division of Bliss & Laughlin Industries, Inc., Schiller Park, Ill.

Continuation-in-part of Ser. No. 264,277, June 19, 1972, abandoned. This application Jan. 16, 1973, Ser. No. 324,163
Int. Cl. A47f *5/10*; A47h *33/00*; E04g *17/16*
U.S. Cl. 248—295 6 Claims

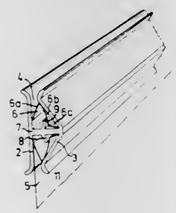


A removable support mounted on a structural column to shore formwork during the forming of a concrete floor slab thereon and then strips and rolls out the formwork intact for reuse in forming successively higher floor slabs. The bracket of the support carries vertically aligned weight bearing elements including a depending lift screw and a wing nut thereon, and rigid and roller elements controlled thereby that selectively engage the formwork. The roller is at the top of the bracket and a U-shaped rigid element has its bight portion carried on the depending lift screw for adjustment by the winged nut with its arms slidably guided by the bracket past the roller for elevation to its formwork supporting position.

3,797,795
CLAMPING ROD FOR THE SUSPENSION OF MATERIAL IN THE FORM OF SHEETS OR THE LIKE

Sven Anders Hemgren, Kungsangen, Sweden, assignor to Beckman & Ullbin AB, Stockholm, Sweden

Filed Apr. 3, 1972, Ser. No. 240,644
Claims priority, application Sweden, May 28, 1971, 6937/71
Int. Cl. A47h *21/00*
U.S. Cl. 248—316 R 7 Claims

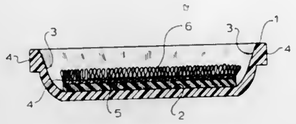


The present invention concerns a clamping rod for the suspension of material, especially sheet-formed material, such as signs and the like. Said clamping rod comprises two substantially rigid flanges which are mutually parallel or convergent and whose edges define a gap into which said material is insertable. A V-formed leaf spring is clamped between said flanges in such a position thereto that a first leg of said spring in said gap abuts against a first one of said rigid flanges along a contact line adjacent the bending line between the two spring legs, and the outer edge of the other leg thereof resiliently presses against the other rigid flange at a distance inside of said gap. Upon insertion, the material is retained between said other flange and the outer edge of said other spring leg.

3,797,796
COASTER

Homer D. Lansdowne, 1250 No. Portofino Drive, Apt. 401, Sarasota, Fla.

Filed Sept. 11, 1972, Ser. No. 287,676
Int. Cl. A47g *29/00*
U.S. Cl. 248—346.1 1 Claim



This invention relates to a Coaster holding or supporting a glass containing a drink for the purpose of preventing the marring of furniture by a dripping sweat formed on the outer surface of the glass and it comprises a non-frangible dished tray of non-porous material in which is placed an insert or pad comprising a base having a knap of highly porous material on one side thereof which will readily absorb the condensation or sweat running down the outside of a glass resting upon the knap of the insert as well as absorbing slight spillages. The insert has a coating of pliable substantially non-porous, non-moisture absorbing material on its under surface which engages the interior of the base of the dished body. This coating prevents slippage of the insert upon movement of the glass. The entire insert is readily removable from the non-frangible body and may be at desired intervals placed in an automatic clothes washer or otherwise washed to completely clease it, and it may be dried in an ordinary clothes dryer or any other suitable manner and thus should prevent mold and musty odors from the insert with its continuous use

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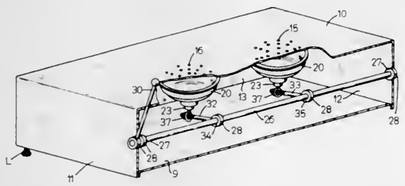
3,797,797
VACUUM HOLDING TABLE FOR A PHOTOGRAPHIC PLATE OR THE LIKE

James J. Keller, Rt. 1, Mt. Horeb, Wis.

Filed Sept. 25, 1972, Ser. No. 291,946
Int. Cl. F16b *47/00*; G03b *27/60*
U.S. Cl. 248—362 1 Claim

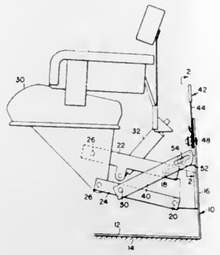


A vacuum holding table for holding photographic plates or the like while the plate is being processed. The table includes a lever by means of which the operator can quickly load the plate and hold it securely on the table without further attention and then can quickly and positively remove the plate from the table.

3,797,798
VEHICLE SEAT WITH SUSPENSION AND SELECTIVE SUSPENSION LOCK-OUT

Michael Keith Magruder, Waterloo, and Terrill Wayne Woods, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed June 26, 1972, Ser. No. 265,976
Int. Cl. B60n *1/02*
U.S. Cl. 248—399 6 Claims

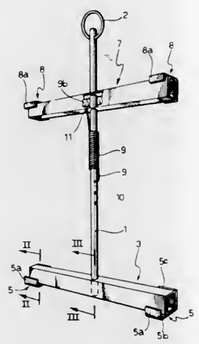


A resiliently suspended vehicle seat with means for selectively locking out the resiliency of the suspension to fix the seat against both up and down movement.

3,797,799
DEVICE FOR SUPPORTING MIRRORS, PLATES, PANELS AND THE LIKE

Delmo Maggia, Via Servais 200/G/6, Turin, Italy

Filed Mar. 21, 1973, Ser. No. 343,335
Claims priority, application Italy, Mar. 28, 1972, 53053/72
Int. Cl. A47g *1/16*
U.S. Cl. 248—491 5 Claims



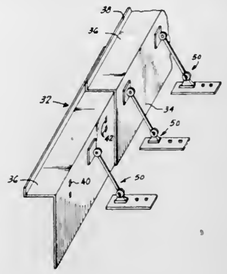
This invention provides a support device for a mirror or like flat member in which upper and lower horizontal edges of the flat member are engaged by hook portions carried by upper and lower cross pieces mounted on a common vertical support rod by which the device is suspended. The upper cross piece is spring urged downwardly to enable the device to grip flat members of different heights.

3,797,800
PORTABLE REUSABLE FORM FOR CONCRETE FOUNDATIONS

Elliott C. Loy, 400 Woodfin, Houston, Tex.

Filed June 2, 1971, Ser. No. 149,198
Int. Cl. B28b *7/22*
U.S. Cl. 249—13 12 Claims

A portable form for concrete foundations and the like according to the present invention comprises a plurality of form sections each being provided with a substantially planar vertical wall defining the outer wall portion of such foundations. Each wall section includes a separatable horizontal wall disposed substantially normal to the vertical wall and a vertical flange cooperating with the horizontal wall to define a brick ledge in the outer periphery of the foundation. The form is provided with interfitting corner sections that cooperate to define brick ledges at the corners of the foundation. The form is supported in place by plurality of adjustable support devices

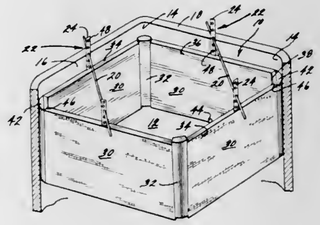


that are secured to the form sections at various positions thereon. Each of the support devices comprises a base that is secured to the ground in any desirable manner and includes an adjustable support that is manipulatable to adjust the height and position of the form sections as desired to achieve proper form configuration. The support devices may be employed to extract the concrete forms subsequent to hardening of the concrete material defining the foundation.

3,797,801
FOUR-PIECE HOT TOP WITH FOLDABLE SUBASSEMBLIES

Fred A. Mueller, Canon City, Colo., assignor to Colorado Refractories Corporation, Canon City, Colo.

Filed Aug. 11, 1971, Ser. No. 170,699
Int. Cl. B22d *7/10*
U.S. Cl. 249—197 2 Claims



This invention relates to a hot top of the type used to insulate the reservoir of an ingot mold into which molten steel is poured that consists of a pair of foldable wall section and corner post subassemblies which cooperate with one another and with two corner posts defining keys for the latter to produce a hollow truncated generally pyramidal enclosure. Each of the foldable subassemblies includes a single large fabric panel to one face of which is fastened in edge-to-edge relation a series of three wall sections while to the other face is attached a corner block opposite the middle of the three wall sections. The three sections are all generally trapezoidal with their adjacent edges oppositely inclined so as to mate in folded relation using the fabric panel as a hinge and define two 45° corners. The free edges of the outboard sections cooperate in a similar way with the adjacent edges of the corner posts. A novel hanger subassembly is provided on each of the two wall

section and corner post subassemblies which includes a pair of apertures strap hangers molded in place between the fabric panel and each of the two end wall sections. The lower projecting ends of the hangers lock beneath their respective wall sections while the upper projecting apertured ends thereof receive rods that extend diagonally in supporting relation across the inner of the rim of the ingot mold reservoir. The invention also contemplates the method of making the hot top foldable subassemblies which includes the steps of impregnating the fabric panel with a heat-resistant slurry, placing the wetted panel in the bottom of a pan, laying the hanger straps atop the panel, forming the three individual wall sections along with the joints therebetween atop the fabric panel and straps, curing the fabric panel and wall sections, fastening a corner block to the outside of the fabric panel in position to cooperate therewith and with the middle wall section on the inside thereof to form an integral corner post, and bending the projecting lower end of the hanger strap to form a hook supporting the wall section on its face

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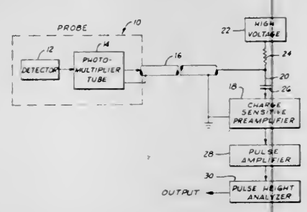
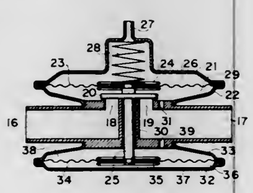
3,797,802
RADIATION MEASURING SYSTEM UTILIZING A CHARGE SENSITIVE AMPLIFIER
Robert S. Foote, Dallas, Tex., assignor to Geodata International, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 37,582, May 15, 1970, abandoned. This application Jan. 21, 1972, Ser. No. 219,734
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **8 Claims**



The method and apparatus for measuring pulsed electric charges, such as the charges from a radiation detection device, which charges originate at a point remote from the place of measurement, including transmitting the charges from their source to the place of measurement, amplifying the charges with a charge sensitive preamplifier and measuring the characteristics of the charges.

3,797,803
CONTROL VALVE ASSEMBLY FOR A GAS PASSAGEWAY
Kenji Goto; Hidetaka Nohira, and Kiyohiko Mizuno, all of Susono, Japan, assignors to Toyota Jidoshiya Kogyo Kabushiki Kaisha, Toyota-shi, Japan
Filed May 12, 1972, Ser. No. 252,577
Claims priority, application Japan, May 15, 1971, 46-39028
Int. Cl. F16k *31/12*
U.S. Cl. 251—61.5 **2 Claims**

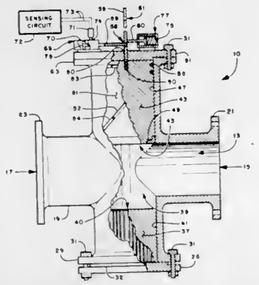


A control valve assembly for a passageway for gases.

The device comprises a valve body adapted to open and close communication between a gas inlet duct and a gas outlet duct, a diaphragm having the valve body attached to a middle portion thereof for resiliently urging the valve body normally to move into engagement with an opening of the gas inlet duct to close the same, compensation apparatus provided in one portion of a diaphragm chamber in which the valve body is disposed for eliminating or minimizing the influence of the pressure of gases on a surface of the diaphragm on which the valve body is mounted, and apparatus for permitting the other portion of the diaphragm chamber which is disposed opposite to the first mentioned diaphragm chamber portion with respect to the diaphragm to communicate with a negative pressure source.

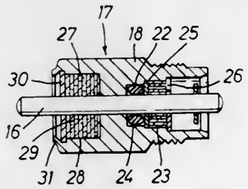
The force of resilience adapted to urge the valve body into engagement with the opening of the gas inlet duct to close the same is set at the same level as the force of negative pressure adapted to operate the diaphragm.

3,797,804
ATMOSPHERIC CLOSURE MECHANISM
Richard E. Ashbaugh, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Feb. 6, 1973, Ser. No. 330,153
Int. Cl. F16k *31/44*
U.S. Cl. 251—68 **5 Claims**



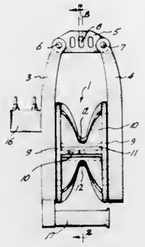
Apparatus for rapidly closing a conduit, using atmospheric pressure for effecting movement of a closure upon release of a retaining pin, the latter being released by electrically activated explosive means, and crushable means for absorbing kinetic energy and thereby stopping the closure.

3,797,805
SEALING MEANS FOR A VALVE STEM
Helmer Trost Nielsen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed Sept. 25, 1972, Ser. No. 291,764
Claims priority, application Germany, Oct. 12, 1971, 2150788
Int. Cl. F16k *41/04*
U.S. Cl. 251—214 **7 Claims**



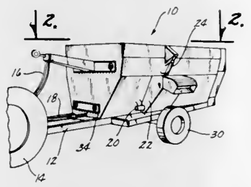
The invention relates to a thermostatic valve assembly for controlling the flow of a liquid therethrough. The assembly has a secondary seal for its valve stem which is made of a material which expands when contacted by a leaking quantity of the liquid being controlled. The expansion of the seal inhibits the leakage and the movement of the valve closure member. This manifestation of malfunctioning is a signal that the primary seal has become defective.

3,797,806
SEINE-HAULING BLOCK
Lawrence E. Demmert, 3408 Redwood Ave., Bellingham, Wash.
Continuation-in-part of Ser. No. 701, Jan. 5, 1970, Pat. No. 3,535,811. This application June 28, 1971, Ser. No. 157,334
Int. Cl. B66d *1/36*
U.S. Cl. 254—192 **9 Claims**



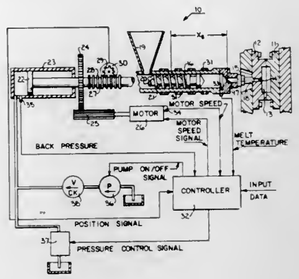
The floats of a seine are lodged in pockets formed between radial webs on the sheave of a seine-hauling block, which serve as abutments to grip the floats for increasing the traction on a seine in hauling it. The seine netting passes through slots in axial alignment with each radial web. Adjacent slots may be offset axially to afford a serpentine path for the seine around the sheave. The sheave is powered by a hydraulic motor. A guard roller mounted below the sheave will strip from the pockets floats lodged in them which are not released before reaching the roller.

3,797,807
MATERIAL MIXER
Norman A. Behrens, Columbus, Nebr., assignor to Creston Manufacturing Co., Inc., Creston, Nebr.
Filed Sept. 13, 1971, Ser. No. 179,795
Int. Cl. B01f *7/04, 7/08*
U.S. Cl. 259—41 **5 Claims**



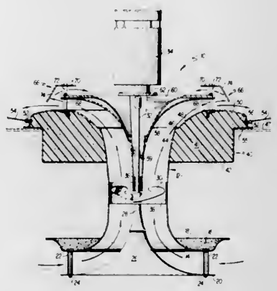
A mixing and dispensing wagon having side-by-side lower longitudinal augers moving material away from the end walls and a pair of upper longitudinal augers moving material toward the end walls such that the material is recirculated for mixing away from the ends on the bottom, upwardly and toward the ends at the top, then downwardly and back to the center area. A discharge conveyer is in communication with the material chamber near the lateral center of the chamber on a level with the lower augers. The upper augers have paddles at the ends adjacent the end walls thereby preventing compacting of the material against the end walls and also to force the material downwardly. One lower conveyer includes conveyer portions spaced apart at its inner ends by a plurality of paddles.

3,797,808
PLASTICATION CONTROL SYSTEM FOR INJECTION MOLDING MACHINES
Carlton Y. W. Ma, and John W. Peter, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Division of Ser. No. 83,072, Oct. 22, 1970, Pat. No. 3,721,512. This application Nov. 17, 1972, Ser. No. 307,294
Int. Cl. B29f *1/04;* **B29b** *1/10*
U.S. Cl. 259—191 **3 Claims**



A plastication control system for controlling the shot size and plastication time of an injection molding machine. The control system includes a computer which calculates the screw speed based on the operating conditions of the immediately preceding cycle in order to control the plastication time to a predetermined value. Additionally, the system controls the back pressure applied to the rotating screw in order to maintain the melt temperature of the plastic at the forward end of the barrel at a predetermined value.

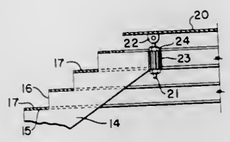
3,797,809
AERATOR APPARATUS
Garland S. Sydnor, Jr., Richmond, Va., assignor to Sydnor Hydrodynamics Inc., Richmond, Va.
Filed Apr. 20, 1972, Ser. No. 245,980
Int. Cl. B01f *3/04*
U.S. Cl. 261—91 **30 Claims**



An aerator apparatus utilizing a top-mounted motor which provides a substantially streamlined flow of liquids from its input to its output. A hollow central frame member or volute is provided with a discontinuity in the form of an outwardly extending circumferential shoulder portion located substantially at the flotation line whereby liquids pumped with the central frame member are separated from contact therewith and exposed to atmospheric pressure. A principal deflector means is so formed vis-a-vis the inner shell for the flotation means that a diverging throat area is provided. The fluids leave the aerator apparatus substantially horizontally over the top of the flotation means. The latter is provided with a contour which corresponds substantially with the trajectory of the

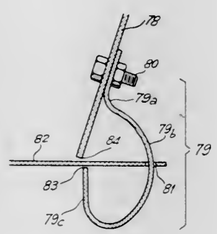
liquids expelled thereover. An auxiliary deflector means returns a small amount of the expelled liquids in order to provide lubrication for the bearings of a propeller driven by the motor.

3,797,810
GAS AND LIQUID CONTACT APPARATUS
Heinz Wolff, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H, Bochum, Germany
Filed Dec. 3, 1970, Ser. No. 94,641
Claims priority, application Germany, Dec. 8, 1969, 1961426
Int. Cl. B01f *3/04*
U.S. Cl. 261—111 **7 Claims**



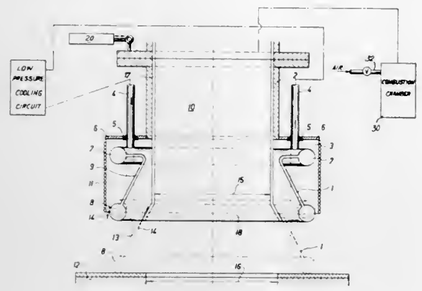
A horizontal outer ring is sealed to the inner surface of the side wall of a vertical shell. Above this ring is an upper series of vertically spaced horizontal rings decreasing in size upwardly. Above the top ring there is a horizontal top plate that is smaller than the top ring. Below the outer ring there is a lower series of vertically spaced horizontal rings decreasing in size downwardly. Provision is made for continuously delivering liquid to the top plate in the shell, and the rings are dimensioned to cause the liquid leaving the edge of the top plate to cascade down the upper series of rings over their outer edges and then down the lower series of rings over their inner edges while a gas is flowing upwardly through the shell and back and forth through the cascading liquid.

3,797,811
MASS EXCHANGE COLUMNS
Yves Jullien, and Jean-Charles Cicile, both of Brioude, Haute-Loire, France, assignors to Societe Peur L'Equipment Des Industries Chimiques Speichim, Paris, France
Filed Aug. 25, 1971, Ser. No. 174,692
Claims priority, application France, Aug. 31, 1970, 70.31649; Aug. 4, 1971, 71.28573
Int. Cl. B01d *3/20*
U.S. Cl. 261—114 R **2 Claims**



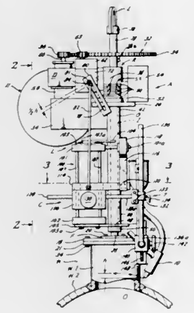
An overflow for an exchange column of the type used in the exchange of phases having different densities. The overflow including a vertically disposed collection passage and a shut-off device adapted to automatically open in dependence of a function of the heavier phase in collection passage. The shut-off device is in one embodiment in the form of a flap valve.

3,797,812
WASTE GAS FLOW SYSTEM FOR METAL-TREATING APPARATUS
Stefan Ivessa, Leibnitz, Steiermark, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria
Filed Sept. 6, 1972, Ser. No. 286,535
Claims priority, application Austria, Sept. 9, 1971, 7825/71
Int. Cl. C21c *5/40*
U.S. Cl. 266—16 **16 Claims**



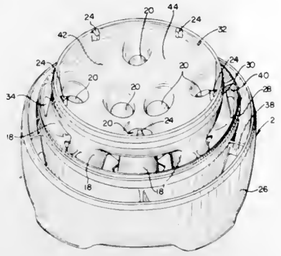
A metal-treating apparatus which includes a vessel in which metal is refined and a waste-gas conduit which receives gas issuing from the vessel. Between the latter conduit and the top end of the vessel is a ring assembly which is movable along the end of the waste-gas conduit adjacent the vessel between a closed position engaging the vessel and an open position spaced therefrom. A structure which surrounds the waste-gas conduit defines a chamber in which the top end of the ring assembly is located even when the latter is in its closed position, and in this closed position the ring assembly defines with this latter structure and with the waste-gas conduit a pair of gaps through which any waste gas which seeks to escape while flowing into the waste-gas conduit must flow while changing its direction at least twice.

3,797,813
CONTROL APPARATUS FOR METALWORKING TOOLS
Vernon H. Roesel, Rt. 1, Box 131M, Cypress, Tex.
Continuation-in-part of Ser. No. 100,573, Dec. 22, 1970, Pat. No. 3,741,555. This application May 26, 1972, Ser. No. 257,440
Int. Cl. B23k *7/04, 37/02*
U.S. Cl. 266—23 M **10 Claims**



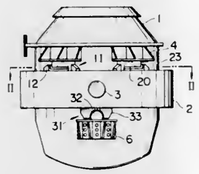
A new and improved apparatus for controlling the movement and spacing of a metalworking tool with respect to workpieces.

3,797,814
OXYGEN LANCE WITH MULTI-ORIFICED NOZZLE
Nicholas M. Rymarchyk, Jr., Pittsburgh; Walter V. Berry, Lake San Marcos, and William W. Berry, Pittsburgh, all of Pa., assignors to Berry Metal Company, Harmony, Pa.
Filed Mar. 27, 1972, Ser. No. 238,136
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 L **11 Claims**



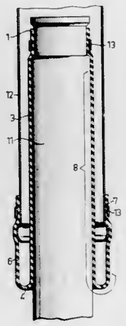
An oxygen lance with a multi-orificed nozzle or tip in the form of a casting where the tip has a plurality of three oxygen orifices about an inner circumference or ring of the nozzle interface or outer wall and a plurality of five oxygen orifices on a concentric outer circumference of the nozzle interface where each orifice of a ring is symmetrical to the other in the same ring but not in the other ring but the spacing of two adjacent orifices on different rings presenting an angle between two nozzle face radii that pass through the centers of two adjacent holes on different adjacent concentric circles that is a maximum angle for least jet spray interference between such two orifices and maximum cooling of the nozzle interface and wherein the nozzle water shelf above the interface is ported to the inside of the nozzle interface to allow coolant within the interior of the nozzle between the oxygen passages as well as on the outer side of the passages of the ringed orifices.

3,797,815
APPARATUS FOR SUPPORTING THE BODY OF THE CONVERTER
Masahiko Seki; Takayuki Imaida, and Hiroyoshi Funakoshi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed May 15, 1972, Ser. No. 253,131
Claims priority, application Japan, May 19, 1971, 46-40908
Int. Cl. C21c *5/50*
U.S. Cl. 266—36 P **3 Claims**



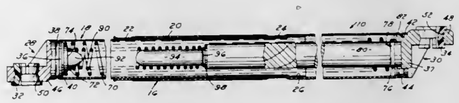
An apparatus for supporting the body of a converter which is supported on a base stand and has a pair of trunnion shafts provided on a trunnion ring held between an upper bracket and a lower bracket fixed on the outside of the body, which comprises a plurality of upper supporting devices each having means freely movable therein and having one end of each supporting device set on the upper bracket and the other end set on a sliding base plate in a guiding groove provided on the upper surface of the trunnion ring and extending in the radial direction of the body, and a plurality of lower supporting devices having a gliding-in part of semi-circular cross-section allowing for a free gliding movement in the radial direction of the body and having one end set on the lower bracket and the other end set on the trunnion ring.

3,797,816
AIR SPRING BELLOWS
Hartwig Voss, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Oct. 14, 1971, Ser. No. 189,384
Claims priority, application Germany, Oct. 15, 1970, 2050613
Int. Cl. F16f *9/36*
U.S. Cl. 267—65 R **1 Claim**



An air spring bellows with two connecting sections of clearly different diameters and a conical portion interconnecting said two connecting sections while the section with the shorter diameter is connected to a metallic plunger member and the section with the greater diameter is connected to a cylinder member, the arrangement being such that a portion of the section with the smaller diameter is in response to a relative movement between said plunger and cylinder members cuffed-over another portion of the same section while the cuffed-over portion is radially outwardly spaced from the non-cuffed-over portion of the same section.

3,797,817
CLOSURE COUNTERBALANCE
Robert J. Deisenroth, Elkhart, Ind., assignor to Excel Industries, Inc., Elkhart, Ind.
Filed June 22, 1972, Ser. No. 265,334
Int. Cl. F16f *3/04*
U.S. Cl. 267—71 **9 Claims**

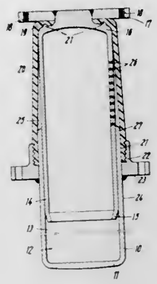


The closure counterbalance is for attachment as a strut between a movable closure which is hingedly fastened to a support structure. The counterbalance includes a pair of tubular members telescopingly connected together in sliding relationship. A compression coil spring within the members urges the members apart. A wooden rod is provided within the tubular members. The wooden rod fixed extends into the spring in sliding relationship therewith to support and guide the spring and prevent the spring from buckling against the inner surface of the tubular members.

3,797,818
HYDRAULIC TELESCOPIC SHOCK ABSORBER

Jean Herbert Willich, and Johannes Jasper de Baan, both of Ennepetal, Germany, assignors to Firma August Bilstein, Ennepetal-Altenvoerde, Germany

Filed Feb. 15, 1972, Ser. No. 226,534
Claims priority, application Germany, July 14, 1971, 2135000
Int. Cl. B60r *19/06*; F16f *5/00, 9/08*
U.S. Cl. 267—122 11 Claims



An hydraulic shock absorber for use for example in absorbing impacts on motor vehicles has a damping characteristic which is dependent on the stroke of a telescopic deformation but not on velocity of impact and the deformation is normally temporary due to restorative properties of the shock absorber.

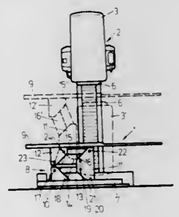
The shock absorber basically comprises a relatively movable piston and barrel which are filled with a damping liquid and which are at least partially surrounded by resilient bellows which accommodate displaced liquid on impact.

The shock absorber includes throttling means in the form of bores and/or slots which may be located in the piston and/or in the barrel.

3,797,819
SUPPORTING TABLE FOR PATIENTS

Winfried Platz, Rathsberg, and Heinz Ludke, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Jan. 16, 1973, Ser. No. 324,069
Claims priority, application Germany, Jan. 15, 1973, 2201921
Int. Cl. A47b *9/00*
U.S. Cl. 269—322 4 Claims

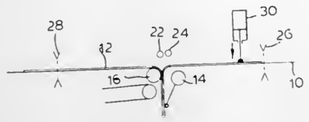


A supporting table for patients has between its base and the table plate a height raising and lowering mechanism which includes rods forming two parallelogram sections connected one behind the other, a connecting member mechanically fixing the upper bearing of the lower section relatively to the lower bearing of the upper section, a motor connected with one of these sections and a power transmitting connection between these sections.

3,797,820
SELF-CENTERING CROSSFOLDER

Derrick McDermott, Brighouse, England, assignor to Thomas Broadbent & Sons Limited, Yorkshire, England

Filed Mar. 14, 1972, Ser. No. 234,519
Int. Cl. B65h *45/04*
U.S. Cl. 270—69 6 Claims

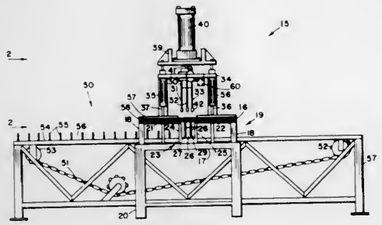


The present invention relates to a laundry cross-folding machine and also to a method of cross-folding a workpiece. The machine includes a pair of workpiece detectors operatively connected both to a clamp and one of a pair of squeeze rollers. A workpiece to be folded is fed in offset relationship relative to a fold plane disposed between the squeeze rollers. The shorter side of the workpiece is clamped whilst the longer side introduced into the fold plane. Thereafter, once the workpiece has been located in a correct position, the clamp is released so that the whole of the workpiece is folded into the fold plane.

3,797,821
FOLDING DEVICE

William N. Crenshaw, Jr., St. Paul, Ind., assignor to KCL Corporation, Shelbyville, Ind.

Filed Nov. 1, 1971, Ser. No. 194,175
Int. Cl. B65h *45/20*
U.S. Cl. 270—79 5 Claims



A device for folding sheets into a pleated condition and transferring the sheets to a conveyor. A platen has a plurality of plates movable through slots formed in a platform for receiving a stack of flat sheets. Subsequent to the movement of the platen into the slots, the platen is moved lengthwise through the slots forcing the pleated sheets therefrom and into a compartment of a conveyor carrying tray. The platen is then raised from the conveyor carrying tray and returned to the original position. Finger-like members are secured to the plates for engaging the edges of the pleated sheets for the transverse movement of the pleated sheets to the compartment of the conveyor carrying tray. A pair of cylinder motors are mounted to the frame of the folding device to controllably move the platen.

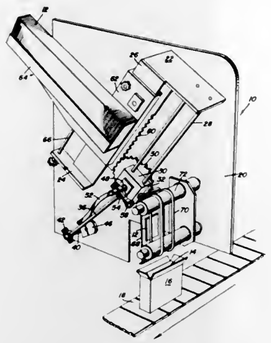
3,797,822
COUPON INSERTER

Paul L. Anderson, P.O. Box 531, Alexandria, Minn.

Filed Apr. 19, 1972, Ser. No. 245,487
Int. Cl. B65h *3/08*
U.S. Cl. 271—12 3 Claims

A mechanism to pick up a coupon, sheet of paper or other similar smooth surface object from a supply source and to

transfer the coupon to a predetermined position and feed it into a container or otherwise deposit it in a desired position. The mechanism includes a reciprocatory slide block that is guided for reciprocation and driven by an eccentric crank assembly. Mounted on the slide block is an oscillating shaft having a vacuum pickup cup mounted thereon which is oscillated in response to reciprocation of the slide block due to a pinion gear carried by the shaft in meshing engagement with a rack

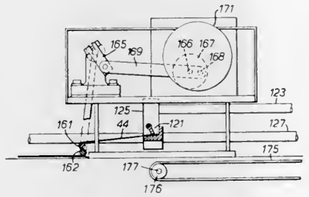


gear that is stationarily positioned in parallel relation to the path of movement of the slide block for movement of the suction cup or suction tip in a cycloidal path that is continuous and repetitive. The coupon or other object is discharged from the suction tip in a tangential direction of the path of movement of the suction tip by employing a transfer unit, such as an endless belt unit to discharge the coupon into a container positioned under the discharge end thereof.

3,797,823
PHOTOGRAPHIC APPARATUS

Charles William Clark, Kings Grove, Maidenhead, Berkshire, England

Filed Mar. 27, 1972, Ser. No. 238,122
Claims priority, application Great Britain, Mar. 29, 1971, 8022/71
Int. Cl. B65h *29/64*
U.S. Cl. 271—64 11 Claims



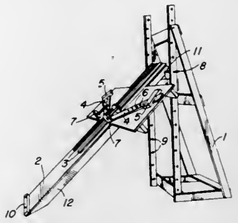
Mechanical means for separating an image-receiving sheet from a more flexible photo-sensitive sheet after image transfer has occurred, the means comprising two rods around which the more flexible sheet is drawn by a power-driven gripper and around which the less flexible sheet is unable to follow.

3,797,824
EXERCISE MACHINE

Glen R. Osbourne, Burlington, Iowa, assignor to Burlington-Cornwall Industries Incorporated, Burlington, Iowa

Filed Mar. 31, 1971, Ser. No. 129,780
Int. Cl. A63b *23/02*
U.S. Cl. 272—57 J 2 Claims

An exercise machine having a stand to support a board containing tracks and angular tracks along which double wheel grips may be rolled. One end of the board is moveable up and down the stand to give different angles of slant, thus requiring different degrees of difficulty in performing the exercise.

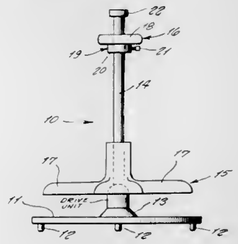


There are stops that may be placed on the tracks to require different degrees of difficulty in performing the exercises at the different angles of slant of the board.

3,797,825
TWO-LEVEL ROTATING-ARM JUMPING AND DUCKING EXERCISE DEVICE

Irene J. Barrett, 203 Pidgeon Hill Rd., Huntington, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,218
Int. Cl. A63b *5/22*
U.S. Cl. 272—74 3 Claims

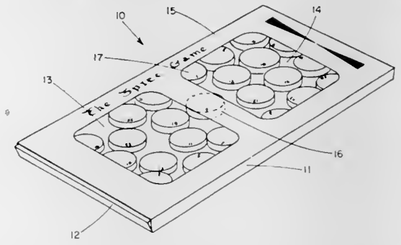


A device for physical culture, and which aids in developing the body muscles by promoting jumping and ducking exercises. The device includes the combination of a platform supported on legs, a mount secured on the platform, and a vertical shaft supported on the mount. Held by the shaft at its lower end is a pair of radially extending arms for being jumped across. Supported by the shaft near its upper end is a pair of radially extending arms for a user to duck his head under. A drive unit rotates both pairs of arms.

3,797,826
SPICE GAME

Robert L. Horner, 1054 Loria Ave., Princeton, Ill.

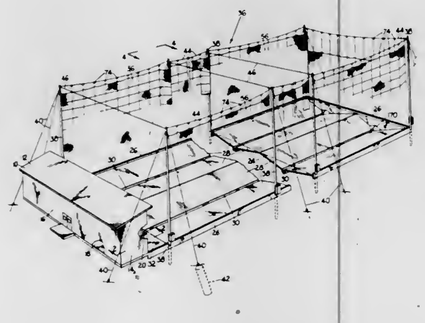
Filed Oct. 6, 1972, Ser. No. 295,502
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R 5 Claims



A spice game wherein the objective is to correctly guess all of the spices of the game without smelling or touching the

spices. The game includes a plurality of sealed containers. Each container has a single spice contained therein which is different from the spices in the remaining containers. Each container is sealed to prevent a player from touching or smelling the spice. The containers are transparent to allow for the visual observation of the spices. Each container has a number marked thereon to allow for the subsequent identification of the spices. In a preferred embodiment there are 24 different spices in circular containers. The containers are in a flat package with two openings with the width of the frame portion around the openings being less than the diameter of a circular container.

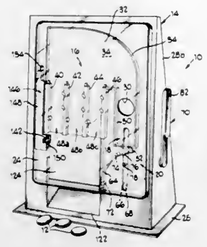
3,797,827
LAKE GOLF BALL DRIVING RANGE
Dean K. Child, 1618 N. Vancouver Ave., Portland, Oreg.
Filed July 2, 1971, Ser. No. 159,296
Int. Cl. A63b *67/02*
U.S. Cl. 273—35 R **8 Claims**



A lake is used to receive golf balls driven from tee platforms and has a transversely inclined bottom portion extending longitudinally. A longitudinally extending power operated ball pickup conveyor is disposed at the bottom of the inclined portion for receiving the balls and conveying them toward the tee platforms. This conveyor is formed of a material having a density only slightly greater than water. A distributing conveyor receives the balls from the pickup conveyor and feeds the balls to the tee platforms. A plurality of upright tubes are employed in the distributing conveyor which hold the ball in single line in abutting engagement for positive flow. A fence is provided around the lake which is movable up and down and which has an overload device adapted to release lift mechanism for the fence when the fence is subjected to an abnormal weight.

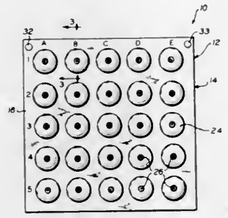
3,797,828
LAUNCHER AND TARGETS HAVING OVERLOAD MECHANISM
Paul J. Ishikawa, and Marvin I. Glass, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 20, 1972, Ser. No. 316,654
Int. Cl. A63b *7/02*
U.S. Cl. 273—126 R **22 Claims**

A game apparatus of the type in which an object, such as a disc, is projected into one of a plurality of different areas or spaces. The game apparatus includes a plurality of discs, a housing, a scoring area in the housing in the form of a plurality of vertical slotted compartments open at the top and bottom. A launching station is spaced from the scoring area and a launcher is provided at the launching station to project the disc toward the scoring area. Each compartment has means associated therewith for holding one disc therein at a time and for automatically releasing the disc whenever a second disc is received in that compartment. By providing indicia on the



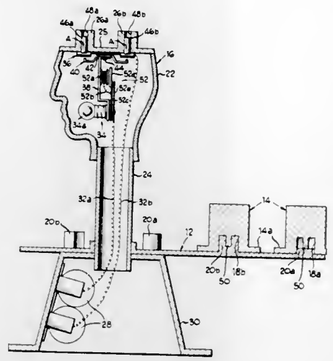
discs, a game such as a slot machine may be simulated, with the launcher having a manipulatable lever on the outside of the housing.

3,797,829
UPRIGHT GAME BOARD HAVING ROTATABLY MOUNTED INDICIA-BEARING BALLS
Aaron Heller, 23 W. 68 St., New York, N.Y.
Filed May 9, 1972, Ser. No. 251,690
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 B **7 Claims**



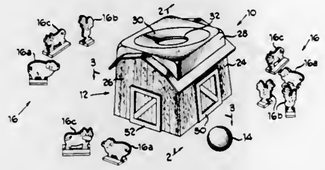
A game device comprising a game board positioned upright between two playing stations and having a plurality of openings arranged in a series of rows and columns extending through the board between the two playing stations. A plurality of indicia bearing balls are rotatably mounted within the board in the plurality of openings so that each ball may be independently rotated from either side of the board to display certain indicia, such as color spots, marked thereon. In playing the game, each player tries to align spots of the same color in any one row or column, or along a diagonal. The indicia on each ball are arranged in pairs with the indicia of each pair being different from each other and in diametrically opposed relation to one another. Also, and considering a common indicia or color spot on every two next adjacent balls (whether in a row, column or diagonal), the color spot diametrically opposed to the common color spot is different on one ball from that on the next adjacent ball. Thus, the pattern of indicia or color spots being formed on one side of the board by one player is different from the pattern being formed on the other side of the board by the other player. A transparent overlay is preferably removably mounted on the game board spaced from the balls and extending thereover for purposes of checking the alignment of the color spots of the alleged winner of the game.

3,797,830
BOARD GAME APPARATUS
Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 6, 1972, Ser. No. 215,775
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 A **16 Claims**



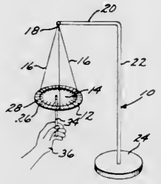
A game apparatus which includes a playing board having a plurality of playing positions, a plurality of three-dimensional playing pieces having differently shaped sockets hidden on the underside thereof, whereby the shape of the socket on the underside of a selected playing piece must be guessed by a player of the game before the playing piece may be played on the playing board, and a test station where the correctness of a player's guess as to the shape of the socket on the underside of the selected playing piece may be determined without looking at the underside of the playing piece. The test station has a plurality of bosses having different geometric shapes to match the sockets on the underside of the playing pieces so that a player tests the correctness of his guess as to the shape of a socket by positioning the respective playing piece over a selected one of the bosses at the test station which the player believes to be of the shape of the socket on the underside of the selected playing piece. In the form shown, a boss is disposed at each of the playing positions on the playing board, the bosses having different geometric shapes for receiving the playing pieces in one or more playing positions.

3,797,831
RANDOM DISPENSATION GAME
Marvin I. Glass, Chicago, and Howard J. Morrison, Deerfield, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed June 22, 1972, Ser. No. 265,322
Int. Cl. A63f *7/10*
U.S. Cl. 273—138 R **2 Claims**



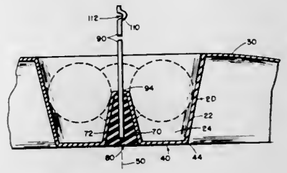
A random dispensation game characterized by the provision of a housing simulating a barn-like structure having a concave top portion with a central opening therein, and conical dispensing member below the central opening, a ball-like playing member intended to be deposited upon the concave portion of the top member and allowed to drop through the opening onto the dispensing member. A plurality of openings in the walls of the structure are in communication with the dispensing member. A door which is opened in response to a playing member striking the interior thereof is disposed over each of the wall openings and plural game elements are provided, which game elements are acquired during play of the game in accordance with the movable door through which the ball-like playing member exits.

3,797,832
SUB-CONSCIOUS MIND CONTROLLED AMUSEMENT DEVICE
Dale D. Benwell, 455 E. Plymouth, Long Beach, Calif.
Filed Dec. 14, 1972, Ser. No. 314,988
Int. Cl. A63f *9/18*
U.S. Cl. 273—161 **8 Claims**



An amusement device that includes an indicia-bearing curved strip that is supported in a horizontal plane at an elevation sufficient for a user to insert an upright elongate object such as a wand, pencil, or the like, within the confines of the strip. The user then attempts to cause the elongate object so held to move towards and away from the various indicia to answer a question posed by the user, either mentally or audibly. The movement of the elongate object and the hand holding the latter, is believed to be in response to mental concentration of the user to the extent that the subconscious mind takes over as may occur in a form of self-hypnosis.

3,797,833
INDOOR-OUTDOOR GOLF GAME DEVICE
Clair E. Rokusek, 4830 S. 137th, No. 8, Millard, Nebr.
Continuation of Ser. No. 83,144, Oct. 22, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 296,219
Int. Cl. A63b *57/00*
U.S. Cl. 273—178 R **16 Claims**



An indoor-outdoor golf game device having a golf cup portion of the type having upwardly and inwardly inclining surface portions for guiding balls into its main opening, the cup being shaped for nesting with like cups for ease of storage in the home when not in use.

A flag and flag post assembly adapted to fit through the cup portion and an adapter receivable in a recess in the cup portion for securing the flag post thereto when the device is used indoors.

ERRATUM

For Class 273—128 R see:
Patent No. 3,797,057

3,797,834

RECORD-PLAYER FOR CONTINUOUS PLAY

Yoshio Takahashi; Kunio Abe, and Toyonori Igata, all of Shizuoka, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,602
Claims priority, application Japan, Dec. 30, 1970, 45-127171
Int. Cl. G11b *17/04, 17/12*
U.S. Cl. 274—10 R 4 Claims

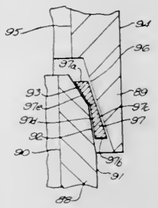
A record-player for continuous play includes, in combination, a center spindle with a drive shaft for supporting record disks to be played in its upper section, a rotary cam for controlling the drive shaft to cause disks to fall down one-by-one to a play station upon completion of playing of one disk and a sensing mechanism for sensing disks not played supported by the center spindle to control the rotary cam.

3,797,835

HIGH PRESSURE JOINT AND SEALING RING THEREFOR

Byrom T. Wehner, Houston, Tex., assignor to Armco Steel Corporation, Middletown, Ohio

Filed Apr. 21, 1972, Ser. No. 246,187
Int. Cl. F16j *15/08*
U.S. Cl. 277—171 6 Claims



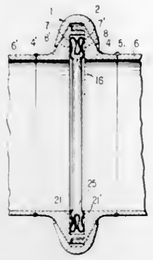
A high pressure joint between fluid carrying conduits and sealing ring therefor. The conduits are of circular cross section and of the type wherein the end of a first one of the conduits is received within the end of a second one of the conduits to form the joint. The sealing ring is located between the exterior surface of the end of the first conduit and the interior surface of the end of the second conduit. The sealing ring and the last mentioned exterior and interior surfaces are so configured that a fluid tight seal is achieved at the joint whether pressure be applied from the interior or the exterior of the joint.

3,797,836

SEALING RING

Horace P. Halling, Laurel, Md., assignor to Pressure Science Inc., Beltsville, Md.

Filed Sept. 7, 1971, Ser. No. 177,966
Int. Cl. F16j *15/00, 9/20*
U.S. Cl. 277—200 6 Claims



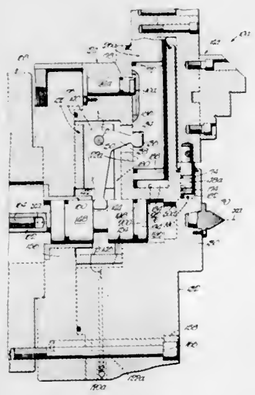
There is disclosed a sealing ring of resilient metal approximately E-shaped in radial cross section. The outer arms of the E have a sinuous configuration and terminate in convex portions which define a primary sealing line when the sealing ring is installed in its cavity. The central arm of the E is a loop having its two sides out of contact with each other. The length of the central arm is approximately equal to the length of the outer arms at the primary sealing line.

3,797,837

CHUCK WITH JAW-GUIDING-AND-SUPPORTING BORES

John J. Roddy, Meriden, and Linwood B. Swanson, Newington, both of Conn., assignors to Cushman Industries, Incorporated, Hartford, Conn.

Filed May 26, 1972, Ser. No. 257,280
Int. Cl. B23b *5/22*
U.S. Cl. 279—114 6 Claims



A chuck, having a chuck body with an axis, a front face and an outer periphery, jaws, and jaw-operating mechanism, of which the jaws are, for their support and guidance in the chuck body, provided with cylindrical bars which are received with a sliding fit in cylindrical bores in the chuck body that extend with their axes radially of and normal to the body axis, and are spaced from the front face of the body. The bores in the chuck body are open at the outer body periphery, and the bars extend beyond the outer body periphery to the outside of the body where they are joined with the jaws which extend along and spaced from the front face of the body, with the jaws also having inner post extensions which are received with a sliding fit in further radial bores in a center boss on the front face of the chuck body.

3,797,838

SECTIONAL SKI

John M. Shurgot, 22312 Marjorie Ave., Torrance, Calif., and Roy D. Ruebel, 15209 Prarie Ave., Manhattan Beach, Calif.

Filed Aug. 4, 1972, Ser. No. 278,018
Int. Cl. A63c *5/02*
U.S. Cl. 280—11.13 K 2 Claims

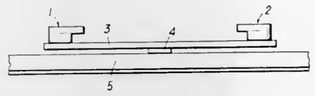
A sectional ski disengagably connectable together in a boot support region wherein a ski boot is supported, the engaging mechanism including a necked-down plug portion of one section of ski inescapably captured in a conforming pocket recess disposed in the other ski section while a ski boot is supported on the boot support region even without the use of safety keepers passing through aligned bores in the overlapped portions of the engaging mechanism.

3,797,839

SKI BINDING

Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Gertsch AG, Zug, Switzerland

Filed Aug. 23, 1971, Ser. No. 173,835
Claims priority, application Austria, Oct. 8, 1970, 9063/70
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 C 10 Claims



Means for fixing bindings to a ski for permitting free flexing of the ski without adversely effecting the relationship of the bindings to the ski boot. A plate is mounted on the upper side of the ski and there is provided one and only one zone of mounting therebetween. The ski bindings are then mounted on said plate for normal engagement with a ski boot. The plate is sufficiently rigid so that the bindings maintain their normal position with respect to the ski boot in spite of the flexing of the ski. Thus, as the ski flexes, the plate is fixed at one point with respect thereto and other portions thereof are free to slide longitudinally of the ski.

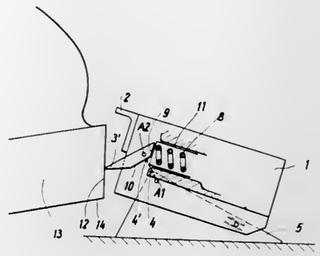
3,797,840

RELEASING HEEL RETAINER

Paul Unger, Bruckwieschstr, 113, 8501 Altenberg near Nuremberg, Germany

Filed Sept. 13, 1971, Ser. No. 179,662
Claims priority, application Germany, Sept. 17, 1970, 2045901
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T 6 Claims

Heel retainer for ski binding releasable against spring bias, having a housing with a sole retaining part and a stepping spur pivotable in the manner of a sliding crank about a forward, horizontal axis of a fixed base portion disposed transversely of the longitudinal extent of the ski and slidably guided in its rearward area on the fixed base portion, where at least in the retaining position the linkage point of the crank on the housing is located ahead of the linkage point of the crank on the fixed base portion, and the stepping spur is movably journalled on or in the housing and the crank is operatively connected with the stepping spur in a manner that it moves the same



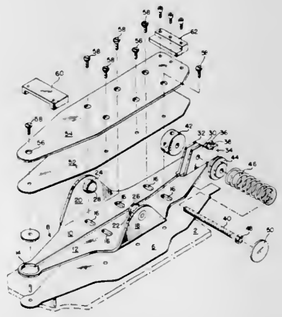
while rocking the housing from retaining position to release position out of the housing into a position suitable for engagement with the heel of the boot, and also pulls it into the housing during the rocking movement of the housing from the release position into the retaining position.

3,797,841

SAFETY BINDING

Robert R. McAusland, Seattle, Wash., assignor to Anderson & Thompson Ski Co., Seattle, Wash.

Filed June 2, 1972, Ser. No. 259,003
Int. Cl. A63c *9/086*
U.S. Cl. 280—11.35 4 Claims

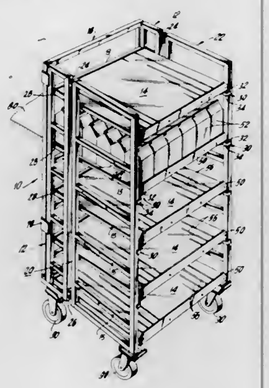


A safety binding assembly for attachment to a ski for interaction with a ski boot, including a standardized cam means mounted to the bottom of the boot whereby the identical binding mechanism will be used regardless of the size of the boot. The binding itself includes a bifurcated plate having upstanding ears adapted to interact with the cam upon the boot and biasing means continuously urging the two legs of the plate to a proximate relationship. A second plate overlies a first plate to prevent the first plate from becoming inoperative due to compact snow and ice as well as providing a smooth, safe surface. For securement of the boot to or removal from the ski, the biasing means is overridden allowing the legs of the bifurcated plate to be separated sufficiently to allow removal of the boot mounted cam.

3,797,842
TRANSFER CART

George E. Swick, Jr., Edina; Ellsworth H. Danielson, and Theodore W. Taylor, both of St. Paul, all of Minn., assignors to The Cornelius Company, Minneapolis, Minn.

Filed June 14, 1972, Ser. No. 262,914
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 R 9 Claims

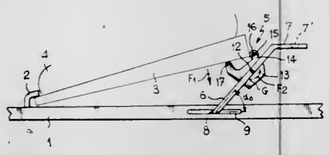


The disclosure relates to a wheeled cart of the collapsible type which is intended for use in handling large food containers, such as milk containers. The cart is specifically characterized by inclined shelves which slope downwardly from the front of the cart toward the rear portion which is provided with a slidably mounted ladder or gate. The forward edge of each shelf includes a lip or partition which prevents the milk products from being pushed off the shelf. Horizontal bars or rungs of the gate are spaced such that, with the gate fully retracted, the rungs prevent the withdrawal of milk products from the rear of the cart, whereas when the gate is extended vertically upwardly, the rungs do not interfere with the enlarged openings needed for loading the milk products onto the shelves from the rear of the cart.

3,797,843
DEVICE FOR SECURING A BOOT TO A BASE

Georges Pierre Joseph Salomon, 34, Ave. de Lovercy, Annecy, France

Filed Oct. 18, 1972, Ser. No. 298,651
Claims priority, application France, Oct. 19, 1971, 71.37522
Int. Cl. A63c *9/08*
U.S. Cl. 280—11.35 T 19 Claims

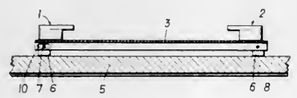


The device includes: a mounting connected to the base and located externally of the space covered by the boot during the operations of putting-on and taking-off the ski; an element for retaining the boot located at least partially within the space covered by the boot and pivoting, between the positions in which it locks and releases the boot, about a horizontal axis located in the mounting and running transversely thereto; and a resilient system allowing the device to move between a position in which the boot is locked and a position in which the boot is released. This system is characterized by resilient means supported by the base and urging the mounting into a position which is raised in relation to the base and in which the boot is released, and by another resilient means acting between the mounting and the retaining element and urging the retaining element into a position in which the boot is released.

3,797,844
SKI BINDING

Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Gertsch AG, Zug, Switzerland

Filed Aug. 13, 1971, Ser. No. 171,553
Claims priority, application Austria, Sept. 18, 1970, 8709/70
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 C 10 Claims

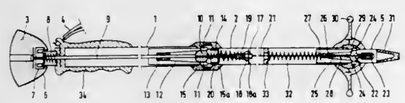


Means for mounting ski binding components onto a ski in such a manner as to permit flexing of the ski without varying the distance between the ski binding components. A rigid plate is mounted in spaced relation to an upper surface of the ski by means which permit at least one end of such plate to be longitudinally translatable with respect to said ski. Preferably one end of the plate is pivoted to the ski and the other end of the plate connected thereto through a slot and pin arrangement. Thus the shape of the plate remains uneffected by flexing of the ski. The boot engaging components of the ski binding are then mounted on said plate and remain at a constant distance from each other regardless of any flexing which may occur in the ski.

3,797,845
SAFETY SKI POLE

Alfred Anton Franz Kepka, and Herwig Guenther Kepka, both of Huebnerstrasse 11, 8000 Munich 19, Germany

Continuation-in-part of Ser. No. 112,888, Feb. 5, 1971, abandoned. This application Dec. 22, 1971, Ser. No. 210,728
Claims priority, application Germany, Feb. 12, 1970, 2006424
Int. Cl. A63c *11/22*
U.S. Cl. 280—11.37 B 57 Claims

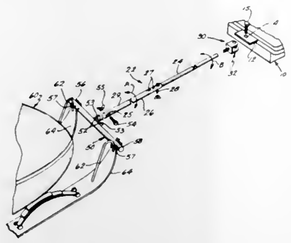


The present invention relates to a safety ski pole wherein a number of safety features are combined into an integral unit. The handle has a safety enhancing large top surface and a wrist strap which may be pulled off the handle against the force of a spring when the pole should be stuck. The pole proper comprises telescoped or hinged tubing sections which, against locking means, will yield to an axial impact applied to the handle or tip end of the pole. The tip itself is also yieldable to retract into the pole tubing in response to such impacts.

3,797,846
TOW BAR

William V. Pevic, 3185 S. 40th Ave., R.R. No. 3, Shelby, Mich.

Filed June 23, 1972, Ser. No. 265,532
Int. Cl. B60d *1/14*
U.S. Cl. 280—24 6 Claims

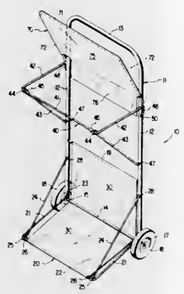


A T-shaped clamping bar includes a cross member having adjustable clamps at opposite ends thereof for attaching the cross member to front portions of the skis of a snowmobile. A tongue is pivotably coupled at one end to the cross member and extends forwardly thereof. The opposite end of the tongue includes a swivel hitch adapted to be coupled to a towing vehicle. The towing bar structure thereby permits articulation and rotation between the towed and towing vehicles to accommodate uneven terrain.

3,797,847
COLLAPSIBLE AND PORTABLE CART FOR FLEXIBLE TRASH

Eleanor Ruth Lindsey, and Gordon A. Lindsey, both of 2124-E Contez St., West Covina, Calif.

Filed Sept. 29, 1972, Ser. No. 293,399
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 C 9 Claims



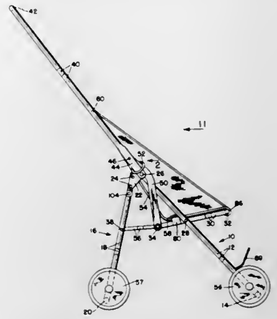
A collapsible and portable cart for trash bags comprises a wheeled U-shaped tubular main frame, a braced supporting frame carrying a web of flexible plastic material providing a platform, a U-shaped frame for holding up the upper end of the bag for loading including means for clamping the open bag edge against the outer sides of the tubular frame, and a hinged cover for closing the bag.

3,797,848
FOLDING STROLLER

Benjamin K. Burnham, Gardner, Mass., assignor to Thayer, Inc., Gardner, Mass.

Filed Oct. 10, 1972, Ser. No. 296,061
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 B 20 Claims

A light-weight folding stroller having for its principal characteristic that it is easily folded and erected by a one hand or a one arm operation. A pusher handle is pivoted with respect to a folding wheeled support having a seat, the support comprising a pair of interpivoted frames, in combination with a past dead center connection. When the pusher handle is moved to erect condition of the stroller, the connection has a part which overlaps the end of the pusher handle, receiving a

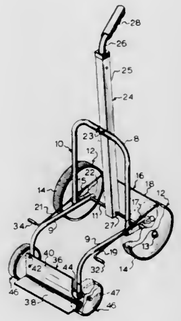


gravity actuated loose ring latch which holds the entire structure erect. The rings are easily placed in an inoperative position when hung on pins extending from the sides of the pusher handle, whereupon a single push motion on the pusher handle folds the entire device. Likewise, a single pull on the pusher handle in the opposite direction erects the stroller and the ring latches are automatically actuated by gravity.

3,797,849
HAND PROPELLED CART

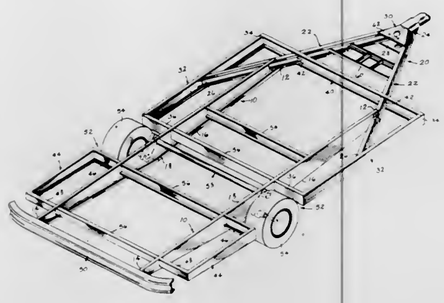
Donald R. Sherman, 1157 Little Oak Dr., San Jose, Calif.

Filed Feb. 5, 1973, Ser. No. 329,737
Int. Cl. B62b *7/00*
U.S. Cl. 280—47.37 11 Claims



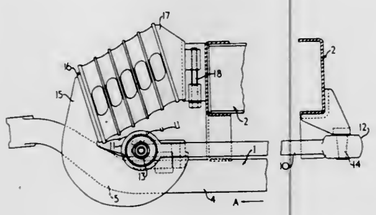
A hand propelled cart which can be adapted for holding an infant carrying seat comprises a cart frame, a principal axle having a pair of oversized wheels mounted thereon, a substantially upright handle attached to said cart frame, a pair of brake supports attached to said cart frame adjacent each of said oversize wheels, a spring friction biased U-shaped braking frame, comprising two sides and a crossarm, the sides of which are adapted to pass, respectively, through said pair of brake supports and engage therewith in a spring friction fit, the open ends of said U-shaped frame having perpendicular extensions depending therefrom, said extensions being adapted to contact the tread on said oversize wheels and serving to brake said cart, said crossarm serving to support said cart in an intermediate rest position, the center of gravity of said cart lying between said principal axle and said crossarm when said oversize wheels and said crossarm rest on the ground.

3,797,850
AXLED VEHICLE SUPPORT FRAME ASSEMBLY
Richard W. Stout, Elkhart, and Milton J. Brunk, Goshen, both of Ind., assignors to Stoutco, Inc., Bristol, Ind.
Filed June 12, 1972, Ser. No. 262,116
Int. Cl. B62d *63/08*
U.S. Cl. 280—106 T **3 Claims**



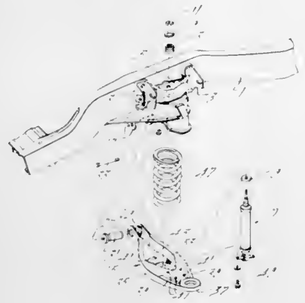
An axled vehicle support frame assembly which includes two parallel longitudinal frame members, each having front and rear end portions tapering from a middle portion of maximum depth. Each longitudinal frame member has its front end joined to a divergent frame member which constitutes a part of a trailer tongue. The frame assembly includes side rails which are spaced laterally outwardly from the longitudinal frame members and which are connected to the frame members. The side rails are positioned at or above the lower periphery of the longitudinal frame members and do not extend below such frame members.

3,797,851
VEHICLE SUSPENSION SYSTEMS
Archie John Hirst, Leicester, England, assignor to The Dunlop Company Limited, London, England
Division of Ser. No. 13,356, Feb. 24, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,704
Int. Cl. B60g *11/24*
U.S. Cl. 280—124 R **1 Claim**



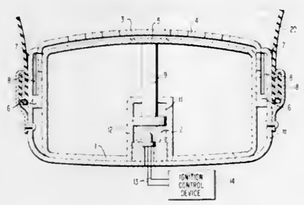
A spring for use under compression and shear loading comprising a stack of rubber blocks interleaved with and bonded to parallel metal plates, successive blocks being progressively displaced in a common direction perpendicular to the direction of stacking of the blocks so that the stack has an echelon profile, at least one of the blocks being provided with a space formed in the central region thereof, of which the following is a specification.

3,797,852
SUSPENSION SYSTEM
Norman P. Patterson, St. Clair Shores, and David J. Perkins, Royal Oak, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 7, 1972, Ser. No. 278,334
Int. Cl. B60g *3/04*
U.S. Cl. 280—124 A **9 Claims**



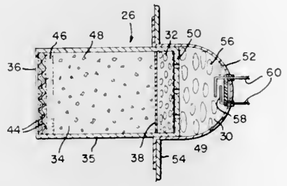
Suspension system for a vehicle, the suspension system including a shock absorber surrounded by a coil spring. The lower ends of the shock absorber and coil spring engage a lower control arm. The lower control arm is formed with a seating portion for receiving the spring and shock absorber.

3,797,853
SAFETY DEVICE FOR VEHICLES
Ernst Grosch, Hennefsieg; Heinz Gawlick, Furth; Hellmut Bendler, Erlangen-Spardorf, and Karl-Egon Flach, Cologne-Riehl, all of Germany, assignors to Dynamit Nobel AG, Trolsdorf, Germany
Filed Apr. 13, 1972, Ser. No. 243,674
Claims priority, application Germany, Apr. 17, 1971, 2118745
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **10 Claims**



A safety device for vehicles, especially automotive vehicles, having a bag disposed in front of the occupant and being inflatable in the manner of a cushion, which bag is in operative connection via a diffuser with a source of compressed gas which can be actuated by an ignition device triggered by a release element responding when a predetermined deceleration value has been exceeded, wherein the diffuser is fashioned as a cover which is resiliently connected to the source of compressed gas and is disposed in the manner of a cap over the source of compressed gas so as to be displaceable to a limited extent in a telescopic manner.

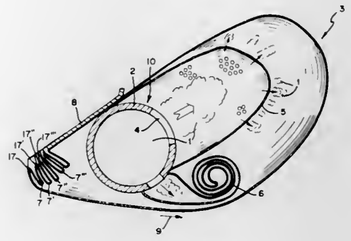
3,797,854
CRASH RESTRAINT AIR GENERATING INFLATION SYSTEM
Donald R. Poole, Woodinville; Peter L. Stang, Bellevue; James E. Mars, Vashon, and Duane A. Williams, Mercer Island, all of Wash., assignors to Rocket Research Corporation, Redmond, Wash.
Filed June 14, 1971, Ser. No. 152,897
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **45 Claims**



A crash restraint system for an automobile comprising an inflatable bag mounted forward of the automobile passenger seat. A bag inflating device comprising a cluster of gas generating units, each of which has a primary nitrogen generating combustion chamber to produce free nitrogen and other gas products, a second oxygen generating chamber to receive the gas mixture from the first chamber and generate free oxygen and introduce this into the gas mixture, and a tertiary chamber which functions to receive this mixture to react out, filter out and condense out undesired combustion products and also cool the remaining nitrogen-oxygen mixture to provide a "breathable air" inflating system for the bag. Alternately the first and second zones can be combined into a single nitrogen and oxygen generating zone.

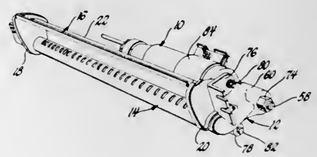
In the combustion chamber is a composition made up of an azide (e.g., sodium azide) and an oxidizer (e.g., potassium perchlorate) which upon ignition produces free nitrogen and other combustion products such as sodium oxide, free sodium and potassium chloride. In the second oxygen generating chamber is an oxygen generating composition (e.g., potassium chlorate) that liberates free oxygen into the gaseous mixture from the first combustion chamber. When these first and second zones are combined in a single nitrogen and oxygen generating zone, pellets of the nitrogen generating composition and pellets of the oxygen generating composition are placed together in a single zone or chamber. In the tertiary chamber or zone is a bed of a porous composition (e.g. aluminum oxide granules bonded with boric oxide) that reacts with, condenses and filters out the sodium, sodium oxide and potassium chloride, and permits the free nitrogen and free oxygen mixture to pass therethrough while cooling the same. Thus, the inflating gas mixture is breathable "air."

3,797,855
BAG DEPLOYMENT
Hubert A. Wright, Jr., Lexington, Mass., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Apr. 10, 1972, Ser. No. 242,472
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **3 Claims**



Folding of air bag or cushion restraint means so that the cushion fabric is deployed uniformly with a reduction in noise on deployment.

3,797,856
OCCUPANT RESTRAINT SYSTEM
Leo J. Matthews, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 19, 1972, Ser. No. 255,027
Int. Cl. B60r *21/10*
U.S. Cl. 280—150 AB **4 Claims**



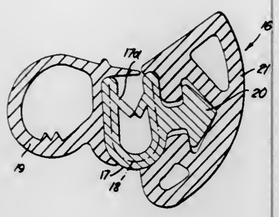
An occupant restraint system includes an inflator having a generally cylindrical neck which is internally threaded. An externally threaded bushing within the outlet includes a radial rib which seats on the end wall of the neck and an axially extending threaded outlet portion having a centrally apertured radially extending wall providing an inflator outlet. An electron beam welded diaphragm closes the opening in the radial wall and is ruptured by electrically fired detonators. An internally threaded cap member is threaded on the outlet portion of the bushing and engages the rib thereof to axially and telescopically locate the cap member with respect to the wall aperture. The cap member includes a plurality of radially extending equally circumferentially spaced ports located adjacent the outlet. An externally threaded stud extends from the axial end wall of the cap member. A manifold of generally L shape includes an annular end cap portion which includes axially spaced first and second openings. The end cap portion fits over the cap member with the first opening receiving the cap member and seating on the bushing rib and the second opening receiving the stud. A nut threaded on the stud secures the manifold to the inflator. The manifold communicates with a diffuser for inflation of an inflatable occupant restraint cushion when the diaphragm is ruptured and the pressure fluid flows through the radial ports of the cap member to the manifold.

3,797,857

TRIM STRIPS FOR VEHICLE DOOR OPENINGS

John Vincent Reeves, Coventry, England, assignor to Chrysler United Kingdom Limited, London, England

Filed June 16, 1972, Ser. No. 263,445
Claims priority, application Great Britain, July 13, 1971, 32833/71
Int. Cl. B60r *13/02*
U.S. Cl. 280—150 B 6 Claims



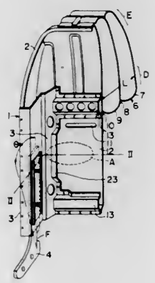
A trim strip for a vehicle door opening has a U-shaped channel to fit around a flange around a door opening. The channel has, on one side, a resilient sealing member to engage a vehicle door and, on the opposite side, an elongate resilient pad secured along the channel by a snap-on fastener to protect a vehicle occupant from injury on the flange.

3,797,858

FRONT SEAT BACK PROVIDING PROTECTION TO OCCUPANTS OF REAR SEATS OF A MOTOR VEHICLE

Makoto Yamada, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed July 17, 1972, Ser. No. 272,157
Claims priority, application Japan, Oct. 20, 1971, 46-83119
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 B 4 Claims



A front seat back providing protection to occupants of rear seats of a motor vehicle.

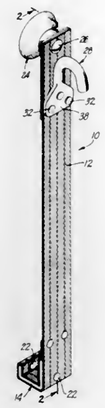
The front seat back comprises a skeleton of the front seat back, a main panel member covering the entire rear surface of the skeleton, reinforcing members disposed at marginal portions of the main panel member, arms for connecting the reinforcing members to the vehicle body, the main panel member and the arms being constructed such that they undergo plastic deformation when a force of impact higher than a predetermined level for each of them is exerted thereon, a horizontal slit formed substantially in the middle of the main panel member, and a buffer element made of a material which permits the buffer element to undergo plastic deformation when a force of impact higher than a predetermined level therefor is exerted thereon and superposed on the main panel member to project rearwardly and to be disposed above the horizontal slit.

3,797,859

CARGO TIE-DOWN ATTACHMENT BRACKET

Richard A. Vasquez, 1905 S. Walnut St., San Gabriel, Calif.

Filed Nov. 19, 1971, Ser. No. 200,402
Int. Cl. B60p *7/00*
U.S. Cl. 280—179 R 3 Claims



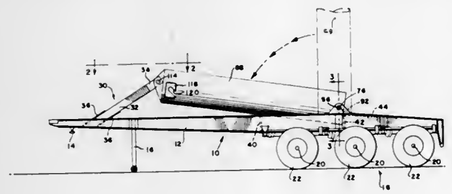
A readily adjustable and removable cargo tie-down attachment bracket to be secured to a vehicle such as one side wall of the cargo space of a pick-up truck for securing an end of a cargo tie-down cord or the like. The bracket has a tension member such as a strap with anchor means such as a hook on one end for engaging a shoulder on the vehicle to releasably secure the strap end to the vehicle, hold-down means such as a suction cup on the other strap end for releasably holding the latter strap end against the vehicle, and a tie-down attachment member such as a hook on the strap to which the tie-down may be secured. The bracket may be readily moved from one location to another on the vehicle and removed from the vehicle when not in use.

3,797,860

MOBILE CARRIER FOR A RADIOACTIVE MATERIAL SHIPPING CONTAINER

Reuben W. Peterson, Brookmeade, Del., and Harold A. Backus, Wynwood, Pa., assignors to NL Industries, Inc., New York, N.Y.

Filed May 24, 1971, Ser. No. 146,245
Int. Cl. B60p *7/00*
U.S. Cl. 280—179 R 6 Claims



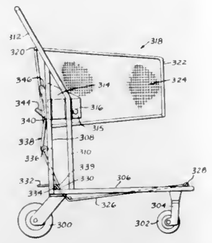
The mobile carrier includes a supporting framework having spaced support means connected to the framework for supporting opposite ends of the shipping container. The portions of the framework between said support means are placed in tension while the shipping container is placed in compression thereby substantially reducing the required weight and size of the supporting frame members.

3,797,861

CHECK OUT SYSTEM AND CART THEREFOR

Willie M. Shoffner, 318 S. Lutheran Church Rd., New Lebanon, Ohio

Division of Ser. No. 62,889, Aug. 11, 1970, Pat. No. 3,700,074.
This application Dec. 6, 1971, Ser. No. 204,929
Int. Cl. B62b *3/08*
U.S. Cl. 280—33.99 H 5 Claims



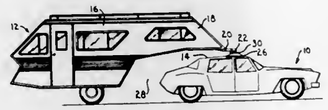
A merchandise check out system and a special cart in which the customer has collected the merchandise is presented to a check out station so that a check out clerk in the station can pick up the articles of merchandise from the cart directly, while a second cart in end to end relation with the first cart has bags therein into which the merchandise can be placed directly by the check out clerk, thereby eliminating the counters and conveyors. The basket of the cart is open at the front and is tiltable upwardly at the front end to selected angles.

3,797,862

PRINTED CIRCUIT BOARD HITCH CONNECTOR

Ernest E. Letterman, Warrensburg, Mo., assignor to Harmon Industries, Inc., Grain Valley, Mo.

Filed Mar. 1, 1972, Ser. No. 230,860
Int. Cl. B60d *1/06*
U.S. Cl. 280—422 8 Claims



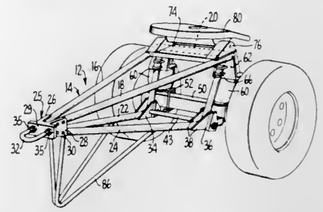
A hitch arrangement for coupling a towing vehicle with the tongue of a towed vehicle and for interconnecting the electrical systems of the two vehicles through means which permits relative rotation of the vehicles about the upright axis established by the hitch connection without interrupting electrical continuity. In applications utilizing a ball and socket hitch where the vehicles are capable of unlimited relative rotation, such as a towing vehicle and trailer combination employing a car-top hitch, the hitch ball is supported on a baseplate attached to the top of the towing vehicle. An electrical contact assembly is mounted beneath the hitch ball and comprises a horizontally disposed printed circuit board having a plurality of circular, radially spaced, conductive lands concentric with said axis, and a plurality of electrically conductive wipers engaging corresponding lands. The circuit board is stationary with the baseplate, and a disc that is rotatable about said axis supports the wipers and is closely spaced from the board. A pair of spaced, upstanding ears on the disc receive the tongue of the towed vehicle, thus the disc and wipers move with the towed vehicle as the vehicles undergo relative rotation about said axis. The electrical systems of the towing and towed vehicles are connected by cables with the lands and the wipers respectively. A weatherproof boot encloses the contact structures and the ears.

3,797,863

LIGHTWEIGHT CONVERTER DOLLY

Joseph J. Cunha, Castro Valley, Calif., assignor to Cunha Products, Inc., Haywood, Calif.

Filed Aug. 11, 1972, Ser. No. 280,047
Int. Cl. B62d *53/00*; B60d *1/14*
U.S. Cl. 280—476 R 6 Claims



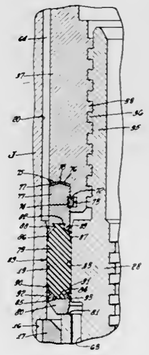
A lightweight converter dolly having uni-body construction of generally triangular profile which serves as both the dolly frame and tongue. An axle is drawn and positioned by trailing arms extending rearwardly from the lower portion of the frame and resilient elastic bodies disposed between the axle and an upper overhanging portion of the frame suspend the frame on the axle. A fifth wheel is mounted on the upper rear portion of the frame for supporting the forward end of a semi-trailer thereon. A hitch is provided at the forward end of the frame by a U-bolt projecting forwardly therefrom. Stand members extend downwardly from the forward portion of the frame for suspension thereof when the dolly is not in use.

3,797,864

COMBINED METAL AND ELASTOMER SEAL

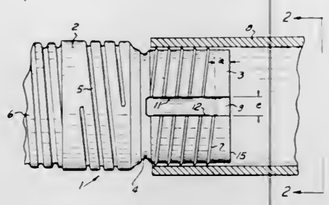
Joseph H. Hynes, Ojai, and Arthur P. Ortolon, Jr., Oxnard, both of Canada, assignors to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed Oct. 28, 1971, Ser. No. 193,312
Int. Cl. F16l *21/00*
U.S. Cl. 285—140 6 Claims



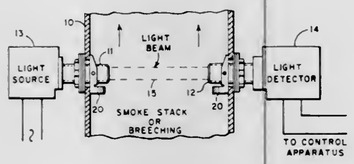
A well casing hanger is provided with a seal deformable into sealing engagement with opposed cylindrical walls of the casing hanger body and another body upon axial compression of the seal. The seal is compound and includes metallic end rings on a cylindrical elastomeric body, the end rings having marginal lips which are deformed oppositely into metal-to-metal sealing engagement with the cylindrical walls and form a seal closing the peripheral gap between the end rings and the cylindrical walls. The elastomeric body is also deformed into sealing engagement with the cylindrical walls and confined by the metallic lips against extruding between the end rings and the cylindrical walls.

3,797,865
ADAPTER
Willard Ballentine, Flint, Mich., assignor to Palmer Concrete Products, Inc., Flint, Mich.
Filed Feb. 25, 1971, Ser. No. 118,726
Int. Cl. F16l *21/00*
U.S. Cl. 285—175 **10 Claims**



An adapter for connecting a threaded conduit to a smooth-walled conduit. The adapter includes a first body portion having a righthanded screw thread for securement to a threaded conduit. A second body portion having a pair of diametrically opposed concave land sections and a lefthanded acute angled chamfered screw thread is adapted to be inserted within the interior of the smooth-walled conduit. The acute angled chamfered thread hinders axial separation of the adapter from the smooth-walled conduit.

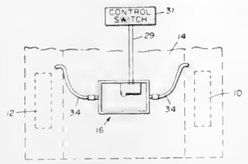
3,797,866
FASTENING DEVICE FOR FASTENING A MEMBER THROUGH A HOLE IN A WALL FROM THE INSIDE SURFACE OF THE WALL
Roman Smulka, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 7, 1972, Ser. No. 260,601
Int. Cl. F16l *5/00*
U.S. Cl. 285—208 **3 Claims**



A fastening device used for fastening a pipe to a wall by inserting the pipe through a hole in the wall so that a pivoted locking device attached to the end of the pipe can change position after the pipe is inserted in the hole and rotated 180°. With such a locking device, the pipe can be removed by reversing the operation to cause the locking device to pivot back to an unlocked position so the pipe can be pulled back out of the hole in the wall.

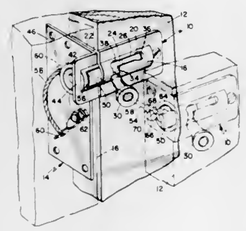
3,797,867
PNEUMATIC VEHICLE SANDING APPARATUS
John J. Hartl, 2200 Second St., S.W., Cedar Rapids, Iowa
Filed June 7, 1972, Ser. No. 260,659
Int. Cl. B60b *39/08, 39/10;* **B61c** *15/10*
U.S. Cl. 291—3 **5 Claims**

A semi-automatic pneumatic sanding apparatus for use in vehicles to spread sand on slippery road surfaces and thereby increase vehicle traction. The operation of the sander is controlled by the vehicle driver from the driver's compartment. The sander includes a fan to create an air stream which is used



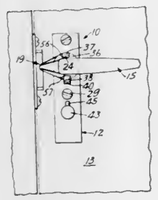
as the conveying medium to move the sand from a storage bin onto the road surface just ahead of the vehicle drive wheels.

3,797,868
BOLT WITH CONCEALED SAFETY CABLE
John R. Carey, 1996 Milford Pl., El Cajon, Calif.
Filed Oct. 16, 1972, Ser. No. 297,603
Int. Cl. E05c *5/02, 17/04*
U.S. Cl. 292—57 **9 Claims**



A door securing bolt movable by a single knob to open, locked and safety positions. In the safety position the bolt is engaged with a cable concealed in the door jamb, the cable allowing limited opening of the door and retracting automatically when the door is closed. In one form the safety cable is incorporated in a slide bolt with an added rotary action for engaging the cable. In another form the cable is attached to a knob which is movable along a slot to the three specific positions.

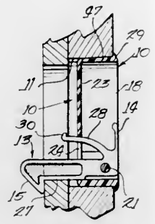
3,797,869
DOOR LATCH
John M. Shaw, Minneapolis, Minn., assignor to Hartzell Manufacturing, Inc., St. Paul, Minn.
Filed Nov. 24, 1972, Ser. No. 309,217
Int. Cl. E05c *3/22*
U.S. Cl. 292—207 **3 Claims**



A door latch in which a latch bolt is mounted on the interior door handle for rotation with the handle and for pivotal movement relative thereto, the latch bolt being resiliently urged to a strike engaging position. A locking slide is supported for movement perpendicular to the axis of rotation of the handle and it is formed with a locking and camming tongue extending

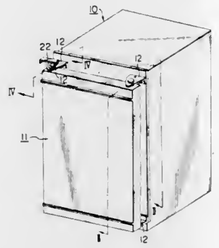
parallel to the axis of the handle for insertion into an axial slot in the handle to lock the handle against rotation. The latch bolt is formed with a camming surface adjacent the handle to cam the locking and camming tongue out of the slot in the handle upon pivotal movement of the latch bolt against the resilient urging.

3,797,870
FLUSH MOUNTED HANDLE, LATCH BOLT, LOCK AND HOUSING ASSEMBLY
Melvin H. Beckman, Rockford, Ill., assignor to Keystone Consolidated Industries Inc., Peoria, Ill.
Continuation-in-part of Ser. No. 209,098, Dec. 17, 1971, abandoned. This application Apr. 21, 1972, Ser. No. 246,432
Int. Cl. E05c *13/04*
U.S. Cl. 292—128 **22 Claims**



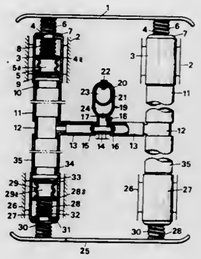
A novel flush mounted handle, latch bolt and housing assembly formed of a suitable plastic material such as nylon and comprising a housing conformably received and frictionally retained in an opening in a door, drawer or other closure such as intended for recreational vehicles or the like, and a combined handle and latch bolt, these two components being readily assembled when snapped together and provide a positive and secure assembly. The novel latch bolt has a flexible tab coacting with the housing to provide spring pressure to bias the latch bolt to latching position, and a key-operated locking means in the housing for retaining the latch bolt in locked position.

3,797,871
DOOR HOLDER
Masao Morishita, Kani, Japan, assignor to Howa Sangyo Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan
Filed Feb. 1, 1972, Ser. No. 222,491
Claims priority, application Japan, July 28, 1971, 46-67579
Int. Cl. E05c *3/04*
U.S. Cl. 292—209 **7 Claims**



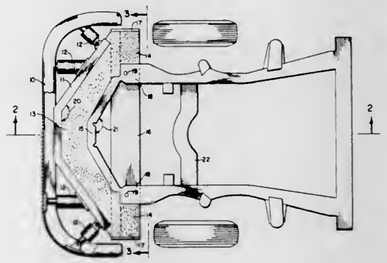
For holding the door of a cabinet or the like in a closed position, a bracket is secured to the cabinet adjacent to the openable end of the door. An L-shaped door retaining member is horizontally swingably mounted on the bracket through a stationary piece which has a concavity to receive a corresponding convexity formed on the door retaining member when the latter is in its door holding position. The retaining member is made of resilient material to yield to an excessive load exerted thereto when the door is forced open. The bracket may be one of four similar brackets respectively secured at the corners of the open end of the cabinet with two of the other three brackets pivotally supporting the door therebetween, so that the door is easily modifiable to open at the opposite end thereof.

3,797,872
BUMPER FOR VEHICLES
Tadakiyo Watanabe; Hiromu Konishi, and Ken-ichi Chiku, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Dec. 20, 1971, Ser. No. 209,699
Claims priority, application Japan, Mar. 8, 1971, 46-12345
Int. Cl. B60r *19/06*
U.S. Cl. 293—30 **5 Claims**



A bumper device for automobiles and other vehicles comprising at least one pair of bumper plates provided symmetrically on the front and rear sides or right and left sides of a vehicle body, and at least one pair of piston cylinder mechanisms mounted on front and rear sides or right and left sides of the vehicle body for supporting one pair of bumper plates. The device further comprises at least one pair of connection lines for inter-connecting the corresponding piston cylinder mechanisms and filled with fluid, and at least one pair of pressure reducing valves each mounted between one of the pair of piston cylinder mechanisms and one of the pair of connection lines.

3,797,873
ENERGY ABSORBING APPARATUS
Charles A. Cook, Jacksonville, Tex., assignor to Ethyl Corporation, Richmond, Va.
Filed June 28, 1971, Ser. No. 157,114
Int. Cl. B60r *19/04*
U.S. Cl. 293—63 **13 Claims**



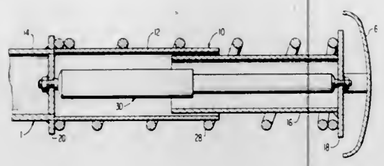
An energy absorbing apparatus for a vehicle including a frame connected to the front end of an automobile chassis. The frame is connected to the vehicle bumper by compressible energy absorbing means.

3,797,874

VEHICLE BUMPER IMPACT ABSORBING SYSTEM

John J. Tufano, 102 Stewart St., New Britain, Conn.

Filed July 12, 1972, Ser. No. 271,155
Int. Cl. B60r *19/06*
U.S. Cl. 293—86 4 Claims



A vehicle bumper impact assembly includes a guide cylinder carried by the vehicle frame, and an impact cylinder slidable within the guide cylinder and securable to the bumper at its outer end. A coil compression spring and a fluid type shock absorber unit are disposed between the guide cylinder and the impact cylinder to resist inward movement of the impact cylinder. An abutment is positioned on the frame to limit inward travel of the impact cylinder and to provide means for mounting the coil spring and the shock absorber unit.

3,797,875

DEVICE FOR HANDLING SMALL OBJECTS

Herbert Emile den Hamer, Hague, Netherlands, assignor to Nederlandse Organisatie Voor Toegespart-Natuurweter-Schappelijk Onderzoek Ten Behoeve Van Nijverheider Handel En Verkeer, The Hague, Netherlands

Filed Nov. 2, 1971, Ser. No. 194,841
Claims priority, application Netherlands, Nov. 11, 1970, 7016527
Int. Cl. A47f *13/00*; B65h *3/20*
U.S. Cl. 294—1 R 2 Claims

A pencil-like hand-apparatus for handling small objects of divergent kinds, having an adhesive head for picking up the objects and a stripper for releasing them.

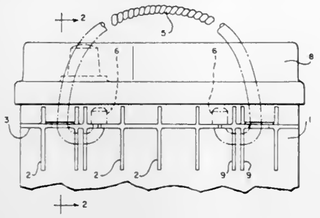
3,797,876

BATTERY CARRYING ARRANGEMENT

Klaus Gummelt, Garbsen, Germany, assignor to Varta Aktiengesellschaft, Frankfurt/Main, Germany

Filed Sept. 12, 1972, Ser. No. 288,453
Claims priority, application Germany, Sept. 17, 1971, 7135447
Int. Cl. H01m *1/04*
U.S. Cl. 294—63 B 10 Claims

A plastic carrying handle for batteries has enlarged ends attached to a rib-supported ledge protruding from the side of the battery case. The part of the handle near each end loops below the ledge and passes upwardly through a slot in the ledge so



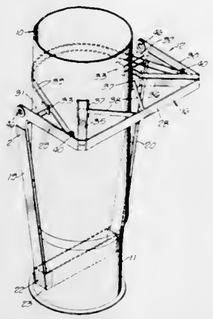
that its respective enlarged end is supported on the top of the ledge.

3,797,877

LIFTING SADDLE FOR VESSELS

John E. Soehrens, Pasadena, Calif., assignor to C F Braun & Co., Alhambra, Calif.

Filed July 11, 1972, Ser. No. 270,590
Int. Cl. B66c *1/22*
U.S. Cl. 294—67 B 4 Claims



A lifting saddle for moving a heavy object such as a pressure vessel from horizontal position to vertical position includes a yoke which encircles a portion of the girth of the object. Cables attached to the yoke encircle another portion of the girth of the object to secure the object and yoke together. Tension elements extend longitudinally from the yoke to apply lifting forces to the vessel at a location remote from the yoke. The tension elements may comprise metallic straps secured to opposite ends of a crossbeam extending diametrically through a portion of the vessel, or the tension elements may comprise flexible cables passing under a portion of the vessel. Contact between the yoke and the outer surface of the vessel may be provided by radial posts on the yoke or by an arcuate contact member on the yoke.

3,797,878

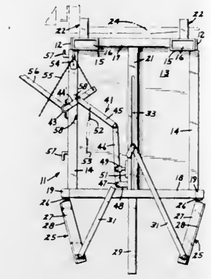
DROP BOTTOM CONTAINER

Raymond C. Fagre, 4125 W. 45th St., Edina, Minn., and Elvin E. Kaiser, Minneapolis, Minn., assignors to said Fagre, by said Kaiser

Filed Sept. 1, 1972, Ser. No. 285,806
Int. Cl. B66c *3/00*
U.S. Cl. 294—71 21 Claims

A drop bottom container adapted for use with a fork lift. The container has a pair of hinged door members for closing its open bottom which are latched into closed position and swing by gravity to the open position when the latch is released. The door members are yieldingly limited at the open

position to prevent uncontrolled swinging movement. The latching mechanism is released manually, initially with minimum movement and maximum mechanical advantage to overcome load forces, followed by progressively increased movement to quickly effect the release even with the con-



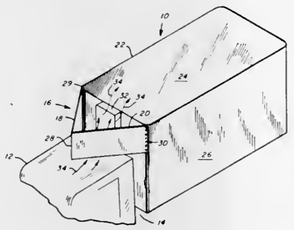
tainer in a fully loaded condition. Means are also included for closing the doors as the container is lowered, which includes a vertically disposed longitudinal member projecting below the open doors which engages the ground with such lowering movement.

3,797,879

CAB OR VAN VEHICLE AIR DEFLECTOR

John D. Edwards, 1033 N. Florence, Tulsa, Okla.

Filed Nov. 10, 1972, Ser. No. 305,233
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 S 7 Claims



This invention describes a demountable type of air deflector device in the form of a triangular prism which can be attached to the upper front wall of a large van or semitrailer, and which extends over the top of the cab. The triangular shaped structure can have a closed top and bottom or, if desired, apparatus such as a refrigerating unit may be placed on the front wall of the van and air allowed to pass up through the air deflector past the refrigerating unit and up over the top of the van. Shock mounts may be provided for attaching the structure to the van, and means are provided for rapidly removing the deflector device as occasion demands.

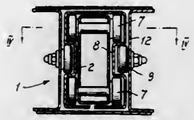
3,797,880

EXTENDABLE VEHICLE BODY

Paolo Pezzaglia, Milan, Italy, assignor to Carrozzeria boneschi Srl, Milan, Italy

Filed June 1, 1972, Ser. No. 263,365
Int. Cl. B62d *33/08*
U.S. Cl. 206—26 2 Claims

A guide for the movement of the walls of vehicle bodies of the extendable wall type comprising at least a first and a second beam member constituted of sections, and supporting the first member a plurality of wheels mounted on ball bearings, adapted to engage with rolling tracks defined inside the second member, so as to permit the sliding engagement of



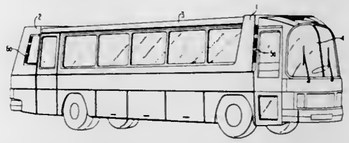
the first member in the second member, the first member being connected to the extendable walls whereas the second member is fixed to a vehicle chassis.

3,797,881

BUS

Robert Bermanseder, and Norbert Bermanseer, both of Sindelfingen, Germany, assignors to Daimler-Benz Aktiengesellschaft

Filed Feb. 11, 1971, Ser. No. 114,420
Claims priority, application Germany, Feb. 12, 1970, 2006250
Int. Cl. B62d *31/04*
U.S. Cl. 296—28 A 12 Claims



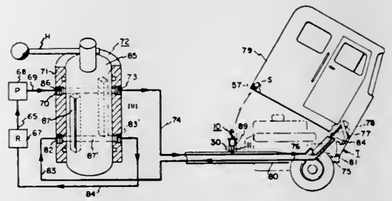
A bus whose top structure includes a forward and rearward roll-over girder constructed as hollow bearers which are supported at the lower ends on the frame structure of the vehicle in order to increase the rigidity of the top, particularly against compression in case of rolling over during an accident.

3,797,882

HYDRAULIC SYSTEM AND MECHANICAL LATCH THEREFOR

Ray S. Brimhall, Salt Lake City, Utah, assignor to Walker Bank and Trust Company

Filed Apr. 29, 1968, Ser. No. 732,484
Int. Cl. B62d *33/06*
U.S. Cl. 296—28 C 13 Claims



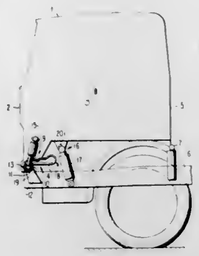
The present invention comprises a pressure system and latching means for determining and controlling movement of a truck-cab relative to its tractor, and, in addition, for latching the two structures together, for translational movement. The pressure system includes means not only for unlocking the latch employed but also for controlling movement and disposition of a cab relative to its tractor frame. The latch means, itself, is of importance in a variety of contexts, to provide for control at a distance of unlatching and latching together two given structures.

3,797,883

SPRING AND TILTING ARRANGEMENT FOR TILTABLE DRIVER CABS

Adolf Steiner, Fritz-Von-Graevenitz, and Hans Rinnergschwentner, both of Rotenfels, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Division of Ser. No. 9,178, Feb. 6, 1970, Pat. No. 3,649,066.
This application Dec. 15, 1971, Ser. No. 208,379
Claims priority, application Germany, Feb. 8, 1969, 1906337
Int. Cl. B62d *27/04, 27/06*
U.S. Cl. 296—35 R 14 Claims



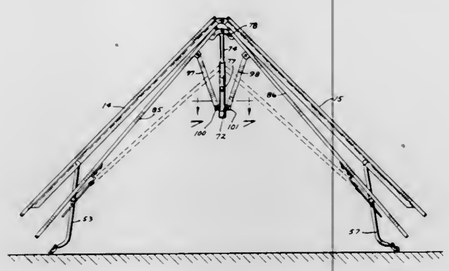
A spring and tilting system for tiltable driver cabs in which springs preferably extending in the vehicle longitudinal direction are provided between the front edge of the driver cab and the vehicle frame while a mounting support of the driver cab equalizing any twisting of the vehicle frame is provided at or near the rear edge of the driver cab. The springs may be constructed as hairpin-shaped, flat springs whose upper leg portion is connected with the driver cab. A lost motion connection is provided between the tilting piston-cylinder mechanism and the driver cab and vehicle frame for permitting free spring action during the normal drive of the vehicle.

3,797,884

FOLDABLE TABLE AND SEATING STRUCTURE

Julian Gutierrez, 6233 Brookview Ave., Minneapolis, Minn.

Filed Feb. 17, 1972, Ser. No. 227,135
Int. Cl. A47b *3/14*
U.S. Cl. 297—159 2 Claims



A foldable table adapted to fold upwardly centrally thereof having as an improvement in connection therewith an attachable seating structure to provide seats co-extensive with said table at each side thereof, sand seating structure being foldable unitarily with said table and corresponding to the thickness thereof, being detachably secured thereto and being adjustable as to height compatible with the height of said table and being adjustable as to height independently of said table.

3,797,885

SEAT TYPE ARTICLE OF FURNITURE AND METHOD OF MANUFACTURING

Edward W. Harman, Malden, and Marvin R. Leatherman, Newton, both of N.C., assignors to Prestige Furniture Corporation, Newton, N.C.

Filed June 28, 1972, Ser. No. 267,422
Int. Cl. A47c *7/54, 7/00*
U.S. Cl. 297—445 8 Claims

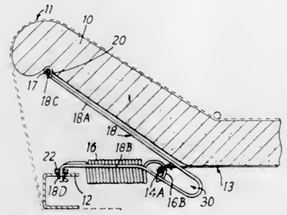
A chair having a base and a shell, with the base providing the seat bottom and the shell providing the sides and back of the seat. The base has a flat top portion that forms the seat bottom and has a continuous outer rigid rim that seats in a continuous downwardly and inwardly facing recess in a rigid bottom rim of the shell, with the sides of the base top portion being completely contained within the shell rim recess so that no upholstering or finishing of the base top portion sides is necessary. The chair is manufactured by separately forming the base and shell, the latter preferably being molded of plastic, and separately upholstering the shell with edges of the upholstery covering layer conveniently secured in the aforementioned recess and securing a seating structure in the base with a covering layer that has edges secured to the rim; the base and shell are then assembled by seating the base rim in the shell recess with the upholstery covering layer edges and seating structure covering layer edges desirably disposed out of sight in the shell recess, and with the shell completely encompassing the base rim for firm securement of the shell on the base.

3,797,886

SEAT FRAMES

David Thomas Griffiths, Ammanford, Camarthenshire, Wales, assignor to Youngflex S.A., London, England

Filed Aug. 1, 1972, Ser. No. 277,100
Int. Cl. B60n *1/06*; A47c *7/02*
U.S. Cl. 297—452 10 Claims



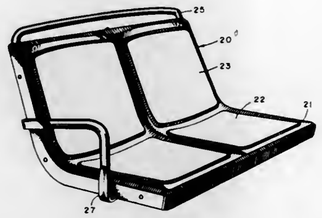
A seat frame, particularly for an automobile, comprises a base frame; a pad which comprises a series of parallel cords and a series of parallel cross-wires, and is suspended across the base frame by means of two rows of tension spring members extending from opposite sides of the base frame for connection with the corresponding side edges of the pad; and an edge frame mounted above the base frame on jack spring members which extend upwardly and outwardly from the side edge regions of the pad and are secured at their upper ends to said edge frame. The jack spring members may constitute the upper limbs of jack springs which are anchored at their lower ends on said base frame, or may constitute the upper limbs of jack springs having short horizontal lower limbs which interconnect said rows of tension spring members and the corresponding side edges of the pad. The pad is usually central, and supplementary pads may be arranged wt the sides of the central pad to provide insulation from the individual jack spring members.

3,797,887

SEAT FOR URBAN MASS TRANSIT VEHICLES

Chester J. Barecki, and Alexander A. Karrip, both of Grand Rapids, Mich., assignors to American Seating Company, Grand Rapids, Mich.

Division of Ser. No. 157,345, June 28, 1972, Pat. No. 3,737,198. This application Aug. 15, 1972, Ser. No. 280,793
Int. Cl. B60n *1/06*; A47c *3/00*
U.S. Cl. 297—454 7 Claims



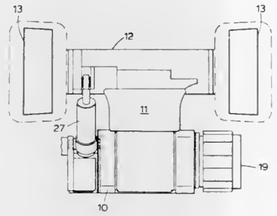
A two-passenger seat for urban mass transit vehicles includes a tubular frame attached to an upright wall of the vehicle and a one-piece plastic shell body-contoured to accommodate two passengers side-by-side. The individual passenger sections each define a back recess for receiving a bucket-contoured back insert, and a seat recess for receiving a contoured seat insert. The body contour in the shell is extended beyond the inserts to provide a rigid upwardly contoured periphery about each section for securing each passenger in place during sharp turns.

3,797,888

CUTTER DRIVE MOTOR SUPPORT ON ARM PIVOT

Herbert Haller, Gelsenkirchen-Buer, and Werner Mennekes, Weidenkamp, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Dec. 6, 1972, Ser. No. 312,527
Claims priority, application Germany, Dec. 7, 1971, 2160644
Int. Cl. E21c *27/24*
U.S. Cl. 299—76 9 Claims



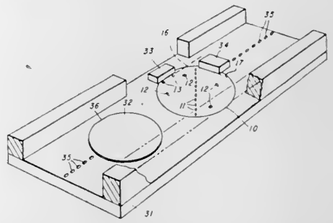
A cutting apparatus primarily for use in mining work and having an arm pivotably supported in a base housing for swinging upwardly and downwardly. The arm has cutting devices supported for rotation on a shaft at its free end and this shaft is coupled with a chain disposed within the arm to a further shaft at the lower end of the arm. The further shaft is connected to the output shaft of a drive motor and the axes of the shafts are aligned with the axis of pivoting of the arm. The drive motor has its own housing supported on an outer ring. This outer ring is in turn mounted for rotation on an inner ring accommodated in a side wall of the base housing. This inner ring is, in turn, connected to the arm. A projection of the housing of the motor engages a stop member to prevent rotation of the housing itself relative to the base housing and apart from this there is no contact between the motor and the base housing.

3,797,889

WORKPIECE ALIGNMENT SYSTEM

Thomas Frank Wilkinson, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1971, Ser. No. 214,123
Int. Cl. B65g *53/00*
U.S. Cl. 302—2 R 9 Claims



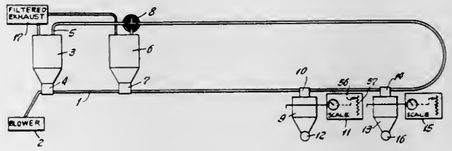
A workpiece alignment system is particularly useful in the alignment of circular or cylindrical workpieces. The workpieces are provided with a flat edge along the circumference which flat edge is aligned in a preselected direction, thereby aligning the workpiece. The system is comprised of a body which includes apertures through which directional air jets flow carrying the workpiece on a directional air cushion to position the workpiece on the body; rotational air jet apertures for rotating the positioned workpiece until the flat edge is in the preselected direction; and flat sensing vacuum apertures for stopping the rotation of the workpiece when the flat edge is in the preselected direction and for providing a signal indicative of the alignment of the workpiece for the system.

3,797,890

PNEUMATIC SCALING SYSTEM

Armon J. Walters, 39 Haverhill Rd., Trumbull, Conn.

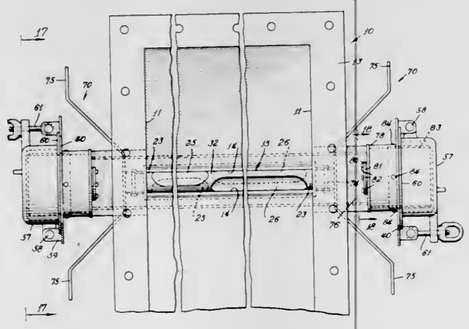
Filed Oct. 16, 1972, Ser. No. 297,931
Int. Cl. B65g *53/40, 53/66*
U.S. Cl. 302—3 10 Claims



A pneumatic materials handling and scaling system comprising a materials supply container, a materials receptor scale container and a pneumatic conveyor tube associated with both containers for conveying material from the supply container to the receptor container at uniform speed and for conveying excess material back to the supply container, characterized by the supply container being provided with adjustable

feeder means for introducing the material from the supply container into the pneumatic tube at adjustable rates and the pneumatic tubing being provided with valve means operative between a diverted position in which it diverts substantially the complete flow of material from the pneumatic tube into the receptor container and a through position in which it permits substantially the complete flow of material through the pneumatic tube bypassing the receptor container and preferably a dribble position in which it partially diverts the flow of material from the pneumatic tube into the receptor container while the feeder means is operating at a reduced speed.

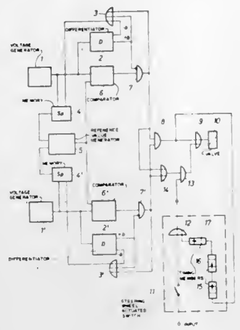
3,797,891
PNEUMATIC HOPPER DISCHARGE OUTLET
William E. Fritz, Hinsdale, Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio
Filed Aug. 28, 1972, Ser. No. 284,254
Int. Cl. B65g *53/40*
U.S. Cl. 302—52 **4 Claims**



Between the lower longitudinal sharp edges of inclined hopper side walls is a pivotable valve shaft having cavities for alignment with the edges to control discharge of lading into an underlying trough which terminates in cylindrical outlet tubes for pneumatic removal of the lading. The cavities have various lengths and are positioned at different circumferential positions to achieve different unloading characteristics. The trough and the outlet tubes may have about the same cross sectional area.

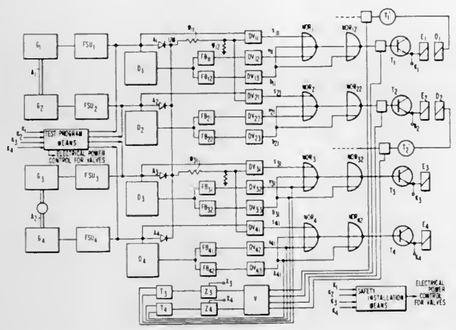
3,797,892
ANTILOCK CONTROL SYSTEM
Heinz Leiber, Leimen, Germany, assignor to Teldrix GmbH, Heidelberg, Germany
Filed Apr. 18, 1972, Ser. No. 245,134
Claims priority, application Germany, Apr. 22, 1971, 2119590
Int. Cl. B60t *8/00*
U.S. Cl. 303—21 EB **9 Claims**

An antilock control system for controlling the braking pressure acting on the wheels of one vehicle axle comprises a sensing device for sensing the behavior of each wheel, two control arrangements for controlling the braking pressure, the first of which is actuated when both wheels exhibit a tendency to lock and the second of which is actuated when one of the wheels exhibits a tendency to lock and a switch device for switching from the first control arrangement to the second



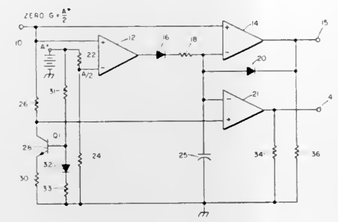
control arrangement when the vehicle is subjected to or is about to be subjected to transverse accelerations.

3,797,893
BRAKE FORCE CONTROL SYSTEM FOR VEHICLES
Manfred H. Burckhardt, Waiblingen, and Hellmut Krohn, Esslingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed July 6, 1972, Ser. No. 269,433
Claims priority, application Germany, July 6, 1971, 2133547
Int. Cl. B60t *8/08, 8/12*
U.S. Cl. 303—21 BE **44 Claims**



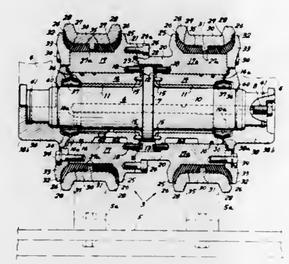
A brake force control system for vehicles, especially for motor vehicles, in which a sensor is coordinated to each wheel for determining its rotational condition, whose signals actuate inlet and outlet valves when exceeding or dropping below certain threshold values so that the brake pressure either increases, remains constant, or decreases, whereby, particularly in vehicles with a high center of gravity and especially with a short wheel base, an additional logic circuit connection is provided which decreases the pressure at the front wheel brakes if a signal symbolizing the road traction of the rear wheels does not arrive within a certain delay.

3,797,894
COMBINATION PEAK DETECTOR AND LEVEL DETECTOR FOR USE IN AN ADAPTIVE BRAKING SYSTEM
Ralph W. Carp, Newport News, Va., assignor to The Bendix Corporation, Southfield, Mich.
Filed Jan. 24, 1973, Ser. No. 326,209
Int. Cl. B60t *8/00;* **303** *20/21*
U.S. Cl. 303—21 R **11 Claims**



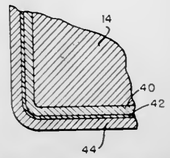
A peak detector for use in an adaptive braking system includes a current source which supplies current to a memory capacitor to maintain the voltage thereacross equal to an input signal so long as the input signal remains above a first threshold. While the input signal is decreasing below the first threshold, current is drawn from the memory capacitor so that the voltage thereacross continues to track the input voltage. However, when the input signal subsequently begins to increase below the first threshold, diodes prevent current from entering or being drawn from the memory capacitor so that the voltage across the capacitor remains constant and equal to the negative peak value of the input signal. The voltage across the capacitor is applied as one input to a comparator while only a portion of the input signal voltage is applied as the second input to the comparator. Accordingly, when the input signal voltage increases by an amount related to the above mentioned portion the comparator generates an output.

3,797,895
LOWER TRACK ROLLER FOR CRAWLER TRACK
Kazuhiro Tomizawa, Chiba, Japan, assignor to Nittai Lease Company Ltd., Tokyo, Japan
Filed Feb. 22, 1972, Ser. No. 228,040
Claims priority, application Japan, Feb. 24, 1971, 46-9163
Int. Cl. B62d *55/16*
U.S. Cl. 305—27 **6 Claims**



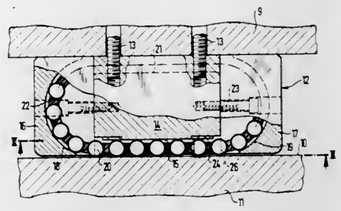
A lower track roller having a resilient buffer means positioned between the roller body and the tread ring.

3,797,896
BEARING FOR WEAR DETECTION
Herbert Bardach, Danbury, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Apr. 21, 1971, Ser. No. 136,083
Int. Cl. F16c *33/00*
U.S. Cl. 308—1 A **8 Claims**



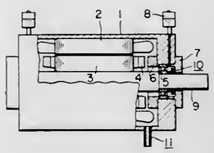
A bearing lined with silver, there being radioactive atom dopants of two species, neither of which need be silver, at a particular depth of the silver lining and a method of placing these radioactive atom dopants in said bearing by electrodeposition without altering the quality or bond strength of the silver lining.

3,797,897
ROLLER BEARING
Georg Schaeffler, Herzogenaurach, Germany, assignor to Industriewerk Schaeffler, Herzogenaurach, Germany
Filed Dec. 29, 1972, Ser. No. 319,496
Claims priority, application Germany, Jan. 18, 1972, 2202085
Int. Cl. F16c *29/06*
U.S. Cl. 308—6 C **4 Claims**



Novel roller bearing for the longitudinally moveable mounting of parts wherein rollers of the bearing move into and out of a slot or space between two races arranged parallel to each other.

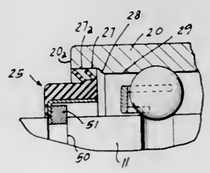
3,797,898
SHAFT BEARING-AND-SEALING DEVICE
Morishima Juichi, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan
Filed Nov. 6, 1972, Ser. No. 303,716
Int. Cl. F16c *33/66*
U.S. Cl. 308—187 **7 Claims**



A shaft bearing-and-sealing device of simple construction for the rotary machines such as an electric motor and the like

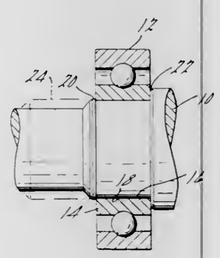
which assures reliable and positive oil sealing function, having a suction fan installed in an axially inner position further inward than the bearing for applying suction to the lubricating oil so as to prevent the oil from leaking out from around the shaft bearing members. This device is readily applicable to and combined with the conventional shaft bearing construction incorporating an oil lubricating an oil lubricating system simply by providing a disc on the output shaft with a larger outer diameter than that of the inner race of the bearing for the purpose of preventing oil leakage cooperatively with the suction fan.

3,797,899
MULTIPLE LIP OUTER LAND RIDING SEAL
Lawrence G. Anderson, Greenhurst, N.Y., assignor to TRW, Inc., Cleveland, Ohio
Filed Sept. 27, 1971, Ser. No. 183,950
Int. Cl. F16c *33/78*
U.S. Cl. 308—187.1 **3 Claims**



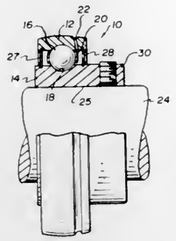
A seal for anti-friction bearing assemblies having a pair of axially spaced apart lips adapted to ride against the inner diameter of the outer race of the bearing assembly, the inner diameter of the seal being backed by a rigid backing ring and being affixable to a shaft supported by the bearing assembly.

3,797,900
BEARING ASSEMBLY
Anthony J. Secola, Hartford, Wis., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Aug. 16, 1972, Ser. No. 281,253
Int. Cl. F16c *36/06*
U.S. Cl. 308—236 **10 Claims**



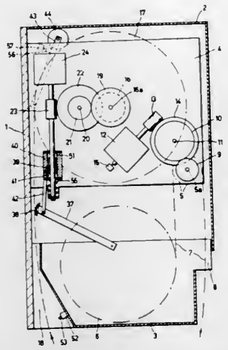
An arrangement providing positive retention of a bearing on a shaft; the bearing is forced over a specially sized shoulder on the shaft by momentary deformation to a seat and is positively held there.

3,797,901
SHAFT LOCKING DEVICE FOR A BEARING ASSEMBLY
Richard J. Smith, Valparaiso, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.
Filed Mar. 14, 1973, Ser. No. 341,092
Int. Cl. F16c *35/06*
U.S. Cl. 308—236 **6 Claims**



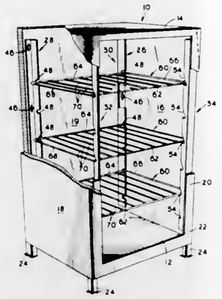
The inner racering of a ball bearing assembly includes a portion which extends beyond the face of the bearing axially about a shaft extending through the racering bore. Two holes are drilled in the inner race extension and are spaced apart about the shaft by an angle measured in a radial direction from the shaft axes which subtends an arc of substantially between 30° to 60°. Set screws are threaded through the apertures and meet the shaft in an interference fit thereby locking the inner racering to the shaft.

3,797,902
DISPENSER FOR WEB-FORM HANDTOWEL
Conrad W. Schnyder, Triesenberg, Liechtenstein, assignor to Neuco Apparatebau AG, Zug, Switzerland
Filed Jan. 29, 1973, Ser. No. 327,485
Claims priority, application Switzerland, Jan. 28, 1972, 1310/72
Int. Cl. B65h *19/00*
U.S. Cl. 312—39 **24 Claims**



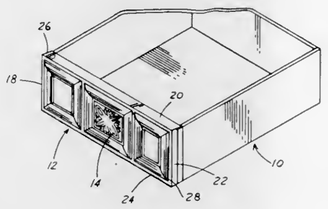
A dispenser for web-form handtowel is disclosed having a casing over which in the rest condition the handtowel is always tensioned between an exit slot and an entry slot. Electric motor driven means are provided for driving a delivery roller so that this withdraws a predetermined length of handtowel from a supply and dispenses it. At the same time, a predetermined length of used handtowel is also unwound from a used handtowel roll. The loop of handtowel formed by the fresh and used handtowel lengths so dispensed hangs out of the casing during a predetermined time after which the motor driven means automatically operate to wind the handtowel up on the used handtowel roll until it is again tensioned over the casing (or until, eventually, the entire end section of the handtowel is wound up).

3,797,903
REFRIGERATOR INCLUDING SHELF MOUNTING APPARATUS
Harry Traulsen, Beechhurst, N.Y., assignor to Traulsen & Co. Inc., College Point, N.Y.
Filed Oct. 25, 1972, Ser. No. 300,841
Int. Cl. A47f *3/04*
U.S. Cl. 312—116 **14 Claims**



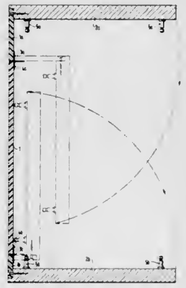
The apparatus includes a pair of front standards and mounting means for mounting a respective one of the pair of front standards adjacent a different edge of the opening of the refrigerator. A pair of rear standards are provided with mounting means for mounting the pair of rear standards on the rear wall of the refrigerator whereby each one of the rear standards is in facing relationship to a different one of the front standards. The pair of front standards are provided with a plurality of vertically spaced rearwardly facing notches each one of which includes an upstanding lip to prevent rearward removal of the front rail of a shelf received therein. The pair of rear standards are provided with a plurality of forwardly facing slots. Each one of the slots extends rearwardly a sufficient distance to permit a shelf received therein to be spaced from the pair of front standards and each one of the slots extends forwardly a sufficient distance to retain and support a shelf when the front rail of the shelf is received in corresponding notches in the front pair of standards.

3,797,904
PLASTIC FACING ELEMENT
Glen W. Krauth, Swainsboro, Calif., assignor to Allied Polymer Corporation, Swainsboro, Ga.
Filed Nov. 15, 1971, Ser. No. 198,765
Int. Cl. B44f *11/00*
U.S. Cl. 312—214 **3 Claims**



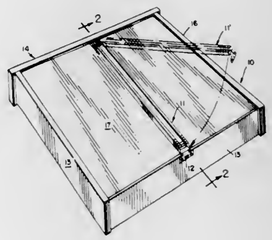
A plastic facing element which may be used on drawers, cabinet doors or the like and will serve to give the drawers, etc. the appearance of having carved wooden fronts. The facing element has a polygonal outline which is the same shape as the outline of the drawer or whatever. A flange projects rearwardly from the element and is designed to fit over the wooden or composition front of the door or drawer and will be nailed, screwed, etc. to firmly attach it to the same. The flange tapers from its thickest at the front of the drawer to its narrowest at its rearmost extension.

3,797,905
FURNITURE OR CONTAINER UNIT
Christoph Naske, Froschhausen, Germany, assignor to WHB-Anbaumobel von Poschinger K.G., Murnau, Germany
Filed Mar. 29, 1972, Ser. No. 239,044
Claims priority, application Germany, Apr. 8, 1971, 2117368; July 9, 1971, 2134373
Int. Cl. A47b *43/00*
U.S. Cl. 312—262 **1 Claim**



A prefabricated furniture or container unit which comprises a main wall and side walls which are pivotably secured to the main wall by hinges consisting of a flexible sheet material which is secured by an adhesive to the main wall and the side walls so that from an erected boxlike position of the unit in which the side walls may be locked, the side walls may all be pivoted toward the main wall so as to extend substantially parallel thereto so that the entire unit will then take up very little storage or shipping space.

3,797,906
DRAWER SLIDE HAVING NOVEL FRONT PANEL CONNECTION
Kenneth H. Gutner, 3285 Doto, Highland Park, Ill.
Filed Mar. 9, 1973, Ser. No. 339,574
Int. Cl. F16c *29/00*
U.S. Cl. 312—330 **3 Claims**

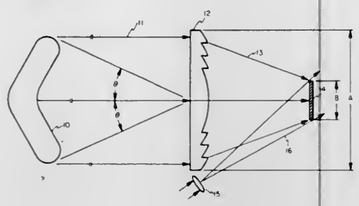


A channel shaped slide for the underside of a drawer having a fluted angled internal tab at its front end for securing the slide to a drawer having a hollow front panel.

3,797,907
FRESNEL LENS SCATTER PLATE FOR DATA REDUCTION HOLOGRAPHY

Emmett N. Leith, Ann Arbor, Mich., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 18, 1972, Ser. No. 290,042
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **2 Claims**

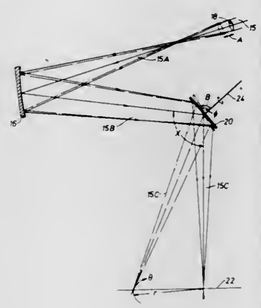


Holographic apparatus and method utilizes a Fresnel lens as a scatter plate in data reduction holography. A second embodiment utilizes a Fresnel lens in series with a fly's eye lens array.

3,797,908
OPTICAL ARRANGEMENTS AND APPARATUS

Brooke Armitage Ward, Goring-on-Thames, and David A. Reynolds, Didcot, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 121,921, March 8, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,711
Claims priority, application Great Britain, Mar. 11, 1970, 11774/70
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **22 Claims**

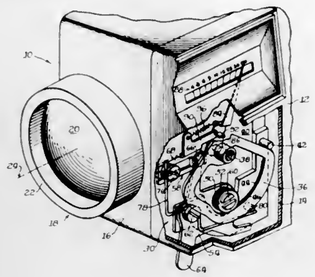


Optical arrangements are described in which an optical beam is reflected by means of a mirror on to a working surface, and is caused to be deflected over the working surface but is automatically maintained continuously in focus on the working surface during such deflection. In some embodiments, the mirror is a plane mirror which is movable about two transverse axes to deflect the beam over the surface, and the optical beam is directed on to the plane mirror via a focussing element, such as a convex lens or mirror, which is linearly movable to maintain the focus on the working surface. In other embodiments, the mirror is fixed and concave, and the optical beam passes through an axial aperture in the mirror and strikes a convex mirror which reflects it on to the concave mirror and thence on to the working surface. The convex mirror is angularly movable about two transverse axes to deflect the beam over the working surface and is also linearly movable along the axis of the concave mirror to maintain the focus.

3,797,909
DIRECT READING TRIANGULATION FOCUSING MECHANISM

Theodore M. Hadzimahalis, Libertyville, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sept. 5, 1972, Ser. No. 286,362
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R **7 Claims**

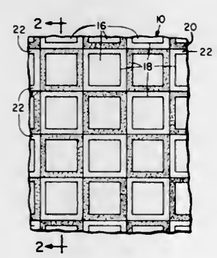


An improvement in a distance determining mechanism for a camera having a focusable objective lens, the mechanism including a pendulous member having a cam surface formed with fine pitched teeth with which similar teeth on a cam follower cooperate to cause adjustment of the lens to a focus condition and, after adjustment, to cause substantially positive locking of the lens in adjusted position while enabling manual focusing through actuation of an externally extending focusing control. By the improvement, the mechanism permits more positive movement of an indicator relative to a focusing scale responsive to the focus condition of the objective lens which is positioned responsive to orientation of the pendulous member of the focusing mechanism.

3,797,910
FIBER OPTIC DEVICE HAVING SOME FIBERS CLAD WITH ABSORBING GLASSES

Ralph A. Westwig, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 14, 1971, Ser. No. 180,365
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **9 Claims**

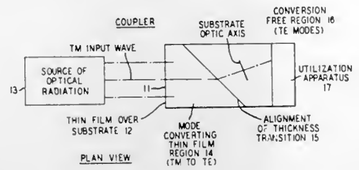


Disclosed is a fiber optic device of the type having a plurality of light-conducting optical fibers secured together in side-by-side relation so that corresponding opposite ends of the fibers cooperate to define first and second faces. Some of the fibers have a single cladding of light absorbing material, the remainder of the fibers having a single cladding of non-absorbing material. The combined effect of this combination of fibers results in image transfer devices capable of transferring an image with high resolution and only a moderate loss in light transmission and image storage devices capable of providing high resolution images having moderately high contrast.

3,797,911
THIN FILM OPTICAL COUPLERS EMPLOYING MODE CONVERSION

Herwig Werner Kogelnik, Fair Haven, and Thomas Patrick Sosnowski, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 18, 1972, Ser. No. 298,785
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 WG **8 Claims**

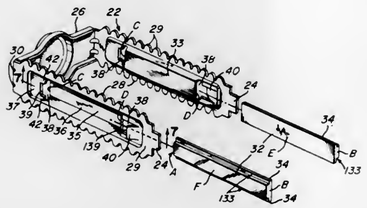


An input-output coupler for thin film optical waveguides is disclosed in which the substrate is anisotropic with its optic axis parallel to the plane of the film and the film index is intermediate the substrate indices. The input beam is appropriately polarized and directed through the substrate toward the film. The input beam is propagated obliquely to the optic axis during coupling and is propagated in a direction either orthogonal or parallel to the optic axis during guiding. The oblique propagation involves some conversion between TE and TM waves. Essentially, the input waves and the output waves of this coupling technique correspond to leaky guided waves in the film.

3,797,912
CYCLE PEDAL WITH REFLECTOR AND METHOD OF MANUFACTURING SAME

Robert Frank Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Maysville, Ky.

Filed July 10, 1972, Ser. No. 270,018
Int. Cl. G02b *5/12*
U.S. Cl. 350—99 **21 Claims**



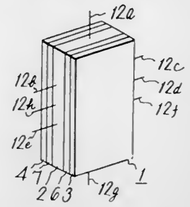
A reflective cycle pedal is described wherein reflective elements are retained in the pedal frame without the use of additional retaining plates, rivets, screws, weldments, or adhesive material of any kind; the reflector elements are retained in the pedal framed by retaining means which are integral with the legs of the pedal frame.

3,797,913
ELECTRO-OPTIC DISPLAY DEVICE

Toshio Mori; Chiaki Kojima, and Hidemasa Tamura, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 29, 1971, Ser. No. 202,789
Claims priority, application Japan, Nov. 30, 1970, 45-106132
Int. Cl. G02b *27/28;* **F02f** *1/26*
U.S. Cl. 350—150 **8 Claims**

In an electro-optic display device comprising a polarizing plate and a display panel having a plurality of electro-optic elements arranged in a predetermined pattern on a suitable base plate, in which a suitable voltage is selectively supplied to the plurality of electro-optic elements to alter the angle of

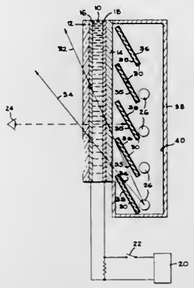


double refracted light in response to the voltage, the electro-optic display device further comprising a means formed between the display panel and the polarizing plate for supplying circular polarized light to the electro-optic elements.

3,797,914
DISPLAY DEVICE EMPLOYING LIQUID CRYSTAL MATERIALS

William Ross Aiken, Los Altos Hills, Calif., assignor to Display Technology Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 126,054, March 19, 1971, abandoned. This application Jan. 11, 1973, Ser. No. 322,707
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **4 Claims**



A display device settable between transparent and translucent or opaque conditions comprising of a layer of a material changeable between light-transmitting and light-scattering conditions in response to electric fields, such as the liquid crystal materials, means for setting up electric fields through said layer, a plurality of superposed relatively spaced, slanting slats located behind the rear face of said layer, said slats having dark, light absorbing front surfaces and bright, light-reflecting rear surfaces, a source of light located behind said slats adjacent the rear ends thereof, for the slats to conduct the light generated by said source obliquely through said layer in such a manner that it misses the eyes of an observer in front of said layer, and a cover arranged over said source of light and having a light-reflecting inner surface.

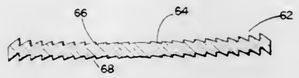
3,797,915
BINOCULAR RANGEFINDER-VIEWFINDER WITH FRESNEL OPTICS

Edwin H. Land, Cambridge, and Philip Norris, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 108,084, Jan. 20, 1971, Pat. No. 3,719,422. This application Sept. 25, 1972, Ser. No. 291,558
Int. Cl. G02b *3/08*
U.S. Cl. 350—211 **2 Claims**

This disclosure depicts a number of novel Fresnel imaging structures incorporated in photographic rangefinding and

viewfinding means. Each Fresnel imaging structure is both focal and afocal for simultaneously providing a view of a



selected field and for projecting into the field a virtual image of a rangefinding or framing reticle.

3,797,916

HIGH RESOLVING-POWER DUPLICATING LENS OF UNIT MAGNIFICATION

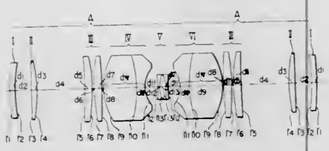
Ichiro Kano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1972, Ser. No. 217,598

Claims priority, application Japan, Jan. 20, 1971, 46-229

Int. Cl. G02b *9/64*

U.S. Cl. 350—214 **1 Claim**



A high resolving-power duplicating lens of unit magnification having the lens arrangement of longitudinal symmetry in which at the opposite ends of the center, negative meniscus lenses (I)(I) with the concave surfaces facing to the center, next to them positive lenses (II)(II) with the convex surfaces facing to the center, next to them lens groups (III)(III) consisting of two or more positive lenses, next to them negative meniscus lenses (IV)(IV) of doublets of which the concave surfaces nearest to the center are faced to the center, and a central double-concave lens (V) of singlet or multiplet symmetrical as a whole are so arranged as to satisfy the following conditions:

(1) $0.4 f_A < d_{IV} < 1.5 f_A$

(2) $0.2 f_A < d_A < 1.0 f_A$

(3) $0 < -f_A/f_V < 0.8$

(4) $0.01 < n_{IV_1} - n_{IV_2} < 0.2$

where

f_A : focal length of each of the two blocks (A)(A) in air, into which the lens system is divided at the center

d_{IV} : axial thickness of lens (IV)

d_A : distance between lens (II) and lens group (III)

f_V : focal length of lens (V)

n_{IV_1} : refractive index of the outside lens of lens (IV)

n_{IV_2} : refractive index of the inside lens of lens (IV)

3,797,917

BOX AND VIEWER ASSEMBLY FOR SLIDES

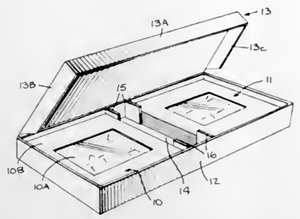
Roberto Barbour, Roslyn Harbor, N.Y., assignor to Cryton Optics, Inc., Roslyn, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,034

Int. Cl. G02b *7/02*

U.S. Cl. 350—250 **2 Claims**

A box and lens assembly adapted to store photographic slides and being convertible into an optical viewer for inspecting the slides, each of which is constituted by a transparency mounted in a frame. The assembly comprises a rectangular container dimensioned to accommodate two stacks of slides in side-by-side relationship and a cover hinged thereto. The cover is provided with a peripheral flange having a side section and two end sections which, when the box is closed, lie against the corresponding walls of the container. The cover is fabricated of flexible material whereby the end sections of the flange may be pulled out slightly to define parallel sockets, one of which is usable to engage the lower margin of a slide to be viewed whereby the slide is held erect with its transparency



exposed to ambient light. Receivable in the other socket is a Fresnel lens plate having the same dimensions as a slide, the optical characteristics of the plate being coordinated with the spacing between the parallel socket to afford an enlarged, well-focused image of the transparency.

3,797,918

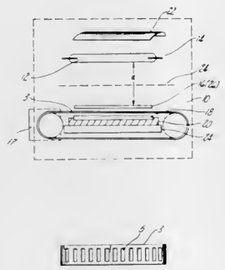
OPTICAL APPARATUS WITH SPECTRAL FILTERS FOR TESTING FASTNESS OF COLORS

Dieter Kockott, Dammstrasse 11, D6451 Ruckingen, Germany

Continuation-in-part of Ser. No. 5,554, Jan. 26, 1970. This application Oct. 12, 1971, Ser. No. 188,567

Int. Cl. G02f *1/30*

U.S. Cl. 350—269 **4 Claims**



Apparatus and method for obtaining a detectable variation in a sample in response to radiation. The apparatus includes a source of radiation and a sample to be tested. Filters and a moveable shading device are disposed between the source of radiation and the sample to provide for irradiating different portions of the sample with radiation of the same light intensity per unit time to study the influence of different wavelengths on a sample. The apparatus enables one to determine the minimum wavelength which will bring about a degradation or disintegration of the sample under test.

3,797,919

HIGH-SPEED SHUTTER

James O. McClenahan, Milpitas, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

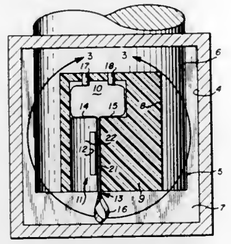
Filed June 30, 1972, Ser. No. 267,768

Int. Cl. G03b *9/08;* **G02f** *1/30*

U.S. Cl. 350—270 **5 Claims**

A shutter element is formed by a loop of an electrically conductive ribbon disposed adjacent to the end of a passageway

to be shuttered. The shuttered end of the passageway is cut at an acute angle. The two leg portions of the ribbon loop are closely spaced to each other and disposed in a plane parallel to the axis of the passageway. A pulse of high current is switched through the loop to cause the current flowing in opposite



directions through adjacent leg portions of the ribbon to produce a magnetically induced pressure on one of the legs of the ribbon forcing the leg over the end of the passageway in gas tight sealing engagement therewith, thereby blocking same.

3,797,920

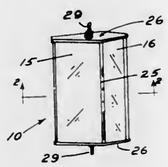
WIDE ANGLE MIRROR

Theodore L. Beach, Jr., P.O. Box 366, Donnelsville, Ohio

Filed June 19, 1972, Ser. No. 263,925

Int. Cl. G02b *5/08*

U.S. Cl. 350—303 **7 Claims**



Main and auxiliary mirrors are angularly disposed at an obtuse angle for viewing a trailing portion of an elongate or articulated vehicle during turning or parking operations thereof as well as traffic conditions at the rear of the vehicle during forward movement thereof.

3,797,921

PHOTOGRAPHING APPARATUS FOR DETERMINING CORNEAL RADIUS

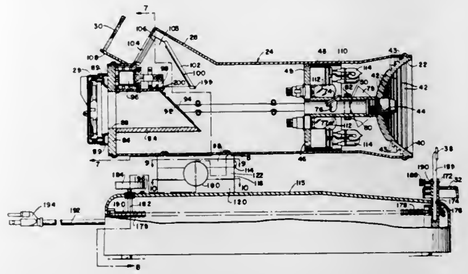
Lauren G. Kilmer; McCabe C. Lively, both of Temco Manufacturing Company, 1826 N. Kingston Pl., Tulsa, Okla., and Alvin E. Reynolds, c/o International Diagnostic Instruments Limited, 3540 E. 31st St., Tulsa, Okla.

Filed June 5, 1972, Ser. No. 259,660

Int. Cl. A61b *3/14;* **G03b** *19/02*

U.S. Cl. 351—7 **12 Claims**

A camera by means of which a doctor can obtain a picture of the eye of a patient, having superimposed thereon one or more concentric circles, permitting determination by the doctor of the radius of the eye cornea so that a contact lens can be properly fitted. The patient supports his head on a chin rest and looks into an opening in the center of a spherically concave screen, focusing on a light dot. Light from within the camera passes through one or more concentric rings in the concave screen to form light circles on the eye cornea. On a viewing screen on the opposite end of the camera the doctor sees an image of the patient's eye with the circles superimposed thereon. The doctor can adjust the elevation of the patient's eye, the rotational alignment between the camera and the patient, and the focus of the image. When these adjustments are satisfactory, the doctor actuates the device to open the camera shutter and energize flash tubes, exposing film to the image of the patient's eye as had been seen by the doctor.



Light from the flash tubes passes through the one or more concentric rings so that one or more light circles appear on the image of the eyeball as photographed on the film. The film is preferably immediately developed within the camera. From the circles on the resulting print, the doctor determines measurements required for the proper fitting of a contact lens.

3,797,922

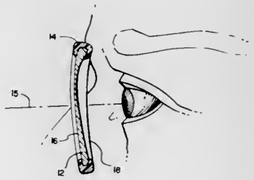
AZYGOUS OPHTHALMIC LENS AND SPECTACLES FOR CORRECTING PRESBYOPIA

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 197,852, Nov. 11, 1971, abandoned. This application May 10, 1973, Ser. No. 358,846

Int. Cl. G02c *7/06*

U.S. Cl. 351—169 **1 Claim**



A concept for a polyfocal ophthalmic lens is described. The polyfocal ophthalmic lens has at least one analytic refracting surface whose power changes uniformly from its top to its bottom. Vision-correcting eyeglasses incorporating polyfocal ophthalmic lenses offer a wearer several lens powers to choose among for different seeing tasks. Polyfocal ophthalmic lenses eliminate the distracting refractive discontinuity present in ordinary bi-focal ophthalmic lenses. In one embodiment of the polyfocal ophthalmic lens, the net refracting power changes so the upper portion of the ophthalmic lens is suitable for viewing distant objects, while the lower portion is suitable for reading and the central portion is suitable for intermediate seeing tasks.

3,797,923

CINEMATOGRAPHIC PROJECTOR

Louis Thevenaz, Sainte-Croix, Switzerland, assignor to Bolex International SA, Sainte-Croix, Switzerland

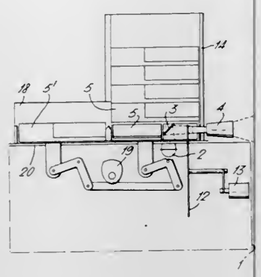
Filed Oct. 10, 1972, Ser. No. 296,220

Int. Cl. G03b *21/04*

U.S. Cl. 352—123 **11 Claims**

A movie projector for showing film cassettes that each have a take-up spool and a feed spool, the projector comprising a

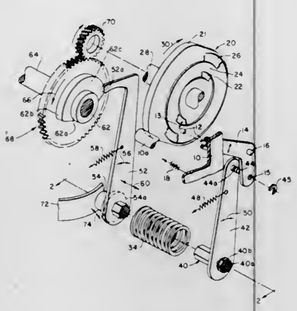
cassette projection station and a cassette rewind station, transfer apparatus for moving each of at least two cassettes one after the other into the projection station then into the rewind station, a first mechanism for engaging the take-up spool when in the projection station to wind film onto the cassette take-up spool and a second mechanism for engaging the feed spool when in the rewind station to rewind film onto the cassette feed spool, drive apparatus for concurrently driving the first and second mechanisms to concurrently wind and rewind the respective cassettes, and apparatus for controlling engagement of the first and second mechanisms with the respective take-up and feed spools for the winding and rewinding thereof and disengagement thereof to permit movement of the cassette from the projection station into the rewind station by the transfer apparatus.



3,797,924
FILM FEEDING MECHANISM FOR MOTION PICTURE PROJECTORS

Donald Earl Day, and Donald Oscar Easterly, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,708
Int. Cl. G03b *1/22, 21/48*
U.S. Cl. 352—194 **7 Claims**

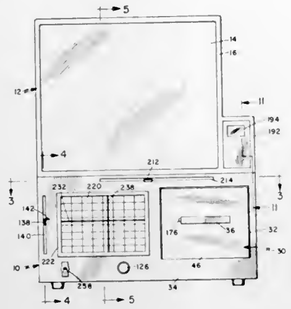


A film feeding mechanism for a motion picture projector includes a member having a plurality of cam surfaces which cooperate with a cam follower for periodically causing a film claw to engage a filmstrip. Also included in the film feeding mechanism is a cooperating cam actuated means which is operative to periodically shift the cam follower between predetermined cam surfaces to provide projection speeds other than the speeds provided by any one of the cam surfaces individually.

3,797,925
MICROFICHE READER WITH INDEXED FICHE MAGAZINE

Louis A. Smitzer, San Diego, Calif., assignor to Ovonic Image Systems, Inc., San Diego, Calif.

Filed Nov. 3, 1971, Ser. No. 195,324
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **4 Claims**

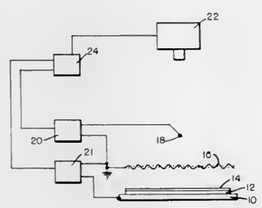


A microfiche reader incorporating an indexed magazine from which fiche cards are selectively extracted, positioned horizontally for viewing and returned to the magazine, all with a single lever. A second lever moves the projection lens and lamp assembly vertically relative to the fiche card, a position indicating grid showing the frame of the fiche card in projection position. The image is projected on a large viewing screen, at the side of which is a small screen showing the identification of the fiche card being viewed. An index frame carrying the contents of the specific magazine, can be moved into projection position to facilitate selection of individual cards and frames.

3,797,926
IMAGING SYSTEM EMPLOYING IONS

Richard A. Fotland, Warrensville Heights, and Virgil E. Straughan, Euclid, both of Ohio, assignors to Horizons Incorporated, a Division of Horizons Research Incorporated, Cleveland, Ohio

Filed Aug. 27, 1971, Ser. No. 178,521
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **21 Claims**

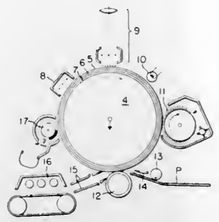


In the formation of visible copies of an image, the use of an ion modulating array provided with an asymmetrical photosensitive coating together with means to electrostatically develop the ion image.

3,797,927
ELECTROPHOTOGRAPHIC COPYING MACHINE

Toru Takahashi; Yoshio Ito, both of Tokyo, and Hidejiro Kodowaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1972, Ser. No. 253,235
Claims priority, application Japan, May 20, 1971, 46-34345; May 24, 1971, 46-35760
Int. Cl. G03g *15/02*
U.S. Cl. 355—3 **7 Claims**

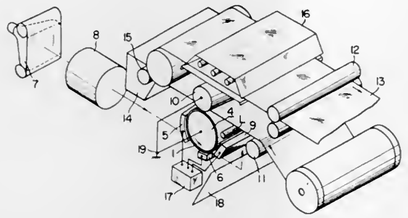


An improvement of an electrophotographic copying machine is provided in which a plurality of grounded grid electrodes are interposed between image forming means and surface of a photosensitive member of the type comprising an electrically conducting support, a photoconductive layer and an insulating layer, wherein the image forming means includes a device for focusing a light image and simultaneously discharging the charged surface of the insulating layer. The perfect discharge of the surface of the photosensitive member can be attained with this apparatus an image having a high contrast, excellent tone reproducibility and uniform sensitivity may be reproduced without being adversely affected by the environmental conditions.

3,797,928
METHOD AND APPARATUS FOR ELECTROPHOTOGRAPHY

Koichi Kinoshita, Narashino, and Masanori Watanabe, Tokyo, both of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 108,733, Jan. 22, 1971, Pat. No. 3,730,709. This application Nov. 30, 1972, Ser. No. 310,881
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **6 Claims**

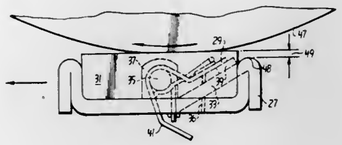


In a method of electrophotography comprising the steps of applying a first electric field across a photosensitive element including a photoconductive layer manifesting persisting internal polarization and a highly insulative layer integrally bonded to one side of the photoconductive layer for depositing a charge of one polarity on the surface of the highly insulative layer, and applying a second electric field across the photosensitive element for depositing a charge of the opposite polarity concurrently with projection of a light image upon the photoconductive layer whereby to form a latent image on the surface of the highly insulative layer corresponding to the light image, a third electric field is applied across the photosensitive element for depositing a charge of the same polarity as the charge deposited by the second electric field for improving the contrast and then the latent image is developed to provide a visible image.

3,797,929
GRIPPER-BAR BUMPER PADS

Gordon D. Deacon, and John A. Toto, both of Norristown, Pa., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,865
Int. Cl. G03g *15/04*
U.S. Cl. 355—3 **3 Claims**

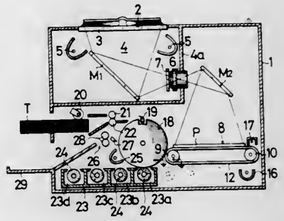


An endless-chain transport system for a photocopy machine is described for gripping copy sheets at a paper-feed station, transporting the copy sheets past a photoconductive drum while holding surfaces of the copy sheets in close proximity to the drum, and transporting the copy sheets to a copy-sheet-delivery station. The transport system comprises gripper bars mounted on transport chains having gripper jaws which are opened and closed by cams to grip and release the copy sheets. Gripper-bar bumper pads are mounted on the gripper bars to hold the gripper bars away from the photoconductive drum.

3,797,930
ELECTROPHOTOGRAPHIC COPIER

Susumu Tanaka; Masayoshi Inoue; Yuji Enoguchi, all of Osaka; Kenichi Wada, Toyokawa, and Takao Fujiwara, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 17, 1972, Ser. No. 244,750
Claims priority, application Japan, May 18, 1971, 46/33806
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **8 Claims**



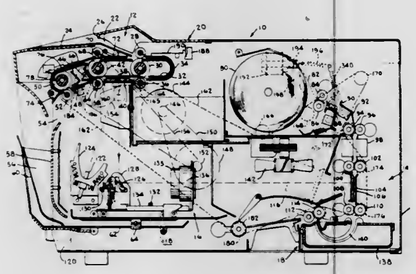
A copier comprises a photosensitive member substantially in the form of an endless belt and composed of a flexible base subjected to electric conductive treatment, and inorganic semiphotoconductive layer and organic semiphotoconductive layer superposed on the base; an exposure station for exposing

the electrically charged sensitive surface of the photosensitive member to reflected light from the face of an original document to form an electrostatic latent image thereon; drive means for driving the photosensitive member during each cycle of transfer operation; means for driving transfer paper in synchronism with the travelling photosensitive member formed with the latent image so as to bring the paper into fitting contact with the member, the transfer paper being composed of an electroconductive base and a dielectric coating thereon; means for electrically grounding the bases of both photosensitive member and transfer paper fitted together to transfer the electrostatic latent image onto the transfer paper; and developing means for supplying toner to the transfer paper bearing the transferred electrostatic latent image to visualize the image. The copier further includes color separation filters in the exposure station and developing sections for three or four colors to be operated in accordance with the change of the filters. A color copy is obtained by repeating a copying cycle three or four times.

3,797,931
SEQUENCE CONTROL APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Joseph F. Miciukiewicz, 78 Shawnee Rd., Trumbull, Conn.; Philip Pollak, Jr., 4 Lookout Ln., Westport, Conn.; Douglas I. Morrison, and William A. Ross, both of 10 Hillcrest Ave., Darien, Conn.

Filed Sept. 23, 1970, Ser. No. 74,737
Int. Cl. G03g *15/00*
U.S. Cl. 355—13 **16 Claims**

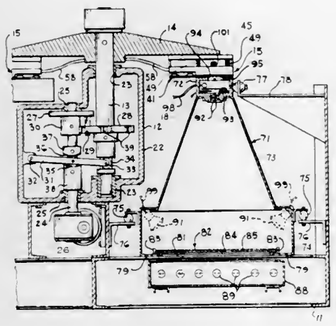


An apparatus for controlling the sequential operation of several functions of a fully automatic electrophotographic copying machine. The copying machine has the capability of projecting an image of indicia on a moving document to a piece of copy paper which is moving in synchronism with the document, and of developing a visible image of the indicia on the copy paper. The disclosed apparatus controls, in response to sensing the leading edge of the document, the energization and de-energization of an illuminating lamp, an electrostatic charger, the commencement of feeding of copy paper, the moment of operation of a severing mechanism for severing a sheet of copy paper from a roll thereof and the feeding of a minimum length of copy paper, regardless of the length of the original document, to prevent pieces of copy paper less than that minimum length from being fed through the machine. The apparatus has features of adjustability which assure that sheets of copy paper will be severed from the roll having a length in exact accordance with the length of the original document, and which assure that the indicia on the original document will be reproduced on the sheet of copy paper in exact accordance with the position of the indicia on the document.

3,797,932
VIBRATION ISOLATION ARRANGEMENT FOR APERTURE CARD PHOTOGRAPHIC COPYING MACHINE

Dale S. Endter; Edwin E. Miller, both of Rochester, and Harry L. Westacott, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1972, Ser. No. 302,433
Int. Cl. G03b *27/00*
U.S. Cl. 355—18 **5 Claims**

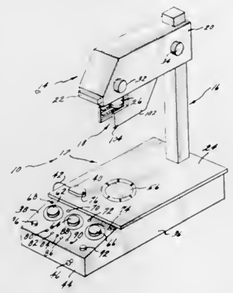


A photographic copying machine is adapted to expose and process a photosensitive film insert on an aperture card, respectively at exposing and processing stations. The machine includes a vibration isolation arrangement for isolating the exposure station and an aperture card, located thereat, from vibration produced by other members of the machine. This permits a relatively long exposure of the film insert without sacrificing image resolution or sharpness.

3,797,933
APPARATUS FOR MAKING COLOR ENLARGEMENTS

Arthur J. Sable, Tall Timbers, Colo., assignor to Sable Photo Works, Inc., Tall Timbers, Colo.

Filed Feb. 3, 1972, Ser. No. 223,081
Int. Cl. G03b *27/76*
U.S. Cl. 355—35 **14 Claims**



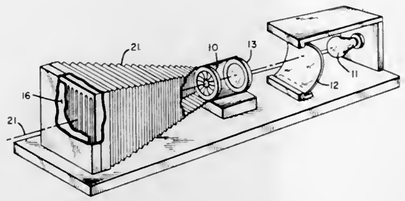
This invention involves a system for making color enlargements from a transparency, either positive or negative, wherein a color analyzer light beneath a transparent window in the base is used to compare the relative intensities of the red, blue and green light contained in a diffused image transmitted by an unknown transparency with the predetermined intensities of these same colors of light transmitted by a preselected reference transparency in order to determine

the relative color balance therebetween. The overall exposure time found necessary to produce an acceptable print at the chosen aperture and degree of image magnification is then determined through further comparison with the preselected reference transparency and this information is coupled with the ratio of relative intensities to arrive at red, blue and green exposure intervals which are separately though simultaneously timed. Two filters are mounted for independent movement into the path of the projected image, the first being of a hue selected to block the color of light selected from the above group already known to require the shortest exposure time, and the second being of a hue selected from the remaining two colors adapted to block that color previously found to require the next shortest exposure time. Control circuitry operatively interconnects the timing and filter actuating mechanisms so as to automatically time the exposures in accordance with the predetermined and preset schedule. In doing so, the circuit functions upon actuation to turn on the enlarger lamp and initiate all three time intervals. Next, it automatically extends the first filter into its extended operative position when the shortest of the three color exposure intervals times out and then it extends the second filter into operative position when the next shortest predetermined color exposure interval times out. Finally, the control circuit becomes operative to shut off the enlarger lamp when the predetermined overall exposure time expires thus terminating the last and longest of the three exposures. The unique combination of subassemblies which cooperate with one another to carry out the foregoing novel procedure together with the procedure itself constitute the subject matter hereof.

3,797,934
SYSTEM AND METHOD FOR MAKING MULTIGRADED TV MASKS

Gerald M. Miller, Sylvania, Ohio, and George M. Munter, Roseville, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 838,459, July 2, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 187,171
Int. Cl. G03b *27/26*
U.S. Cl. 355—52 **3 Claims**



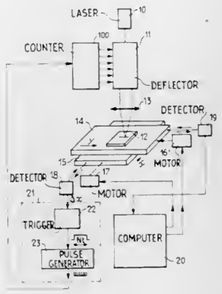
A method for forming a multigraded negative by utilizing an arcuate shaped light diffuser of uniform thickness.

3,797,935
SYSTEMS FOR WRITING PATTERNS ON PHOTOSENSITIVE SUBSTRATES

Raymond Marcy, Paris, France, assignor to Thomson-CSF Paris, France

Filed Apr. 25, 1972, Ser. No. 247,345
Claims priority, application France, May 4, 1971, 71.16048
Int. Cl. G03b *27/32*
U.S. Cl. 355—53 **6 Claims**

To carry out the exposure of a photoresist at a pattern scale of 1 : 1, a laser writing-in beam is projected onto the latter. The substrate carrying the photoresist undergoes displacements in at least one of two mutually perpendicular directions. Positioning of the laser beam is obtained through the medium of a deflection system comprising a device for generating

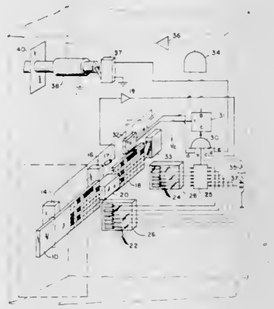


pulse trains which control a digital optical deflector. The pulse trains are triggered by electrical pulses supplied from interferometric means monitoring the displacement of the substrate. The whole duration of each one of said pulse trains is smaller than the time interval between the triggering pulses.

3,797,936
ELECTRONIC LOCKING SYSTEM

Andre C. Dimitriadis, New York, N.Y., assignor to Intertech, Inc., New York, N.Y.

Filed July 13, 1972, Ser. No. 271,251
Int. Cl. G06k *9/08;* **E05b** *47/00*
U.S. Cl. 356—71 **9 Claims**



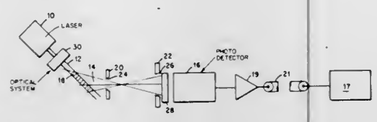
An opto-electronic locking system for an entry door which is provided with an optically encoded key. The key is decoded internally by a sensing device which translates the light code detected into electrical levels which are compared with a stored code. If the code on the key corresponds to the stored code, then the circuit activates an electromechanical mechanism which in turn opens the lock. If the code on the key is not correct, then the electrical circuit activates an alarm or a security system or both.

3,797,937

SYSTEM FOR MAKING PARTICLE MEASUREMENTS

Frederick M. Shofner, Knoxville, Tenn., assignor to Environmental Systems Corporation, Knoxville, Tenn.

Filed Mar. 1, 1972, Ser. No. 230,757
Int. Cl. G01n *15/02*
U.S. Cl. 356—102 7 Claims



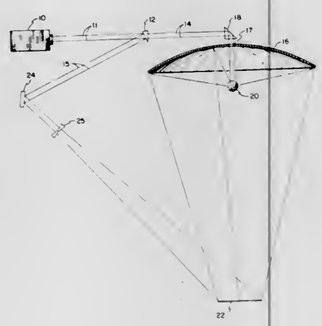
A system for in situ particle measurement employing light scattering. Both dry and liquid particles are measurable.

3,797,938

OPTICAL APPARATUS FOR MEASURING DEFORMATION OF PARABOLIC ANTENNAS

Lee O. Heflinger, Torrance, and Ralph F. Wuerker, Palos Verdes, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 16, 1972, Ser. No. 297,745
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 7 Claims



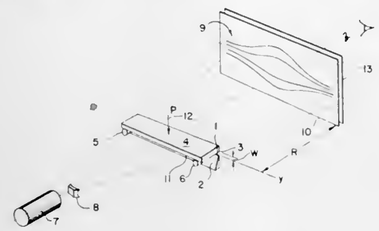
An optical apparatus for recording by double exposure either a hologram or a holographic contour map of a parabolic antenna. The holographic apparatus requires a laser and is arranged so as to function with practical lasers such as a ruby laser having limited coherence and limited light power. Although the antenna is a paraboloid it may be considered an ellipsoid with conjugate foci for purposes of this invention. Accordingly, the scene beam is reflected onto the antenna from a point image source close to one of the foci of the parabolic antenna while the hologram is at the conjugate focal point of the antenna. The path length of the reference beam is matched to that of the scene beam to provide temporal coherence matching. The light may be scattered by a diffuse reflecting ball in one of the foci of the antenna or alternatively a specularly reflecting ball may be used. This ball may be gold plated to improve the reflection of the ruby light. For contouring of the antenna one of the reflectors in the path of the reference beam may be hinged to change the angle of the reference beam between exposures, each being taken at a different wavelength.

3,797,939

DIFFRACTOGRAPHIC MEASUREMENT OF PROFILE

Timothy R. Pryor, 5423 York Ln., Bethesda, Md.

Continuation-in-part of Ser. No. 253,421, March 15, 1972, which is a continuation-in-part of Ser. No. 751,615, Aug. 8, 1968, Pat. No. 3,664,739. This application May 23, 1972, Ser. No. 256,099
Int. Cl. G01b *9/02*
U.S. Cl. 356—111 38 Claims



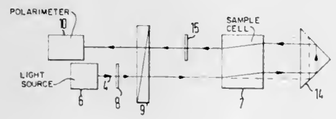
A method and apparatus for dimensional gaging of object profiles is disclosed. A boundary of the tested member is located adjacent a reference member to provide, on illumination with essentially monochromatic and space coherent electromagnetic radiation, an interference pattern whose intensity distribution is a function of the relative positions of the members. Analysis of these interference patterns gives the profile of the tested member.

3,797,940

REFRACTOMETER WITH DISPLACEMENT MEASURED POLARIMETRICALLY

Raymond John King, Teddington, England, assignor to National Research Development Corporation, London, England

Filed Dec. 8, 1971, Ser. No. 206,080
Claims priority, application Great Britain, Dec. 9, 1970 58556/70
Int. Cl. G01n *21/46*
U.S. Cl. 356—134 3 Claims



A refractometer in which a monochromatic light beam passes through a test specimen so as to be displaced, either translationally or rotationally, in dependence of the refractive index of the specimen. The beam is linearly polarised and is subjected to optical rotation through an angle depending on the extent of the displacement, the optical rotation being measured with a polarimeter to give a measure of refractive index.

3,797,941

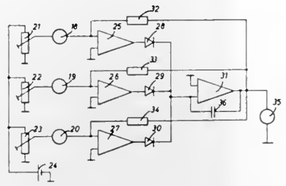
PHOTOELECTRIC EXPOSURE CONTROL DEVICE

Karel Germanus Staes, Wilrijk, and Luc Yves Natens, Berchem, both of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Division of Ser. No. 843,597, July 22, 1969, Pat. No. 3,748,981. This application Jan. 18, 1972, Ser. No. 218,851
Claims priority, application Great Britain, July 22, 1968, 34896/68
Int. Cl. G01j *3/46, 1/42*
U.S. Cl. 356—175 5 Claims

A method and apparatus for photographically recording colour subjects onto recording material which is spectrally sensitive in different regions of the visible light spectrum.

The luminance of the colour subject is measured in at least two of the different regions wherein the recording material is sensitive, the exposure of the recording material is predetermined in taking the measured luminance of the subject in the region of greatest luminance more into acount than the measured luminance(s) of the region(s) of smaller luminance, and the recording material is exposed to the colour subject to an extent which is in accordance with said predetermined exposure.

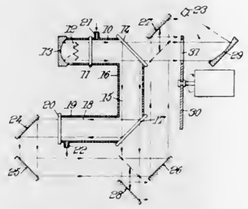


3,797,942

METHOD AND APPARATUS FOR ANALYSIS BY LIGHT ABSORPTION SPECTROMETRY

Bertrand Joly, Ville Davray, France, assignor to Sourian & Cie, Boulogne-Billancourt, France

Filed Dec. 11, 1972, Ser. No. 313,623
Claims priority, application France, Feb. 4, 1972, 72.003895
Int. Cl. G01j *3/46*; G01n *21/34, 21/06*
U.S. Cl. 356—181 10 Claims



The invention relates to the analysis of gas by light absorption, suitable for use in analysing the exhaust gasses of automobile engines. The device comprises a tank receiving the gas to be analysed and in which a source sends a beam of light. It comprises at least one interferential filter placed on the path of the beam and at an angle, not of 90°, with this latter, the said filter transmitting the larger portion of the energy of the beam to a detector in a predetermined band of wave lengths and reflecting into the tank the larger portion of the remaining energy in the form of a reflected light beam.

3,797,943

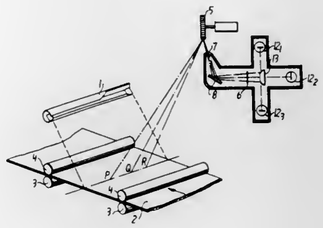
SURFACE INSPECTING APPARATUS

Yukio Nagao, and Chiaki Fukazawa, both of Tokyo, Japan, assignors to Tokyo Shibawa Electric Company, Ltd., Saiwai-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Aug. 21, 1972, Ser. No. 282,222
Claims priority, application Japan, Aug. 31, 1971, 46-66877
Int. Cl. G01n *21/32*
U.S. Cl. 356—200 6 Claims

A surface inspecting apparatus is provided and includes a light source which illuminates the surface of an object to be inspected.

A slit plate having a plurality of slits of different shape which determine the field of vision for the object is provided and is arranged in the path of the reflected light from the object to be inspected. A plurality of photo-electric conversion devices are provided for converting the reflected light from the object to be inspected which passes through the slits. Further means are provided for scanning the field of vision. By detecting the change of the light quantity of the reflected light from the object to be inspected which passes through the slits by the photo-electric conversion devices, it can be readily determined whether defects in the object to be inspected exist or not. Also by comparing the output of each of the photo-electric conversion devices, the shape of any defect can be determined.

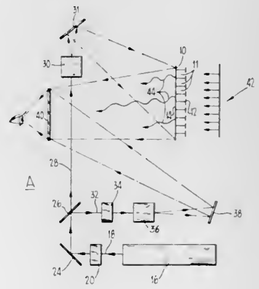


3,797,944

NON-DESTRUCTIVE TESTING OF ACOUSTICAL HONEYCOMB PANELS

George R. Urquhart, South Laguna, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Nov. 8, 1972, Ser. No. 304,625
Int. Cl. G01n *21/00, 29/04*
U.S. Cl. 356—237 2 Claims

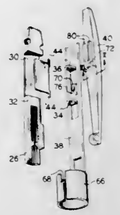


A time average holographic transparency photograph is made of the imperforate surface of acoustical honeycomb panel having a plurality of cells while the perforate surface is subjected to sound energy having a known frequency equal to the designed resonant frequency of the panel cells, and at a selected energy level. The transparency is then viewed while the laser beam is directed therethrough. Light swirls in the transparency indicate good cells, and dark areas indicate inoperative or faulty cells. Where unknown, the fundamental resonant frequency of the cells can be determined by making a real time image of the imperforate surface absent the sound excitation. The imperforate sheet is then viewed through the resulting real time image transparency while subjecting the perforate surface to a slowly varying range of sonic frequencies at a constant energy level until the swirls of resonance are displayed.

3,797,945
MULTI-TIP WRITING INSTRUMENT WITH SWINGING DOOR SELECTOR

Nathan A. Zepell, 1359 Santa Teresita Dr., Santa Barbara, Calif.

Filed Dec. 26, 1972, Ser. No. 318,668
Int. Cl. B43k *27/12*
U.S. Cl. 401—33 14 Claims

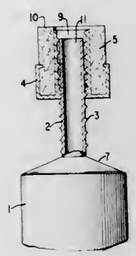


In a multi-tip writing instrument a clip, a push button or equivalent mechanism for projecting a writing tip, is provided with a hinged plate or swinging door for engaging the selected writing tip. The selector responds to gravity or inertial forces. Any suitable mechanism can keep the writing tip projected. Upon retraction, the push button or clip is retracted further than the writing tip to free the swinging door from engagement with the writing tips so that any new selection can be made by the hinged selector swinging to the desired writing point.

3,797,946
ADHESIVE SPREADER ASSEMBLY

Hans-Klaus Witzmann, Homburg/Saar, and Gabriella Kraus, Dusseldorf, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

Filed June 18, 1971, Ser. No. 154,270
Claims priority, application Germany, June 19, 1970, 2030196
Int. Cl. B43k *8/00*
U.S. Cl. 401—116 6 Claims



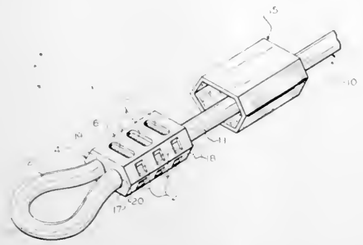
This invention relates to a spreader assembly for an adhesive container having an elongated dispenser neck comprising a holder containing a porous spreader adapted to adjustably, axially engage the elongated dispenser neck whereby the position of the holder containing said spreader can be adjusted relative to the dispenser neck.

3,797,947
IMPROVEMENTS IN SHEATHED CLAMPS FOR LOOPED CABLE ENDS

Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Nov. 30, 1972, Ser. No. 310,702
Int. Cl. F16g *11/00*
U.S. Cl. 403—23 3 Claims

An article protecting cable has polygonal inner clamps applied to contiguous portions of the cable inwardly of the looped end portions, said clamps being of a metal sufficiently malleable to permit swaging operations to form detents which project inwardly from all sides of the clamps to bite into and

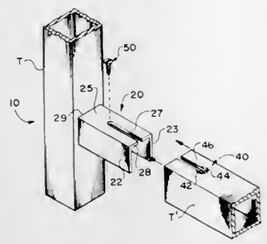


secure the cable extents which pass through the clamps. Covering the inner clamps and secured thereto are similarly shaped polygonal sheaths of a metal relatively harder than that of the clamps to resist cutting or deformation by a thief.

3,797,948
FASTENING MEANS FOR TUBULAR MEMBERS

Edwin Charles Weininger, 1508 Wendover Dr., High Point, N.C.

Filed Aug. 28, 1972, Ser. No. 284,278
Int. Cl. F16b *7/18*
U.S. Cl. 403—245 6 Claims

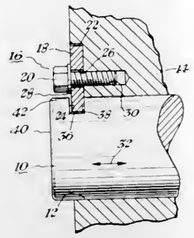


A channel-shaped member is attached at one end to a tubular member so that the channel may be axially inserted into another tubular member, thereby forming a construction unit for knock-down furniture supports. A longitudinally extending slot is provided in the channel-shaped member's web portion, extending through the web's outer edge and terminating short of its inner edge. When a spreading element such as a self-tapping screw is inserted into the longitudinally extending slot at any point along the longitudinal axis thereof, the channel member's spaced-apart walls are forced away from each other due to the weakening effect of the slot in the channel's web portion. Accordingly, the channel's spaced-apart walls make frictional engagement with the other tubular member's inner walls. A locking means associated with the other tubular member interlocks with the self-tapping screw. The other tubular member may be provided also with a longitudinal slot, extending from the outer edge thereof to and connecting with the locking means, which slot corresponds with the longitudinal slot provided in the channel-shaped member. As a result, the self-tapping screw may be prepositioned in place at the manufacturing location with field assembly consisting of merely sliding the other tubular member into place and tightening the screw.

3,797,949
KEEPER FOR RETAINING A PIN OR SHAFT

Andrew J. Petros, Oakdale, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed July 3, 1972, Ser. No. 268,896
Int. Cl. F16d *1/06*
U.S. Cl. 403—355 4 Claims

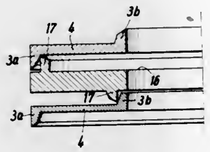


A keeper arrangement for a pin or shaft or the like, comprises a machine structure or like component having a counter-sunk recess intersecting a passage for the pin or shaft. The pin or shaft, when inserted into the passage, has a slot therein extending complementarily with the recess. A keeper plate is seated in the recess, where the plate is retained, and extends into the juxtaposed slot of the pin or shaft.

3,797,950
CONNECTING ARRANGEMENT

Hermann Ehrenberg, Michelstadt/Odenwald, Germany, assignor to Fouquet-Werk Frauz & Planck, Rottenburg a. Neckar, Germany

Continuation-in-part of Ser. No. 137,353, April 27, 1971, Pat. No. 3,679,245. This application Feb. 25, 1972, Ser. No. 229,517
Claims priority, application Germany, Mar. 2, 1971, 2109828; Mar. 2, 1971, 2109827; Mar. 17, 1971, 2112986
Int. Cl. B60b *27/06*
U.S. Cl. 403—370 17 Claims



A cylindrical inner member is coaxially and with clearance surrounded by an annular outer member, and in the clearance is located a connecting arrangement having one or more annular elements of elastically yieldable material, each such element having a transverse wall portion extending transverse to the longitudinal axis of the inner member, and an inner and an outer annular wall-portion extending in opposite directions axially of the clearance beyond the transverse wall portion by a predetermined distance. A stressing arrangement is provided for stressing the annular element axially so as to effect radial displacement of the annular wall portions into frictional engagement with the inner and outer member, respectively. The stressing arrangement includes a pair of annular stressing members located at opposite axial sides of the annular element in the clearance and each having a side facing the annular element and provided with at least one annular bead projecting axially by a distance which is slightly greater than the distance by which the annular wall portions project beyond the transverse wall portion.

3,797,951
WEARING COURSES OF STONE AND MASTIC ON PAVEMENTS

Gerhard Zichner, Bergisch Gladbach, Germany, assignor to Strabag Bau-A.G., Cologne-Deutz, Germany

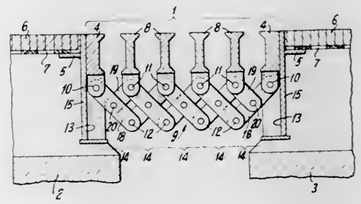
Filed Aug. 3, 1971, Ser. No. 168,662
Claims priority, application Germany, Aug. 10, 1970, 2039627
Int. Cl. E01c *11/24*
U.S. Cl. 404—19 17 Claims

A hot mixture of stone and mastic is applied to the road foundation and compacted. The quantity and fluidity of the mastic is such that during and after the compacting, the mastic flows into the interstices between the stones forming the wearing course as a layer of mastic substantially free of voids, in which the stones are embedded, and with stone protruding from the upper surface thereof.

3,797,952
ROADWAY TRANSITION FOR EXPANSION JOINTS ON ROAD BRIDGES ETC.

Karl Werner Pommerening, Dortmund-Niederhofen, and Rainer Salewski, Dortmund, both of Germany, assignors to Rheinstahl AG, Essen am Rheinstahlhaus, Germany

Filed Dec. 1, 1971, Ser. No. 203,683
Claims priority, application Germany, Jan. 26, 1971, 2103415
Int. Cl. E01c *11/14*
U.S. Cl. 404—52 11 Claims



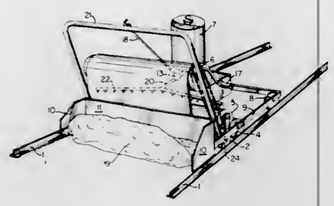
A roadway transition for expansion joints on road bridges and the like includes intermediate bars extending parallel to the joint edges. The bars are supported at at least two points along their lengths by vertically oriented lazy tongs having their hinges extending parallel to the joint edges, these lazy tongs forming supporting beams for the intermediate bars. The upper end hinges of the lazy tongs are fixedly articulated at points in the range of the joint edges, so that the upper and lower intermediate hinges are in common vertical planes, with the upper intermediate hinges lying, in any position of the lazy tongs, in the horizontal plane of the upper end hinges. Each intermediate bar has at least one supporting member engageable with another intermediate bar to prevent tilting. The lower end hinges of the lazy tongs may be mounted in vertical guide slots.

3,797,953

APPARATUS FOR THE LAYING AND ROLLING OUT OF COATING OR PAVING MATERIALS

Bertil Nils Lindskog, Backaskog, Sweden, assignor to System Research Inc., New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 83,012
Int. Cl. E01c *19/28*
U.S. Cl. 404—103 4 Claims



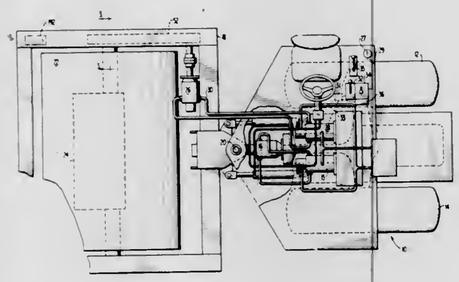
The present invention relates to an apparatus for laying and rolling out coating or paving materials, comprising a single means in the form of a roller for laying as well as rolling out and leveling fluid and solid materials within a wide range of temperatures, said roller having a shield plate to prevent the material being laid to pass over the overside of said roller.

3,797,954

GROUND COMPACTING APPARATUS

Jesse W. Harris, San Antonio, Tex., assignor to Tampo Manufacturing Company, San Antonio, Tex.

Continuation of Ser. No. 84,400, Oct. 27, 1970, abandoned. This application May 23, 1972, Ser. No. 256,195
Int. Cl. E01c *19/28*
U.S. Cl. 404—117 23 Claims



A method and apparatus for controlling the frequency of vibration of a vibratory compactor having a vibration producing means and a ground compaction member. The frequency of vibration of the compactor is varied to obtain approximately maximum compacting efficiency by varying the speed of cyclic movement of the vibration producing means in accordance with a detected phase relationship between the cyclic movement of the vibration producing means and the cyclic movement of the ground compacting member.

ERRATUM

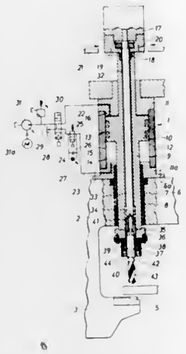
For Class 404—98 see:
Patent No. 3,797,958

3,797,955

BORING AND PUNCHING DEVICE

Werner Peddinghaus, Bruchhausen 21, Sprockhovel-Hassinghausen, and Ludwig Regnebrecht, Gevelsberg, both of Germany, assignors to said Peddinghaus, by said Regnebrecht

Filed Nov. 10, 1972, Ser. No. 305,545
Claims priority, application Germany, Nov. 12, 1971, 2156226
Int. Cl. B23b *47/22*
U.S. Cl. 408—20 9 Claims



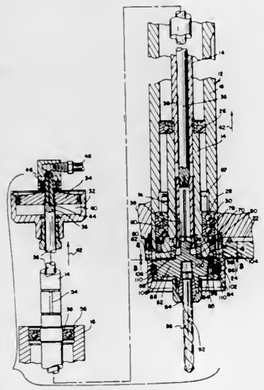
A boring and punching device in which a double acting fluid pressure operable piston is reciprocally mounted in a cylinder and divides the cylinder into two cylinder sections one of which is adapted per time unit to be acted upon by two different quantities of pressure fluid for boring and punching respectively. The device furthermore includes a connecting rod connected to the piston and having an axial passage therethrough through which extends a rotatable spindle. A tool holder is detachably and exchangeably connected to the lower end of the connecting rod and is adapted selectively to receive a punching tool or a boring tool which latter is adapted to be rotatably connected to the spindle.

3,797,956

MACHINE TOOL HOLDER AND DRIVING MEANS

Jack L. Bayer, 1640 E. Bethany Home Rd., Phoenix, Ariz., and Walter J. Breitkopk, 7720 E. Heatherbrae, Scottsdale, Ariz.

Filed Dec. 15, 1972, Ser. No. 315,610
Int. Cl. B23b *29/30*; B23c *1/00*
U.S. Cl. 408—35 7 Claims



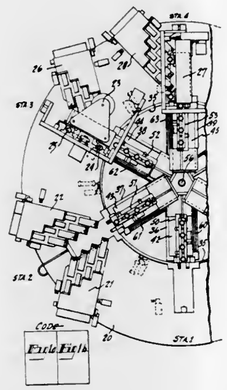
A machine tool holder and driving means for holding various tools such as drills, taps, milling cutters, etc., wherein a tool holder carries such a tool and is readily and easily removably connected to a driving spindle mechanism whereby several tools may be successively used and changed rapidly relative to said spindle mechanism; the tool holder having separate concentric means removably engageable with cooperative and conforming areas on the spindle mechanism for maintaining accurate concentric and axial alignment of the tool holder with the spindle, the said concentric means being disengageably held in accurate connection by a power operated draw bar in the spindle mechanism and spring loaded shear pin mechanism intermeshes between the tool holder and spindle to provide driving torque resistance; the said concentric means being devoid of conventional locking taper structure so as to be freely and accurately engageable and disengageable.

3,797,957

APPARATUS FOR SIMULTANEOUSLY DRILLING AND TAPPING A PLURALITY OF WORK PIECES AT EACH OF A PLURALITY OF POSITIONS

Nils Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Division of Ser. No. 118,218, Feb. 24, 1971, Pat. No. 3,733,142, which is a division of Ser. No. 763,043, Feb. 24, 1971, abandoned. This application Apr. 26, 1972, Ser. No. 247,573
Int. Cl. B23b *39/20*
U.S. Cl. 408—44 2 Claims



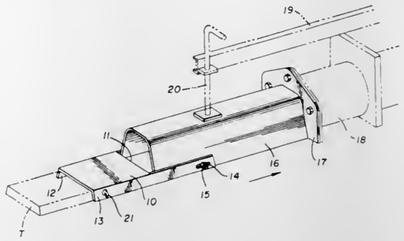
The apparatus, intended primarily for simultaneously drilling and tapping a plurality of work pieces at each of a plurality of working positions includes an annular table supporting a plurality of tapping and drilling assemblies at a plurality of spaced working positions. Rotably mounted within the annular table support is a turret having a plurality of radial arms on which are supported retractible work supporting shuttles movable toward and from working positions adjacent the tapping and drilling assemblies mounted on the annular table. Means are provided for rotating the turret to successive working positions. A novel clamp and positioning means are mounted on the shuttles for holding and accurately positioning a work supporting cartridge. Novel multiple spindle tapping and drilling assemblies permit tapping and drilling from different angles, simultaneously of a plurality of rigidly held work pieces mounted on the shuttles.

3,797,958

CUT OFF PLATE FOR CURBING MACHINES

Sante D. Lofaro, 30 Stanley Ave., Vienna, Ohio

Filed Oct. 6, 1972, Ser. No. 295,596
Int. Cl. E01c *11/28*
U.S. Cl. 404—98 3 Claims



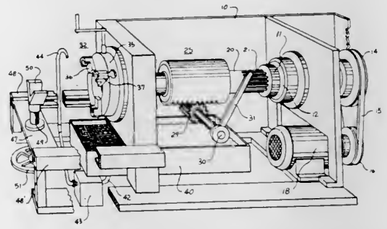
A cut off plate is removably disposed horizontally adjacent the outlet of the compaction shoe of a curbing machine useful in extruding asphalt or concrete curb. The cut off plate divides the extruded curb permitting the upper portion to be removed as desirable in forming driveway approaches and the like.

3,797,959

SHAFT CENTERING MACHINE

Floyd O. Davis, and Boyce W. Davis, both of 2326 E. Buckeye Rd., Phoenix, Ariz.

Filed Mar. 29, 1972, Ser. No. 239,055
Int. Cl. B23b *49/04*
U.S. Cl. 408—135 2 Claims



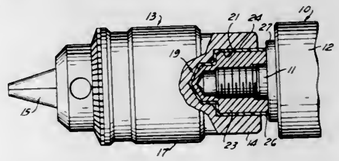
A machine for providing centering holes in shafts to be used on lathes which drills the holes in horizontally mounted shafts placed on a rack and moved into alignment with the cutting tool of the machine.

3,797,960

ELECTRICALLY INSULATED CHUCK FOR HAND-HELD DRILLS

Donald J. McCarthy, Wethersfield, Conn., assignor to The Jacobs Manufacturing Company, West Hartford, Conn.

Filed Feb. 23, 1972, Ser. No. 228,561
Int. Cl. B23b *31/12*
U.S. Cl. 408—240 2 Claims



A chuck including a rotatable metal body carrying jaws that are adjustable for holding a work bit. The body has a metal in-

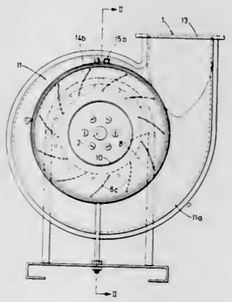
sert press fitted into a cavity for drivably coupling the body to the spindle of a hand-held drill. A coating of nylon plastics over the outer surface of the insert electrically insulates the body of the chuck from the insert and, as a consequence, from the spindle.

In a further embodiment, the spindle itself is coated with the nylon plastics material and is press fitted into the body of the chuck.

3,797,961
CENTRIFUGAL FAN

Heinrich Brechbuhl, Hombergstrasse 56, 3612 Steffisburg, Switzerland

Filed June 19, 1972, Ser. No. 264,243
Claims priority, application Switzerland, June 25, 1971, 9409/71
Int. Cl. F04d *29/40, 29/46, 29/50*
U.S. Cl. 415—126 **3 Claims**



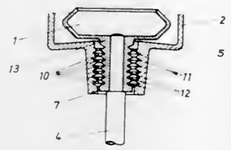
A centrifugal fan, the rotor of which is driven through the agency of a support plate from the drive shaft of a motor or from the shaft of a V-belt drive, and incorporating a housing having a drive opening, a suction connection and a pressure connection, and wherein the housing is formed of at least three components. The one housing component having the pressure connection can be shifted or displaced relative to the other two side components having the drive opening and the suction connection, and can be fixed by means of a holding mechanism in desired position. According to the invention, the rotor is detachably connected with the support plate, and the ring-shaped disks of the rotor having the buckets or blades each possess at least two holes arranged symmetrically with respect to one another and extending coaxially with respect to the axis of the rotor.

3,797,962
SPINNING TURBINE

Fritz Stahlecker, Bad Ueberkingen, Germany, assignor to Wilhelm Stahlecker GmbH, Reichenbach, Germany

Filed Jan. 25, 1972, Ser. No. 220,597
Claims priority, application Germany, Jan. 27, 1971, 2103718
Int. Cl. F04d *29/08*
U.S. Cl. 415—169 **13 Claims**

A spinning turbine in which the turbine itself is rotatable within a closed stationary housing in which a pressure below atmospheric is to be maintained. The shaft of the turbine which is to be rotatably mounted outside of the housing, preferably on indirect bearing means, extends through a slightly larger bore in the back wall of the housing or in an annular flange on this back wall so as to form an intermediate an-

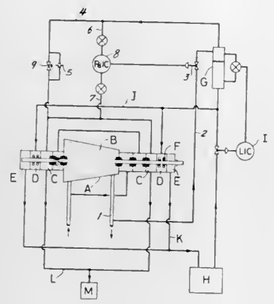


nular slot. One or both walls of the slot and/or the back wall of the turbine and/or the inner side of the back wall of the housing are provided with annular grooves which form air chambers to prevent air from passing from the outside to the interior of the housing.

3,797,963
SEALING APPARATUS FOR GAS COMPRESSOR

Takamasa Endo, 3-22-302 5-chome, and Shojiro Sugimura, 7436 Chikko, both of Tamano, Okayama, Japan

Filed Dec. 8, 1971, Ser. No. 205,918
Claims priority, application Japan, Dec. 16, 1970, 45-112107
Int. Cl. F01d *5/06*
U.S. Cl. 415—175 **1 Claim**



Apparatus for sealing the rotor shaft of gas compressor by sealing liquid fed under pressure comprising equalizing gas chambers, sealing liquid chambers, a head tank to feed the sealing liquid into the sealing liquid chambers, and means for regulating the pressure in the head tank according to the operating condition of the gas compressor.

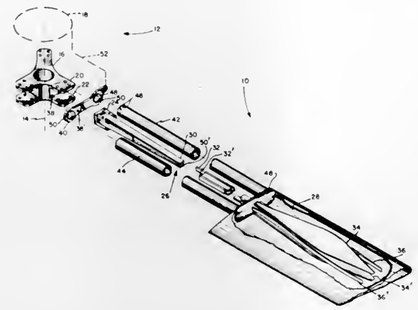
3,797,964
ROTARY WING APPARATUS

Thomas F. Hanson, 24204 Heritage Ln., Newhall, Calif.

Continuation-in-part of Ser. No. 832,366, June 11, 1969, abandoned. This application June 24, 1971, Ser. No. 156,307
Int. Cl. B64c *27/38*
U.S. Cl. 416—134 **10 Claims**

The specification discloses a novel wing, or blade, of the non-articulated or "rigid" type for a rotary wing aircraft. Ten-

sion, bending, and shear supporting elements such as bands of fibre glass are bonded in a force distributing manner to the body of the lifting blade and carried in a slender bonded fibre glass bundle-filler material assembly flexure arm from the inboard end of the lifting body to a hub attachment fixture. The

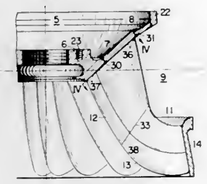


resultant flexure member is stiff in tension but torsionally relatively very soft. Torsional strength and pitch control to the blade is provided by a pair of torsionally rigid torque tubes in plane with and in a straddled relation with the tension arm flexure member.

3,797,965
WELDED TYPE FRANCIS RUNNER

Hidenori Tonooka; Tetsuo Okuni; Hideo Ito; Michitada Kawano; Tadashi Jimbo, all of Hitachi, and Shunichi Fukasu, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 854,220, Aug. 29, 1969, abandoned. This application May 24, 1971, Ser. No. 146,068
Int. Cl. F01d *5/14*
U.S. Cl. 416—186 **5 Claims**



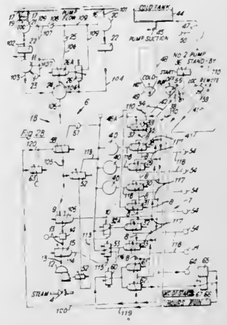
A welded type Francis runner adapted to be sectionalized into a plurality of units for transportation wherein the crown ring and the band ring of said runner are sectionalized along a plane in the direction of the axis of said runner, but the blades of said runner are not sectionalized.

3,797,966
CONTROL SYSTEM

Forrest Thomson Randell, Glasgow, Scotland, assignor to Weir Pumps Limited, Glasgow, Scotland

Filed Aug. 30, 1972, Ser. No. 284,876
Claims priority, application Great Britain, Sept. 10, 1971, 42256/71
Int. Cl. F04b *49/00*
U.S. Cl. 417—13 **11 Claims**

A control system for a pump installation comprising a primary feed back circuit including sensors measuring the fluid discharge pressure of the pump and possibly additionally the fluid flow in the pump discharge and regulating the speed of the pump drive to control said discharge pressure in dependence for example on the pressure requirements of boiler feed, and including additionally a secondary feed back circuit sensing further operating conditions in the pump installation e.g. water and oil pressures. The primary circuit delivers a

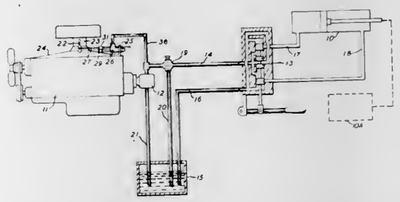


speed control signal for actuation of control valve means of the pump drive which may be for example a steam turbine, and the secondary circuit is coupled to a gate of the primary circuit whereby in the event of any of the further conditions being unsatisfactory the control signal is interrupted and the pump stopped.

3,797,967
HYDRAULIC THROTTLE ACTUATOR

David Franklin Howeth, 1207 Elizabeth Blvd., Granbury, Tex.

Continuation-in-part of Ser. No. 105,411, Jan. 11, 1971, abandoned. This application May 10, 1972, Ser. No. 252,005
Int. Cl. F04b *49/10, 49/02*
U.S. Cl. 417—34 **5 Claims**



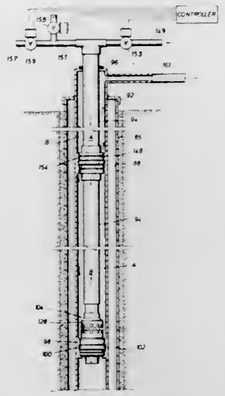
A throttle actuator for accelerating and decelerating the speed of an internal combustion engine in response to work demand where the engine drives the pump of a hydraulic system. In one aspect, the invention is directed to a throttle actuating piston and rod arrangement for operating the throttle of the engine and a pulsation intensifier for sensitively controlling the piston's movement. The pulsation intensifier is connected in a pressure line from the pump and comprises a free spring biased floating piston of configuration such that there is a differential in area across the piston for fluid pressure intensification purposes. The intensifier piston in one embodiment also has an axial passage therethrough and an orifice communicating with the throttle actuating piston. Both pistons are slidably mounted in housings which have springs to normally position the pistons in directions to cause the engine to return to idle speed when there is no work demand.

3,797,968

APPARATUS FOR FLOWING LIQUID FROM A WELL

Johnnie A. Elfarr, Palestine, Tex., assignor to William George, Jr., Palestine, Tex., a part interest

Filed Feb. 22, 1972, Ser. No. 228,012
Int. Cl. F04f *1/02*
U.S. Cl. 417—138 14 Claims



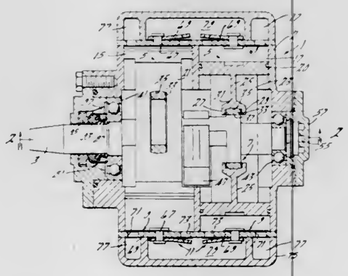
Apparatus for flowing fluid from wells such as oil wells and the like, utilizing gas displacement of fluid entering the well from an earth formation intersected by the well. Apparatus is utilized that enables the use of a simple downhole double check valve system that may be retrieved from the well for repair or replacement simply by removing the centermost conduit from the well thereby enabling the use of blowout proof safety mechanisms for such repair or replacement operations and eliminating the necessity of simultaneously removing all of the conduits or removing liquid filled tubing from the well.

3,797,969

REFRIGERANT COMPRESSOR

Herman R. Weatherhead, Dayton, Ohio, and William F. Gibson, Hayward, Wis., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 21, 1972, Ser. No. 282,639
Int. Cl. F04b *27/04*
U.S. Cl. 417—273 9 Claims



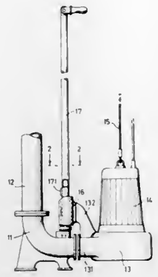
A compressor having two pairs of opposed pistons, the pistons of each pair being rigidly connected together for common reciprocable movement and yoke members connecting said pistons to a rotatable crankshaft.

3,797,970

ALIGNMENT MEANS FOR AN IMMERSIBLE PUMP

Albert Blum, Scheiderhohe, Siegkries, Germany

Filed June 8, 1971, Ser. No. 150,965
Int. Cl. F04b *17/00*
U.S. Cl. 417—360 5 Claims



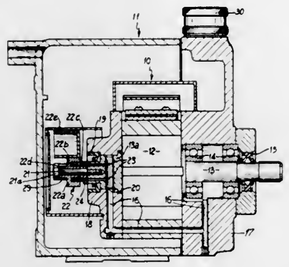
A guide means is provided for a pump such that the guide, affixed to a cylindrical guide pipe, engages a guide sleeve on a pump. The sleeve is so designed that the guide forces the pump into proper alignment with a delivery line.

3,797,971

ROTARY VACUUM PUMPS

Ian Watts, Bury, England, assignor to General Engineering Co. (Radcliffe) Limited, Radcliffe, Lancashire, England

Filed Apr. 13, 1972, Ser. No. 243,627
Claims priority, application Great Britain, Apr. 14, 1971, 9326/71
Int. Cl. F01c *21/04*; F04c *29/02*
U.S. Cl. 418—84 2 Claims



A rotary vacuum pump in which the pump shaft extends into a reservoir and is provided with a paddle element connected to a seal which can be located into and out of sealing contact with an oil feed passageway in the pump shaft to allow or prevent the passage of oil from the reservoir to the pump.

3,797,972

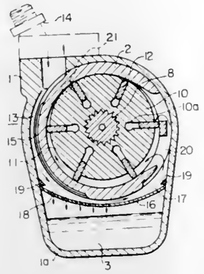
ROTARY VANE-TYPE GAS-COMPRESSOR

Shozo Nakayama; Masayuki Kurahashi, and Mitsuhiro Hattori, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya-shi, Aichi-ken, Japan.

Filed Apr. 2, 1971, Ser. No. 130,716
Claims priority, application Japan, Apr. 7, 1970, 45-29685
Int. Cl. F01c *21/04*; F04c *29/02*
U.S. Cl. 418—85 5 Claims

In a rotary vane-type gas compressor having an outer casing and a stator provided with a rotatable round rotor, a chamber for cooling the stator is formed between the compression side

peripheral wall of the stator and the outer casing, a baffle plate is disposed below the stator so as to form a part of the gas passage. The inlet aperture of the casing and the suction port



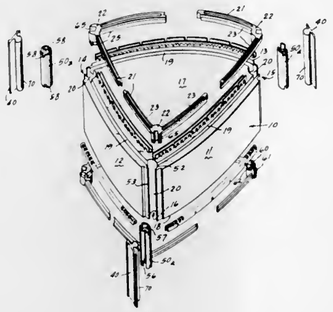
of the cylinder are connected by way of the cooling chamber and the gas passage below the stator. The baffle plate separates oil particles from the gas flow.

3,797,973

SLIPPER TYPE APEX SEAL FOR ROTARY PISTON ENGINE

Herbert F. Prasse, Town and Country; Harold E. McCormick, Ballwin, and William F. Ott, St. Louis, all of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Oct. 1, 1971, Ser. No. 185,582
Int. Cl. F01c *19/04*
U.S. Cl. 418—118 10 Claims



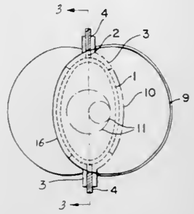
A T-shaped apex seal for rotary piston engines, the upright of the T being pivotally mountable in an apex seal groove of the multilobed rotor and the cross bar of the T having trochoid rotor chamber surface engaging raised sealing ribs lengthwise thereof and spaced a substantial distance to either side of the center line of the upright, with the rib at the leading side of the cross bar being spaced a greater distance from the center line than the rib at the trailing side of the cross bar. Grooves are provided alongside the apex seal groove to receive the side portions of the cross bar as it tilts relative to the seal groove in the pivotal movements of the apex seal as it follows the rotor chamber surface in the rotation of the rotor.

3,797,974

PACKING STRIP ARRANGEMENT FOR ROTARY PISTON ENGINES

Franz Huf, Konstanz, Germany, assignor to Dornier System GmbH, Friedrichshafen, Germany

Filed June 20, 1972, Ser. No. 264,486
Claims priority, application Germany, June 30, 1971, 2132521
Int. Cl. F01c *19/02*; F04c *15/00, 27/00*
U.S. Cl. 418—129 11 Claims



This invention relates to a packing strip arrangement for sealing the working chambers of rotary piston engines of trochoidal construction having a trochoidal piston rotor, a housing boundary shaped according to the coordinated outer envelope curve, and contracted portions with radial packing strips at said contracted portions, which comprises

sealing ring means in each of the lateral housing walls within the inner envelope curve described by the edge of the piston rotor, said sealing ring means being closed within themselves,

sealing element means starting from said sealing ring means, extending radially in the direction to the contracted points, and directly adjoining the radial packing strips at the outer ends thereof,

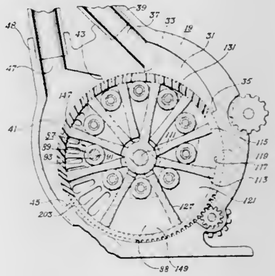
and curved transition element means which rest against said sealing ring means and guide said sealing element means in the radial direction.

3,797,975

ROTOR VANE MOTOR DEVICE

Leonard J. Keller, Sarasota, Fla., assignor to The Keller Corporation, Sarasota, Fla.

Filed Feb. 18, 1972, Ser. No. 227,393
Int. Cl. F01c *1/00, 19/00*; F04c *27/00*
U.S. Cl. 418—137 9 Claims



An eccentric rotor, concentric vane motor device characterized by one or more of the following improvements: (1) an improved seal structure for sealing between the vanes and rotor vane guides as they rotate and interdigitate the vanes within a main chamber; (2) an adjustable inlet aperture on a torque control sleeve to eliminate a throttle and its associated loss in efficiency; (3) adjustable exhaust apertures in an exhaust control to reduce losses from over- or under-expansion

of a working fluid flowing through the motor; (4) a combination of the adjustable inlet aperture and the adjustable exhaust apertures to enable optimum efficiency, including the supercharging capability, over a wide range of power and speed requirements; and (5) a vane tip seal intermediate the vane and the interior cylindrical surface of a main chamber within which the vanes rotate. The motor device is employed in a system, including a reversing valve arrangement, for reversing the direction of rotation of the motor; and has within it means for reversibly positioning the adjustable inlet apertures and the adjustable exhaust apertures. Also disclosed are specific embodiments useful for a wide variety of working fluids, regardless of whether or not the working fluids are recirculated.

3,797,976

OIL SEAL DEVICE FOR ROTARY PISTON INTERNAL COMBUSTION ENGINE

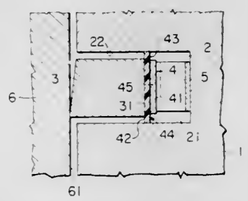
Sakai Moriya, Urawa; Shoji Suzuki, Tokyo, and Noriyuki Kurio, Hiroshima, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1972, Ser. No. 298,174

Claims priority, application Japan, Oct. 21, 1971, 46-96768

Int. Cl. F01c *19/12*

U.S. Cl. 418—142 **8 Claims**



An oil seal device of a rotary piston internal combustion engine whose rotor is formed with one or more oil seal grooves, has a spring disposed within the bottom of the oil seal groove of the rotor and has an intermediate ring provided with a seal element formed of rubber or synthetic resin at least on the inner and outer periphery thereof, disposed between the rear surface of an oil seal body and the spring.

3,797,977

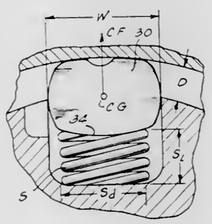
SLIPPER-TYPE PUMPING ELEMENT FOR A PUMP OR MOTOR

Robert E. Carlson, Livonia, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 13, 1972, Ser. No. 314,861

Int. Cl. F01c *1/00*

U.S. Cl. 418—267 **7 Claims**



A slipper vane sealed pump is proportioned in critical relationships between the pumping vane and the cam bore:

1. width to contact depth aspect ratio of 2.6 to 2.8;
2. circumferential contact arc to contact depth ratio of 1.4 to 1.9;
3. underslipper surface curvature within a range of 2½ to 5 percent of spring radius; and
4. a spring ratio of 1.55/1;

to afford improved noise and high speed durability characteristics.

3,797,978

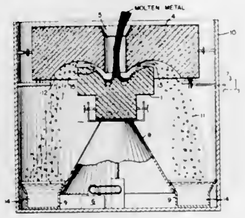
APPARATUS FOR PRODUCING SIZED FERROALLOY PARTICLES

Claude Frank Young, and Charles Martin Offenhauer, both of Niagara Falls, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 28,594, April 15, 1970, Pat. No. 3,660,544. This application Jan. 19, 1972, Ser. No. 219,099

Int. Cl. B29c *23/00*

U.S. Cl. 425—8 **6 Claims**



A process and apparatus for disintegrating a stream of molten ferroalloy into solidified spheroidal to spherical configurations for use as additives in metal producing furnace operations or the like.

3,797,979

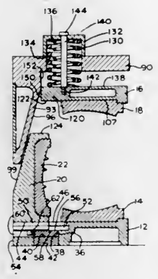
SEGMENTED TIRE MOLD APPARATUS

Alan Greenwood, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 148,670, June 1, 1971, abandoned. This application Mar. 14, 1972, Ser. No. 234,566

Int. Cl. B29h *5/02*

U.S. Cl. 425—47 **25 Claims**



Apparatus for molding tires providing means for actuating a segmented mold having two annular sidewall molds and a plurality of tread mold segments readily installed, removed, and interchanged therein. The segments are moved radially inwardly by a closing mechanism associated with or attached to a first part of the apparatus which carries one sidewall mold and a second mechanism, independent of the closing mechanism, for moving the respective tread molding segments to be moved further outwardly while permitting the segments to be moved further outwardly without limit. The latter mechanism is illustrated by a cam ring mounted for partial rotation or oscillation about the mold axis and which has a plurality of cam ramps which engage cam followers mounted respectively on the tread mold segments and disposed outwardly of the cam ring.

3,797,980

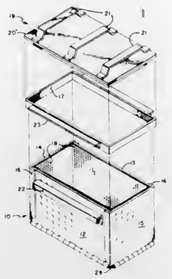
CHEESE MOLD WITH HINGED SIDE WALLS

Burnell E. Budahn, Norwood, Minn.

Filed Jan. 21, 1972, Ser. No. 219,777

Int. Cl. A01j *25/13*

U.S. Cl. 425—84 **7 Claims**



A cheese mold is provided having side and end walls pivotally joined to a bottom member with a pressing member providing closure of the mold. The bottom, pressing member, side and end walls each have plate members with raised projections on their inner facing surfaces that space a flat inner perforated member from each of the plates, thereby facilitating drainage of whey from the cheese. A construction which provides for stable stacking of molds is achieved.

3,797,981

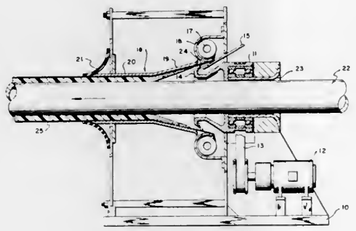
APPARATUS FOR CONTINUOUSLY PRODUCING TUBULAR FOAMED POLYURETHANE INSULATION

Jan C. Van Dijk, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 815,129, April 10, 1969, Pat. No. 3,733,382. This application Oct. 25, 1972, Ser. No. 300,695

Int. Cl. B29d *27/00*

U.S. Cl. 425—110 **3 Claims**



Apparatus for continuously producing tubular foamed polyurethane insulation in which a liquid foamable polyurethane composition is supplied to a rotary ring dispenser which centrifugally sprays the liquid onto a flexible sleeve positioned around and spaced from a pipe. The sleeve and dispensed liquid are moved axially relative to the dispenser and the outer surface of the sleeve is supported while the liquid foams and expands radially to fill the space between the pipe and the sleeve.

3,797,982

EXTRUDER OUTPUT MULTIPLIER

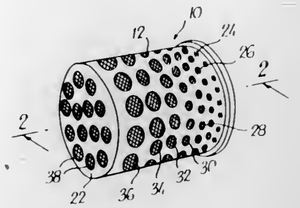
Giuseppe Borrello, Anzio, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 8, 1972, Ser. No. 251,146

Claims priority, application Italy, May 26, 1971, 50589/71

Int. Cl. B29f *3/00*

U.S. Cl. 425—198 **6 Claims**



A cylindrical extrusion head having a series of varied size, multiple outlet orifices is used to multiply the output of an extruder.

3,797,983

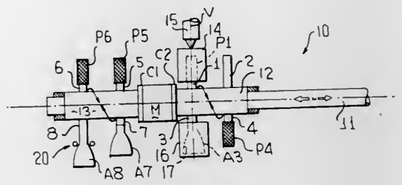
APPARATUS FOR INJECTION BLOW MOLDING PLASTIC ARTICLES

Edmund H. Merz, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,334

Int. Cl. B29c *17/07*

U.S. Cl. 425—242 B **10 Claims**



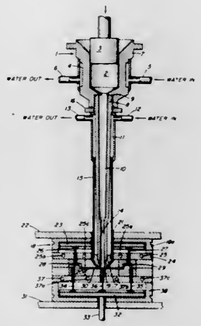
This disclosure relates to apparatus for molding plastic articles, such as bottles or jugs, by forming a plurality of parisons, expanding the parisons, and between the forming and expanding steps reciprocating and rotating at least one of the parisons to cool it during movement between forming and expanding stations at a rate which will maintain optimum overall cycle time whereby the degree of orientation retained in the blown article is greater than heretofore provided because of the extra cooling time involved. Preferably the apparatus includes a pair of supporting members, cores or blow sticks carried by the supporting members upon which the parisons are injected, and means for separately rotating each of the core supporting members to present each parison to a blow station with the pair of core supporting members being additionally reciprocated in a selective fashion to maintain optimum parison cooling and overall machine cycle time.

3,797,984

COLD SPRUE INJECTION MOLDING DEVICE WITH INTEGRAL SPRUE CHAMBER AND INJECTION NOZZLE

John Gerald Yago, 2325 Belvedere Dr., Toledo, Ohio; Robert George Haas, 13483 Five Point Rd., Perrysburg, Ohio, and George Bruckner Rheinfrank, 228 E. Front St., Perrysburg, Ohio

Continuation-in-part of Ser. No. 63,564, Aug. 13, 1970, abandoned. This application July 25, 1972, Ser. No. 274,934
Int. Cl. B29g *3/00*
U.S. Cl. 425—243 1 Claim



There is provided a cold sprue injection molding device with a sprue chamber integral with the nozzle, together with suitable temperature controlling means, such as a liquid jacket, to maintain temperature in the sprue chamber sufficiently low so that with a thermosetting resin, the resin does not cure before injection at the parting line of a two-part split mold. Specifically, the device comprises a ram-type injection feeder means and means for maintaining a predetermined temperature in said feed means, said device being in contact with a split mold with means for maintaining molding temperatures therein. More specifically, the device comprises a plasticizing and sprue chamber and an injection nozzle as a single unit positioned to direct molding composition feed through the nozzle terminating at the parting line of a sprue chamber-free split mold, said sprue chamber-injection nozzle unit being positioned independent of the mold and being detachably removable therefrom, wherein the tip of the nozzle of said unit terminates at the parting line of the split mold; means for maintaining non-curing molding temperatures in said plasticizing and sprue chamber-injection nozzle unit, said means extending to a point from about one-eighth inch to one-half inch from the nozzle tip; and a split mold in which one of the two sections thereof contains partially positioned therein the said detachably removable sprue chamber-injection nozzle unit, said mold having means therein for maintaining curing temperatures for the molding composition.

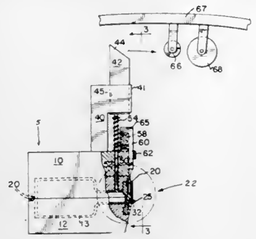
3,797,985

EXCESS PARISON REMOVER

Edward B. Garver, Merrionette Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,029
Int. Cl. B29d *23/03*
U.S. Cl. 425—305 B 8 Claims

Apparatus for use in combination with an extrusion blow mold process for disposing of excess extruded tubular material not utilized within the mold. Such apparatus includes metallic means carried by the mold halves for grasping and cooling the



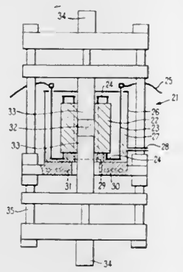
free end of such extruded material, and means for controllably releasing such material at an appropriate location within the cycle of the molding apparatus.

3,797,986

DEVICE FOR HOT PRESSING OF CERAMIC MATERIALS

Harald Onder, Wetzikon, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed Oct. 4, 1972, Ser. No. 294,830
Claims priority, application Switzerland, Oct. 7, 1971, 14623/71
Int. Cl. B28b *3/08*
U.S. Cl. 425—352 4 Claims



A device for hot pressing of ceramic materials in powder form or fine granular form, comprising a mold defining a longitudinal cavity and built up of graphite plates arranged in succession along its length each plate lying perpendicular to the wall of the mold cavity, at least one layer between each plate and the next, these layers being resistant to high temperature, electrically ensulating, and ceasing at some distance from the wall of the mold cavity, and electrically conducting carbon material filling the slots thus resulting in the wall of the mold cavity.

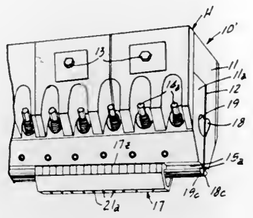
3,797,987

COEXTRUSION APPARATUS FOR FLAT FILM

George J. Marion, 691 E. Boot Rd., West Chester, Pa.

Continuation-in-part of Ser. No. 861,047, Sept. 25, 1969. This application Feb. 4, 1972, Ser. No. 223,436
Int. Cl. A01j *21/00*
U.S. Cl. 425—463 24 Claims

A dual outlet coextrusion flat film die assembly for various thermo-extrudable materials includes split manifold chambers separated from each other by a rigid plate that can include heat insulating means to prevent heat transfer between the manifolds. Each manifold is tapered toward its own die mouth; has separate melt inlets adapted for center, top or end feed operations; has separate pre-land and final land surfaces leading to individual outlet openings for precise control of melt flow; and has separate heat control means allowing precise temperature control for each melt as it flows throughout the die. Temperature differentials ranging from 0° to 200° F. are obtainable between the extruded layers. A differential push-



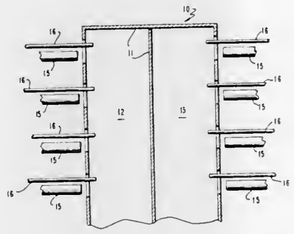
pull adjustment system for a movable lip of each outlet opening includes opposed alternatingly staggered thimble bolts for precise control of each individual layer profile. Methods of laminating the extruded layers to each other as well as to other substrates are included.

3,797,988

BOILER BURNER BALANCING COUNTER CONTROL SYSTEM

Cecil W. Davidson, P.O. Box 373, Anna, Tex.

Continuation-in-part of Ser. No. 170,854, Aug. 11, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,644
Int. Cl. F23n *5/00*
U.S. Cl. 431—12 11 Claims



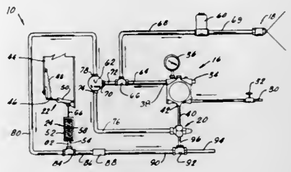
The number of burners in operation in each of a plurality of banks of burners that are used for heating a furnace boiler are electronically counted by sensors monitoring the combustion regions of the burners and corresponding transistor circuits the combined output of which converts the voltage of common circuits corresponding to each bank, depending upon the total number of burners actually in operation in each bank; applying the corresponding voltage outputs of the common circuits by way of an adder/subtractor amplifier to selectively programmed electronic voltage comparators, and utilizing the outputs thereof with heat load-demand requirement signals as input logic to AND-gates for continuously controlling the number of burners in operation, as well as keeping them balanced, by automatically opening and/or closing a preselected number of fuel supply valves to the burners depending on the programming of the comparators, to maintain the number of burners in operation in the banks equal.

3,797,989

BURNER CONTROL SYSTEM

Merrill K. Gordon, Winfield, Kans., assignor to Peabody Gordon-Piatt, Inc., Winfield, Kans.

Filed Nov. 20, 1972, Ser. No. 308,182
Int. Cl. F23n *3/00*
U.S. Cl. 431—90 9 Claims



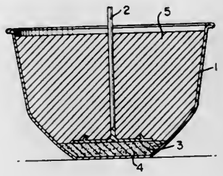
A burner control for a system having fluid burner, a pump, a nozzle, an air control louver with a fluid operator and a fluid bypass. A main valve connects the pump and the nozzle. A second valve connects the pump, the main valve, the louver operator and the fluid bypass, and additionally the louver operator connects with the fluid bypass. The control in operation controls the operator of an air louver apparatus and fluid flow through the nozzle and the bypass in a low fire condition and a high fire condition.

3,797,990

CANDLE

Jack M. Ogers, Fairlawn, N.J.; Charles Porter, Monroe, and Ronald A. Matesevac, Tuxedo, both of N.Y., assignors to Avon Products, Suffern, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,801
Int. Cl. F23d *3/16*
U.S. Cl. 431—291 10 Claims



A candle comprising a container having therein a candle wax layer, a wick extending through said candle wax layer and above the upper surface thereof, and a safety wax capable of melting at the temperature generated by the wick but non-flammable at such temperatures; in the molten state said safety wax having a specific gravity greater than that of the candle wax.

3,797,991

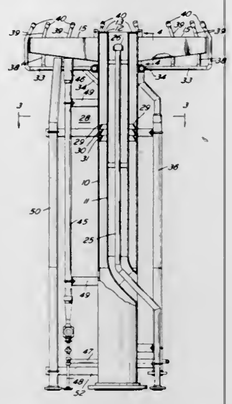
FLARE BURNER

John F. Straitz, III, Jenkintown, Pa., assignor to Combustion Unlimited, Incorporated, Elkins Park, Pa.

Filed Jan. 8, 1973, Ser. No. 321,941
Int. Cl. F23b *5/00*
U.S. Cl. 431—202 10 Claims

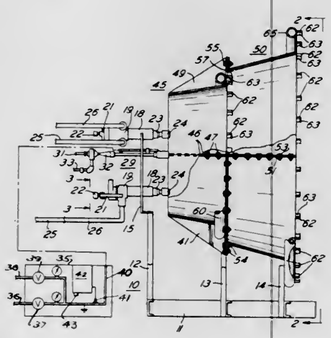
A flare burner for waste combustible gases from oil refineries and the like is disclosed which includes a stack for the gases with central air duct and steam pipe, the stack having outwardly extending vanes with gas delivery slots, the tops of the vanes being angularly disposed in a plane with respect to radial lines through the center of the stack for a swirling action

of the burning gas. The stack has a closure plate with flame retention openings. An interior back flow preventing diode can be employed and also an optional steam ring with steam



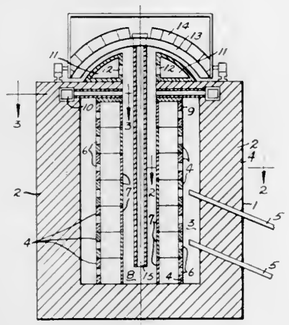
delivery pipes along the vanes and with angularly disposed tips to enhance the swirling action of the burning gas. Ignitors and pilots are shown.

3,797,992
CRUDE OIL BURNER
John F. Straitz, III, Jenkintown, Pa., assignor to Combustion Unlimited, Incorporated, Elkins Park, Pa.
Filed Dec. 15, 1972, Ser. No. 315,339
Int. Cl. F23q *9/00*
U.S. Cl. 431—285 **8 Claims**



A crude oil burner is provided particularly suited for offshore oil well testing,having a plurality of aligned and spaced air cones to the rear end of which crude oil is delivered, and into which air is induced. Air is also available at the space between the cones and at the front of the front cone. Water is sprayed into the flame from a ring at the rear of the front cone and beyond the front of the front cone from a ring at the front of the front cone to provide smokeless combustion.

3,797,993
TUNNEL KILN
Kurt Heldt, Kronberg, and Hans Lappe, Frankfurt, both of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany
Filed June 22, 1972, Ser. No. 265,304
Claims priority, application Germany, July 7, 1971, 2133762
Int. Cl. F27b *5/14, 9/00*
U.S. Cl. 432—212 **8 Claims**



There is provided a flame heated tunnel kiln for the firing or sintering of elongated ceramic molded articles. The articles are arranged in hanging fashion on a moveable arched cover over the upper shaft opening of the kiln. The kiln comprises a tunnel chamber having separating side walls opening outwardly into the flame zone in the region of the firing zone. There are also provided thin walled, fire resistant hollow blocks in said region. These hollow blocks are arranged so that they prevent relative movement to each other transversly of the furnace axis. Openings are provided in the blocks, burners are directed toward such openings. Hot gasses are removed in a composition below a cool air flow channel which is bounded by the upper tunnel chamber and opens thereto and a gap is provided for the inflow of outer air between the arched cover and the outer contour of the cool air flow channel.

CHEMICAL

3,797,994
HAIR COLORING COMPOSITIONS CONTAINING ORGANIC ACID ANHYDRIDE-DYE POLYMERS
Gregoire Kalopissis, Paris, France, assignor to Societe anonyme dite: L'Oreal, Paris, France
Continuation-in-part of Ser. No. 576,839, Sept. 2, 1966, Pat. No. 3,617,165, which is a continuation-in-part of Ser. No. 523,525, Jan. 28, 1966, Pat. No. 3,619,101, which is a continuation-in-part of Ser. No. 227,542, Oct. 1, 1962, abandoned. This application Mar. 19, 1971, Ser. No. 126,349
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 **7 Claims**

This invention relates to hair dye compositions which comprise a solution of a colored polymer in a solvent selected from the group consisting of water, alcohol and their mixtures.

3,797,995
POLYESTER TEXTILE FIBERS DYED WITH ALPHA-AMINOANTHRAQUINONE DYES
Edgar E. Renfrew, and Raouf Botros, both of Lock Haven, Pa., assignors to American Aniline Products, Inc., Paterson, N.J.
Continuation-in-part of Ser. No. 80,172, Oct. 12, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 294,161
Int. Cl. D06p *3/52;* **C09b** *1/28*
U.S. Cl. 8—39 **8 Claims**

Anthraquinone dyes are made by the reaction of anthraquinone intermediates, substituted in each of the alpha positions with a hydroxyl group or an amino group and containing at least one α-amino group, with an aralkyl alcohol, such as benzyl alcohol, in sulfuric acid medium preceded by or followed by halogenation. Synthetic textile fibers, in particular, polyethylene terephthalate fibers, when dyed with the new dyes are colored in blue shades which are substantive, light fast, sublimation resistant and retain their shade well when viewed under different light sources.

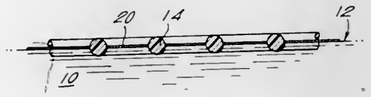
3,797,996
PROCESS FOR TREATING FABRICS AND FABRICS OBTAINED THEREFROM
Razmic S. Gregorian, Aiken, S.C., and Hans R. Hoernle, Augusta, Ga., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.
Filed Dec. 17, 1971, Ser. No. 209,456
Int. Cl. D06m *15/20*
U.S. Cl. 8—114.5 **4 Claims**

The process for producing unusual effects in a three-component fabric having a facing component having upstanding fibers, a backing component and a water-insoluble interlayer component securing the facing component to the backing wherein the entire facing component, the entire backing component, or both the entire facing and backing components are subjected to chemically promoted shrinkage. Laminates obtained are described.

3,797,997
METHOD FOR FIXING THE SHAPE OF TEXTILE MATERIALS
Henry Douglas Feldtman, Point Lonsdale, and Barry Edwin Fleischfresser, Belmont, Victoria, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Melbourne, Victoria, Australia
Filed Oct. 26, 1970, Ser. No. 84,251
Claims priority, application Australia, Nov. 6, 1969, 63436/69; May 14, 1970, 1207/70
Int. Cl. D06m *3/10, 3/06, 15/16*
U.S. Cl. 8—127.6 **6 Claims**

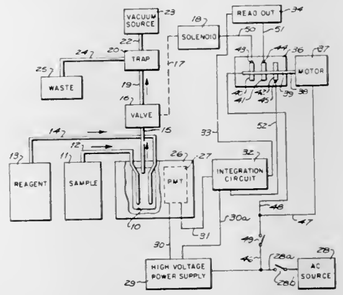
Textile materials consisting of or containing wool or other keratinous fibres are maintained, without external restraint, in a cohesively set configuration by depositing on the materials a substance that renders the materials resistant to loss of cohesive set during subsequent treatments to establish permanent set in the material.

3,797,998
METHOD FOR AFFECTING A CONDITION OF A BOUNDARY LAYER OF GAS OR VAPOUR AT A SURFACE OF A BODY OF LIQUID
Hector Roland Bourne, 8 Wellesley Rd., Hawthorn, and Bruce Cameron Brown, 84 Marianne Way, Victoria, both of Australia
Filed July 7, 1971, Ser. No. 160,482
Claims priority, application Australia, July 7, 1970, 1751/70
Int. Cl. B01j *1/18*
U.S. Cl. 21—60.5 R **8 Claims**



A method of reducing evaporation from a water storage by use of a meshwork such as a plastics net which may be laid over the water or on the surface thereof. In the preferred method, the net is laid on the surface and a barrier layer of an oily or other film-forming liquid is located in the meshes.

3,797,999
METHOD AND APPARATUS FOR INDICATING MICRO-ORGANIC MATTER BY MEANS OF CHEMILUMINESCENCE
Samuel Witz, Los Angeles, and Rudolph H. Moyer, West Covina, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed May 20, 1970, Ser. No. 39,061
Int. Cl. G01n *33/00, 33/04, 33/16*
U.S. Cl. 23—230 R **13 Claims**



The presence and relative quantity of porphyrin-containing micro-organic matter such as bacteria, tissue cells and the like

are indicated by drawing material from a container of the porphyrin-containing sample under test and also from a container of a reagent simultaneously into and through a reactor cell, by means of a vacuum source. The reagent is of a character, such as a mixture of luminol and hydrogen peroxide, which upon contact with the micro-organic matter produces chemiluminescence. A photomultiplier tube housed in proximity to the reactor cell senses the chemiluminescence and produces an electrical output which is suitably amplified and integrated and read on a read-out device such as a voltmeter.

3,798,000

AGENT AND METHOD FOR DETERMINATION OF CALCIUM

Roland Helger, Darmstadt, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

Filed Aug. 14, 1972, Ser. No. 280,174

Claims priority, application Germany, Sept. 3, 1971, 2144136

Int. Cl. C09k *3/00;* **G01n** *31/00, 33/00*

U.S. Cl. 23—230 R **7 Claims**

An agent for the colorimetric determination of calcium, containing a color reagent, which forms complexes in the presence of calcium ions, and a buffer system which consists essentially of a mixture of amidosulfonic acid, disodium tetraborate and alkali carbonate.

3,798,001

APPARATUS AND METHOD FOR DISCERNING AN INDICATOR REACTION POINT

Peter Naumann, Stockelsdorf, and Hans Moller, Lubeck, both of Germany, assignors to Dragerwerk Aktiengesellschaft, Lubeck, Maislinger Allee, Germany

Filed Mar. 29, 1972, Ser. No. 239,233

Claims priority, application Germany, May 7, 1971, 2122586

Int. Cl. G01n *21/06*

U.S. Cl. 23—232 R **6 Claims**

A method for readily discerning an indicator reaction point between an indicator preparation having a first color and a reaction substance which is to be identified and which has a second different color where the reaction is such that there is a third color formed in a transition between the first two colors comprises passing the substance to be identified through a transparent vessel having an indicator preparation therein, and observing the separating line between the first and second colors by viewing through the third color so as to obscure the third color. A device which may be used for such testing comprises, for example, a test tube having a transparent wall of a color comparable to the color of transition between the first and second colors so that when viewing through the test tube, the transition color is obscured and the separation between the first and second color becomes clear. The tube may be formed with the wall of the third color or a transparent foil of the third color may be wrapped around the exterior surface thereof.

3,798,002

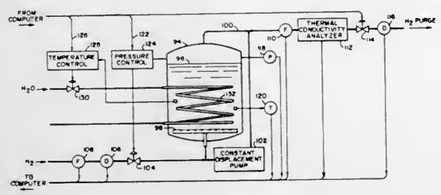
COMPUTER CONTROL SYSTEM FOR REFINING AND HYDROGENATION OF UNSATURATED HYDROCARBONS

Richard E. Putman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 885,405, Dec. 16, 1969, Pat. No. 3,653,842. This application Dec. 14, 1971, Ser. No. 208,008

Int. Cl. B01j *1/00;* **C07c** *3/12;* **G01n** *27/00*

U.S. Cl. 23—253 A **4 Claims**



Described is a control system for a refining hydrogenation and deodorizing plant for edible oils and the like wherein various system variables are converted into signals which are fed to a computer which controls the system to optimize performance and reduce oil losses.

3,798,003

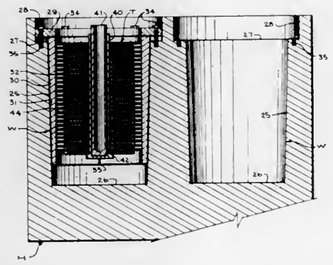
DIFFERENTIAL MICROCALORIMETER

E. Keith Ensley, Sherman Hill Estates, Laramie, Wyo., and Henry A. Scholz, Rt. 8, Box 310, Silver City, N. Mex.

Filed Feb. 14, 1972, Ser. No. 225,718

Int. Cl. G01k *17/00;* **G01n** *25/20*

U.S. Cl. 23—253 R **8 Claims**



A differential microcalorimeter having a pair of cylindrical thermopiles with a tubular test cell, axially carried within each

thermopile. Each thermopile is fitted into an internally cylindrical, externally tapered, longitudinally segmented sleeve. The sleeve is fitted into a tapered well in a heat sink. Pressure against the sleeve to thrust it into the well reduces its diameter to more effectively grip the thermopile. The thermopile is a laminated arrangement of spacers and disk-shaped thermocouple members. Each spacer includes an inner ring gripping the core, an outer ring gripped by the wall of the sleeve and an intermediate insulator washer. Each thermocouple member consists of a disk-shaped insulator about which thermocouple wires are wrapped with the inner edge of the wires being supported upon the inner rings of the spacers and the outer edges supported upon the outer rings thereof. To effectively transmit heat from the core to the inner spacer rings through the wires to the outer spacer rings and to the heat sink, the inner spacer rings are slotted and tightly grip the core of the thermopile. The outer spacer rings are also slotted, and each outer spacer ring is thereby tightly gripped by the sleeve when the sleeve is reduced in diameter regardless of the possibility of variations in the outside diameter of the outer spacer rings. The spacer rings are anodized to insulate them from the thermocouple wires which rest against them.

3,798,004

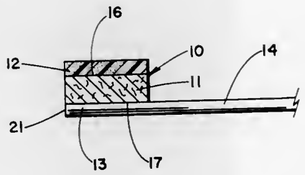
TEST DEVICE

Avraham Zerachia; Natan Friedgut, and Gary Steinman, all of Jerusalem, Israel, assignors to Ames-Yissum, Ltd., Givat Shaul, Jerusalem, Israel

Filed Apr. 18, 1972, Ser. No. 245,242

Int. Cl. G01n *21/06, 21/20*

U.S. Cl. 23—253 TP **7 Claims**



An improved dip and read type test device having a flat bibulous matrix having an indicator incorporated therewith, the matrix being disposed between and attached to a pair of liquid impervious members and having exposed peripheral edge portions such that upon immersion into a solution containing material to which said indicator is responsive, flow of said solution into said matrix through said edge portions causes formation of measurable visible indicia pattern on the matrix.

3,798,005

APPARATUS FOR OBTAINING HYDROGEN

Christian Koch, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Erlanger & Berlin, Germany

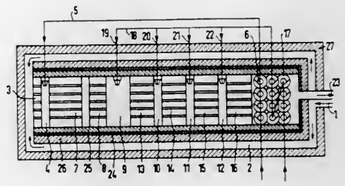
Filed Dec. 15, 1970, Ser. No. 98,264

Claims priority, application Germany, Dec. 24, 1969, 1964810

Int. Cl. B01j *9/04;* **C01b** *2/10*

U.S. Cl. 23—288 R **9 Claims**

A hydrocarbon and air mixture or a hydrocarbon and oxygen mixture is incompletely catalytically burned, in a highly porous sinter block or stone containing nickel or platinum. The block is provided with passage openings. The thus obtained gas mixture which consists, mainly of CO and H_2 is brought by means of at least one quenching with H_2O down to temperatures of 500° to 150°C and subsequently reacted with the formed water vapor in sinter blocks which are highly



porous, contain conversion catalysts and are provided with preferably parallel passage openings.

3,798,006

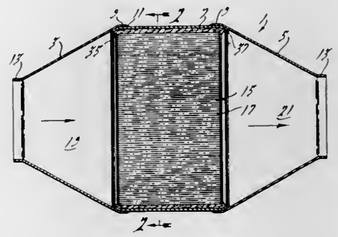
CATALYTIC CONVERTER FOR EXHUAST GASES

Robert N. Balluff, Rives Junction, Mich., assignor to Tenneco, Inc., Racine, Wis.

Filed Dec. 14, 1971, Ser. No. 207,793

Int. Cl. F01n *3/14;* **B01j** *9/04*

U.S. Cl. 23—288 F **17 Claims**



A catalytic converter adapted for use in the exhuast systems of internal combustion engines comprises a housing including as a part thereof a tubular shell having a differentially hardened fibrous lining to resiliently support, insulate, and secure a monolithic type catalyst element. The ends of the tubular shell and the fibrous lining are angularly deformed inwardly to protect the corners of the catalyst, to minimize gas impingement on the fibrous material, and to mechanically retain the catalyst in position.

3,798,007

METHOD AND APPARATUS FOR PRODUCING LARGE DIAMETER MONOCRYSTALS

Raymond A. Bochman; Ralph G. Dessauer, both of Poughkeepsie, and Dian P. Jen, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

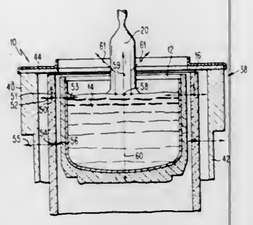
Filed Dec. 5, 1969, Ser. No. 882,571

Int. Cl. B01j *17/18*

U.S. Cl. 23—301 SP **17 Claims**

An improved method and apparatus for producing large diameter semiconductor crystals by the Czochralski process wherein a relatively flat temperature profile is maintained within the melt by adding heat to the sides and top of the melt while simultaneously removing heat from the melt through the crystal being pulled and the lower portion of the melt. In the apparatus, the temperature profile is maintained with a deflector to direct heat energy to the top surface of the melt about

the crystal being pulled, a heat exchange element to facilitate removal of heat through the crystal being pulled, and means to



remove heat through the lower portion of the crucible containing the melt.

3,798,008

RETENTIVE TUNGSTEN BODY CONTAINING 20–50 PPM TITANIUM AND/OR ZIRCONIUM

Gyorgy Baktai; Sandor Saly; Benedek Orlik, and Jeno Neugebauer, all of Budapest, Hungary, assignors to Egyesult Izzolampa es Villamossagi Reszvenytarsasag, Budapest, Hungary

Filed Sept. 12, 1972, Ser. No. 288,289
Int. Cl. C22c *27/00, 1/04*
U.S. Cl. 29—182 3 Claims

Retentive (shape-retaining) tungsten bodies - e.g., coils - can be manufactured, if the tungsten contains besides the conventional additives /e.g., Si, K, Al etc./ Ti and/or Zr as additional additives in a quantity of the order of magnitude of 20–500 ppm. Such coils sustain their retentivity at high temperatures even for long periods.

3,798,009

HARD SINTERED COMPOSITION

Susumu Yamaya, Tokyo; Takeshi Sadahiro, Yokohama, both of Japan, assignors to Toshiba Tungaloy Co., Ltd., Isukagoshi, Kawasaki-shi, Japan

Filed Dec. 15, 1971, Ser. No. 208,064
Claims priority, application Japan, Oct. 1, 1971, 46-76313
Int. Cl. G22c *29/00*; B22f *3/12*
U.S. Cl. 29—182.7 3 Claims

The addition of up to 5 wt.% of zirconium carbide to hard sintered compositions of the titanium carbide type used in cutting tools for machining metals reduces cratering and plowing when machining metals at high speeds.

3,798,010

EXPLOSION BONDED ALUMINUM TO STEEL

William F. Sharp, Jr., Bellmawr, and Thomas F. Enright, Woodbury Heights, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 695,506, Jan. 3, 1968, abandoned, and is a division of Ser. No. 756,704, July 30, 1968, Pat. No. 3,583,062. This application Feb. 11, 1971, Ser. No. 114,662
Int. Cl. B23p *3/00*
U.S. Cl. 29—196.2 4 Claims

Composite products of certain aluminum and steel layers metallurgically bonded together over at least 90 percent of their interface by a substantially diffusionless wavy bond containing, by area, at least about 70 percent direct aluminum-to-steel bonding are prepared by an improved explosion-bonding process wherein at least one layer of aluminum is caused to

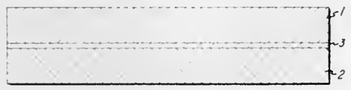
collide progressively with a layer of steel at a velocity of about from 2,500 to 3,400 meters/sec. and at an impact angle of about from 14° to 25°, the opposed surfaces of said layers being disposed at an angle of less than 5° prior to detonation of said explosive.

3,798,011

MULTILAYERED METAL COMPOSITE

William F. Sharp, Jr., Bellmawr, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 795,505, Jan. 31, 1969, abandoned. This application Jan. 26, 1970, Ser. No. 5,990
Int. Cl. B32b *15/00*
U.S. Cl. 29—197 4 Claims



Interlayers of malleable tantalum-, columbium-, aluminum-, or titanium-base metals are employed between layers of high-yield-strength aluminum-, titanium-, or zirconium-base metals and dissimilar layers of high-yield-strength-iron-, nickel-, or aluminum-base metals to provide metallurgically bonded metal composites having good shear strength and superior resistance to impact loading. The composites are useful, e.g., as transition joints, and are used to best advantage where gas-tight tubular transition joints are required. Transition joints composed of high-yield-strength titanium- or aluminum-base metals bonded to high-yield-strength stainless steel via an interlayer of tantalum- or columbium-base metal exhibit outstanding low-temperature properties, and composites of high-yield-strength zirconium-base metals bonded to such stainless steels via the same interlayers make superior transition joints for nuclear applications.

3,798,012

COMBUSTION PROCESS AND FUEL COMPOSITIONS

William Monroe Le Suer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 89,031, Nov. 12, 1970, abandoned, which is a continuation of Ser. No. 700,301, Jan. 24, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 474,479, July 23, 1965, abandoned, and Ser. No. 468,558, Sept. 10, 1965, abandoned, and Ser. No. 665,934, Sept. 6, 1967, abandoned, which is a continuation of Ser. No. 394,337, Sept. 3, 1934, abandoned. This application June 9, 1971, Ser. No. 151,538
Int. Cl. C10l *1/18, 1/30, 1/32*
U.S. Cl. 44—51 22 Claims

The invention disclosed herein is directed to an improved combustion process whereby the fuel is efficiently utilized and

the formation of undesirable exhaust smoke is reduced. The combustion process comprises the burning of a fuel in which there is incorporated a small amount of metal salts having a particle size less than about 800 microns. The invention relates further to improved fuel compositions containing such metal salts.

3,798,013

DOUBLE ION EXCHANGE METHOD FOR STRENGTHENING GLASS ARTICLES

Touru Inoue, Nishnomiya; Nobuyoshi Ohsato, Itami, and Jun Hasegawa, Takarazuka, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Apr. 24, 1972, Ser. No. 246,815
Claims priority, application Japan, Apr. 26, 1971, 46-27811
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 4 Claims

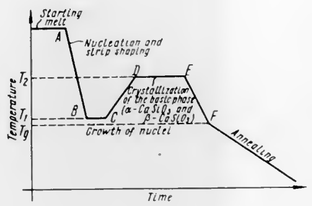
A process for increasing the strength of a glass article by subjecting a glass article containing alkali metal ion A to a treatment of exchanging the ion A with an alkali metal ion B having a larger ion radius than the ion A, wherein the exchanging treatment is performed in two successive stages, and the second-stage exchanging treatment is carried out under milder treating conditions using a treating salt having a larger ion B content than in the first-stage treatment.

3,798,014

METHOD OF MANUFACTURING CRYSTALLINE GLASS ARTICLES

Konstantin Timofeevich Bondarev, ul. Yanvarskogo vosstania, 24-a, kv. 60, Kiev; Tamara Efimovna Gollus, ul. Pushkinskaya, 291, kv. 6, Konstantinovka Donetskoi oblasti; Anatoly Gavrilovich Minakov, ul. Levanevskogo, 18, kv. 11, Konstantinovka Donetskoi oblasti; Vladimir Anatolievich Minakov, ul. Aleandra Nevskogo, 18, kv. 31, Konstantinovka Donetskoi oblasti, and Anatoly Vasilievich Strekalov, ul. Schmidta, 31, kv. 12, Konstantinovka Donetskoi oblasti, all of U.S.S.R.

Continuation-in-part of Ser. Nos. 703,272, Feb. 6, 1968, abandoned, and Ser. No. 703,543, Feb. 7, 1968, abandoned, and Ser. No. 717,453, March 29, 1968, abandoned. This application Nov. 5, 1970, Ser. No. 87,101
Int. Cl. C03c *3/22*
U.S. Cl. 65—33 2 Claims



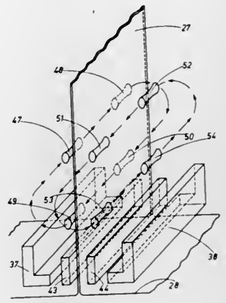
A method of making crystalline glass products, comprising: melting the batch mix to obtain a glass crystallizable about the microparticles of metal sulfides present therein, cooling the glass mass to a temperature of 670°–750°C with simultaneous shaping of the material, holding the material at said temperature, raising its temperature to 930°–970°C at a rate of 75°–320°C per hour, holding the material at that temperature, and its subsequently cooling at a controlled rate.

3,798,015

GLASS SHEET DRAWING METHOD AND APPARATUS

Claude Brichard, Moustier-sur-Sambre, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed July 14, 1972, Ser. No. 271,754
Claims priority, application Luxembourg, Aug. 20, 1971, 63755
Int. Cl. C03b *15/04*
U.S. Cl. 65—95 42 Claims



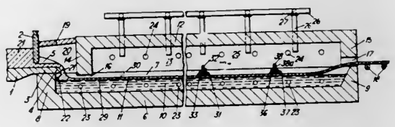
A method and apparatus for improving the quality of glass produced by drawing a ribbon of glass from a molten glass bath through a drawing chamber, by producing a flow of gas in the chamber and around the ribbon so as to cause the gas to repeatedly traverse at least one closed circuit extending through a region opposite at least one of the two outer thirds of the ribbon width.

3,798,016

MANUFACTURE OF FLAT GLASS

Edward Russell Ormesher, 48 Heyes Ave., Rainford, Lancashire, and John Allan Yates, 21 White Rails Dr., Ormskirk, Lancashire, both of England

Continuation-in-part of Ser. No. 810,151, March 25, 1969, abandoned. This application Sept. 14, 1971, Ser. No. 180,506
Int. Cl. C03b *18/02*; C03c *21/00*
U.S. Cl. 65—99 A 4 Claims

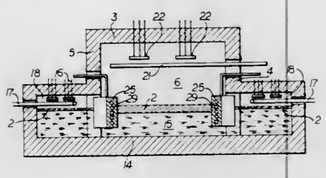


Float glass having a predetermined characteristic is manufactured by maintaining a body of surface modifying molten material against the hot glass surface, and later cleansing the treated glass surface by wiping that surface with an ancillary body of molten material. The ancillary body of molten material is spaced downstream of the first body by a distance which locates the ancillary body beyond the region of condensation of vapor originating from the first body.

3,798,017
METHOD FOR USING MOLTEN METAL CHANNEL FOR THE CONVEYANCE OF LIQUID GLASS

Franz Classen, Kantatr, 36, 505 Ponz-Grengel, Germany

Division of Ser. No. 209,892, Dec. 20, 1971. This application June 8, 1972, Ser. No. 261,114
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A 4 Claims



The method disclosed pertains to making glass sheets by placing molten glass on a molten metal bath in a channel which communicates with chambers on the sides of the channel which allows molten metal to flow from the chambers. The temperature of the molten glass is regulated within adjustable blocks on the sides of the channel.

3,798,018
GLASS MANUFACTURE

Leo J. Paridon, Doylestown; Cloyde G. Dye, and Frank J. Yarsa, both of Barberton, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

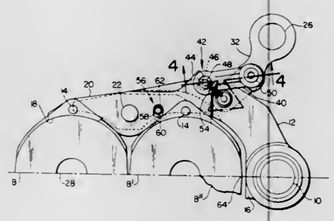
Filed Dec. 23, 1971, Ser. No. 211,658
Int. Cl. C03b *1/00*
U.S. Cl. 65—134 9 Claims

A process for preparing glass free of voids and imperfections is provided comprising charging an aqueous slurry of glass-forming metal hydroxide, and sand to a molten glass pool at a rate sufficient to minimize spattering, segregation of reactants and carry-off of alkali with the evolved steam, maintaining the temperature of the molten glass at or above the fusion temperature of the reactants for a time sufficient to effect reaction, and recovering the resulting glass.

3,798,019
MOLD HOLDER ARM AND INSERT OPENING MECHANISM

Wasyl Bystrianyk, Simsbury; Andrew S. Federko, Bloomfield, and Albert J. Trahan, Vernon, all of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed May 22, 1972, Ser. No. 255,460
Int. Cl. C03b *9/40*
U.S. Cl. 65—360 12 Claims



A glassware forming machine has mold holder arms pivotally mounted on a common hinge pin, and a conventional rock shaft and crank opens and closes each of these arms through a short link pivotally connecting the arm to the crank. The angular displacements of these arms are limited by the geometry of a conventional glassware forming machine, and in order to blow larger size ware the present invention contemplates subjecting the split molds, which are pivotally carried on these arms, to a cocking motion as the arms are opened. An interconnecting link acts on the molds and operates off the crank. The interconnecting link operates when the mold holder arms are open, but does not interfere with the normal mold closing motion. An alternative configuration is shown for the blank mold side of an I. S. machine to increase the clearance for the neck ring arm during revert motion, and to allow longer parisons to be reverted.

3,798,020
PROCESS FOR INCORPORATING MICRONUTRIENTS IN LIQUID PHOSPHATIC FERTILIZERS

Thomas Moylan Parham, Jr., Colonial Heights, and James Earl Sansing, Jr., Chester, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

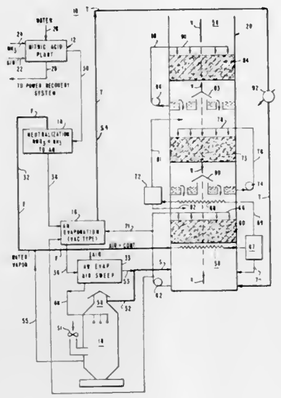
Filed June 17, 1971, Ser. No. 154,170
Int. Cl. C05d *9/02*
U.S. Cl. 71—1 10 Claims

The sequestration of micronutrient metal ions in liquid phosphatic fertilizer solutions is facilitated by incorporating in the solutions a synergistic combination of citrate and polyphosphate salts.

3,798,021
POLLUTION ELIMINATION FOR FERTILIZER PROCESS

Dellason F. Bress, Murray Hill, and Carmen A. Petrarca, Caldwell, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Aug. 21, 1972, Ser. No. 282,220
Int. Cl. C05c *9/00*; B01d *47/06*
U.S. Cl. 71—28 18 Claims

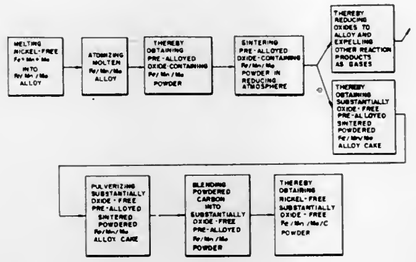


In a continuous process for the manufacture of fertilizer, waste heat from the process is passed in indirect heat exchange relation with a stream of air and water entrained fertilizer solids. In this manner, it is possible to remove substantially pure water and air together with the fertilizer containing solution which can be used in the manufacture of the fertilizer.

3,798,022
PRE-ALLOYED NICKEL-FREE SILICON-FREE MINIMAL OXIDE LOW ALLOY IRON POWDER

Gordon J. LeBrasse, Ann Arbor, and Boniface Stolarski, Grosse Pointe Woods, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Division of Ser. No. 115,994, Feb. 17, 1971, Pat. No. 3,676,103. This application Mar. 20, 1972, Ser. No. 235,890
Int. Cl. B22f *9/00*
U.S. Cl. 75—0.5 BA 2 Claims



A pre-alloyed nickel-free silicon-free low-alloy iron powder with minimal oxide content yet possessing good hardenability and good mechanical and metallurgical properties for the production of sintered powdered metal articles is prepared by alloying iron with approximately one-half of one per cent molybdenum and approximately one-half of one per cent of manganese. Any desired carbon content is obtained either by combining carbon with the molten alloy prior to atomization or by adding graphite thereafter to the pre-alloyed powder by blending prior to compacting. The detrimental oxides normally created during the production of these compactible metal powders by the high temperature atomization of the molten metal from which they are formed are reduced to negligible amounts having harmless effects by passing the pre-alloyed powder through a sintering furnace containing a reducing atmosphere, such as a hydrogen or dissociated ammonia gas atmosphere. The sintered powdered alloy cake thus produced is then pulverized to form the alloy powder of the present invention. Comparative tests described, and their results set forth herein, show that the present invention alloy powder, although omitting the nickel content previously thought necessary, nevertheless retains the functions of, and compares favorably in performance with the prior nickel-content iron alloy powders.

3,798,023
METHOD FOR PRODUCING TUNGSTEN WHISKERS

Chuji Tomita, 1507-Kamisuwa, Suwa-shi, Japan

Continuation-in-part of Ser. No. 37,996, May 18, 1970, abandoned. This application May 3, 1972, Ser. No. 249,973
Claims priority, application Japan, May 23, 1969, 44-39745; Sept. 11, 1969, 44-71636
Int. Cl. B22f *1/00*
U.S. Cl. 75—.5 BB 7 Claims

Tungsten whiskers ranging in diameter from about 0.5 to 3 μ are produced by interdispersing tungsten oxide and a suitable catalyst in fine granular form and heating the interdispersion in a hydrogen atmosphere.

3,798,024
RECLAMATION OF ALUMINOUS SKIM

Alfred M. Murphy; Kenneth C. Hagerman, both of Richmond, and Nicholas A. Wagner, Chester, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed July 13, 1972, Ser. No. 271,411
Int. Cl. C22b *21/00*
U.S. Cl. 75—68 R 9 Claims

Skim or dross material formed on a body of molten aluminum or aluminum alloy is treated to recover aluminous metal by removing the hot skim material to a preheated skim pot, introducing previously melted salt flux, stirring the flux and skim so as to admix them thoroughly, and recovering molten metal separated from the residual skim solids.

3,798,025
VACUUM DECARBURIZATION IN RH AND DH TYPE DEGASSING SYSTEMS

Sundaresan Ramachandran, and James C. Fulton, both of Natrona Heights, Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

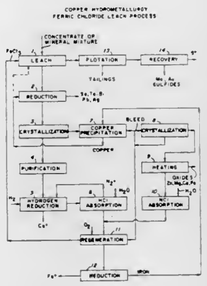
Filed Dec. 29, 1971, Ser. No. 213,528
Int. Cl. C21c *7/10, 5/28*
U.S. Cl. 75—49 6 Claims

A method for cyclically decarburizing a bath of molten metal such as steel by transferring the molten metal from a first vessel to a second vessel, evacuating the space above the molten metal in the second vessel while subjecting the metal bath in the second vessel to oxygen to decarburize the same, and returning the decarburized metal from the second to the first vessel. The foregoing cycle is repeated while the pressure within the second vessel is progressively reduced and the oxygen introduced into the second vessel varied to decarburize the molten metal bath in steps without substantial oxidation of metal constituents therein.

3,798,026
COPPER HYDROMETALLURGY

Edward Francis Godfrey Milner, Trail, British Columbia; Ernest Peters, Vancouver, British Columbia; Godefridus Maria Swinkels, Rossland, British Columbia, and Andrew Imre Vizsolyi, Vancouver, British Columbia, all of Canada, assignors to Cominco Ltd., Vancouver, British Columbia, Canada

Filed Mar. 27, 1972, Ser. No. 238,460
Int. Cl. C22b *3/00*
U.S. Cl. 75—104 34 Claims



A cyclic method of recovering copper, iron and sulfur from iron and copper sulfide bearing materials is described. The method is self-sufficient with regard to iron and copper con-

sumption and gives almost quantitative yields of iron and copper. The method comprises:

1. subjecting a copper bearing material to a leach with a hot ferric chloride containing lixiviant,
2. separating the reaction mixture thereby formed into a solids residue and a leach solution containing cuprous, cupric and ferrous chlorides,
3. adding metallic copper to said leach solution to thereby reduce cupric ions present to the cuprous state,
4. crystallizing out cuprous chloride formed in step (3) above,
5. treating the cuprous chloride with hydrogen to form elemental copper and hydrogen chloride gas, and,
6. treating the ferrours chloride with hydrochloric acid and oxygen to regenerate the ferric chloride containing lixiviant and to simultaneously precipitate ferric oxide.

The ferric chloride containing lixiviant is recycled to the leaching step. The ferric oxide is reduced to elemental iron.

3,798,027
GRAY IRON

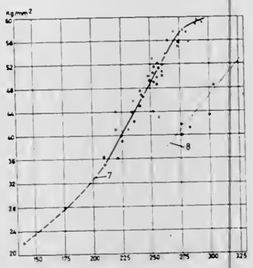
Charles Defranco, Zele, and Jan Van Eeghem, Deurle, both of Belgium, assignors to Centre de Recherches Scientifiques et l'Industrie des Fabrications Metalliques, en abrege, C.R.I.F., Brussels, Belgium

Continuation of Ser. No. 797,622, Feb. 7, 1969, abandoned. This application Dec. 15, 1971, Ser. No. 208,489

Claims priority, application Belgium, Feb. 13, 1968, 710679

Int. Cl. C22c *37/00*

U.S. Cl. 75—124 **12 Claims**



High strength low hardness gray iron consisting essentially of about 1 – 3 percent aluminum, 2 – 4 percent carbon, up to 1% silicon and the balance iron, said gray iron having been inoculated with a minimum of 0.3 percent of an inoculant alloy, the active inoculant of which is selected from the group consisting of calcium, barium and strontium.

3,798,028
ZINC-ALUMINUM ALLOYS WITH GOOD MACHINABILITY

Edouard Gervais, Montreal, Quebec, and Pierre Chollet, Pierrefonds, Quebec, both of Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

Filed May 5, 1972, Ser. No. 250,557

Claims priority, application Canada, July 21, 1971, 118722

Int. Cl. C22c *17/00*

U.S. Cl. 75—178 AM **5 Claims**

Zinc-aluminum alloys having good machinability contain from 0.01 to 1 percent magnesium, from 0.01 to 3 percent bismuth, and up to 10 percent copper, in addition to zinc and aluminum in amounts to result in the alloy having a eutectoid transformation. Heat treatment of the alloys by homogenization at a temperature between the solidus and eutectoid temperatures and subsequent cooling to ambient temperature improves the corrosion resistance.

3,798,029
LAMINATED ELECTROPHOTOGRAPHIC UNIT AND PROCESS

Arvind R. Saklikar, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed July 27, 1971, Ser. No. 166,428

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **5 Claims**

A unit adapted for use in electrophotographic cameras and an electrophotographic process are disclosed where the unit has electrostatic charges and comprises a photosensitive member consisting of a photoconductive layer and an electroconductive layer electrostatically attached to an insulating layer. If the unit is to be used as a film and stored for later exposure, it is sealed in an encasing sheet of the insulating material. If the unit is to be exposed directly, the insulating layer can comprise a master containing an image. During formation of the unit, the photoconductive layer is given a charge of a first polarity and the insulating layer is given a charge of an opposite polarity prior to contacting the two and prior to exposure to radiation. A preferred embodiment utilizes a clear plastic insulating layer with a resistivity of 10^{14} to 10^{16} ohms-meters and a dielectric constant of about 2 which in the form of a film contains no image and in the form of a printing element contains an image.

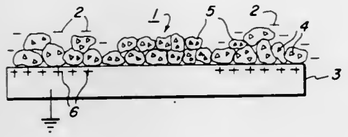
3,798,030
PHOTOELECTROSOLOGRAPHIC IMAGING METHOD UTILIZING POWDER PARTICLES

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 32,597, April 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 679,774, Nov. 1, 1967, abandoned. This application Oct. 20, 1972, Ser. No. 299,531

Int. Cl. G03g *13/00, 5/02*

U.S. Cl. 96—1 PS **21 Claims**



A migration imaging method using a structure made from a plurality of powder particles each including a marking material and a softenable material. Charge is deposited on the powder particles and effects migration of the marking material upon softening the softenable material.

3,798,031
PHOTOCONDUCTIVE 1,2,3,4-TETRAHYDROQUINOLINES EMPLOYED IN ELECTROPHOTOGRAPHY

Wilhelmus Janssens, Aarschot; Johannes Josephus Vanheertum, Halle-Zandhoven; Robert Joseph Pollet, Vremde; Hendrik Hubert Sneyers, Wijnegem, and Jozef Aime Dierckx, Mechelen, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 9, 1972, Ser. No. 304,939

Claims priority, application Great Britain, Nov. 10, 1971, 52287/71

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.8 **40 Claims**

Electrophotographical recording process wherein a pattern of increased conductivity is produced image-wise in a photoconductive insulating recording layer containing as essential photoconductive compound a photoconductive 1,2,3,4-tetrahydroquinoline. The photoconductive compound can be chemically and spectrally sensitized and charged either negatively or positively.

3,798,032
ELECTROCONDUCTIVE COATING, ELECTROSTATOGRAPHIC COPY SHEET, AND METHODS OF MAKING AND USING THE SAME

Lewis S. Miller, Bellevue, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Oct. 6, 1971, Ser. No. 187,211

Int. Cl. G03g *5/10;* **H01b** *1/06*

U.S. Cl. 96—1.5 **11 Claims**

An improved electroconductive coating is made by incorporating in its formulation both an organic film-forming polymer and certain low molecular weight monomeric quaternary ammonium compounds. An improved electrostatographic copy sheet is made by combining a conductive layer comprising said improved electroconductive coating and a dielectric or photoconductive printing layer.

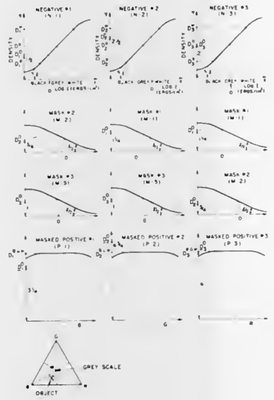
3,798,033
ISOLUMINOUS ADDITIVE COLOR MULTISPECTRAL DISPLAY

Edward F. Yost, Jr., Northport, N.Y., assignor to Spectral Data Corporation, Hauppauge, N.Y.

Filed May 11, 1971, Ser. No. 142,232

Int. Cl. G03c *5/08;* **G03b** *27/04, 33/06*

U.S. Cl. 96—5 **2 Claims**



Each of a set of multispectral photographic negatives of a given scene is made by exposure to radiation from the scene primarily in a different spectral region, and each has substantially the same gamma. From each negative a positive mask is formed of which the gamma substantially equals minus one times the gamma of the negatives divided by one less than the number of negatives in the set. Each negative is subtractively combined in register with each positive mask made from the other negatives of the set. This forms a set of masked positives which correspond respectively to the negatives and in each of which density distribution is a function substantially exclusively of the hue and saturation distribution in the scene in the corresponding spectral region. The masked positives are combined additively in a color viewer to provide an improved multispectral display.

3,798,034
PROCESS FOR THE PRODUCTION OF HALF-TONE AND LINE WORK MULTI-COLOR PHOTOGRAPHIC IMAGES

Urbain Leopold Laridon, Wilrijk, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Feb. 25, 1972, Ser. No. 229,586

Claims priority, application Great Britain, Feb. 26, 1971, 5563/71

Int. Cl. G03c *7/16, 7/00*

U.S. Cl. 96—15 **7 Claims**

Multi-colored half-tone and line-work positive photographic images are produced from a multi-colored original. The photographic element used comprises a support carrying a light-sensitive layer spectrally sensitized to one of the three primary color regions of the visible spectrum and containing a photopolymerizable monomer and a photopolymerization initator therefor, dispersed in a polymeric binder. The images are produced by a process comprising the steps of:

A. exposing the light-sensitive layer to actinic light through the multi-colored original,
B. heating and pressing together the exposed light-sensitive layer on a receptor surface and stripping away the temporary support together with the photopolymerized parts of the light-sensitive layer, so that the unpolymerized parts are transferred to the receptor surface in the form of a positive color separation image,
C. exposing this color separation image to actinic light to polymerize the photopolymerizable monomer,
D. repeating the above steps with two other elements comprising a temporary support carrying a light-sensitive layer spectrally sensitized to one of the two other primary color regions of the visible spectrum and also containing a photopolymerizable monomer and an initiator dispersed in a polymeric binder.

In each step (B) the exposed light-sensitive layer is heated and pressed on the receptor surface in superposition on the positive color separation image(s) already present and in register therewith.

3,798,035
METHOD OF MAKING FLEXIBLE PRINTING PLATES

Richard S. Varga, Akron, and Thomas R. Szczepanski, Royalton, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 290,399

Int. Cl. G03c *5/00;* **G03f** *7/00*

U.S. Cl. 96—35.1 **3 Claims**

Soluble, crystalline, low molecular weight ethylene-vinyl acetate copolymers are sensitized, typically with aromatic ketones, and can be insolubilized by exposure to U.V. light (3,200–3,800A) which selectively cures the exposed areas. Uncured material is removed by cold solvent wash leaving exposed area as a raised surface. Plates for flexographic printing are prepared from these materials by this process.

3,798,036

METHOD OF MANUFACTURING MICROSTRUCTURES

Hartmut Schnepf, Heilbronn-Klingenberg, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 31, 1972, Ser. No. 239,961
Claims priority, application Germany, Apr. 1, 1971, 2115823
Int. Cl. G03c *5/04*
U.S. Cl. 96—41 3 Claims

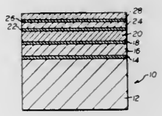
A method of manufacturing microstructures on a substrate comprises projecting at least one mask pattern onto a substrate through an objective lens and copying a further mask pattern onto the substrate by a contact process, the contact mask for the contact process being formed by projecting a mask pattern through the same objective lens onto a material for making the contact mask.

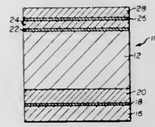
3,798,037

PHOTOGRAPHIC COLORING ELEMENT AND PROCESS

Avrum Silverman, 2809 Avenue K, Brooklyn, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,880
Int. Cl. G03c *1/40, 5/50, 5/08*
U.S. Cl. 96—74 20 Claims





A film for producing a color image from a monochromatic image comprising at least a first layer of emulsion having a color coupler for producing a negative or a positive image in a first color of the monochromatic image. A second layer of emulsion has a second type of color coupler for producing an image in a second color with luminances reversed with respect to the image formed in the first layer. The two additional layers of emulsion each contain the same type of color coupler so that the two additional layers produce a positive masked negative image or a negative masked positive image of the monochromatic image in a third color whereby the developed film produces a colored image of the monochromatic image.

A novel process for producing the colored image from the monochromatic image is also disclosed.

3,798,038

FILM SUPPORT COATED WITH POLYESTER AND GELATIN-SILVER HALIDE EMULSION

Lothar Richter, and Georg Eichhorn, both of Berlin-Kopenick, Germany, assignors to VEB Filmfabrik Wolfen Fotochemische Werke Berlin, Berlin, Germany

Continuation of Ser. No. 60,632, Aug. 3, 1970, Pat. No. 3,694,212, Continuation of Ser. No. 630,840, April 14, 1967, abandoned. This application Sept. 26, 1972, Ser. No. 292,474
Int. Cl. G03c *1/80*
U.S. Cl. 96—87 R 1 Claim

An article comprising a cellulose ester- or polyethylene terephthalate-based substrate, overlying and in contact with the substrate an adhesive coating consisting of the reaction product of a triepoxide selected from the group consisting of triglycidyl cyanurate, triglycidyl isocyanurate, and tri-(2,3-dioxypropyl) isocyanurate with an aliphatic or aromatic dicarboxylic acid containing up to 10 carbon atoms in its molecule in molar proportions of the triepoxide to the dicarboxylic acid of about 1:2, and overlying and in contact with the adhesive coating a coating of a gelatin-silver halide emulsion.

3,798,039

COPY SHEET CONTAINING SILVER SOAP AND AN ORGANIC PEROXYGEN OXIDIZING COMPOUND

Albert W. Leclair, Hudson, N.H., assignor to Nashua Corp., Nashua, N.H.

Filed Mar. 8, 1972, Ser. No. 233,385
Int. Cl. G03c *1/02, 1/76, 3/00*; B41m *5/00*
U.S. Cl. 96—114.1 5 Claims

An organic peroxygen oxidizing compound is incorporated in a silver soap containing white copy sheet of a two-sheet system to enhance the image contrast and reduce coloring of background areas.

3,798,040

RARE-EARTH SILICA REFRACTORY CERAMIC MATERIALS AND METHOD FOR PRODUCING SAME

George J. Kamin, Towanda, and William T. Kiger, Athens, both of Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Mar. 2, 1971, Ser. No. 120,307
Int. Cl. C04b *35/50*
U.S. Cl. 106—39 R 12 Claims

Rare-earth oxide silica ceramic refractory compositions are disclosed comprising a rare-earth oxide and silica in specific mole ratios. The rare-earth oxides specifically preferred are yttrium, and misch metal. Processes for producing refractory materials as well as shaped refractory bodies are also disclosed.

3,798,041

OPTICAL GLASS HAVING ANOMALOUS DISPERSION PROPERTIES

Tetsuro Izumitani, and Isao Masuda, both of Tokyo, Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed July 24, 1972, Ser. No. 274,384
Claims priority, application Japan, July 23, 1971, 46-55113
Int. Cl. C03c *3/16*
U.S. Cl. 106—47 Q 2 Claims

An optical glass having an anomalous dispersion property in the short wavelength region, a high Abbe number of greater than 52, a high stability of devitrification and an excellent acid resistance and consisting of.

P_2O_5 44.0 to 68.0%, B_2O_3 5.0 to 21.0%, Al_2O_3 1.0 to 8.0%, BaO 4.0 to 33.0%, MgO 1.0 to 14.5%, ZnO 0 to 10.5%, SrO 0 to 12.0%, CaO 0 to 7.0%, La_2O_3 0 to 9.0%, ThO_2 0 to 7.0%, TiO_2 0.5 to 4.2% and As_2O_3 0 to 3.5%, by weight is disclosed.

3,798,042

REFRACTORY SHAPE WITH PREREACTED GRAIN

Joseph E. Neely, Los Gatos, and Sidney F. Brown, Milpitas, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Oct. 17, 1972, Ser. No. 298,442
Int. Cl. C04b *35/24, 35/42*
U.S. Cl. 106—59 15 Claims

A refractory shape exhibiting physical and chemical stability, good high temperature strength, reduced firing shrinkage, and improved thermal shock resistance is made from an admixture of periclase refractory grain, refractory chrome ore grain, and a prereacted chrome-magnesia grain made by reacting a finely divided admixture of magnesia-yielding material and refractory chrome ore material at elevated temperatures.

3,798,043

HIGH STRENGTH REFRACTORY CONCRETE

Rudolph W. Wallouch, Lewiston, N.Y., assignor to Airco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 261,122, June 8, 1972, abandoned. This application Dec. 6, 1972, Ser. No. 312,466
Int. Cl. C04b *35/02*
U.S. Cl. 106—64 12 Claims

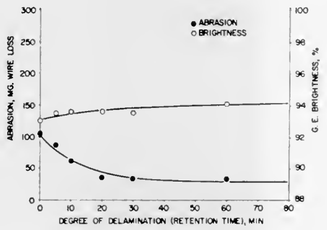
A refractory concrete of improved strength made from calcium-aluminate cement, a refractory aggregate of ferrochromium slag, and as an additive, powdered boron phosphate. According to the method of the invention the graded slag is admixed with the phosphate additive and aluminate cement to form a concrete grog, which is subsequently fired in air to temperatures of 1,000°C or higher. A ceramic-type bond is thereby formed, transforming the concrete rapidly into a dense refractory body.

3,798,044

PROCESS FOR MANUFACTURING CALCINED KAOLINITIC CLAY PRODUCTS

James Brooks Whitley, and William Floyd Abercrombie, Jr., both of Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Filed June 7, 1972, Ser. No. 263,381
Int. Cl. C08h *17/06*; C09c *1/28*
U.S. Cl. 106—288 B 4 Claims



A process for producing calcined mineral products having improved brightness and significantly reduced abrasion is disclosed. In accordance with the invention, mineral such as kaolin clay, are delaminated by agitating a slurry of the minerals in the presence of a hard, abrasive grinding media, such as glass beads, which have a specific gravity higher than the mineral-water suspension or mixture. The delaminated particulates are then filtered, dried and calcined at a temperature in excess of 750° C to remove the water of hydration and bring about a sharp exothermic reaction. In one method embodiment, the minerals or clays are subjected to a high intensity magnetic field, prior to the delamination, to remove foreign matter or contaminants which are deleterious to the production of a calcined pigment having a high brightness and a low abrasive index. The calcined products of the invention may be used in the coating and filling of paper, in paints, as reinforcing fillers or pigments in elastomers and the like.

3,798,045

SILICA ENCAPSULATED LEAD CHROMATE PIGMENT OF THE PRIMROSE YELLOW SHADE

Julius Jackson, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 206,125, Dec. 8, 1971, abandoned. This application Sept. 27, 1972, Ser. No. 292,502
Int. Cl. C09c *1/20*
U.S. Cl. 106—298 1 Claim

A primrose yellow shade pigment of outstanding light stability is prepared. The pigment comprises orthorhombic phase particles of a chemically prereduced lead chromate-lead sulfate solid solution, which particles are encapsulated with a dense amorphous silica coating.

3,798,046

MODIFIED, PRECIPITATED ALUMINO SILICATE PIGMENTS AND AN IMPROVED METHOD FOR PREPARING SAME

Robert C. Fitton, Bel Air, Md., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Nov. 5, 1971, Ser. No. 198,022
Int. Cl. C09c *1/02*
U.S. Cl. 106—306 9 Claims

Novel alkali aluminum silicate particulates modified with and containing a chemically bound alkaline earth metal, and a method for producing same is disclosed. The alumino silicate pigments contain an alkaline earth metal, preferably calcium, magnesium or barium in addition to an alkali metal, such as sodium. In chemical composition, the pigments contain oxides of the alkaline earth metal, the alkali metal, aluminum and silicon and are distinguishable from co-precipitates. The pigments are prepared by introducing dilute solutions of an alkali silicate and an aluminum salt of a mineral acid into an agitated aqueous receiving medium containing an alkaline earth salt or hydroxide. The pH of the fuild reaction medium may be controlled to form finely divided precipitated particulates having improved properties and which may be used as pigments in paper, paint, rubber, inks, plastics and the like.

3,798,047

PIGMENT FOR COATING PAPER AND MANUFACTURE THEREOF

Pierre Delfósse, Paris, France, assignor to Omya S.A., Paris, France

Filed Dec. 9, 1971, Ser. No. 206,255
Int. Cl. C09c *1/02*
U.S. Cl. 106—306 7 Claims

A pigment for coating paper comprises an intimate mixture of 40–95 parts of natural calcium carbonate and 60–5 parts of satin white, at least 80 percent of the satin white being smaller than two microns. The pigment is prepared by grinding the components together, one of the components being in suspension.

3,798,048

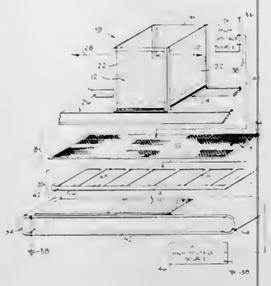
METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING AN OBJECT

Albert C. Brody, Philadelphia, and Edward Lipkin, Wyncote, both of Pa., assignors to Nyvel Corporation, Croyden, Pa.

Filed July 27, 1971, Ser. No. 166,364
Int. Cl. B05b *5/00*; B44d *1/092*
U.S. Cl. 117—17 10 Claims

An apparatus and method for electrostatically applying a plurality of particles such as flock to an object. The particles

are placed into a hopper at an uppermost portion of the apparatus and are propelled downwardly through a metallic screen to which an unchanging electrical charge is applied. The particles are given a predetermined orientation and continue their downward passage through a metallic grid to which



a changing electrical charge is applied. In another embodiment, the flock is propelled in an upward direction through changing and unchanging electrically charged zones. The particles attach themselves to the object in a uniformly dense manner and substantially align themselves in accordance with the electrostatic lines of force.

3,798,049

METHOD FOR THE DEVELOPMENT OF LATENT ELECTROSTATIC IMAGES

Horst Kosche, Feldstrasse 21, Dueren-Lendersdorf, Germany

Filed Apr. 6, 1972, Ser. No. 241,824

Claims priority, application Austria, Apr. 9, 1971, 3075/71

Int. Cl. G03g *13/10*

U.S. Cl. 117—37 LE **13 Claims**

A method for developing electrostatic latent images comprises applying a developer, which comprises a liquid or paste vehicle containing toner particles, to an electrostatically charged surface from a roller or other applicator. The liquid or paste developer is applied in a very thin film to the roller so that substantially the only toner particles contained in the liquid or paste film are in the electrical double layer formed at the roller — liquid (paste) interface. The applicator, or at least the outer surface thereof, is made of a material with a dielectric constant between about 100 and 10,000 preferably a titanate of a bivalent metal, e.g., barium titanate or calcium titanate (perovskite). The developer is preferably a thixotropic dispersion of polarizeable toner particles in a non-polar liquid.

3,798,050

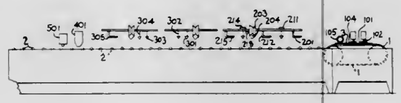
CATALYTIC SENSITIZATION OF SUBSTRATES FOR METALLIZATION

Helmut Franz, Oakmont, and Roy G. Crissman, Lower Burrell, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 28, 1971, Ser. No. 147,790

Int. Cl. B44d *1/08;* **C03c** *17/10*

U.S. Cl. 117—47 A **5 Claims**



Metal films of improved uniformity are formed on substrates having their surfaces sensitized by the deposition of palladium on tin by buffering the palladium salt solution in contact with the glass at a pH from 6 to 9. Buffering is preferably accomplished by contacting the substrate with an aqueous buffering solution and an acidic palladium salt solution.

3,798,051

METHOD FOR ENHANCING THE ADHESIVENESS OF FIBER TO RUBBER AND THE TREATED FIBER

Eiichi Morita, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 27, 1972, Ser. No. 248,067

Int. Cl. B32b *25/00;* **B32b** *25/02*

U.S. Cl. 117—75 **16 Claims**

Diallylaminomethyl-resorcinol compositions are described which are useful for adhering fiber to rubber.

3,798,052

POLYVINYLIDENE FLUORIDE COATING FOR METALS

Joachim Ebeling, Tacherting, Germany, assignor to Suddeutsche Kalkstickstoff-Werke AG, Trostberg, Germany

Filed June 28, 1972, Ser. No. 267,014

Claims priority, application Germany, June 30, 1971, 2132645

Int. Cl. B32b *15/08*

U.S. Cl. 117—75 **6 Claims**

A firmly adhering coating on a metal includes a baked base layer whose binder component is a linear polyester resin and a hardener for the same, and a baked surface layer essentially consisting of 10 to 40 percent of the polyester resin employed in the base layer and 60 to 90 percent polyvinylidene fluoride.

3,798,053

CONTROL OF ATMOSPHERIC COMPOSITION DURING RADIATION CURING

Thomas F. Huemmer, South Bend, Ind., assignor to The O'-Brien Corporation, South Bend, Ind.

Filed Mar. 30, 1971, Ser. No. 129,586

Int. Cl. B44d *1/50;* **C09d** *3/58, 3/72*

U.S. Cl. 117—93.31 **4 Claims**

A method for in situ radiation polymerization or curing of air inhibited compositions as coatings on substrates in the presence of limited but still substantial amounts of oxygen. As much as 7.5 percent by weight of oxygen may be present if the radiation dose is fixed by the formula:

$$(D_r = X(O_2 \text{ level}) + C$$

wherein D_r is the total dose required to cure to a tack-free state. (O_2 level) is the oxygen content of the atmosphere in percent by weight, C is the total dose that would be required in an oxygen free atmosphere and X is variable depending upon the composition of the coating and the composition of the inert atmosphere.

3,798,054

METHOD OF SUGAR COATING TABLETS

Ryuichi Kawata, 16-12, Sendagi 3-chome, Bunkyo-ku, Tokyo; Hiroitsu Kawada, 30-29-22, Hasune 2-chome, Itabashi-ku, Tokyo; Tadayoshi Ohmura, 11-12, Honcho 1-chome, Kurumemachi, Kitatamagun, Tokyo; Katsuhiko Yano, 16-1 Hasune 3-chome, Itabashi-ku, Tokyo; Hiroshi Suglura, 16-1 Hasune 3-chome, Itabashi-ku, Tokyo, and Nobuo Takada, 16-1 Hasune 3-chome, Itabushi-ku, Tokyo, all of Japan

Filed Sept. 24, 1971, Ser. No. 183,635

Claims priority, application Japan, Sept. 25, 1970, 45-83917

Int. Cl. B32b *1/00*

U.S. Cl. 117—100 A **4 Claims**

A sugar-coated tablet characterized by high stability is prepared by a simple and commercially feasible procedure.

The tablet is prepared by applying to the tablet core an aqueous sugar solution containing calcium lactate.

3,798,055

VAPOR DEPOSITION PROCESS

Charles d'A. Hunt, Moraga, Calif., assignor to Airco, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 790,500, Dec. 13, 1968, Pat. No. 3,652,325. This application Dec. 27, 1971, Ser. No. 212,250

Int. Cl. C23c *13/02*

U.S. Cl. 117—107 **3 Claims**

1750°F

A vacuum vapor deposition process is described for depositing a coating of a cobalt-base alloy on a substrate. The quality of the deposited coating is improved by maintaining the substrate above a minimum temperature of 1,600°F. in the case of alloys with substantially soluble constituents, and of 1,700°F. in the case of alloys having at least partially insoluble constituents.

3,798,056

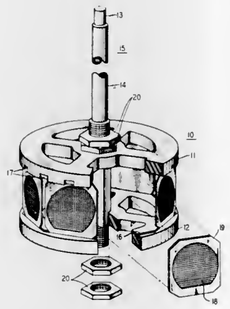
ELECTROLESS PLATING PROCESS

Yutaka Okinaka, Madison, and Richard Sard, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1972, Ser. No. 241,363

Int. Cl. B01k *1/00;* **C23c** *17/00*

U.S. Cl. 117—113 **3 Claims**



Improved deposition rates from electroless plating baths are described. The increase in deposition rate, which may be as great as seven-fold, arises from the use of a rotating substrate holder. Where uniformity of thickness is critical, periodic reversal of rotation may be used.

3,798,057

IMPREGNATED FIBROUS WEB STRUCTURES

Walter Polovina, Princeton, N.J., assignor to AB Carl Munters, Sollentuna, Sweden

Filed Oct. 5, 1971, Ser. No. 186,768

Int. Cl. B32b *19/02;* **C08g** *45/04*

U.S. Cl. 117—126 AB **12 Claims**

Fibrous webs, such as asbestos paper, are impregnated with a mixture of a chlorinated polymeric C_3 or C_5 hydrocarbon, a chlorinated terphenyl or chlorinated paraffin plasticizer, and a polyepoxy compound. The impregnated webs, when suitably shaped, are useful as contact tower air and water contact bodies.

3,798,058

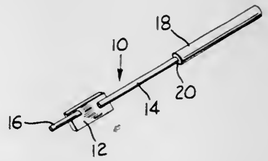
REFRACTORY METAL PHOSPHATE AND PHOSPHIDE COATINGS FOR REFRACTORY METAL LEADS AND PROCESS FOR PRODUCING METAL PHOSPHIDES

Vincent Chiola, 329 York Ave.; James S. Smith, and Clarence D. Vanderpool, both of R.D. 2, all of Towanda, Pa.

Division of Ser. No. 3,937, Jan. 19, 1970, which is a continuation-in-part of Ser. No. 647,106, June 19, 1967, abandoned. This application Jan. 13, 1972, Ser. No. 217,491

Int. Cl. C23c *11/00;* **H01j** *1/88*

U.S. Cl. 117—201 **6 Claims**



Lamps operating at high temperatures, and more particularly incandescent or arc lamps having sealed-in lead-in electrical conductors with improved service characteristics and longer service life are fabricated with a "coating" on the aforesaid leads comprising at least one of the following: a phosphate or phosphide of tungsten, or a phosphate or phosphide of molybdenum.

Illustrative of the results obtained upon service testing 400-W, 120-V quartz-iodine lamps, at operating temperatures of 500°-600$\pi\zeta$ c., using

A. untreated, uncoated, molybdenum electrode assemblies,

B. platinum-clad, molybdenum electrode assemblies (exemplary of the prior-art techniques), and

C. tungsten phosphate-coated molybdenum electrode assemblies,

are as follows:

A. failed through oxidation and subsequent disintegration, with accompanying seal and lamp failure at 100 hours' operation.

B. failed at approximately 150 hours of life testing.

C. was still operating on a life test after 200 hours.

Processes for forming metal phosphides from metal phosphates and process for coating leads with refractory metal phosphates and phosphides are also disclosed.

3,798,059

THICK FILM INDUCTOR WITH FERROMAGNETIC CORE

Brian Astle, Indianapolis, Ind., and Jean Marie Guiot, Ann Arbor, Mich., assignors to RCA Corporation, New York, N.Y.

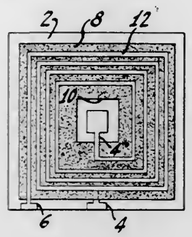
Filed Apr. 20, 1970, Ser. No. 29,957

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **13 Claims**

Thick film inductor suitable for hybrid integrated circuits

comprising successive layers of powdered sintered ferromagnetic material in a cured catalyst-hardenable resin binder and



a pattern of conductors comprising powdered metal in a cured catalyst-hardenable resin.

3,798,060

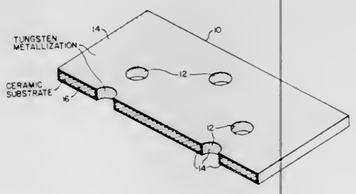
METHODS FOR FABRICATING CERAMIC CIRCUIT BOARDS WITH CONDUCTIVE THROUGH HOLES

Wallace D. Reed, and Richard A. Stoltz, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 28, 1971, Ser. No. 193,461

Int. Cl. C23c *11/02, 3/00*

U.S. Cl. 117—212 **6 Claims**



A method for preparing double-sided circuit boards for electrical circuits wherein a ceramic substrate containing a plurality of holes is metallized by chemical vapor deposition of tungsten on the surface and through the holes and is etched delineate conductive patterns. There is also provided the product produced by this process. The process is preferably used on electronic microcircuits with alumina or beryllia substrates where electrical interconnections between conductive patterns the two outer surfaces and between the outer surfaces and the innerlayers are provided by through-hole metallization.

3,798,061

METHOD FOR FORMING A SINGLE-LAYER NITRIDE FILM OR A MULTI-LAYER NITRUDE FILM ON A PORTION OF THE WHOLE OF THE SURFACE OF A SEMICONDUCTOR SUBSTRATE OR ELEMENT

Shumpei Yamazaki, 20, No. 7, 1-chome Shinkawa, Shizuoka, Japan

Continuation of Ser. No. 672,402, Oct. 2, 1967, abandoned. This application July 13, 1970, Ser. No. 56,208

Claims priority, application Japan, Oct. 17, 1967, 42-2077; Oct. 7, 1966, 41-66000

Int. Cl. B44d *1/16, 1/18*

U.S. Cl. 117—213 **8 Claims**

The process for preparing an electrically insulating nitride surface coating on a silicon or germanium semiconductor substrate comprising oxidizing the surface of a silicon or germanium semiconductor to form a stain film on said surface; nitriding said oxide stain film surface by heating to a temperature above 600°C in a reactive atmosphere comprising gaseous nitrogen, ammonia or hydrazine and applying ultraviolet light to said surface whereby a chemically and physically stable electrical insulating nitride surfaced semiconductor is formed. The invention also includes a process for preparing a multilayer nitride surface coating on a silicon or germanium substrate in which the first layer is formed as set forth in the preceding sentence and then one or more additional layers are formed by heating the semiconductor having the aforesaid first layer with a gaseous mixture of (i) a silicon compound selected from the group consisting of silicon halide and silane and (ii) a compound selected from the group consisting of nitrogen, ammonia and hydrazine to form a silicon nitride surface on said nitride surfaced semiconductor. The invention also includes the nitride surfaced semiconductor which may be produced by the foregoing processes.

3,798,062

METHOD OF MANUFACTURING A PLANAR DEVICE

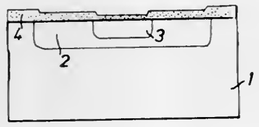
Werner Mroczeck, and Werner Scherber, both of Heilbronn, Germany, assignors to Licentia Patent-Vermaltungs-GmbH, Frankfurt am Main, Germany

Filed Sept. 27, 1971, Ser. No. 184,176

Claims priority, application Germany, Sept. 30, 1970, 2047998

Int. Cl. H01l *7/44*

U.S. Cl. 117—212 **12 Claims**



A method of manufacturing a planar device includes removing at least a portion of an insulating layer used as a mask for producing a region or regions in a semiconductor body and replacing this insulating layer with a layer of silicon nitride.

3,798,063

FINELY DIVIDED RUO_2 PLASTIC MATRIX ELECTRODE

Denis F. Decraene, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Nov. 29, 1971, Ser. No. 203,059

Int. Cl. B44d *1/34, 1/18*

U.S. Cl. 117—230 **9 Claims**

Finely divided RuO_2 serves as an efficient and long-lived electrocatalyst when dispersed in a polymer matrix chemically and mechanically inert to an electrolyte. When applied to a substrate, generally an electrically conductive substrate, an electrode, particularly suited for use as an anode at which oxygen is evolved, is obtained. A coating of polyvinylidene fluoride containing RuO_2 having a particle size of less than 0.1 micron on a titanium substrate is exemplary.

3,798,064

CONGEALING AND CLEANING MIXTURE

Hans Amoser, Rheingaublic, Germany, assignor to Braas & Co. GmbH, Frankfurt am Main, Germany

Filed Dec. 10, 1971, Ser. No. 206,873

Claims priority, application Germany, Dec. 16, 1970, 2061827

Int. Cl. B08b *7/00, 9/08*

U.S. Cl. 134—7 **10 Claims**

A granular, fluid mixture comprising polyvinyl chloride, a lubricant, sodium tripolyphosphate, and optionally a basic heavy metal compound, and a method of employing the mixture in cleaning the hot metal pots of appliances used in processing plastics are disclosed. This composition and process eliminate the necessity of cooling, shutting down, and dismantling plastic processing appliances before cleaning them free of plastic residues.

3,798,065

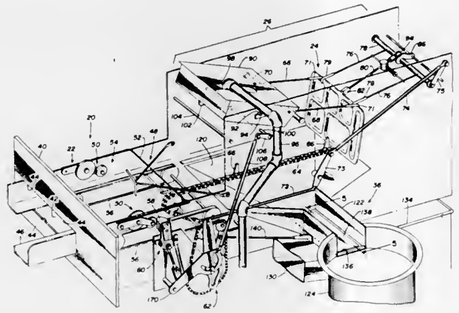
TRAY WASHING SYSTEM

Lawrence Pete Kitterman, 1309 Woodway, Hurst, Tex., and Howard Gene Rice, 1109 Hadrian Ct., Irving, Tex.

Filed Nov. 13, 1970, Ser. No. 89,401

Int. Cl. B08b *3/04, 9/00, 11/00*

U.S. Cl. 134—25 R **13 Claims**



A tray washing system includes conveyors which transport compartmented food service trays from a tray receiving mechanism to inverting and scrapping mechanisms and through washing, rinsing and drying mechanisms to a stacking mechanism. The receiving mechanism restricts trays to insertion in a predetermined orientation in which the food receiving surfaces face upwardly, and the inverting mechanism inverts each tray so that the feed receiving surface faces downwardly. As each tray is inverted, the scrapping mechanism discharges substantially the entire contents of a cleaning fluid reservoir onto the food receiving surface of the tray, and thereby dislodges refuse and silverware that may be on the tray. The washing, rinsing and drying mechanism apply a water-detergent solution, rinse water, and drying air to the trays, respectively, and the stacking mechanism deposits the trays onto a mobile self-depressing tray receiver. The tray washing system further includes a silverware separating and soaking mechanism comprising a chute which receives cleaning fluid and refuse and silverware entrained therein, a dam which removes the heavier silverware from the cleaning fluid, and a door in the bottom of the chute for dropping the silverware into a soaking sink.

3,798,066

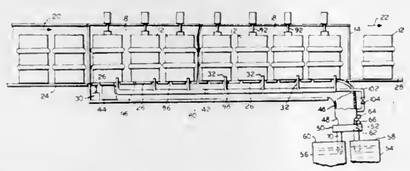
METHOD OF RECONDITIONING USED STEEL DRUMS

Robert G. Evans, 1255 Peters Rd., Harvey, La.

Filed Mar. 10, 1972, Ser. No. 236,529

Int. Cl. B08b *3/02, 3/10*

U.S. Cl. 134—27 **12 Claims**



The method and apparatus for reconditioning used steel drums containing organic matter, rust, interior linings, and the like, preheating the drums up to 700°F, chemical and/or water washing the drums' interior with high pressure spray and draining, a sulfuric acid solution bath spray impinging on said surface while heated, a hydrochloric acid solution bath spray impining on said surface after the sulfuric acid is drained off, a water bath and drain stage for reducing the acidity in the drum, and a neutralizing bath to clean the final remnants of any presence of an acid from the inner surfaces of the drum.

3,798,067

ELECTROLYTIC CELL AND METHOD FOR MAKING SAME

Dieter Kunze, Kelkheim, Germany, assignor to Varta Aktiengesellschaft, Kelkheim/Ts., Germany

Filed Oct. 17, 1972, Ser. No. 298,258

Claims priority, application Germany, Oct. 18, 1971, 2151736; Oct. 18, 1971, 2151734

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 LN **10 Claims**

An electrolytic or galvanic cell has at least one electrode having silver as an active substance and a solid electrolyte essentially consisting of silver iodide and silver selenate. In making the cell, the electrolyte is pressed into a tablet, a mixture of silver and electrolyte powder is pressed onto one side of the tablet and a mixture containing graphite and electrolyte powder is pressed onto the other side of the tablet.

3,798,068

ELECTROLYTIC AND GALVANIC CELLS AND METHOD OF MANUFACTURE THEREOF

Dieter Kunze, Kelkheim, Germany, assignor to Varta Aktiengesellschaft, Kelkheim/Ts., Germany

Filed Oct. 17, 1972, Ser. No. 298,259

Claims priority, application Germany, Oct. 18, 1971, 2151735; Oct. 18, 1972, 2151732

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 LN **10 Claims**

An electrolytic cell, such as a control cell, or a galvanic cell, such as a primary cell, includes at least one silver electrode and a solid electrolyte, the latter consisting essentially of a mixture of 80 to 90 Mol percent silver iodide and 10 to 20 Mol percent silver tungstenate. The method of manufacturing the electrolytic or galvanic cell includes the steps of pressing the electrolyte into a tablet and thereafter pressing onto a first side of the electrolyte tablet a mixture of silver, electrolyte powder and possibly graphite; and pressing onto the second side of the tablet a mixture including graphite and electrolyte powder. In the manufacture of galvanic cells, the mixture pressed onto the second side also includes an iodine-yielding compound.

3,798,069

BATTERY STRUCTURE INCORPORATING CHLORINE SCAVENGER

John Broadhead, Morristown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

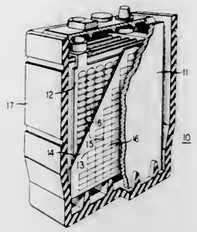
Filed May 10, 1972, Ser. No. 251,921

Int. Cl. H01m *39/04*

U.S. Cl. 136—26 **4 Claims**

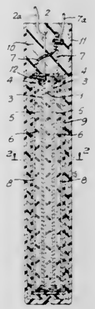
A lead-acid battery is described which incorporates a chlorine scavenger which converts molecular or ionic chlorine to an organic chloride which is inert and does not interfere with the electrochemical process of battery operation. Organic compounds which are useful as chlorine scavengers contain a multiple carbon-to-carbon bond and contain a polar group to make the scavenger substance soluble in the electrolyte. Chlorine scavenger material is especially useful in

lead-acid batteries used primarily in the float condition, and/or where the battery is hermetically sealed. Scavenger



material can be incorporated in the battery in a variety of ways as, for example, in the separator material.

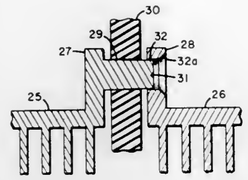
3,798,070
LEAD-ACID STORAGE BATTERY WITH TITANYL SULFATE BUFFERED ELECTROLYTE
Samuel Ruben, 52 Seacord Rd., New Rochelle, N.Y.
Continuation-in-part of Ser. Nos. 886,415, Dec. 18, 1969, abandoned, and Ser. No. 166,717, May 12, 1972, abandoned. This application May 12, 1972, Ser. No. 252,724
Int. Cl. H01m *39/00*
U.S. Cl. 136—26 **19 Claims**



A titanium grid is used to support the positive electrode of lead peroxide while the negative porous lead electrode is supported on either a copper or titanium grid in a lead-lead-acid storage battery. A small quantity of titanyl sulfate is added to the aqueous sulfuric acid electrolyte to inhibit dissolubility of the titanium therein. In one battery embodiment the electrolyte is immobilized by gelling and confined between the electrodes while the assembly is surrounded with an insulating wrapping and sealed hermetically in a quantity of cured epoxy resin.

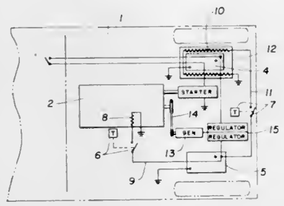
3,798,071
MAKING ELECTRICAL CONNECTIONS THROUGH A STORAGE BATTERY WALL
Anthony Sabatino, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.
Continuation-in-part of Ser. No. 668,395, Sept. 18, 1967. This application June 5, 1969, Ser. No. 830,834. The portion of the term of this patent subsequent to Nov. 6, 1990, has been disclaimed.
Int. Cl. H01m *5/00*
U.S. Cl. 136—134 R **3 Claims**

Two connector members, one on each side of the battery wall, are brought close to one another through an opening in the wall. The parts are then joined together by fusion and after fusing, pressure is applied to force the members to press firmly



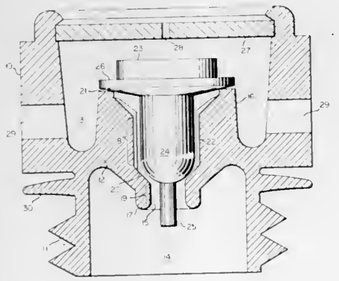
and securely against the respective sides of the wall to produce a tight seal against leakage of fluid through the opening in the wall.

3,798,072
ENGINE COMPONENT HEATING SYSTEM
Arthur Anderson, Chicago, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Aug. 21, 1972, Ser. No. 282,306
Int. Cl. F01m *5/02*; **B60l** *1/02*; **F02n** *17/02*
U.S. Cl. 123—142.5 E **5 Claims**



A heating unit for the oil dip stick of the oil system of the engine of an automotive vehicle is electrically connected to an auxiliary battery via a thermostatically controlled switch. The heating unit thereby heats the oil when the temperature drops below a predetermined level.

3,798,073
SUBMERSIBLE BATTERY VENT PLUG
David L. Karpal, Pomona, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Oct. 10, 1972, Ser. No. 295,912
Int. Cl. H01m *1/06*
U.S. Cl. 136—178 **5 Claims**



A submersible battery vent plug is disclosed which includes a valve with a double seal, the first seal being adapted to close

under an initial fluid pressure and the second seal adapted to close under a pressure higher than the initial pressure.

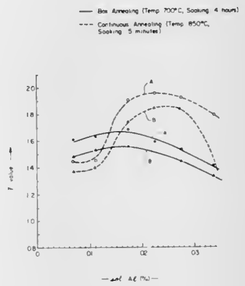
3,798,074
SURFACE FINISHING
Donald F. Esler, Natrona Heights, and Edward G. Choby, Jr., Pittsburgh, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Filed Mar. 23, 1972, Ser. No. 237,557The portion of the term of this patent subsequent to Nov. 21, 1989, has been disclaimed.
Int. Cl. C23f *7/00*
U.S. Cl. 148—6.16 **102 Claims**

A composition for providing a protective coating, comprised of a solution containing phosphate ions, chromate ions, ammonium ions, silicate ions and cations. The molar concentration of the phosphate ions, chromate ions, ammonium ions and cations is between 0.01 and 1 mole per 100 ml. of solvent, and the molar concentration of the silicate ions is from 0.01–33 percent of the molar concentration of the phosphate ions, chromate ions, ammonium ions and cations. The phosphate ions, chromate ions, ammonium ions and cations are proportionately present in the solution as 8–78 mole percent phosphate ion, 2–45 mole percent chromate ion, 1–56 mole percent ammonium ion and 0.01 to 55 mole percent cation.

3,798,075
METHOD OF MAKING STAINLESS STEEL CONTAINING BORIDES
Lee P. Bendel, Lebanon, N.J., assignor to Carpenter Technology Corporation, Reading, Pa.
Filed Mar. 10, 1970, Ser. No. 18,045
Int. Cl. C21d *7/00, 7/14*
U.S. Cl. 148—12 **9 Claims**

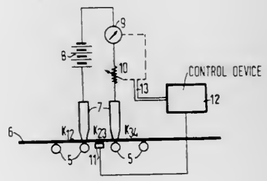
A method for making stainless steel containing small, uniformly distributed boride particles and the product of such process having an improved absorption cross-section for thermal neutrons, in which a stainless steel containing about 0.1 to 4 percent by weight boron after being prepared in a convenient intermediate form is heated at or just above a critical temperature of from 2,275° to 2,325° F. at least long enough for it to be heated throughout to temperature and then it is rapidly cooled. The intermediate form is then worked to effect substantially uniform distribution of the boride particles. When necessary to prevent sagging and tearing of the intermediate form while it is being heat treated, it is supported while at heat. After cooling the support is removed before working.

3,798,076
METHOD FOR PRODUCING AL-KILLED DEEP DRAWING COLD ROLLED STEEL PLATE BY CONTINUOUS ANNEALING
Mineo Shimizu; Hiroshi Takechi; Kenichiro Suemune; Setsuo Nagao, and Kuniteru Ohta, all of Kitakyusyu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Apr. 27, 1972, Ser. No. 248,242
Claims priority, application Japan, Apr. 27, 1971, 46-027179
Int. Cl. C21d *9/48*
U.S. Cl. 148—12 **2 Claims**



A method of producing an aluminum-killed cold rolled steel sheet for deep drawing by a continuous annealing, which comprises cold rolling a hot rolled steel plate containing not more than 0.015 percent of carbon, 0.05 to 0.50 percent of manganese, 0.13 to 0.33 percent of soluble aluminum with the balance being iron and unavoidable impurities.

3,798,077
METHOD FOR ALIGNING MECHANICAL FILTERS
Alfhart Gunther, Haar, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Sept. 24, 1971, Ser. No. 183,423
Int. Cl. C21d *1/00*; **C22f** *1/00*
U.S. Cl. 148—13 **5 Claims**



In a mechanical filter, the coupling elements coupling the individual filter resonators to each other comprise a material having a Young's modulus dependent upon the final heat treatment temperature. In a method for aligning the filter, the coupling elements are subjected to heat treatment, the maximum temperature of which is higher than the final heat treatment temperature.

3,798,078
WELDING SUBSTANCE AND METHOD OF MAKING SAME

Kurt Lettner, and Jakob Hans Finkenauer, both of Lohhof, Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

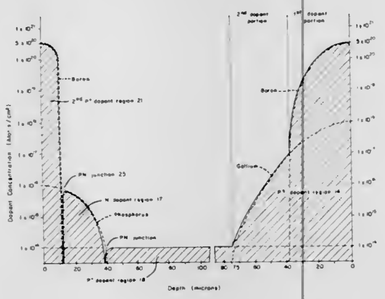
Filed Oct. 12, 1971, Ser. No. 188,456
Claims priority, application Germany, Oct. 14, 1970, 2050482
Int. Cl. B23k *35/24*; C22b *9/10*
U.S. Cl. 148—26 4 Claims

A welding substance such as a submerged arc-welding powder, powdered welding flux, electrode-coating flux and welding assist, and welding-rod core material, is made at least in part from a hydraulic cement or cement clinker after calcination thereof. The cement or cement clinker (cement precursor) can be used in an amount ranging between 5 and 90 percent by weight of the welding-assist composition, preferably 35 - 65 percent by weight, in a particle size below 2.5 mm. The composition is preferably fired at a temperature between 400° to 1,000°C to ensure complete removal of water of crystallization.

3,798,079
TRIPLE DIFFUSED HIGH VOLTAGE TRANSISTOR

Chang Kwei Chu, Pittsburgh, and Surinder Krishna, Greensburg, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 5, 1972, Ser. No. 259,404
Int. Cl. H01l *3/14*
U.S. Cl. 148—33.5 4 Claims



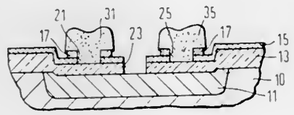
A high voltage transistor with improved surge voltage capacity is formed in a silicon semiconductor body of thickness of at least 4 mils and having two opposed major surfaces and a resistivity of at least 30 ohm-centimeters. A collector region adjoins a major surface and is comprised of three portions: The first collector portion adjoins a PN junction and has a substantially uniform dopant concentration therethrough corresponding to the resistivity of the body to support a desired reverse breakdown voltage. The second collector portion adjoins the major surface and has a dopant concentration of at least 1×10^{19} atoms per cubic centimeter at said surface and a steep dopant concentration gradient to provide for good ohmic and thermal contact properties. The third collector portion is intermediate the first and second collector portions and has higher dopant concentrations than said first collector portion, but lower than said second collector portion, and has a shallower dopant concentration gradient that said second collector portion to support a reverse breakdown surge voltage through the transistor.

Preferably the transistor is the PNP type made by simultaneously diffusing boron and gallium and/or aluminum into the major surface of a silicon wafer or body having a given concentration level of N-type dopant therethrough. Thus the various portions of the collector region are simultaneously formed.

3,798,080
METHOD OF PRODUCING A SEMICONDUCTOR COMPONENT

Wolfgang Henning; Konstantin Von Hoerschelmann; Ingo Kruger, and Herbert Weidlich, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 22, 1971, Ser. No. 136,341
Claims priority, application Germany, Apr. 27, 1970, 2020531
Int. Cl. H01l *7/44*
U.S. Cl. 148—187 2 Claims



In producing a semiconductor component, the use of a silicon nitride layer as an etching stencil, provides an exact positioning of various windows, relative one another, in a silicon dioxide layer, arranged on a semiconductor body. The method is particularly suitable for producing high-frequency transistors of comb structure in planar technology.

3,798,081
METHOD FOR DIFFUSING AS INTO SILICON FROM A SOLID PHASE

Klaus Dietrich Beyer, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1972, Ser. No. 226,033
Int. Cl. H01l *7/34*
U.S. Cl. 148—188 19 Claims

A process for diffusing As into a silicon substrate forming diffused regions having a surface impurity concentration in excess of 10^{19} atoms/cc by forming a composite layer of an upper As doped glassy layer and an underlying SiO_2 layer at the interface of the substrate and glassy layer, and heating the substrate and layers in an inert atmosphere to diffuse the As from the solid phase glassy layer through the SiO_2 layer and into the substrate to the desired depth.

3,798,082
TECHNIQUE FOR THE FABRICATION OF A PN JUNCTION DEVICE

Bertram Schwartz, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

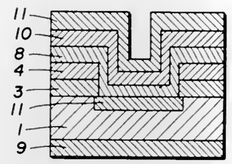
Division of Ser. No. 83,416, Oct. 23, 1970, abandoned. This application Aug. 7, 1972, Ser. No. 278,639
Int. Cl. H01l *7/34*
U.S. Cl. 148—188 8 Claims

A passivated p-n junction device in which the junction is prevented from rising to the crystallographic surface by the interposition of a semi-insulating layer intermediate the crystallographic surface and the electrical surface is described. The structure is fabricated by forming a semi-insulating layer upon the surface of an n-type Group III(*a*) – V(*a*) compound semiconductor, generating a window therein and introducing a p-type material through the window.

3,798,083
FABRICATION OF SEMICONDUCTOR DEVICES

John G. Schmidt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 134,240, April 15, 1971, Pat. No. 3,728,784. This application Dec. 8, 1972, Ser. No. 313,315
Int. Cl. H01l *7/44*
U.S. Cl. 148—188 5 Claims



The disclosure herein pertains to methods for fabricating planar, discrete or monolithic arrays of semiconductor devices, particularly light-emitting diodes and arrays thereof. The disclosure more particularly concerns diffusion processes to form controlled regions of P-type conductivity in N-type conductivity semiconductors.

3,798,084
SIMULTANEOUS DIFFUSION PROCESSING

Vincent J. Lyons, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 2,287, Jan. 12, 1970, abandoned. This application Aug. 11, 1972, Ser. No. 279,902
Int. Cl. H01l *7/44*
U.S. Cl. 148—189 8 Claims

Emitter and base regions of a semiconductor device may be formed simultaneously by a capsule diffusion with a source containing both N type and P type dopants. The dopants utilized must have substantially different diffusion rates. For instance, for a silicon semiconductor substrate, the source may be formed of boron and arsenic-doped silicon.

3,798,085
MANUFACTURE OF A BURNING RATE DETERRENT COATED PROPELLANT

Dale F. Mellow, Stanhope, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 177,813, Sept. 3, 1971, Pat. No. 3,743,554. This application Feb. 12, 1973, Ser. No. 331,422
Int. Cl. C06b *19/02*
U.S. Cl. 149—10 15 Claims

Manufacture of burning rate deterrent coated propellants by contacting a nitrocellulose smokeless powder, at an elevated temperature, with a defined linear polyester of a new class of burning rate deterrents, which wets, and diffuses into the smokeless powder at the elevated temperature level, as a plasticizer therefor, but is substantially non-migrating within the smokeless powder at lower temperatures; effecting the contacting step under conditions causing the polyester to coat and penetrate the smokeless powder to form the coated propellant; and then reducing the temperature of the resulting deterrent coated propellant to the lower temperature above described.

Also provided, are nitrocellulose smokeless powder propellants having as a burning rate deterrent, the defined polyester coating diffused by its own plasticizing action into the propellant to form a resulting burning rate gradient therefor.

3,798,086
HIGH-ENERGY SOLID PROPELLANT BINDER

Adolf H. Muenker, Somerset; Leland K. Beach, Westfield, and Herschel T. White, Montclair, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Sept. 23, 1966, Ser. No. 582,207
Int. Cl. C06d *5/06*
U.S. Cl. 149—19 2 Claims

Propellant compositions which contain high nitrogen content binders are prepared by reacting liquid poly-secondary amines with perchlorates. Powdered aluminum may be added.

3,798,087
FAST BURNING COMPOSITE PROPELLANT

William E. Hill, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1969, Ser. No. 817,615
Int. Cl. C06b *11/00*
U.S. Cl. 149—19 2 Claims

1-isopropenylcarborane is reacted with tetrafluorohydrazine to form NFIPC. NFIPC is a modifier to enhance the burning rates of composite propellants. When NFIPC is used to replace n- butylferrocene in a propellant formulation, a faster burning propellant with better physical properties results.

3,798,088
COCRYSTALLIZATION OF AMMONIUM PERCHLORATE AND STABILIZATION OF SOLID PROPELLANTS

Edward K. Lindsay, Cumberland, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 5, 1973, Ser. No. 338,127
Int. Cl. C06b *11/00*
U.S. Cl. 149—20 13 Claims

A method of improving the thermal stability of double-base propellants containing ammonium perchlorate (AP) by cocrystallization of AP with resorcinol before formation of the propellant grain. AP is dissolved in a solution of liquid ammonia; resorcinol is added to the solution. After evaporation and drying the resulting cocrystals are ground and, in the conventional manner, incorporated into a propellant matrix.

3,798,089
FUEL FOR A MAGNETO-HYDRODYNAMIC GENERATOR

Rainer Zeller, Munich, Germany, assignor to Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft, Munich, Germany

Filed Sept. 3, 1971, Ser. No. 177,876
Claims priority, application Germany, Sept. 4, 1970, 2043884
Int. Cl. C06b *15/00*
U.S. Cl. 149—22 12 Claims

A fuel for a magneto-hydrodynamic generator in which readily ionizable seed material additives and power-increasing additives are suspended simultaneously in a liquid fuel carrier system whereby the suspension is stabilized in the form of a thixotropic gel by the addition of a suspension agent.

3,798,090
PROCESS FOR PRODUCING CROSS-LINKED PROPELLANTS

John C. Allabashi, Morristown, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 605,142, Dec. 22, 1966. This application Dec. 4, 1968, Ser. No. 781,284
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.4 10 Claims

Chemically modified double base propellant formulations containing a phenol-blocked diisocyanate as cross-liking agent are cross-linked by unblocking the diisocyanate during propellant cure. A typical formulation contains nitrocellulose, nitroglycerin, ammonium perchlorate or cyclotrimethylene trinitramine, aluminum and a prepolymer of polyglycoladipate and 2,4-tolylene diisocyanate.

3,798,091
GELLED CHROMIUM ACETATE CROSS-LINKED AQUEOUS SLURRY TYPE SALT EXPLOSIVES, AND MANUFACTURE

Herbert G. Knight, Jr., Succasunna, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Mar. 26, 1973, Ser. No. 345,161
Int. Cl. C06b *1/04*
U.S. Cl. 149—60 13 Claims

Gelled aqueous slurry salt type explosives in which the gelation agent is guar gum crosslinked with a chromium acetate at pH levels lower than heretofore, viz, at 4.5–5.4, by crosslinking the guar gum in the pH range with a chromium acetate of the group of chromium hydroxy acetate, chromium triacetate, and mixtures thereof, in the presence of calcium nitrate which constitutes at least part of the oxidizer salt.

Heretofore, guar gum/chromium acetate gelation agents for the above explosives have been available only at higher pH levels with accompanying impairment of gel strength and stability, water resistance, viscosity characteristics, and stability of certain ingredients of the explosive.

3,798,092
LOW-TEMPERATURE LIQUID EXPLOSIVE COMPOSITION

Wallace F. Runge, Terre Haute, Ind., and Donald W. Edwards, Lehighton, Pa., assignors to Commerical Solvents Corporation, Terre Haute, Ind.

Filed Aug. 25, 1972, Ser. No. 283,861
Int. Cl. C06b *7/00*
U.S. Cl. 149—89 4 Claims

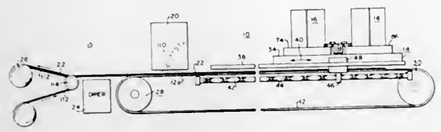
A low-temperature liquid explosive suitable for use at −60° F or above comprising nitromethane and methylene chloride in a 7:3 ratio by weight and from about 2–12 percent diethylene triamine based on the weight thereof.

3,798,093
METHOD OF MAKING A LAMINATED FIBROUS STRIP

Samson P. Levine; Ralph W. Kugler; Anthony J. Candek, all of Pittsburgh, and Arthur H. Long, Jeannette, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 100,683, Dec. 22, 1970, Pat. No. 3,685,376. This application July 7, 1972, Ser. No. 269,690
Int. Cl. B26d *1/06*
U.S. Cl. 156—62.2 7 Claims

A system for preparing an elongated laminated strip having a plurality of layers of metal fibers with the fibers of each layer being disposed at angles to the fibers of adjacent layers, including at least two fiber cutting shredders which are mounted on a movable carriage above a conveyor belt. The movable carriage travels back and forth over a short segment of travel of the conveyor belt and the shredders are rotatably mounted on the carriage for dropping successive layers of metal fibers onto the conveyor belt with the fibers of each layer being disposed at angles to each other. At the end of travel of the

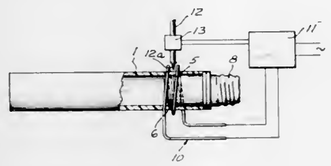


carriage in each direction the shredders are rotated to different angles and the belt simultaneously moves a short increment of travel, whereby a continuous multiple layered strip of metal fibers is produced. At another work station on the belt an adhesive binder is applied to the strip so that upon leaving the belt the strip may be wound upon a reel for storage and handling.

3,798,094
METHOD OF SECURING A CLOSURE MEMBER TO A PLASTIC CONTAINER

Allan Costa, 622 Udall Road, West Islip, N.Y. 11795

Continuation-in-part of abandoned application Ser. No. 827,944, May 26, 1969. This application Jan. 27, 1972, Ser. No. 221,211
Int. Cl. B29c *27/04*
U.S. Cl. 156—69 5 Claims



The present invention relates to a method of air and liquid tight welding or fusing a closure member to a small cylindrical plastic container, particularly a thin-walled container as widely used for cosmetic and pharmaceutical flowable compounds. The invention further relates to a container produced in accordance with the method of the invention.

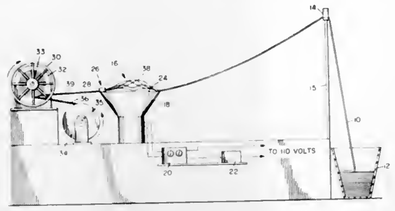
3,798,095
PROCESS FOR SPREADING A GRAPHITE FIBER TOW INTO A RIBBON OF GRAPHITE FILAMENTS

John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Original application Dec. 14, 1970, Ser. No. 97,988, now Patent No. 3,704,485. Divided and this application Sept. 13, 1972, Ser. No. 288,850
Int. Cl. B32b *31/16*
U.S. Cl. 156—73 5 Claims

A process for spreading a graphite fiber tow into a mass of substantially individual graphite filaments is provided. Spreading of the filaments is achieved by vibrating the graphite tow in air pulsating at a frequency and in-

tensity sufficient to couple the energy of the pulsating medium to the graphite tow. Vibration of the tow in air



causes separation and spreading of the filaments in the tow.

3,798,096
PROCESS FOR FORMING PLASTIC PARTS HAVING SURFACES RECEPTIVE TO ADHERENT COATINGS

John J. Grunwald, New Haven, Eugene D. D'Ottavio, Thomaston, Harold L. Rhodenizer, Bethlehem, and Michael S. Lombardo, Waterbury, Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

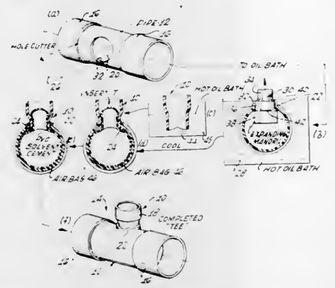
No Drawing. Original application Dec. 31, 1969, Ser. No. 889,472, now Patent No. 3,620,933. Divided and this application Nov. 9, 1971, Ser. No. 197,164
Int. Cl. B32b *15/08, 31/12;* C09j *5/02*
U.S. Cl. 156—151 3 Claims

Plastic parts are formed against an anodically treated aluminum surface by molding, laminating, etc., whereby the surface of the formed part after removal of or separation from the aluminum has a high energy level and is receptive to adherent coating of paint or metal plate. In particular, laminates of a thermoplastic resin and a sacrificial cladding of aluminum foil are prepared which, after subsequent stripping of the sacrificial metal cladding, exhibit unique surface properties enhancing the bonding thereto of paints, inks and plated metal deposits.

3,798,097
METHOD OF MAKING BRANCHED PLASTIC CONDUITS

Edward V. Mendenhall, P.O. Box 2026, Oxnard, Calif. 93030

Filed Mar. 23, 1972, Ser. No. 237,484
Int. Cl. B29c *17/00*
U.S. Cl. 156—152 22 Claims

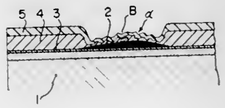


A method of joining a plastic tube to the side of a plastic pipe to form a branched conduit by making a hole in the side of the pipe smaller than the tube, softening the area around the hole and expanding the hole to a size sufficient to receive one end of the tube while forming an upstanding flange around the hole, forming a radial lip on the end of the tube and bonding the tube to the pipe with the lip engaged with the inside of the pipe around the hole and the flange engaged around a portion of the outside of the tube. In one embodiment, a "T" conduit is formed by deforming the tube to form the lip while one end portion of the tube is in position in the hole, and in a second, the lip is formed prior to insertion of the tube in the hole. In a third embodiment, a "cross" conduit is formed by deforming the ends of two tubes in two axially aligned holes in the sides of the pipe.

3,798,098
PANEL HAVING EMBOSSED PRINTING PATTERN

Yasumasa Ogawa and Seigo Nomiyama, Kitakyushu, Japan, assignors to Dantani Sangyo Kabushiki Kaisha, Kitakyushu-shi, Fukuoka-ken, Japan

Filed Apr. 6, 1972, Ser. No. 241,711
Claims priority, application Japan, May 19, 1971, 46/33,904
Int. Cl. B44f *7/00, 9/00*
U.S. Cl. 156—154 9 Claims

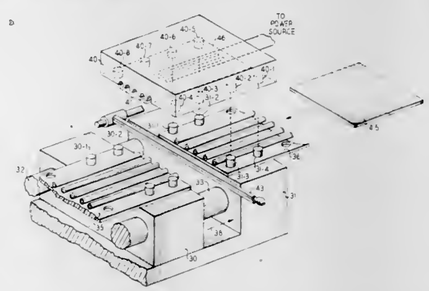


A process for finishing a surface of a panel to make a dressed surface having a three-dimensional pattern comprises printing a desired pattern on the surface of the panel with a printing ink containing a foaming agent which generates gases through reaction with a hardening agent in a transparent coating material subsequently applied thereon, subsequently applying a transparent coating material containing the hardening agent onto the entire printed surface to cause reaction of the hardening agent and the foaming agent thereby to foam and inflate the printed domains, and then after drying the coated layer grinding off a part of the foamed and inflated portions to form a three-dimensional concave pattern.

3,798,099
METHOD FOR SPLICING OPTICAL FILMS

Enrique Alfredo Jose Marcatill, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 12, 1972, Ser. No. 262,002
Int. Cl. B65h *69/02, 69/06*
U.S. Cl. 156—158 5 Claims



An arrangement of optical fibers, apparatus and methods for splicing same, are described. The fiber arrangement comprises a plurality of fibers secured to a ribbon-

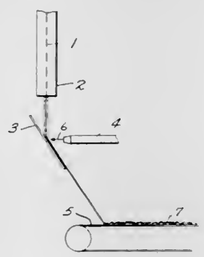
like tape. The fiber segments to be spliced are mounted on the slideable holders of a splicer such that each of the fibers of one segment are aligned approximately coaxially with a fiber on the other segment. The individual fibers are then cut, as required; moved into position; more accurately aligned by mechanical means; and then bonded together by the application of either heat or a bonding material of suitable refractive index. In one arrangement, accurate alignment of the fibers is obtained by means of a grooved cover plate which is placed over the adjacent ends of the fibers and left in position until the bonding step is completed. Various means for mounting the fiber segments in the splicer and for strengthening the splice are disclosed. A modified splicer for liquid core fibers is also described.

3,798,100

APPARATUS FOR MAKING SPUNBONDED FABRICS

Charles Marchadier, Ecully, and Jean Togny, Saint-Foy-les-Lyon, France, assignors to Rhone-Poulenc-Textile, Paris, France

Filed Apr. 26, 1972, Ser. No. 247,874
Claims priority, application France, Apr. 26, 1971, 14,885
Int. Cl. D04h *3/00*
U.S. Cl. 156—167 **14 Claims**



A process for producing spunbonded nonwoven fabrics is disclosed, wherein continuous filaments of organic polymers are extruded, stretched to orient same, and then arranged in fabric form on a moving conveyor. The filaments are arranged or distributed on the moving conveyor by impact from a deflector surface, with a fluid jet operating upon the point of impact from a location in front of the point of impact in relation to the direction of the deflected filaments, and in the same plane as the axis of the filaments before and after impact with the deflector surface.

The spunbonded nonwoven fabrics produced by the disclosed process are more homogeneous than prior spunbonded non-woven fabrics, and are suitable for known uses of such fabrics, such as apparel backing, padding and the like.

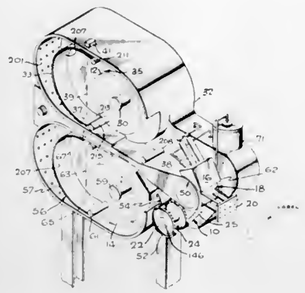
3,798,101

LABELING METHOD

Herbert La Mers, Los Angeles, Calif., assignor to R. A. Jones & Company, Inc.

Application Nov. 13, 1970, Ser. No. 89,492, which is a division of application Ser. No. 756,651, Aug. 30, 1968, now Patent No. 3,661,625. Divided and this application Dec. 20, 1972, Ser. No. 316,909
Int. Cl. B29c *17/04;* **B32b** *31/00*
U.S. Cl. 156—212 **7 Claims**

Methods for applying labels to objects include the steps of engaging and detaching removable precut labels, supported within an elongated web, with a reciprocating plunger driven through the web, and applying a detailed label to an object with the same plunger. A resilient plunger is utilized to successively resiliently engage, detach and apply labels to objects and detached labels are held on the plunger for a predetermined time. Before



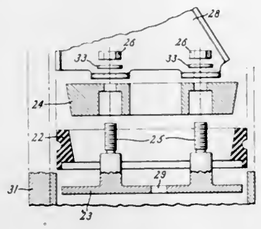
labels are detached from the web, the web is drawn through a station where a tacky surface is established on one side of the labels.

3,798,102

METHOD OF SEALING THE TIP END OF A HELICOPTER ROTOR BLADE SPAR

Joseph J. Penyak, Ridley Park, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 5, 1971, Ser. No. 169,286
Int. Cl. B29c *27/00, 27/30;* **B64c** *11/16;* **F03b** *3/12*
U.S. Cl. 156—214 **4 Claims**



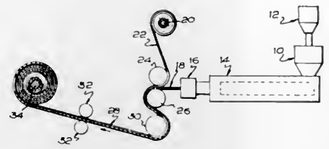
There is disclosed a method of sealing a closure to a container or similar object. As a specific application there is described the method of sealing the tip end of a helicopter rotor blade spar. At the spar tip end there is provided a bulkhead comprising a backing plate and a wedge plate joined together by bolts and conforming to the shape of the spar interior. Surrounding the edges of the bulkhead is the sealant. Prior to inserting the bulkhead and sealant into the spar, the sealant is semi-cured from a liquid state to a molded solid state whereby it can be fitted about the bulkhead plates. After the bulkhead is located in place in the spar, the sealant is further cured to seal the area between the spar and bulkhead. The two-step process of semi-curing the sealant and then finally curing in the sealed position is unique to this invention.

3,798,103

LAMINATING INCOMPATIBLE POLYSTYRENE AND VINYL CHLORIDE OR ACRYLIC PLASTIC SHEETS

Thomas Norman Gaunt, 179 Wetherby Road, Leeds 17, Yorkshire, England

Continuation-in-part of abandoned application Ser. No. 823,986, May 12, 1969. This application Feb. 25, 1972, Ser. No. 229,347
Int. Cl. B29b *1/04*
U.S. Cl. 156—244 **4 Claims**



Laminating polystyrene sheet and a synthetic plastics material lining sheet which is highly impermeable to gases and is incompatible with the polystyrene, and thermoforming containers in the laminate, removing them from the laminate and separating the skeletel wastes of the polystyrene and lining sheet for re-use. The satisfactory bonding between the polystyrene and lining sheet is achieved by extruding one or both of the sheets and bring the sheets together under pressure and cooling while the or each extrudate is still soft. The lining sheet is suitably polyvinyl chloride, copolymer of polyvinyl chloride or high barrier acrylic thermoplastic material.

3,798,104

GAS ACTIVATED BONDING OF UNDRAWN POLYAMIDE ARTICLES

William C. Mallonee, Atlanta, and Henry E. Harris, Savannah, Ga., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of abandoned application Ser. No. 1,477, Jan. 8, 1970, which is a continuation-in-part of application Ser. No. 737,507, May 17, 1968, now Patent No. 3,516,900, which in turn is a continuation-in-part of abandoned application Ser. No. 528,699, Feb. 16, 1966. This application Dec. 2, 1971, Ser. No. 203,957
Int. Cl. B29d *27/08;* **C09j** *5/02*
U.S. Cl. 156—306 **5 Claims**

Touching polyamide shaped structures, such as granules, products of extrusion and the like are autogenously bonded together along their contiguous surfaces by the absorption and subsequent desorption of an activating gas such as a hydrogen halide to form products including porous pellicles, substantially seamless articles and the like.

3,798,105

METHOD OF JOINING A PART TO A MATRIX MATERIAL

Clifford George Hannah, Alvaston, Reginald Shuttleworth, Ravenshead, and Alan David McCroft, Chaddesden, England, assignors to Rolls-Royce Limited, Derby, England

No Drawing. Filed May 14, 1971, Ser. No. 143,594
Claims priority, application Great Britain, May 14, 1970, 23,374/70
Int. Cl. B32b *7/10;* **C09j** *5/02*
U.S. Cl. 156—307 **8 Claims**

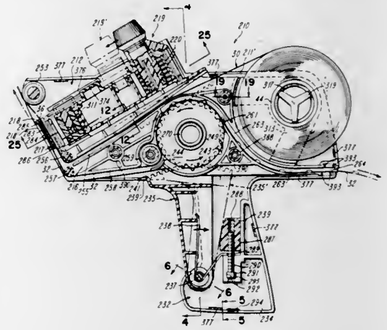
Articles to be joined together, such as metal sheets or carbon fibers, are first coated with a primer coating of a tough thermoplastic resin material as a polysulphone, then a matrix material such as an epoxy resin is applied to the coated part and the matrix-primer coated part is brought together with another part, optionally similarly prepared, with pressure and heat, causing the resin to cure and an interdiffusion between the thermoplastic and the matrix material. Parts so joined together have bonds of improved strength, stronger, for example, than when the same matrix material is used but without the primer.

3,798,106

LABEL PRINTING AND APPLYING APPARATUS

William A. Jenkins, Englewood, and Paul H. Hamisch, Jr., Franklin, Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Dec. 8, 1971, Ser. No. 205,854
Int. Cl. B32b *31/00*
U.S. Cl. 156—384 **14 Claims**



There is disclosed label printing and applying apparatus by which labels are successively printed and applied to merchandise. The apparatus feeds pressure sensitive labels mounted on a web of supporting material to a printing zone and to a delaminating zone. An applicator disposed downstream of the delaminating zone is used to apply the labels to merchandise.

3,798,107

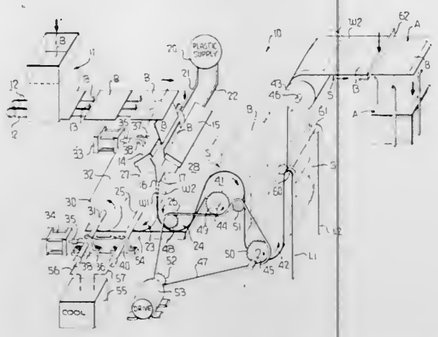
LAMINATING APPARATUS

William Townsend Bright, 1029 Webster Road, Summersville, W. Va. 26651

Filed Aug. 23, 1971, Ser. No. 174,029
Int. Cl. B29b *5/00*
U.S. Cl. 156—500 **4 Claims**

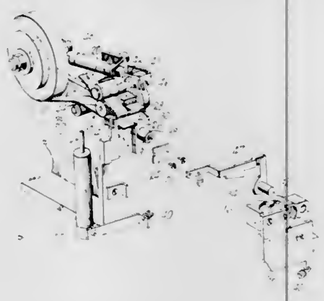
This disclosure relates to a laminating apparatus including means for extruding a pair of hot plastic webs between which is sandwiched sheets of paper stock material thus forming a sandwich web structure which when transversely severed forms table place mats or the like, the apparatus further including resilient and rigid surfaced rolls between which the sandwich web structure is

fed, and means for moistening an exterior surface of the resilient roll. The apparatus further includes means for



maintaining the resilient and rigid rolls at respective temperature ranges of 70° F.–90° F. and 90° F.–110° F.

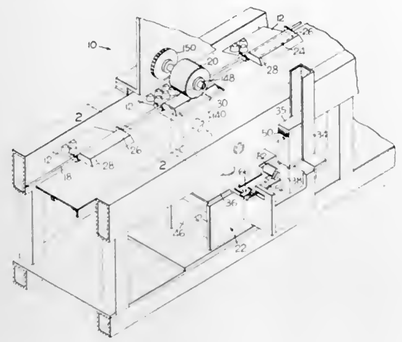
3,798,108
APPARATUS FOR DISPENSING TAPE
Joseph R. Ioannilli, Beverly, Mass., assignor to USM Corporation, Boston, Mass.
Filed Dec. 20, 1971, Ser. No. 209,939
Int. Cl. B32b *31/00;* **B26d** *7/06*
U.S. Cl. 156—510 **4 Claims**



An apparatus for dispensing tape comprises means for feeding the tape having the backing temporarily attached to a separator which separates the tape from the backing. The tape is then directed toward a dispensing area portion of the apparatus and the backing is fed into means for pulling the backing. The pulling means are then activated to feed tape onto the dispensing portion of the apparatus and cutting means are activated to cut a piece of the tape on the dispensing portion for use.

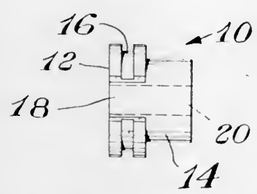
3,798,109
APPARATUS FOR APPLYING CUT LABELS TO OBJECTS
Donald R. Gamroth, New Berlin, Wis., assignor to Condes Corporation, Milwaukee, Wis.
Filed Apr. 17, 1972, Ser. No. 244,406
Int. Cl. B65c *9/10*
U.S. Cl. 156—568 **11 Claims**

Apparatus is shown for gluing cut labels to the inside under-surface of a container while printing is simultaneously being applied to an opposite outside upper surface by a printing roller. The apparatus comprises a vertical magazine containing a stack of cut labels; a rotating indexing table; stripper and insertion means for removing labels one-at-a-time from the magazine and for placing them on the table while the table is in one position; and impression roll means for removing a label from the table after the table has rotated to another position and for applying the label to the inside surface of the container.



As the label is being moved by the impression roll, glue is automatically sprayed on a portion of the reverse side thereof.

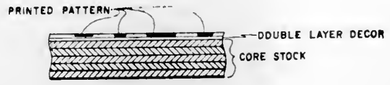
3,798,110
ROTARY SEALING ROLLER
Leo J. Von Gunten, Akron, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 15, 1971, Ser. No. 208,228
Int. Cl. B21b *27/00;* **B32b** *31/00*
U.S. Cl. 156—582 **2 Claims**



A rotary sealing roller employed in wrapping apparatus, said roller providing heat softening of a wax or adhesive on a tear strip ribbon just prior to the same being combined with wrapping material. The roller comprises a thin heated roller having a groove disposed circumferentially around the outer edge and a recess disposed on the outer periphery thereof. The groove provides straight line lateral alignment of the ribbon on the roller at high speeds. The recess prevents heat softening of the wax or adhesive on the ribbon over a short span of its length disposed adjacent to and overlapping the ends of individual wrappers cut from the wrapping material.

3,798,111
MULTIPLE LAYER DECORATED PAPER, LAMINATES PREPARED THEREFROM AND PROCESS
William C. Lane, Chillicothe, Ohio, and Donald E. Moffatt, Lee, Mass., assignors to The Mead Corporation, Dayton, Ohio
Continuation-in-part of abandoned application Ser. No. 147,839, May 28, 1971. This application Mar. 24, 1972, Ser. No. 237,952
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 **12 Claims**

A decorated multiple layer paper suitable for use as a top surface in resin impregnated abrasion resistance decorated laminates, and the laminates prepared therefrom, said multiple layer having a base layer and a top layer, the top layer comprising abrasion resisting mineral particles having a hardness of 7 or more on the Moh scale and a particle size ranging from 10 to 75 microns, and with a printed pattern over the exposed surface of the top layer. The multiple layer paper is made by depositing a



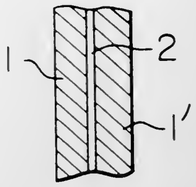
base layer on a paper machine forming wire, and while the base layer is in a wet state and still supported on the forming wire, depositing the top layer thereover. Abrasion resistant decorative laminates are prepared from said decorated multiple layer paper by saturating said paper with a resin, suitably a thermosetting resin followed by uniting with a core and curing of said resin.

3,798,112
COMBINED STAIN RETARDANT AND SEPARATOR INTERLEAVING MATERIAL FOR GLASS SHEETS
William J. Hay, Jr., Cheswick, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Original application Dec. 18, 1970, Ser. No. 99,500, now Patent No. 3,723,312. Divided and this application Aug. 10, 1972, Ser. No. 279,417
Int. Cl. B32b *17/06;* **F16k** *31/00*
U.S. Cl. 161—162 **3 Claims**

Sheets of glass are packaged, using in place of interleaving paper a dedusted agglomerated salicylic acid or a mixture of dedusted agglomerated salicylic acid and inert separator material, such as polystyrene beads. A novel method for agglomerating the acid is disclosed with the resulting salicylic acid agglomerated with polyethylene oxide and comprising substantially spherical particles less than about 30 mesh and having only a minor portion less than about 200 mesh. In accelerated staining tests agglomerated salicylic acid protects against staining slightly less than interleaving paper with its high application cost; agglomerated salicylic acid may be applied to sheets of glass with application costs on the order of those for applying wood flour or Lucite, which have extremely limited or negligible stain-retardant qualities, and this agglomerated material prevents surface scratching better than interleaving paper and nearly as well as an inert spherical separator.

3,798,113
LAMINATED WINDSHIELD STRUCTURE
Joji Suzuki and Keihachiro Tanaka, Hyogo-ken, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan
Application June 6, 1971, Ser. No. 153,888, which is a continuation of abandoned application Ser. No. 780,419, Dec. 2, 1968. Divided and this application Aug. 9, 1971, Ser. No. 170,154
Claims priority, application Japan, Dec. 7, 1967, 42/78,813
Int. Cl. B32b *5/14, 17/10*
U.S. Cl. 161—164 **5 Claims**

A laminated windshield structure has at least two transparent glass sheets and at least one interlayer of an organic polymeric material interposed between the glass sheets and bonded thereto to provide a unitary structure. At least one of said glass sheets has at least one surface with a Li^+ ion concentration higher than that of the interior of the glass sheet and a Na^+ ion concentration lower than that of the interior of the glass sheet. The one glass



sheet is under a tensile stress for giving said glass sheet a reduced impact strength lower than the normal impact strength of a glass sheet of the same thickness and size.

3,798,114
GLASSES WITH HIGH CONTENT OF SILVER OXIDE
Theodor L. Chvatal, Vienna, Austria, assignor to Owens-Illinois, Inc., Toledo, Ohio
No Drawing. Filed May 11, 1971, Ser. No. 142,336
Int. Cl. B32b *15/04*
U.S. Cl. 161—191 **2 Claims**

Glasses having a high content of silver oxide are described. Generally these glasses contain at least 20%, and up to as high as 70% silver oxide expressed as Ag_2O. The glasses also contain a metal oxide of one of the metals, vanadium (V), tungsten (W), molybdenum (Mo), uranium (U) or manganese (Mn), and an oxide of one of the metalloids; viz. boron (B), phosphorous (P), germanium (Ge), arsenic (As), antimony (Sb), bismuth (Bi) or tellurium (Te). Alternatively, the glass may contain in addition to the Ag_2O component, a mixture of oxides of the above transition elements. The glasses are produced by forming a melt using silver in the form of $AgNO_3$ to thereby enable formation of glasses which may have considerable quantities of Ag_2O without precipitating the silver out in the metallic form. The glass compositions are characterized by low melting and low softening temperatures, high density, high refractive index, good infrared transmission characteristics and water resistance. Uses for the glasses include fiber optics, condensers, and glazes for substrates for microelectronic circuits.

3,798,115
LAMINATES OF POLYPROPYLENE AND POLYAMIDE
Alfred Hofmann, Bobenheim-Roxheim, and Hans-Peter Weiss, Altrip, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
No Drawing. Filed Feb. 1, 1972, Ser. No. 222,646
Int. Cl. B32b *27/32, 27/34*
U.S. Cl. 161—227 **1 Claim**

Improvement in sandwich-type polypropylene/polyamide laminates consisting of a layer of a mixture of polypropylene (PP) and polyamide (PA) (layer 2) sandwiched between outer layers 1 and 3 of polypropylene and polyamide respectively. The improvement consists in that

(α) the polypropylene (PP) used is a specific mixture of

(a) a polypropylene of which less than 1% by weight is soluble in boiling toluene and

(b) a polypropylene of which more than 99% by weight is soluble in boiling toluene, provided that the polypropylenes (a) and (b) have (substantially) the same intrinsic viscosities, (substantially) the same molecular weight distributions and specific intrinsic viscosities (η), and

(β) the polyamide (PA) is a polycaprolactam having a specific viscosity and specific melting point.

The laminates of the invention have improved permeability to water vapor, relatively low permeability to oxygen and relatively high stiffness and are therefore particularly suitable for packaging foodstuffs.

3,798,116
HEAT SEALED POLYESTER FILM
Howard D. Bassett, Downers Grove, Franklin E. Schrage, Flossmoor, and George F. Kirkpatrick, Downers Grove, Ill., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Filed Oct. 18, 1971, Ser. No. 190,277
Int. Cl. B32b *7/02;* **F16l** *11/00*
U.S. Cl. 161—231 **5 Claims**

A flexible heat set biaxially oriented film article having in at least one portion thereof a bead type heat seal which is prepared by clamping together adjacent the portion to be heat sealed, superimposed plies of a heat set, biaxially oriented polyester film, said film being characterized as having a tensile strength of at least 15,000 p.s.i. and a ratio of tensile strengths in the TD to MD direction between about .67 and 1.5, imposing a heat energy source to fuse in a bead type seal the superimposed film and maintaining the plies of film pressed together until the source of heat energy is retracted therefrom.

3,798,117
LAMINATE COMPRISING PIGMENTED MELAMINE RESIN MODIFIED NITRILE RUBBER IMPREGNATED BASE AND SUPERIMPOSED FILM
Alfred Thomas Guertin, Ronald James Keeling, and Walter William Schlermeier, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio
No Drawing. Filed Mar. 15, 1972, Ser. No. 235,043
Int. Cl. B32b *27/42*
U.S. Cl. 161—251 **7 Claims**

A decorative laminate comprising a heat and pressure consolidated assembly comprising in superimposed relationship at least one dried paper base sheet impregnated with a pigmented mixture of a nitrile rubber latex and a water dispersible melamine-formaldehyde resin surfaced with a thermoplastic film back-printed with a design thereby rendering the film translucent or a thermoplastic film pigmented so as to render it translucent.

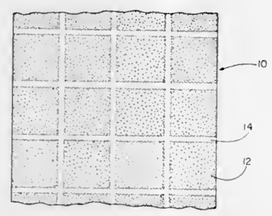
3,798,118
HOT MELT ADHESIVE FORMULATION
Faber B. Jones, Nowata, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
No Drawing. Continuation-in-part of application Ser. No. 100,294, Dec. 21, 1970, which is a continuation-in-part of application Ser. No. 614,413, Feb. 7, 1967, which in turn is a continuation-in-part of application Ser. No. 580,194, Sept. 19, 1966, all now abandoned. This application June 6, 1972, Ser. No. 260,214
Int. Cl. C08f *45/30, 45/52*
U.S. Cl. 161—245 **10 Claims**

Hot melt adhesive compositions with superior resistance to high temperature loss of strength are prepared from conventional ingredients including resin tackifiers and waxes plus a high melt flow resinous polymer of propylene The adhesive formulations can contain about 20 to 90 weight parts of substantially crystalline resinous propylene polymer which includes homopolymers of propylene, and copolymers of ethylene and propylene and 10 to 80 weight parts of resin tackifier and optionally a proportion of wax per 100 parts of total adhesive formulation. The compositions can be used as sealants or adhesives in producing laminates which can then be exposed to boiling water or steam without adhesive failure.

3,798,119
PROCESS FOR BLEACHING KRAFT PULP WITH OXYGEN IN THE PRESENCE OF WHITE LIQUOR FROM A KRAFT RECOVERY SYSTEM
Rudra P. Singh, Ridley Park, Pa., assignor to Scott Paper Company, Philadelphia, Pa.
No Drawing. Filed Apr. 24, 1972, Ser. No. 247,119
Int. Cl. D21c *9/10*
U.S. Cl. 162—65 **5 Claims**

An improved method of bleaching kraft pulp in an oxygen-based bleaching process is disclosed in which (a) white liquor from a kraft recovery system is employed as a source of alkali in the oxygen-based bleaching process without any pretreatment of the white liquor to remove sodium sulfide and (b) the effluent from the oxygen-based bleaching process is recycled directly to the kraft recovery system.

3,798,120
DISPOSABLE TISSUE WITH CONTROLLED WET BREAK-UP
Kenneth M. Enloe, Neenah, and James T. Gresham, Hortonville, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 11, 1972, Ser. No. 243,022
Int. Cl. D21h *5/02*
U.S. Cl. 162—112 **12 Claims**

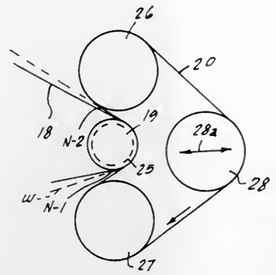


Absorbent tissue webs structured to control wet breakup and designed especially for disposal in recirculating toilets. Selectively spaced areas of the tissue are treated with a wet strength chemical which strongly binds the fibers to each other in the selected areas to prevent wet disintegration of these areas. The wet strengthened areas comprise a multiplicity of closely spaced patches of predetermined size arranged to cover the major portion of the total web area. These patches are separated by narrow web portions substantially free of binder. When sheets of the thus treated tissue web are deposited in the aqueous system of a recirculating toilet and subjected to circulatory action of the aqueous fluid therein, the narrow web portions quickly weaken and rupture. The major areas of the sheets represented by the wet-strengthened patches are dispersed in the water as small individual patches which retain their integrity and approximate size. The narrow unbonded web portions break up into individual component fibers but these fibers represent only a minimal part of the total fibers in the web.

3,798,121
WRAPPED ROLL PRESS
Leroy H. Busker, Rockton, and Carl J. Francik, Roscoe, Ill., assignors to Beloit Corporation, Beloit, Wis.
Filed Oct. 28, 1971, Ser. No. 193,272
Int. Cl. D21f *3/06*
U.S. Cl. 162—205 **12 Claims**

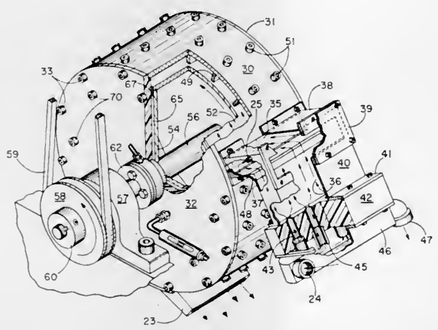
An apparatus and method for forming a fibrous web and particularly for removing water therefrom by a compressing action which includes passing the web over a portion of the outer surface of a revolving roll and applying a belt to the outer surface to define a pressing zone

in which the web is pressed due to the linear tension on the belt with a felt or other means passed through the pressing zone to receive water pressed from the compacted web and the belt being imperforate and equal



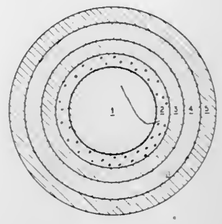
atmospheric pressures existing on both sides of the pressing zone so that the water is expressed solely by the application of mechanical pressure which is at least as great as 100 pounds per square inch.

3,798,122
METHOD AND APPARATUS FOR THE PRODUCTION OF FIBROUS SHEETS
David W. Appel, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation-in-part of application Ser. No. 798,409, Feb. 11, 1969. This application June 26, 1972, Ser. No. 266,075
Int. Cl. D21l *1/00*
U.S. Cl. 162—315 **5 Claims**



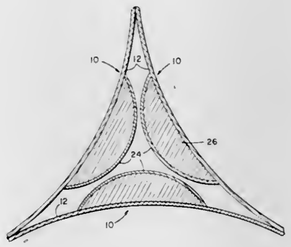
An apparatus arrangement and method for the generation of a fiber containing foam and the draining of the foam substantially immediately following its formation is disclosed. The draining on a foraminous support commences within about 100 milliseconds of the termination of the action which generates the foam. The conveying of the foam from the generation zone to the foraminous support is such that the fibers are not significantly changed in their orientation by movement to the foraminous support. The foam is formed in a wide, thin ribbon so that lateral spreading of the foam to attain sheet width is not necessary.

3,798,123
NUCLEAR FUEL FOR HIGH TEMPERATURE GAS-COOLED REACTORS
Terrence B. Lindemer, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Mar. 16, 1972, Ser. No. 235,206
Int. Cl. G21c *3/06, 3/20*
U.S. Cl. 176—67 **8 Claims**



A method of controlling fuel failure within a nuclear reactor by providing a novel fuel particle which maintains a total carbon monoxide and carbon dioxide partial pressure of less than $10^{(6.8-13,300/T°\ K.)}$ atmospheres at temperatures above 1350° K.

3,798,124
FUEL SUBASSEMBLY FOR NUCLEAR REACTOR
Richard C. Noyes, Hartford, Conn., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed May 27, 1969, Ser. No. 828,269
Int. Cl. G21c *3/06, 3/32*
U.S. Cl. 176—76 **4 Claims**

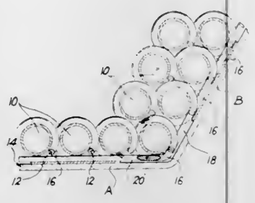


A circular cylinder nuclear fuel subassembly having extended circumferentially spaced containers of moderating material along the outer periphery to permit a plurality of subassemblies to be assembled in contact with each other and the containers occupying the spaces between the subassemblies.

3,798,125
NUCLEAR FUEL SUBASSEMBLY
Jean Skok, Aix-en-Provence, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Nov. 16, 1971, Ser. No. 199,104
Claims priority, application France, Nov. 20, 1970, 7041794
Int. Cl. G21c *3/08, 3/32*
U.S. Cl. 176—78 **5 Claims**

A nuclear fuel assembly for a liquid metal cooled fast reactor comprises a bundle of fuel pins in a shroud. Each pin carries a helical spacer fixing the minimum spac-

ing between each pin and the adjacent pins or the shroud. Localized head losses along the lateral subchannels are



produced by wires disposed parallel to the inner wall of the shroud and obliquely with respect to the axes of the pins.

3,798,126

FISH PROTEIN ISOLATE

Rupert Josef Gasser, Kempttal, Grafstal, and Lienhard Bodo Huster, Winterthur, Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

No Drawing. Filed Sept. 10, 1971, Ser. No. 179,586

Claims priority, application Great Britain, Sept. 23, 1970, 45,311/70

Int. Cl. C12b *1/00*

U.S. Cl. 195—5 **19 Claims**

Protein is isolated from fish material (e.g. fish meal, raw fish, fish offal) by solubilization with alkali and the lipids present in the fish are removed by liquid-liquid extraction with one or more solvents.

3,798,127

MEDIUM FOR THE CULTURE OF THE *ESCHERICHIA COLI* STRAIN

Maria Dogariu, Georgeta Alupei, Maria Verdes, Gaby Friedman, Escaterina Grumeza, Tudor Cobzariu, and Ligia Ionescu, Iasi, Rumania, assignors to Fabrica de Antibiotice Iasi, Iasi, Rumania

No Drawing. Filed June 20, 1972, Ser. No. 264,496

Int. Cl. C12b *3/14;* **C12d** *13/10*

U.S. Cl. 195—65 **6 Claims**

The invention relates to a medium for the culture of the *Escherichia coli* strain, which is a producer of pencillinacylase (penicilliamidase), a penicillin-splitting enzyme. This medium contains urea in an amount of 0.1 to 1% by weight as a nitrogen source and lecithin in an amount of 0.01 to 0.05% by weight as a promoter of the process for formation of the penicillinacylase enzyme.

3,798,128

METHOD FOR THE PRODUCTION OF GRANULAR ENZYME PREPARATION

Shinpei Minato, Hyogo, Jisaku Goto, Osaka, and Kiyoshi Katagiri and Hiromi Nakatani, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,493

Claims priority, application Japan, Apr. 8, 1970, 45/29,896

Int. Cl. C07g *7/02*

U.S. Cl. 195—68 **4 Claims**

The present invention relates to an improved process for producing a granular enzyme preparation which comprises blending an aqueous enzyme solution and water soluble salt with a hydrophilic organic solvent at specific concentration and temperature. The advantages of the process include improved ease of handling, safety and uniformity of product.

3,798,129

PROCESS FOR PRODUCING PARVULINES

Eva Toth-Sarudy, Istvan Horvath, Jozef Gyimesi, Istvan Ott, Laszlo Alfoldi, Janos Berdy, Istvan Koczka, Vilma Scholtz, Valeria Szell, and Eva Laszio nee Tomori, Budapest, Hungary, assignors to Gyogyszerkutato Intezet, Budapest, Hungary

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,173

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **5 Claims**

A process for the microbiological production of parvulines, in which *Streptomyces parvulus* var. *parvuli* NRRL 5740 (deposited at the National Health Institute, Budapest, Hungary on Oct. 31, 1967, under No. 36) is cultured at aerobic conditions, at 24–32° C. in a medium containing complex proteins, carbohydrates and mineral salts, and the antibiotics accumulated are recovered by extraction.

3,798,130

PYRROLINE BASED COMPOUNDS

Carolina Coronelli, Giangualberto Gallo, and Graziella Beretta, Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Original application Jan. 28, 1971, Ser. No. 110,755, now Patent No. 3,737,439. Divided and this application Nov. 7, 1972, Ser. No. 304,355

Int. Cl. C12k *1/00*

U.S. Cl. 195—80 R **4 Claims**

A 1-pyrroline-2-acrylamide, which is suitable for use as an antibiotic (herein referred to as pyracrimycin A) is produced by cultivation of *Streptomyces eridani* n. sp. ATCC 21619 and can be isolated from the fermentation medium by extraction. The antibiotic substance is active against various Gram-positive and Gram-negative bacteria. The dihydro derivative of 1-pyrroline-2-acrylamide is also disclosed.

3,798,131

ASSAY FOR POLYMERIC DNA AS A METHOD FOR DETECTING MALIGNANCY

Donald E. Rounds and K. Sankara Narayan, Altadena, Calif., assignors to Pasadena Foundation for Medical Research, Pasadena, Calif.

No Drawing. Filed Apr. 24, 1972, Ser. No. 246,881

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **7 Claims**

A method is disclosed for determining polymeric DNA and therewith the presence of cancerous cells. A sample of a biological fluid, such as blood serum, irrigation fluids, etc., is obtained and filtered. A fluorescent substance is admixed with the filtrate which is capable of binding with polymeric DNA, after which the fluorescent intensity of the mixture is determined. The polymerized DNA content of the solution is digested and the fluorescent intensity measured a second time. The difference in the two readings indicates quantitatively the polymerized DNA present, which has been found to be an indication of the presence of cancerous cells.

3,798,132

BUTADIENE RECOVERY PROCESS

Dante H. Sarno, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

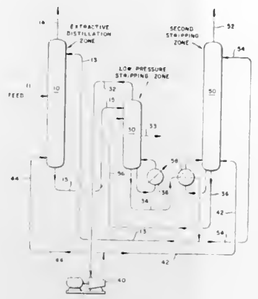
Filed Mar. 29, 1971, Ser. No. 129,086

Int. Cl. B01d *3/40;* **C07c** *7/08*

U.S. Cl. 203—53 **3 Claims**

A process for separating butadiene from mixtures of butadiene and C_4 unsaturates in an extractive distillation of the mixture in the presence of a polar solvent and recovering the butadiene from the fat solvent mixture is

disclosed. The butadiene-containing hydrocarbon mixture is introduced to the intermediate portion of an extractive distillation zone wherein it is contacted with the polar solvent which flows downwardly in the zone. In this manner butadiene is recovered in the fat solvent from the bottom of the extractive distillation zone. This fat solvent is introduced to a first stripping zone operated at a pressure lower than the extractive distillation



zone where the butadiene is stripped from the solvent. The butadiene-rich vapor from this first stripping zone is then compressed to a pressure higher than that of the extractive distillation zone. A portion of the compressed vapor is returned to the bottom portion of the extractive distillation zone and butadiene is recovered from the remaining portion of the compressed vapor in a second stripping zone.

3,798,133

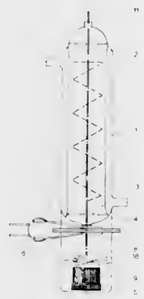
EXTRACTOR ASSEMBLY

Edward L. Randall, 8615 Erinbrook Way, Sacramento, Calif. 95826

Filed Oct. 18, 1971, Ser. No. 190,064

Int. Cl. B01d *11/02*

U.S. Cl. 203—99 **9 Claims**



Apparatus as a new and improved extractor assembly for consecutive hot solvent extraction, vapor and vapor condensate extraction.

3,798,134

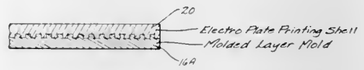
METHOD OF MAKING AN ELECTROTYPE SHELL

James A. Hynes, Winnetka, Ill., assignor to Printing Plate Supply Co., Chicago, Ill.

Filed Nov. 15, 1971, Ser. No. 198,955

Int. Cl. B41m *5/02;* **B51c** *3/08*

U.S. Cl. 204—6 **8 Claims**



An electrotype printing shell is made by first making a negative film of the subject matter to be printed and then making a positive master of a photopolymer photosensitive material from the negative film. A soft, flowable polymer material is then spread over the positive master and the liquid material is then polymerized such that a thin molded layer is formed on the positive master. The thin molded layer is then removed and sensitized followed by electroplating a printing shell material on the sensitized molded layer functioning as a mold. Lastly, the printing shell is removed from the molded layer mold.

3,798,135

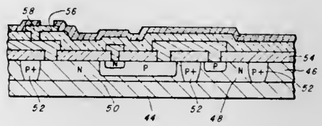
ANODIC PASSIVATING PROCESSES FOR INTEGRATED CIRCUITS

Ronald C. Bracken, James G. Harper, and Arnold D. Paddock, Dallas, and Wilson G. Morrison, Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 3, 1972, Ser. No. 249,807

Int. Cl. C23b *5/48;* **H01l** *11/00*

U.S. Cl. 204—15 **12 Claims**



Anodic oxidation is employed in the fabrication of integrated circuits to provide passivation and protection from abrasion. In one aspect of the invention the anodized passivating layer is selectively etched to expose bonding pads and scribe line areas. In a different aspect of the invention, a method for fabricating a multilevel interconnected integrated circuit is provided wherein a layer of anodic oxide is formed to cover the first level of interconnects. A layer of insulating material is then deposited over the anodic oxide layer to advantageously reduce interlevel capacitance. First level bonding pads and scribe line areas are exposed. A conductive layer is then deposited and patterned to form the second level interconnect pattern. This second level interconnect may also be protected by an anodic oxidation overlayer, if desired.

3,798,136

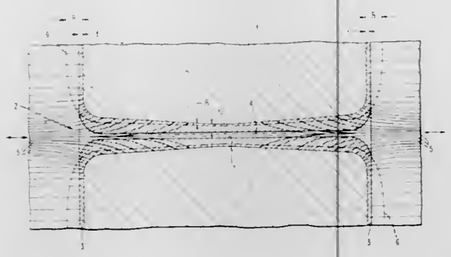
METHOD FOR COMPLETELY FILLING SMALL DIAMETER THROUGH-HOLES WITH LARGE LENGTH TO DIAMETER RATIO

Judith D. Olsen, South Salem, and Lubomyr T. Romankiw, Briarcliff Manor, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 9, 1972, Ser. No. 261,459

Int. Cl. C23b *5/48, 5/56*

U.S. Cl. 204—15 26 Claims



A method and apparatus for plating through large length to diameter ratio holes in a substrate is disclosed. The method consists of forming holes in a substrate which are tapered either by electron beam, or laser drilling, or by forcing an appropriate etchant through a previously drilled hole. The substrates may be of any material and can be either insulating or conductive. In the instance of the former, the substrate should be of such a character that it is amenable to electroless plating or other surface metallizing techniques. After metallizing the tapered hole where the substrate is conductive, the interiors of the tapered holes are electroplated while simultaneously subjecting the tapered portion to agitation by forced convection. Using a prior art plating solution of high throwing power, and forcing it through the tapered holes from the large end toward the small end, causes relatively high deposition rates at the widest portion of the taper which gradually decrease along the length of the taper until the narrow portion is reached where the minimum deposition rate occurs. Under such circumstances, plating occurs non-uniformly along the length of the taper such that the tapered holes are substantially closed without leaving large, unwanted voids which contribute to poor conductivity characteristics. The length of holes which may be filled can be doubled by providing a taper which decreases toward the midpoint of a substrate and from there increases in size until the opposite side of the substrate is reached. Using the same electroplating solution of high throwing power, plating through holes of this character can be accomplished while periodically reversing the direction of flow through the "double taper" holes.

Apparatus for carrying out the above described method consists of an enclosed chamber having inlet and outlet ports through which plating solution under pressure can be forced. Anodes consisting of wire mesh are disposed adjacent to both the inlet and outlet ports while an element containing holes which are to be plated-through forms the cathode and is disposed intermediate the anodes. Where a single taper is used, electroplating solution is forced in one direction but, where a "double taper" is utilized, the flow of electroplating solution is periodically reversed. The method and apparatus of the present invention provides completely plated through-holes which have a length to diameter ratio in excess of 25 and, in addition, have extremely good conductivity characteristics.

3,798,137

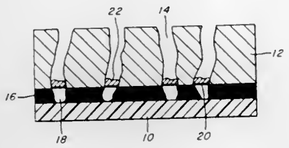
DIRECT CURRENT PIGMENTING OF ANODIZED ALUMINUM

William P. Kampert, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 22, 1972, Ser. No. 237,179

Int. Cl. C23b *9/02*

U.S. Cl. 204—35 N 7 Claims



Direct current electrolytic coloring of anodized aluminum with As, Sb, Bi, Cu, Ag, Cd, Sn, Se, Te and Tl.

3,798,138

ELECTRODEPOSITION OF COPPER

Barnet D. Ostrow and Fred I. Nobel, Roslyn, N.Y. assignors to Lea-Ronal, Inc., Freeport, N.Y.

No Drawing. Continuation of application Ser. No. 790,854, Jan. 13, 1969, which is a continuation-in-part of application Ser. No. 469,323, July 2, 1965, both now abandoned. This application July 21, 1971, Ser. No. 164,893

Int. Cl. C23b *5/20, 5/46*

U.S. Cl. 204—52 R 19 Claims

Copper is electrodeposited from an aqueous acid plating bath or solution containing at least one copper salt, a heterocyclic sulphur-nitrogen organic compound, such as water soluble derivatives of 2-thiazolidinethiones, 2-imidazolidinethiones or their reaction products with alkyl aldehydes or dialdehydes, and a water soluble brightener containing a carbon-sulphur group in which the carbon atom is attached to at least one other hetero-atom, such as sulphur or nitrogen.

3,798,139

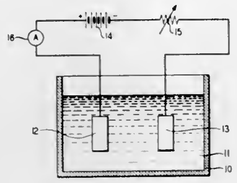
ELECTROLYTIC OXIDATION OF GALLIUM CONTAINING COMPOUND SEMICONDUCTORS

Bertram Schwartz, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of abandoned application Ser. No. 207,052, Dec. 13, 1971. This application Sept. 25, 1972, Ser. No. 292,127

Int. Cl. C23b *11/00*

U.S. Cl. 204—56 R 28 Claims



Electrolytic oxidation systems are described for growing an amorphous oxide layer on the surface of a gallium containing compound semiconductor. The electrolyte comprises either H_2O adjusted to an acidic or basic pH range or an H_2O_2 solution. Utilizing these systems, oxide thicknesses of greater than 1000 angstroms can be grown in relatively short periods of time.

3,798,140

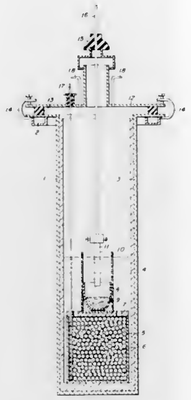
PROCESS FOR PRODUCING ALUMINUM AND SILICON FROM ALUMINUM SILICON ALLOYS

Thomas A. Sullivan, Eben L. Singleton, and Morris L. Johnson, Boulder City, Nev., assignors to the United States of America as represented by the Secretary of the Interior

Filed Feb. 1, 1973, Ser. No. 328,826

Int. Cl. C01b *33/02;* C22d *3/12*

U.S. Cl. 204—67 10 Claims



Aluminum–silicon alloy produced, for example, by smelting aluminum-silicate ore, is employed as the anode in electrolysis in a molten salt electrolyte of

$$NaCl—KCl—AlCl_3$$

or $NaCl—KCl—AlF_3$. Molten aluminum is produced at the cathode. Anode residue is acid leached to produce metallurgical grade silicon.

3,798,141

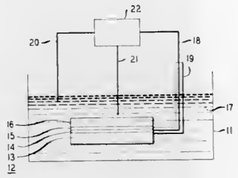
TECHNIQUE FOR ELECTROETCHING THIN FILM METALLIZATION

Joseph Yahalom, Maplewood, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 19, 1972, Ser. No. 298,856

Int. Cl. C23b *3/02*

U.S. Cl. 204—129.43 7 Claims



Pattern delineation of thin film metallizations including gold, platinum and rhodium is effected electrolytically in the presence of a strong acid having a pH less than one. The described technique permits controlled etching of noble metals which heretofore have been etched only with difficulty.

3,798,142

CORROSION PROTECTION

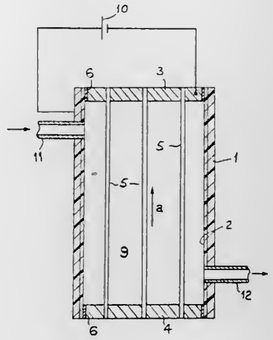
Lee Stanley Evans, Rugby, England, assignor to Courtaulds Limited, London, England

Continuation-in-part of abandoned application Ser. No. 64,591, Aug. 17, 1970. This application Apr. 20, 1972, Ser. No. 245,752

Claims priority, application Great Britain, Aug. 28, 1969, 42,793/69

Int. Cl. C23f *13/00*

U.S. Cl. 204—147 8 Claims



A corrosion resistant structure which comprises plastics material and metal, the plastics material having carbon fibres incorporated therein at such a concentration as to render at least part of the plastics material electrically conducting, the pastics material and the metal each having means for electrically connecting them to a source of electrical supply so that the metal is electrochemically protected. Examples of such structures are heat exchangers and boats with glass fibre-reinforced hulls.

3,798,143

ELECTROPHORETIC DEPOSITION OF ACRYLIC COPOLYMERS

Rolf Rolles and Paul F. Wallace, New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,735

Int. Cl. B01k *5/02;* C23b *13/00*

U.S. Cl. 204—181 9 Claims

Electrophoretic deposition of an acrylic interpolymer comprising methyl methacrylate and an acrylic acid or related unsaturated short-chain carboxylic acid on an aluminum or anodized aluminum substrate from an aqueous colloidal dispersion.

3,798,144

METHOD FOR SEPARATING LIQUIDS

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company

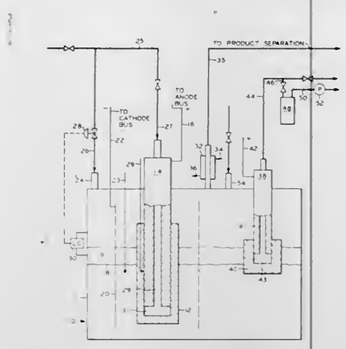
Original application Sept. 17, 1969, Ser. No. 858,734, now Patent No. 3,617,453. Divided and this application May 17, 1971, Ser. No. 143,892

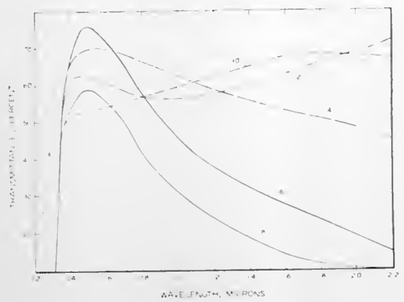
Int. Cl. B01d *13/02;* B03c *5/00*

U.S. Cl. 204—186 6 Claims

Method and apparatus for removing a layer of a first liquid from a body of a second liquid. Said first liquid

is caused to selectively flow through the pores of and into a porous collection cup immersed therein. Application of an electric current to said cup increases the selectivity thereof for said first liquid.





3,798,145

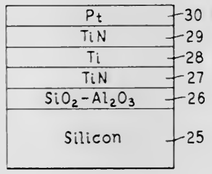
TECHNIQUE FOR REDUCING INTERDIFFUSION RATES AND INHIBITING METALLIC COMPOUND FORMATION BETWEEN TITANIUM AND PLATINUM

Paul Richard Fournier, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed May 30, 1972, Ser. No. 258,072

Int. Cl. C23c *15/00;* **H01l** *5/00*

U.S. Cl. 204—192 **4 Claims**



A technique for reducing the interdiffusion rates and inhibiting intermetallic compound formation between thin film titanium-platinum metallizations involves incorporating a titanium nitride layer intermediate the titanium and platinum.

3,798,146

METHOD OF MAKING A TRANSPARENT ARTICLE HAVING REDUCED RADIATION TRANSMITTANCE

Chong T. Wan, Douglas L. Chambers, and Donald C. Carmichael, Columbus, Ohio, assignors to Shatterproof Glass Corporation, Detroit, Mich.

Continuation of abandoned application Ser. No. 114,823, Feb. 12, 1971. This application June 6, 1973, Ser. No. 367,585

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **5 Claims**

A transparent article having reduced radiation transmittance which comprises a body of transparent glassy siliceous material having a smooth continuous surface, a continuous intermediate layer sputter-coated on the continuous surface to a thickness of from 10 to 200 A., the intermediate layer being of a metal selected from the group consisting of molybdenum, titanium, chromium, tungsten, tantalum, and their alloys, and a continuous film sputter-coated on the continuous intermediate layer to a thickness of from 100 to 500 A., the film being of a metal selected from the group consisting of gold, gold-base alloys, copper and copper-base alloys.

3,798,147

DEVICE FOR MEASURING AN ACTIVITY OF ZINC IONS

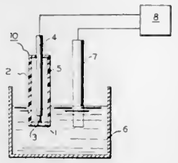
Kenji Higashiyama and Hiroshi Hirata, Osaka, Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan

Filed Feb. 28, 1972, Ser. No. 229,913

Claims priority, application Japan, Mar. 2, 1971, 46/11,124, 46/11,125; Mar. 3, 1971, 46/11,408, 46/11,409

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 M **7 Claims**



A device for measuring an activity of zinc ions comprises a selective electrode and a reference electrode immersed in a solution containing zinc ions, said selective electrode including a disc in a batch composition which comprises a combination of zinc chalcogenide and at least one member selected from the group consisting of silver telluride and silver selenide or a combination of silver sulfide and at least one member selected from the group consisting of zinc telluride and zinc selenide.

3,798,148

DEVICE FOR CONDUCTING CURRENT TO A ROTATING ELECTROPLATING BARREL

Wolfgang Petzold, Rankestrasse 72, Nuremberg, Germany

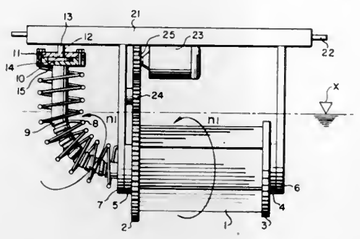
Continuation-in-part of abandoned application Ser. No. 75,164, Sept. 24, 1970. This application Aug. 23, 1972, Ser. No. 283,173

Claims priority, application Germany, Oct. 2, 1969, P 19 50 342.5

Int. Cl. C23b *5/78*

U.S. Cl. 204—213 **13 Claims**

An arrangement for conducting electrical current to the interior of a rotating drum for the treatment of surfaces on articles within the drum. Electroplating current is conducted from a stationary source to the bearings of a rotating drum, by way of a flexible cable. A flexible shaft made of a series of interlinking elements, carries a conducting cable having one end secured to an assembly rotating with the shaft. The rotating assembly envelops a stationary disc-shaped member through which current is conducted to the movable assembly and the cable secured thereto.



3,798,149

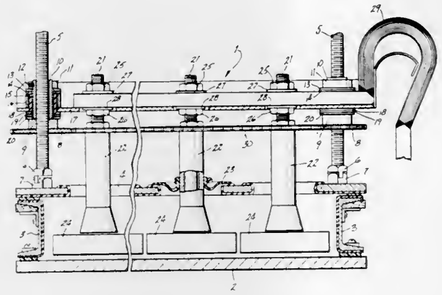
ANODE ADJUSTMENT MEANS FOR MERCURY CATHODE ELECTROLYTIC CELLS

Elmer N. Macken, Stamford, Conn., assignor to Olin Corporation

Filed Aug. 21, 1972, Ser. No. 282,530

Int. Cl. B23p *1/12;* **C22d** *1/04*

U.S. Cl. 204—225 **9 Claims**



The invention relates to improvements in apparatus for the adjustment of the elevation of anodes in a horizontal mercury cell employing a vertical motion coordinating member comprising the combination of a rotary member, a tube and a band. Rotation of the vertical motion coordinating member assures uniform positive vertical movement of the anode-supporting member.

3,798,150

APPARATUS FOR THE TREATMENT OF LIQUORS USING POROUS DEPOSITION ELECTRODES

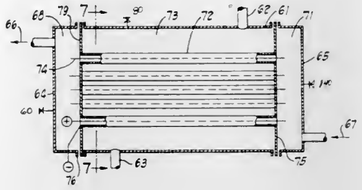
Allan E. Gilchrist, Westlake, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed Jan. 3, 1972, Ser. No. 214,650

Int. Cl. B01k *3/04*

U.S. Cl. 204—272 **7 Claims**

Pressure cell apparatus for the treatment of electrically conductive feed liquor is set forth. The conformation of the apparatus is broadly that of a shell-and-tube heat exchanger that can be of the single pass or multipass variety, and it can have substantially straight or bent tubes, including tubes with return bends. However, in this apparatus tubes are electrodes, and they are microporous. Electrode means of polarity opposite the tubes are provided; e.g., in the form of one or more charged heads or elements between such head or heads and the tube ends proximate thereto. Preferably the counter electrodes actually extend into the tubes. Appropriate fluid inlets and outlets and electrical terminals are provided.



3,798,151

DEPOSITION PLATE TO BE USED AS A STARTER BLANK OR CATHODE FOR USE IN METAL REFINING

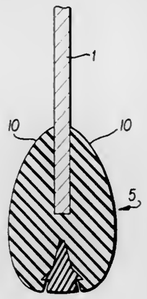
Akira Takamura, Akashi, Yasuo Moriguchi, Nishinomiya, and Hiroshi Sato, Kobe, Japan, assignors to Kobe Steel, Ltd., Fukiai-ku, Kobe-shi, Japan

Filed Sept. 28, 1972, Ser. No. 292,999

Claims priority, application Japan, Oct. 8, 1971, 46/93,125

Int. Cl. B01k *3/00;* **C23b** *7/00*

U.S. Cl. 204—281 **7 Claims**

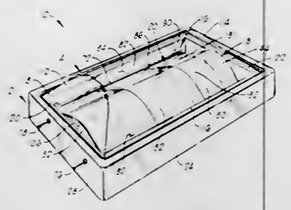


A deposition plate to be used as a starter blank for producing a starter sheet useful in an electrolytic metal-refining process, the starter blank having a resilient, flexible frame around the peripheral edge thereof. To facilitate the insertion of the starter blank within the frame, as well as the stripping of the starter sheet from the starter blank, a wedge member is associated with the frame, the wedge member being removed from the frame upon insertion of the blank, and being subsequently inserted within the frame so as to lock the frame and blank together. The resilient flexible frame preferably forms a sharp intersection with the starter blank.

The plate may likewise be used as a cathode, in which case the resilient, flexible frame does not extend around the entire periphery of the cathode as is the case with the starter blank, but to the contrary, extends only along the longitudinal sides thereof, the bottom portion having been removed. To facilitate stripping of the copper deposits

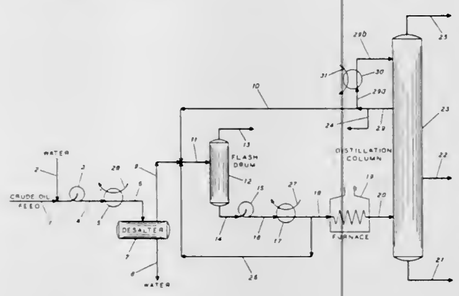
from the cathode plate, the bottom edge of the plate contains an inwardly extending V-shaped groove or notch in lieu of the removed portion of the resilient frame.

3,798,152
ELECTROPHORESIS CELL MEANS
Leo P. Cawley, P.O. Box 8152, Wichita, Kans. 67208
Filed Oct. 16, 1972, Ser. No. 297,638
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **9 Claims**



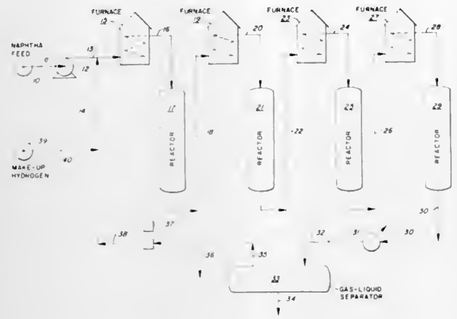
An electrolytic cell for immundodiffusion has a covered tray. Within the tray are oppositely chargeable electrodes. The tray has a cavity with an inlet and an outlet. The electrolytic cell receives conductive gel in the tray in contact with the electrodes. A heat transfer fluid is passed through the cavity to regulate the temperature of the gel.

3,798,153
CRUDE OIL PROCESSING
John H. Arndt, Jr., Berkeley, and Wayne A. Ebert, Dublin, Calif., assignors to Chevron Research Company, San Francisco, Calif.
Filed Jan. 26, 1973, Ser. No. 326,616
Int. Cl. C10g *17/00, 33/00*
U.S. Cl. 208—48 AA **9 Claims**



In a process which comprises heating, desalting and then further heating hydrocarbonaceous oil using heat exchangers and a desalter, an improvement is made which comprises: (a) desalting the oil to obtain desalted oil; (b) injecting a hot fluid into the desalted oil, said hot fluid being at a temperature higher than the desalted oil; and (c) flashing the desalted oil before further heating of the desalted oil in any heat exchanger. Preferably, the hot fluid injected into the desalted oil is a hot distillate withdrawn from the crude oil distillation column located downstream of the flashing step. The hot distillate serves to ameliorate possible foaming in the flash drum by lowering the viscosity of the desalted oil through raising the over-all temperature and through the lower viscosity of the distillate compared to the crude oil at a given temperature.

3,798,154
REFORMING WITH A NON-NOBLE-METAL-MORDENITE CATALYST
Ralph J. Bertolacini, Chesterton, Ind., and Harry M. Brennan, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.
Original application Feb. 16, 1971, Ser. No. 115,613, now abandoned. Divided and this application Mar. 1, 1972, Ser. No. 231,052
Int. Cl. C10g *35/08, 39/00, 35/06*
U.S. Cl. 208—65 **24 Claims**



The catalyst comprises a hydrogenation component comprising a member selected from the group consisting of a metal of Group VI–A, compounds of a metal of Group VI–A, and mixtures thereof supported on a co-catalytic solid support comprising mordenite and a porous refractory inorganic oxide. The hydrogenation component may be characterized further by a member selected from the group consisting of rhenium, compounds of rhenium, a non-noble metal of Group VIII, compounds of a non-noble metal of Group VIII, and mixtures thereof. The preferred Group VI–A metal is molybdenum.

A reforming process comprises contacting a petroleum hydrocarbon stream in a reforming zone under reforming conditions and in the presence of hydrogen with the above catalyst. In one embodiment, the process comprises contacting a partially-reformed hydrocarbon stream in a reforming zone under reforming conditions and in the presence of hydrogen with the above catalyst. In another embodiment, the process comprises contacting the petroleum hydrocarbon stream in a first reforming zone under reforming conditions and in the presence of hydrogen with a catalyst comprising a platinum group metal and a halide on alumina to produce a first reformate and subsequently contacting the first reformate in a second reforming zone under reforming conditions and in the presence of hydrogen with the above catalyst.

3,798,155
HYDROCARBON CONVERSION PROCESS AND BIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN
Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Mar. 10, 1972, Ser. No. 233,819
Int. Cl. C10g *35/06*
U.S. Cl. 208—139 **8 Claims**

A catalytic composite comprising a combination of a platinum group component, a bismuth component and a halogen component with a porous carrier material is disclosed. The platinum group metal and halogen components are present in the composite in amounts, calculated on an elemental basis, corresponding to about 0.01 to about 2 wt. percent platinum group metal and about 0.1 to about 3.5 wt. percent halogen. The bismuth component is present in

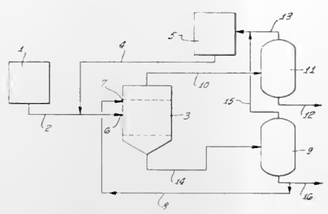
an amount corresponding to an atomic ratio of bismuth to platinum group metal of about 0.1:1 to about 1:1. Moreover, both the platinum group component and the bismuth component are uniformly dispersed throughout the porous carrier material and both of these metallic components are present in the elemental metal state. The principal utility of the subject composite is in the conversion of hydrocarbons, particularly in the reforming of a gasoline fraction. A specic example of the catalyst disclosed is a combination of a platinum component, a bismuth component, and a halogen component with an alumina carrier material, wherein the platinum and bismuth components are uniformly dispersed throughout the carrier material, wherein the composite contains 0.01 to 2 wt. percent platinum, 0.1 to 3.5 wt. percent halogen, and an amount of bismuth corresponding to an atomic ratio of bismuth to platinum of 0.1:1 to 1:1 and wherein both the platinum and bismuth components are present as the corresponding elemental metals.

3,798,156
HYDROPROCESSING CATALYST AND PROCESS
Albert L. Hensley, Jr., Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.
Filed Sept. 22, 1971, Ser. No. 182,704
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 **23 Claims**

The catalyst comprises a hydrogenation component on a solid catalytic support comprising a composite of zinc oxide and a catalytically active alumina. The support comprises a maximum amount of 50 wt. percent zinc oxide, based on the weight of said support. The hydrogenation component comprises a member selected from the group consisting of a metal of Group VI–A and a metal of Group VIII of the Periodic Table of Elements, the oxides of said metals, the sulfides of said metals, and combinations thereof. A preferred Group VI–A metal is molybdenum and a preferred Group VIII metal is cobalt.

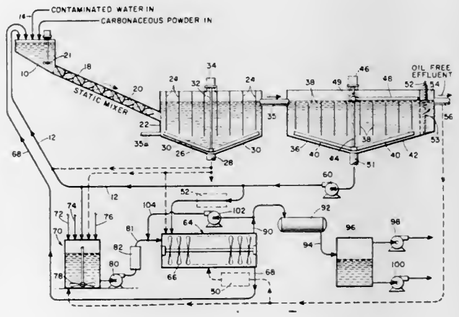
The process comprises contacting a hydrocarbon feedstock in a reaction zone with the above catalytic composition in the presence of hydrogen and under hydroprocessing conditions. An embodiment of the process is a hydrodesulfurization process.

3,798,157
PROCESS FOR THE REMOVAL OF CONTAMINANTS FROM HYDROCRACKING FEEDSTOCKS
Fernando Manzanilla, Armando Manjarrez, and Lino Conroy, Mexico City, and Julio Lara, Edo. de Mexico, Mexico, assignors to Instituto Mexicano del Petroleo, Mexico City, Mexico
Continuation of abandoned application Ser. No. 84,853, Oct. 28, 1970. This application May 10, 1973, Ser. No. 358,841
Int. Cl. C10g *21/40*
U.S. Cl. 208—251 **2 Claims**



The elimination of metallic poisons for hydrocracking catalysts and asphaltene and like polymer fractions from feedstocks is achieved rapidly and effectively by adding to the feedstock insoluble finely particulate matter, e.g. talc or asphaltene in quite minor amount, combining the metallic compounds and polymer fractions into gravity separable agglomerates and separating the agglomerates and the desired fraction of the feedstock.

3,798,158
PROCESS FOR REMOVING OIL AND OTHER ORGANIC CONTAMINANTS FROM WATER
Clinton O. Bunn, Denver, Colo., assignor to Col-Mont Corporation, Butte, Mont.
Filed May 26, 1971, Ser. No. 146,985
Int. Cl. B01d *15/06;* **C02b** *1/14*
U.S. Cl. 210—33 **12 Claims**

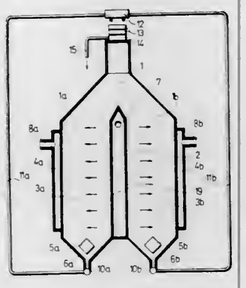


Method of the removal of oil and other organic contaminants from polluted effluent, particularly oil refinery effluent. The oil is sorbed by carbonaceous material either in the form of —200 mesh or finer carbon particles in the form of coal, fly ash or activated carbon, or a porous matrix comprised of such finely divided carbon particles and a powdered plastic such as polyethylene, or a combination of powdered carbon particles and matrix. The sorbent is stripped of the oil thereby conditioning the same for reuse in the system, or withdrawal from the system, in the case of matrix formation, for use independent of the system.

3,798,159
METHOD AND APPARATUS FOR CONTINUOUS FILTRATION OF LIQUIDS WITH SIMULTANEOUS REGENERATION OF FILTER MEDIUM
Laszlo Kisbocskol, Budapest, Sandor Kubo, Tatabanya, and Gusztav Reczey, Budapest, Hungary, assignors to Tatabanyai Szenbanyak, Tatabanya, Hungary
Filed Feb. 23, 1972, Ser. No. 228,709
Claims priority, application Hungary, Feb. 23, 1971, TA–1,105
Int. Cl. B01d *15/06*
U.S. Cl. 210—33 **9 Claims**

Liquids are continuously filtered through a portion of a filter medium such as sand with simultaneous regeneration of other portions of the filter medium. The raw liquid passes from a vertical distributor horizontally through a vertical filter bed in a single filter chamber while another portion of the filter bed in the same filter chamber is offstream. The offstream filter material is removed from the bottom and the material that has been filtered out is removed therefrom, whereupon the filter material is returned to the top of the single chamber, where it again fills the space from which it was removed. Separate filtrate

collectors are provided which are selectively placed in communication with an outlet thereby to determine which



portions of the body of filter material are onstream and which portions are offstream.

3,798,160

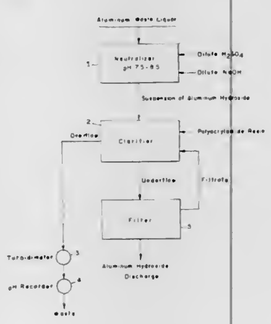
TREATMENT OF ALUMINUM WASTE LIQUORS

Clifton J. Huffman, Niles, Mich., assignor to American Metal Climax, Inc., New York, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,807

Int. Cl. B01d *21/01;* **C01f** *7/34*

U.S. Cl. 210—53 **5 Claims**



Method of recovering aluminum values from aluminum waste liquor which comprises adjusting the pH of the liquor to 6 to 8.5, thus causing precipitation of aluminum hydroxide, adding sufficient polyacrylamide resin solution to produce a concentration of 1 to 5 p.p.m. of resin in the liquor, allowing the aluminum hydroxide precipitate to settle in a thickener, withdrawing the supernatant liquid from said thickener, removing the precipitate from said thickener by filtration, recycling the filtrate to the thickener, and collecting the aluminum hydroxide filter cake from the filter.

3,798,161

COMPOSITION FOR PREPARING GRAPHITE BODIES

Robert L. Hamner and John M. Napier, Oak Ridge, Earl W. Stooksbury, Jacksboro, and Richard A. Strehlow, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Nov. 10, 1970, Ser. No. 88,729

Int. Cl. C01b *31/04*

U.S. Cl. 252—1 **2 Claims**

This invention relates to a graphitizable composition that can be extruded at low temperatures to form a shaped article which upon carbonization yields a body having an open porosity of up to 30 percent as measured by mercury porosimetry, said composition further characterized in that it comprises a homogeneous mixture of graphite or graphitizable filler material and a liquid binder consisting essentially of polymerized isotruxene and acenaphthylene.

3,798,162

LUBRICATING COMPOSITIONS CONTAINING METAL PHOSPHONATES

Joseph J. Dickert, Jr., and Carleton N. Rowe, Lower Makefield Township, Pa., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 70,901, Sept. 9, 1970. This application Aug. 14, 1972, Ser. No. 280,604

Int. Cl. C10m *1/44, 3/38, 5/24*

U.S. Cl. 252—32.5 **15 Claims**

The extreme pressure properties of organic fluids are improved by adding thereto a small amount of a gold hydrocarbyl hydrocarbylphosphonate complexed with a basic nitrogen compound or another metal hydrocarbyl hydrocarbylphosphonate which may or may not be so complexed.

3,798,163

LUBRICANT COMPOSITION FOR INHIBITING VALVE RECESSION

Robert C. Palmer, Markham, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed July 23, 1971, Ser. No. 165,732

Int. Cl. C10m *1/40*

U.S. Cl. 252—33.4 **17 Claims**

A method for improving the wear properties of exhaust valves of natural gas fueled internal combustion engines is disclosed. The method involves lubricating the engine with a composition which comprises oil of lubricating viscosity, alkaline earth metal sulfonate, and at least one alkaline earth metal salt of a condensation product of an alkylene polyamine, an aldehyde and a substituted phenol.

3,798,164

POLYOXYALKYLENE BIS-THIOUREA EXTREME PRESSURE AGENTS AND METHODS OF USE

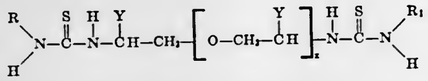
Thomas J. Kmet, Midlothian, and Jon A. Loboda, Chicago, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Original application May 24, 1971, Ser. No. 146,535, now Patent No. 3,704,321. Divided and this application Sept. 14, 1972, Ser. No. 289,203

Int. Cl. C10m *1/06, 1/38*

U.S. Cl. 252—47.5 **6 Claims**

Novel substituted and unsubstituted polyoxyalkylene bis-thioureas having the formula:



wherein x is a number from 1 to 10, R and R_1 are selected from the group consisting of hydrogen, alkyl and alkenyl, Y is hydrogen or lower alkyl, are useful as extreme pressure lubricants in metal working fluids and particularly in aqueous type fluids. Compositions comprising the thioureas and a boundary lubricant provide the anti-weld and friction reduction properties necessary for heavy duty machining.

3,798,165

LUBRICATING OILS CONTAINING HIGH MOLECULAR WEIGHT MANNICH CONDENSATION PRODUCTS

Edmund J. Piasek, Chicago, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 502,368, Oct. 22, 1965, now Patent No. 3,539,633. This application Feb. 10, 1969, Ser. No. 798,102

Int. Cl. C10m *1/20, 1/32*

U.S. Cl. 252—51.5 R **6 Claims**

Oil soluble high molecular weight Mannich condensation products formed by reacting (1) high molecular weight alkyl-substituted hydroxy aromatic compounds whose alkyl-substituent has a number average molecular weight ($\overline{M}n$) from about 600–100,000, (2) a compound containing at least HN< group, and (3) an aldehyde in the respective molar reactant ratio of 1:0.1–10:1.0–10, are highly efficient ashless type (metal free) dispersant-detergent lubricant oil addition agents. Lubricating oils containing these compositions provide a high degree of protection against the deposition of sludge and varnish and corrosion when used as crankcase lubricants. Bis-Mannich products prepared by condensing (1) a 850–2500 $\overline{M}n$ polyalkyl-substituted phenol, (2) an alkylene polyamine and (3) formaldehyde in the respective molar ratio of 1.0:0.7–1.0:1.5–2.1 are novel products and are especially effective for high severity detergent-dispersant function over the extended oil drain range of crankcase lubricant oils recommended by automobile manufacturers.

3,798,166

LUBRICANT COMPOSITIONS

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Jan. 5, 1972, Ser. No. 215,641

Int. Cl. C10m *1/34, 1/36*

U.S. Cl. 252—51.5 A **8 Claims**

Lubricants having added thereto a small amount of a mixture of an acylamido diarylamine and a di(alkaryl) amine have improved oxidation stability.

3,798,167

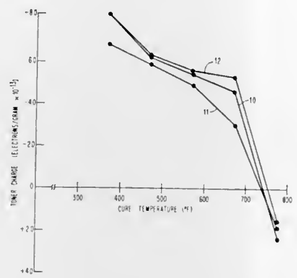
ELECTROPHOTOGRAPHIC DEVELOPER HAVING CONTROLLED TRIBOELECTRIC CHARACTERISTICS

William J. Kulka and Howard Everett Munzel, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,725

Int. Cl. G03g *9/02, 13/08*

U.S. Cl. 252—62.1 **10 Claims**



An electrophotographic development carrier comprises core particles coated with a fluoropolymer or a mixture of a fluoropolymer and a modifying material. When utilized with appropriate electroscopic toner materials, the carrier, which is coated with the mixture of the fluoropolymer and the modifying material, is effective in producing a desired polarity and magnitude of the triboelectric charge on the toner particles, and the carrier, which is coated with the fluoropolymer, is effective in producing a triboelectric charge of a desired magnitude on the toner particles. Control of the polarity and magnitude of the triboelectric charge characteristic of the the carrier, which has its particles coated with the mixture of the fluoropolymer and the modifying material, is obtained by heating the coated particles to a selected temperature depending upon the desired polarity and magnitude and the particular toner with which the carrier is used. Control of the magnitude of the triboelectric charge characteristic of the carrier, which is coated with the fluoropolymer, is obtained by controlling the curing conditions.

3,798,168

DETERGENT COMPOSITION

Leon Tumerman, Deerfield, Ill., assignor to Kraftco Corporation, New York, N.Y.

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,430

Int. Cl. C11d *3/20*

U.S. Cl. 252—89 **15 Claims**

A composition which is soluble in water to form a washing solution which is effective to remove soil from a substrate. The composition comprises an organic surface-active detergent and an aluminate or borate compound of alphahydroxy carboxylic acids.

3,798,169

COMPOSITION FOR APPLICATION OF SOIL-RELEASE FINISH

Robert E. Dickson, Belle Mead, N.J., and Stanley M. Barkin, Pittsburgh, Pa., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,658

Int. Cl. C11d *7/22*

U.S. Cl. 252—89 **13 Claims**

A composition for applying a non-permanent soil-release finish to fabrics from dilute solution comprising a polycarboxylate polymer having an acid equivalent weight of from about 110 to 175, and a water-soluble salt of a polyvalent metal. A preferred polycarboxylate polyrelease finish to fabrics from dilute solution comprising mer is a copolymer of ⅔ methacrylic acid and ⅓ ethylacrylate. The composition is particularly useful for applying a soil-release finish in the rinse cycle of a home laundry process.

3,798,170

STABILIZED METHYLCHLOROFORM COMPOSITIONS

Wilbur H. Petering, Detroit, Mich., Charles E. Kircher, Jr., Youngtown, Ariz., and Paul R. Pinchak, St. Clair Shores, Mich., assignors to Detrex Chemical Industries, Inc., Detroit, Mich.

No Drawing. Continuation-in-part of application Ser. No. 218,542, Jan. 17, 1972, which is a continuation-in-part of application Ser. No. 815,483, Apr. 11, 1969, now abandoned. This application June 8, 1972, Ser. No. 261,069

Int. Cl. C11d *7/52*

U.S. Cl. 252—162 **4 Claims**

Methylchloroform compositions are provided which are stable in the presnece of metals, including aluminum, in either the anhydrous state or in the presence of water. The methylchloroform compositions of this invention contain pyrazine as the effective stabilizer. The compositions of this invention are useful in both liquid and vapor degreasing of metal and as a propellent for aerosol compositions.

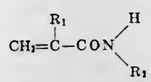
3,798,171

PROCESS FOR PRODUCING MONOMER MIXTURE

Masao Ishii, Tokyo, and Takashi Sunamori and Sadao Kimura, Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 767,818, Oct. 15, 1968, now Patent No. 3,652,478. This application Dec. 2, 1971, Ser. No. 204,369
Claims priority, application Japan, Oct. 27, 1967, 42/69,146, 42/69,147
Int. Cl. C08g *20/20*
U.S. Cl. 252—182 **8 Claims**

A process for producing a copolymerizable monomer mixture consisting essentially of an N-alkoxyalkylated unsaturated carboxylic acid amide and at least one α,β-ethylenically unsaturated carboxylic acid which comprises mixing an unsaturated carboxylic acid amide having the formula:



wherein R_1 is hydrogen or methyl group and R_2 is hydrogen, a lower alkyl group or a

group in which R_3 is hydrogen or a branched or straight alkyl group having 1 to 12 carbon atoms, and at least one α,β-ethylenically unsaturated carboxylic acid or its anhydride with at least one organic solvent capable of forming an azeotropic mixture with water, at least one alcohol and, if necessary, at least one aldehyde and then subjecting the resulting mixture to dehydration-condensation under a reduced or an ordinary pressure. Said process enables the monomer mixture produced to be used in the production of a copolymer for coating composition without isolating the N-alkoxyalkylated unsaturated carboxylic acid amide from the mixture.

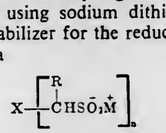
3,798,172

DYEING TEXTILE MATERIALS WITH VAT AND SULFUR DYES AND REDUCING AGENT STABILIZERS FOR SAME

James N. Etters, Danville, Va., assignor to Dan River Inc., Danville, Va.

No Drawing. Original application May 26, 1969, Ser. No. 827,894, now Patent No. 3,645,665. Divided and this application Nov. 23, 1971, Ser. No. 201,542
Int. Cl. D06p *1/30;* **C09k** *3/00*
U.S. Cl. 252—188 **4 Claims**

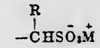
An improved process for dyeing cellulosic textiles with vat or sulfur dyes using sodium dithionite as reducing agent, using as a stabilizer for the reducing agent a stabilizer of the formula



wherein M is a monovalent cation selected from the class consisting of alkali metal and ammonium cations, R is a monovalent group selected from the class consisting of hydrogen, alkyl, alkenyl and furyl, *n* is an integer of 1 to 3, X is a group having a valence of *n* and is selected from the class consisting of hydroxyl and substituents having the formula

$$R'_{3-n}N$$

and R′ is a monovalent radical selected from the class consisting of hydrogen and monovalent hydrocarbon, said stabilizer being used in an amount providing about 0.01 to about 2 mols of



unit of said stabilizer per mol of said reducing agent. Also, the stabilizer as defined above in dry particulate form and novel mixtures of reducing agent and stabilizer.

3,798,173

PRODUCT AND PROCESS FOR EUROPIUM-ACTIVATED RARE EARTH PHOSPHOR

Dilip K. Nath, Euclid, and John R. Wolk, North Olmsted, Ohio, assignors to General Electric Company

Filed June 3, 1971, Ser. No. 149,456
Int. Cl. C09k *1/10, 1/54*
U.S. Cl. 252—301.4 F **9 Claims**

Europium oxide activated rare earth phosphors are prepared having improved physical properties including uniform particle size of the phosphor crystals, brighter emission, and less electrical conductivity than can be obtained by conventional methods of preparation. The phosphor crystals are grown in the presence of a vitreous flux composition which is an alkali borosilicate material having a vitreous phase. The vitreous flux can be formed in situ by mixing the constituent materials with the rare earth oxides and heating the mixture to the firing temperature at which the phosphor crystals are formed or a preformed vitreous flux can be mixed with the rare earth oxides and the same firing schedule carried out. The final product can contain up to 15 weight percent vitreous flux in the luminescent material for optimum performance and said vitreous flux forms a coating on the phosphor crystals.

3,798,174

METHOD OF PREPARING THICKENING GRADE SILICA COMPOSITION

Ellsworth George Acker and Rimantas Glemza, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,182
Int. Cl. B01j *13/00;* **C01b** *33/12, 33/14*
U.S. Cl. 252—317 **17 Claims**

Thickening grades of silica are produced by an insolubilization technique. The process comprises forming an ammoniated alkali silicate solution, acidulating this solution to a pH of about 10.4 to 11 to form a silica hydrosol, and then prior to the setting of this hydrosol to a hydrogel, rapidly admixing this hydrosol with an ammonium salt solution. This admixing tends to further insolubilize the silica which then forms as soft loosely aggregated particles. This silica can then be concurrently deaggregated, and dried, dried and deaggregated or dewatered and deaggregated. This final processing will depend on the charactistics of the silica to be produced.

3,798,175

CATALYSTS FOR THE RING OPENING POLYMERIZATION OF CYCLIC OLEFINS

Roland Streck and Heinrich Weber, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed June 11, 1971, Ser. No. 152,374
Claims priority, application Germany, June 6, 1970, P 20 28 935.4
Int. Cl. B01j *11/84*
U.S. Cl. 252—429 B **28 Claims**

The molecular weight of polyalkenamers produced by a ring-opening polymerization of cyclic olefins is regulated and terminal carbalkoxy groups formed thereon employing a catalyst system consisting essentially of (1) a tungsten or molybdenum compound, (2) an organoaluminum compound, (3) an unsaturated carboxylic acid ester wherein the ester group is separated from the double bonded carbon atom by at least one methylene group or the single bonded oxygen atom of the ester group and at least one of the carbon atoms bearing the double bond bears at least one hydrogen atom, and, optionally, (4) a compound containing one or more hydroxy or sulfhydryl groups.

3,798,176

METHOD FOR MANUFACTURING A CATALYST AND ITS CARRIER HAVING A VACANT CENTER OR A DENSE CENTER

Takeo Ao, Osaka, Japan, assignor to Osaka Yogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 860,084, Sept. 22, 1969. This application Apr. 12, 1972, Ser. No. 243,472
Claims priority, application Japan, July 19, 1968, 43/50,565
Int. Cl. B01j *11/00, 11/40, 11/82*
U.S. Cl. 252—437 **9 Claims**

This invention relates to a method for manufacturing a catalyst and its carrier having a vacant center or a dense center. Such a carrier is made into pellet form by covering a desired core with a finely divided material, drying and calcining the resultant pellet. Such a catalyst is made of a carrier to which a solution containing a catalytic compound is impregnated, after which the impregnated carrier is calcined.

3,798,177

NOVEL CATALYST SUPPORT

Marion G. Reed, Hacienda Heights, and Joseph Jaffe, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,819
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 R **14 Claims**

The disclosure provides a novel catalyst support, a method of making said support by treatment of prior art crystalline catalyst supports with hydroxy-aluminum solution and hydrocarbon conversion processes wherein the catalyst used therein includes said support.

3,798,178

SELF-REGENERATIVE DEHYDROGENATION CATALYST

Frederick J. Soderquist, Essexville, and Lyle E. Martz, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 886,353, Dec. 18, 1969. This application Feb. 17, 1972, Ser. No. 227,267
Int. Cl. B01j *11/08, 11/22*
U.S. Cl. 252—468 **9 Claims**

Metal oxide dehydrogenation catalysts having an electrically conducting, discontinuous amount of certain specific metals incorporated either through the bulk of the catalyst or distributed on its surfaces provide comparatively high electrical conductivity, and can be more uniformly heated by use of an electrical current than similar catalysts having no free metal present. The metal-containing or metal-coated catalysts can comprise the entire mass of catalyst in a reactor, or such catalyst can be placed adjacent to the electrodes and in intimate contact with catalyst containing no metal to promote more uniform passage of electrical current through a catalyst bed. The novel method comprises the use of the catalyst having metal particles discontinuously distributed throughout its bulk as the sole catalyst, or as part of the catalyst bed in contact with electrodes, admixed with catalysts containing no metal, to dehydrogenate hydrocarbons, while passing an electrical current through the catalyst bed to maintain desired temperature levels.

3,798,179

GRANULAR FREE-FLOWING DETERGENT BATH COMPOSITION

James A. Hellyer, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 29, 1971, Ser. No. 158,107
Int. Cl. C11d *1/28, 3/065*
U.S. Cl. 252—535 **13 Claims**

There are disclosed granular, free-flowing detergent bath compositions consisting essentially of a water soluble synthetic organic detergent (e.g., an alkali metal alkyl glyceryl ether sulfonate wherein the alkyl has from 10 to 18 carbon atoms) and a microencapsulated water insoluble and/or water-immiscible emollient (e.g., mineral oil or a mixture thereof with isopropyl myristate). The microencapsulated water-insoluble bath oil has a hydrolyzed protein encapsulating wall material soluble in water at a temperature of from 75° F. to 115° F. to release therefrom emollient bath oil. The compositions upon addition to bath provide combined sudsing and skin emollient effects without mutual antagonism or interaction, providing a floating layer of emollient beneath a layer of suds. A water-soluble alkaline builder salt, such as sodium tripolyphosphate, may be employed in combination with the water-soluble synthetic organic detergent.

3,798,180

BUILDER-CONTAINING DETERGENT COMPOSITIONS

Helmut Westernacher, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Nov. 10, 1971, Ser. No. 197,491
Claims priority, application Germany, Nov. 19, 1970, P 20 56 814.3
Int. Cl. C11d *3/066, 3/07*
U.S. Cl. 252—527 **31 Claims**

Washing compositions containing a detergent and, as a builder, a water soluble salt of an amino partial amide of a polymeric carboxylic acid, e.g., styrene-maleic anhydride copolymer.

3,798,181

ENZYMATIC DETERGENT BAR

Salvador Morelos Vazquez, Atzcapotzalco, Mexico City, Mexico, assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 3, 1970, Ser. No. 86,594
Int. Cl. C11d *3/38, 17/00*
U.S. Cl. 252—539 **10 Claims**

An enzymatic detergent bar, especially useful for washing laundry and removing stains therefrom, comprises: a synthetic organic detergent, e.g., linear higher alkyl aryl sulfonate; an enzyme, e.g., a protease; a builder or filter salt, e.g., alkali metal carbonate, alkali metal sulfate; a binder, e.g., corn starch; and water, in such proportions as result in production of a form-retaining, hard, nontacky, readily soluble and effectively cleaning bar.

Also disclosed are methods for making and using the described detergent bar.

3,798,182

MILDNESS ADDITIVE

Ralph Kelly, 6705 Sampson Lane, Cincinnati, Ohio 45236, and Edmund Jean Ritter, R.R. 1, Box 13-A, Loveland, Ohio 45140

No Drawing. Application Jan. 9, 1968, Ser. No. 696,509, now Patent No. 3,630,934, which is a continuation-in-part of application Ser. No. 613,095, Feb. 1, 1967, now Patent No. 3,538,009. Divided and this application May 5, 1971, Ser. No. 140,576
Int. Cl. C11d *1/00*
U.S. Cl. 252—546 **11 Claims**

Detergent formulations containing a skin irritating detergent and as a mildness additive for preventing or reducing skin irritation a compound having the formula:

$$Y—R—Y'$$

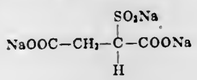
wherein R is a divalent organic radical containing a chain of at least 15 atoms between the open valence of the radical, the majority of which are carbon atoms, and containing a cyclic moiety of at least 5 atoms, and wherein Y and Y′ are polar groups which contain at least one nitrogen, oxygen, sulfur or phosphorus atom or combination thereof.

3,798,183
DETERGENT BUILDER COMPOSITION

Herman A. Bruson, Woodridge, Conn., and Henry Gould, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,654
Int. Cl. C11d *1/14, 1/22*
U.S. Cl. 252—557 **1 Claim**

The present invention relates to a detergent formulation having a builder with the formula:



3,798,184
POLYURETHANES STABILIZED BY INCORPORATING THE REACTION PRODUCT OF ACETONE AND DIPHENYLAMINE

Michael Cuscurida and Doris Marvin Rice, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed July 5, 1972, Ser. No. 269,153
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 BB **5 Claims**

Polyurethane compositions prepared from particular polyether polyols are stabilized against dry-heat degradation by incorporating therein the reaction product of acetone and diphenylamine.

3,798,185
GAS PERMEABLE MEMBRANES AND PROCESS FOR MAKING SAME

William E. Skiens, Walnut Creek, Ben J. Lipps, Concord, Earl A. McLain, Walnut Creek, and Donald E. Dubocq, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,289
Int. Cl. C08j *1/14*
U.S. Cl. 260—2.5 M **23 Claims**

The incorporation of polyorganosiloxanes and/or hydrocarbon extender oils in certain thermoplastics which are compatible with the siloxane and/or hydrocarbon oil at elevated melt temperatures and which have on oxygen permeability constant of at least about 0.5×10^{-10} cc. cm./(cm.^{2} sec. cm. Hg) greatly improves the permeability of membranes prepared from same to gases such as oxygen and carbon dioxide. Novel processes for making the membranes are disclosed.

3,798,186
COMPOSITION FOR PLUGGING FORMATIONS HAVING PORES IN CONSTRUCTIVE WORKS

Sadao Nakade, Itami, and Hirosuke Kubota, Toshiyuki Oshita, and Kuniyoshi Sakane, Osaka, Japan, assignors to Kabushiki Kaisha Takenaka Komuten, Osaka-shi, Japan

No Drawing. Original application Mar. 20, 1969, Ser. No. 808,865, now Patent No. 3,623,330. Divided and this application May 11, 1971, Ser. No. 142,376
Claims priority, application Japan, Mar. 21, 1968, 43/18,635; July 13, 1968, 43/49,492; Nov. 16, 1968, 43/83,940
Int. Cl. C08g *41/04*
U.S. Cl. 260—2.5 A **7 Claims**

This invention relates to composition for plugging formations in civil engineering and construction, reinforced underground structure and underground structure required for strengthening the ground thereof, which may be effectively utilized in plugging or in strengthening unstable ground in sealing-off points of water leakage or oil leakage in civil engineering and construction, in preventing gas leaks in soils or in construction, or in increasing bearing capacities of pull-out or push-in piles to be constructed.

Thus, the invention is intended to provide a composition for plugging formations having interstices and a composition for compacting formations by filling interstices with a solidified substance and also provide a reinforced ground structure and an undergound structure for reinforcing the ground, characterized in that a fluidal substance, such as an isocyanate compound, which upon coming into contact with water, reacts thereby to produce water-insoluble solidified substance and liberating a gas, is forced to be present in the interstices in formations such as water leakage regions in civil engineering and construction and a ground or weak ground where water leakage or water seepage is expected, so that it reacts with the water and the resulting insoluble solidified substance is allowed to be intimately bonded to the surfaces of the interstices under the pressure of the liberated gas, thereby sealing-off the interstices easily and effectively.

3,798,187
PHOTO-DEGRADABLE STYRENE TYPE RESIN COMPOSITIONS

Hiroshi Miyoshi, Takatsuki, Tomoo Shinohara, Kyoto, and Hiroyuki Tateishi, Shiga, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed June 22, 1971, Ser. No. 155,617
Int. Cl. C08f *33/08, 47/10*
U.S. Cl. 260—2.5 HB **14 Claims**

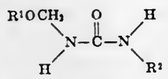
Photo-degradable styrene type resin compositions formed by addition of at least one halogenated polystyrene, in which at least a portion of the hydrogen atoms linked with the carbon atoms in the main chain of the polymer are substituted with halogen atoms, in an amount sufficient to exhibit photo-degradation-promoting action, to a styrene type resin.

3,798,188
EXPANDABLE POLYMERIC COMPOSITION

Makoto Takizawa, Ageo, Kinzo Miyamoto, Mitaka, Matahiko Asahi, Tokyo, and Megumu Nakamoto, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,453
Int. Cl. C08j *1/20*
U.S. Cl. 260—2.5 R **8 Claims**

A polymeric composition composed of a polymeric thermoplastic material and 0.01–20% by weight of a urea derivative of the formula:



wherein R^1 is hydrogen or alkyl of 1–5 carbon atoms and R^2 is hydrogen or $—CH_2OR^1$. The urea derivative undergoes condensation with the separation of water and simple alcohols and functions as a chemical blowing agent at an elevated temperature within the range of 100 to 270° C.

3,798,189
SILICONE RESINS USED AS SURFACTANTS IN VINYL CHLORIDE FOAM

Edward T. Simoneau, Burnt Hills, Richard E. Moeller, Troy, and Norman G. Holdstock, Scotia, N.Y., assignors to General Electric Company

No Drawing. Application Nov. 10, 1970, Ser. No. 88,472, now Patent No. 3,730,931, which is a continuation-in-part of abandoned application Ser. No. 53,973, July 10, 1970. Divided and this application Mar. 1, 1973, Ser. No. 337,069
Int. Cl. C08f *47/08, 29/24*
U.S. Cl. 260—2.5 P **11 Claims**

A composition comprising a vinyl chloride polymer, a plasticizer and a silicone resin selected from a silicone resin having $R_3SiO_{1/2}$ monofunctional units and SiO_2

tetrafunctional units with the ratio of the monofunctional units to the tetrafunctional units being from 0.25 to 0.75 with 3.0 to 5.0% by weight of hydroxyl groups and a silicone resin having $R'_3SiO_{1/2}$ monofunctional units and SiO_2 tetrafunctional units and R^2_2SiO difunctional units with the ratio of monofunctional units to tetrafunctional units to difunctional units being from 0.25–0.75 to 1 to 0.05–0.1 with 3.0 to 5.0% by weight of hydroxyl groups and wherein R, R', R^2 are monofunctional hydrocarbon radicals. The composition is mechanically frothed with air to produce a foam which is then heated to gel and fuse the foam. There is preferably used in the above composition one of the above silicone resins which has been further treated so that it has less than about 0.5% by weight of hydroxyl groups. In addition, there is provided a very efficient foaming agent which is produced by adding one of the above silicone resins with a select class of plasticizers, such as dioctyl phthalate.

3,798,190
RUBBER BLENDS CONTAINING AN HYDROGENATED STYRENE BUTADIENE RANDOM COPOLYMER

Toshio Yoshimoto, Takaaki Imamura, Kazuo Tanaka, and Arata Miyagi, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 677,731, Oct. 24, 1967. This application Aug. 19, 1970, Ser. No. 64,959
Claims priority, application Japan, Nov. 3, 1966, 41/72,485
Int. Cl. C08c *9/04, 9/08*
U.S. Cl. 260—5 **2 Claims**

A rubbery vulcanizable composition having an increased green strength, which comprises a blend of (a) at least one polymer selected from the group consisting of natural rubber, polyisoprene, styrene-butadiene copolymer, polybutadiene, butyl rubber and ethylene-propylene terpolymer and (b) from 5 to 95 parts by weight of an hydrogenated copolymer per 100 parts by weight of said blend, said hydrogenated copolymer having polymeric monomer units which consist of

(1) styrenic units,
(2) conjugated diolefinic units, and
(3) hydrogenated conjugated diolefinic units,

wherein the styrenic units are randomly distributed in the polymeric monomer units.

3,798,191
INORGANIC CEMENT COMPOSITIONS CONTAINING EPOXY RESIN AND POZZOLAN

James H. Donnelly, San Francisco, Calif., assignor to Epoxon Corporation, San Francisco, Calif.

No Drawing. Continuation-in-part of application Ser. No. 157,250, Dec. 5, 1961, now Patent No. 3,198,758, which is a continuation-in-part of application Ser. No. 817,477, June 2, 1959. This application July 26, 1965, Ser. No. 474,946
The portion of the term of the patent subsequent to Aug. 3, 1982, has been disclaimed
Int. Cl. C08g *30/00, 51/04*
U.S. Cl. 260—13 **19 Claims**

This invention is directed to an inorganic cement composition comprising from 1 to 300 parts by weight of inorganic cement, of which from 5–100% by weight is pozzolan, and from 1–200 parts by weight of a thermosetting epoxy resin and an amine curing agent therefor.

3,798,192
POLYTHIOL BASED SEALANTS

Joseph R. Kenton, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 17, 1971, Ser. No. 199,718
Int. Cl. C08g *43/02, 47/10*
U.S. Cl. 260—29.2 M **21 Claims**

The adhesive characteristics of cured sealant formulations based on polythiol polymers are substantially improved by the incorporation into the uncured sealant formulation of at least one glycidyl trialkyloxysilane which has been at least partially hydrolyzed prior to such incorporation. The use of the hydrolyzed glycidyl trialkyloxysilane enhances the adhesion quality of the cured sealant over that achieved by the incorporation of the same amount of glycidyl trialkyloxysilane into the polythiol. Water or ethylene glycol can also be incorporated into the polythiol to further improve the properties of the sealant.

3,798,193
PROCESS FOR PREPARING AN ELECTROCOATING COMPOSITION

Girish Girdhar Parekh, Stamford, and Werner Josef Blank, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 139,912, May 3, 1971. This application Sept. 28, 1972, Ser. No. 293,235
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.4 UA **10 Claims**

A process for preparing an electrocoating composition comprising mixing (1) from about 40% to about 95%, by weight, of a uniquely prepared anionic acrylic polymer containing at least carboxyl and alcoholic hydroxyl functions, (2) from about 4% to about 50%, by weight, of an amine-aldehyde cross-linking agent, (3) from about 1.0% to about 20%, by weight, of a neutralizing agent, such as an alkali hydroxide or an amine, (4) from about 0% to about 70% of pigment, and (5) from 20% to 95% water. The acrylic polymer is prepared by the copolymerization of a styrene, an alkyl acrylate, such as butyl acrylate, and maleic anhydride which is followed by reaction with an appropriate aliphatic diol containing of from 3 to 8 carbon atoms and possessing primary and secondary hydroxyl groups, such as 1,2-propylene glycol and 2,2-dimethyl-1,3-butanediol. The composition finds utility in coating applications, wherein the bath stability containing said resinous coating composition and high pigment levels in said composition are assured.

3,798,194
PREPARATION OF LATEXES BY DIRECT DISPERSION OF ACIDIC ORGANIC POLYMERS INTO AQUEOUS ALKALINE MEDIA CONTAINING CERTAIN ALKANOLS

Gordon D. McCann and Earl T. Dumitru, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,622
Int. Cl. C08f *47/16*
U.S. Cl. 260—29.6 E **10 Claims**

Synthetic latexes and aqueous colloidal dispersions, free of added external surfactants and emulsifiers, are made from normally solid, water- and alkali-insoluble thermoplastic organic addition polymers containing a plurality but low concentration of carboxylic acid groups in the polymer structure and which are in non-colloidal massive form by digesting the polymer in admixture with an enveloping alkaline aqueous liquid medium containing an alkanol such as n-butanol, n-pentanol, or mixtures thereof until the polymer spontaneously converts into colloidal particles in the aqueous medium. In examples, a solid thermoplastic copolymer of ethylene and 8% by weight acrylic acid, in the form of molding granules, was converted to latex form by digestion in aqueous ammonia con-

taining n-butanol. The resulting dispersions are useful in impregnating, coating and adhesive compositions.

3,798,195
THERMOSTABLE POLYMERIC VINYLIDENE CHLORIDE COMPOSITIONS
Richard E. Watson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation of abandoned application Ser. No. 169,356, Aug. 5, 1971. This application Apr. 26, 1973, Ser. No. 354,593
Int. Cl. C09d *3/74*
U.S. Cl. 260—30.4 R **5 Claims**

This invention is directed to compositions of matter comprising a polymer of vinylidene chloride and as a heat stabilizing agent therefor, from about 0.25 to 2 percent by weight of N,N-bis (2-hydroxyethyl) glycine sodium salt.

3,798,196
SULFUR CONTAINING ORGANO-ORGANO-OXYSILANE
Gottfried Rocktäschel, Friedrich Thurn, and Horst Fleischhauer, Grossauheim, Werner Schwarze, Frankfurt am Main, and Hermann Westlinning, Kleinostheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed July 16, 1971, Ser. No. 163,467
Claims priority, application Germany, July 18, 1970, P 20 35 778.2
Int. Cl. C08f *45/04*
U.S. Cl. 260—41.5 A **14 Claims**

There are prepared sulfur containing organo-organo-oxysilanes of the formula A—X—Z where A is

N≡C—S—

R—S—, RO—CS—S—, RS—CS—S—, R_1—CS—S—, where R and R_1 are univalent organic residues, X is a divalent organic residue, Z is —SiR''$(OR')_2$;

—Si(OR')$_3$

—Si(OR')$_2$—O—Si(OR')$_3$;

—Si(OR')$_2$—NH—Si(OR')$_3$;

—Si(OR')$_2$—O—Si(OR')$_2$—X—A;

—Si(OR')$_2$—NH—Si(OR')$_2$—X—A

where R' and R'' are alkyl groups of 1 to 12 carbon atoms. The compounds are useful as additives to cross-linkable mixtures containing organic polymers.

3,798,197
METHOD FOR THE MANUFACTURE OF LATEX BONDED ASBESTOS COVER LAYERS AND COVERS PRODUCED
Walter Naschwitz and Elisabeth Knust, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Erlangen and Berlin, Germany
Filed Jan. 21, 1972, Ser. No. 219,684
Claims priority, application Germany, Jan. 29, 1971, P 21 04 333.4
Int. Cl. C08c *11/16;* **H01m** *27/00, 3/02*
U.S. Cl. 260—41.5 A **10 Claims**

A process for the production of latex bonded cover layers for electrochemical cells, particularly fuel cells, is described. Amphibole asbestos, particularly anthophyllite asbestos, bundles are broken down by a cationic wetting agent. The nonbroken-down particles are removed. A suspension is made from the asbestos fibers and filler substances in the form of powders, with a grain size of up to 100μ, which are stable in acid electrolyte, have ionic conductivity and can be swelled to several times their volume. Bentonite and cationic ion exchangers are particularly suitable as the filler substances. The suspension is mixed with an acid resistant latex and formed into a finished cover layer.

3,798,198
HYDROLYTICALLY STABILIZED POLYURETHANES
Lionel Geoffrey Hole, Barton Seagrave, England, assignor to The Shoe and Allied Trades Research Association, Kettering, England
Filed Dec. 18, 1970, Ser. No. 99,626
Claims priority, application Great Britain, Dec. 19, 1969, 62,094/69; Apr. 10, 1970, 17,228/70
Int. Cl. C08g *51/58, 51/60, 51/62*
U.S. Cl. 260—45.85 R **17 Claims**

Products partly or wholly composed of polymeric condensates, especially polyurethane, and stabilized against hydrolytic degradation by the incorporation of a minor amount, not less than ½%, of a stabilizer selected from chelating agents, weak free organic acids and buffer salts. A preferred stabilizer is ethylene diamine tetraacetic acid (EDTA) or a soluble salt thereof, e.g. the disodium salt. The stabilization is particularly effective when the product incorporates inorganic cations such as residual catalyst. A process in which the stabilizer is added to a solution of the polymeric condensate which is subsequently formed by solvent removal into a product.

3,798,199
CARBOXYLIC ACID DIHYDRAZIDE POLYMERS
Yuri W. Han, Los Angeles, Calif., assignor to Lockheed Aircraft Corporation, Los Angeles, Calif.
No Drawing. Filed Oct. 5, 1972, Ser. No. 295,160
Int. Cl. C08g *9/06, 5/02*
U.S. Cl. 260—49 **19 Claims**

A new class of polymer, namely a carboxylic acid dihydrazide-diol-aldehyde polymer, is prepared by polymerizing a carboxylic acid dihydrazide with a diol and an aldehyde under temperature conditions to form an N-uncyclized polyamic acid. The polyamic acid is then internally N-N cyclized at a higher temperature.

3,798,200
POLYETHER URETHANE ELASTOMER HAVING AN IMPROVED CUT GROWTH AND FLEX CRACK RESISTANCE AND THE PROCESS FOR PREPARATION THEREOF
Yoshio Kaneko, Tsutomu Matsunaga, Yoji Watabe, and Shigeyuki Toki, Tokyo, Japan, assignors to Bridgestone Tire Co. Ltd., Tokyo, Japan
Filed Dec. 13, 1972, Ser. No. 314,848
Int. Cl. C08g *22/14*
U.S. Cl. 260—77.5 AM **13 Claims**

Polyether urethane elastomer having improved cut growth and flex crack resistance prepared by using polyfunctional isocyanate, curing agent and polyether having active hydrogen terminal groups, wherein the weight average molecular weight of said polyether is within the range of 4,000 to 20,000 and the molecular weight distribution curve of said polyether has at least two peaks, at least one of which is located in the higher molecular weight region and at least another one of which is located in the lower molecular weight region than the rheological critical molecular weight of said polyether.

3,798,201
MOLTEN LEWIS ACID HIGH PERFORMANCE HETEROCYCLIC POLYMER POLYMERIZATION
Lowell Saferstein, Plainfield, and William A. Mannion, Springfield, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 221,779, Jan. 26, 1972. This application Feb. 24, 1972, Ser. No. 229,178
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 TF **9 Claims**

An improved process is provided for the synthesis of high performance heterocyclic polymers wherein the polymerization is conducted in the presence of a molten Lewis acid selected for its ability to dissolve the high

molecular weight polymer and to remove water produced via the condensation reaction.

3,798,202
POLYOLEFIN PRODUCTION
Benny E. Nasser, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Oct. 12, 1971, Ser. No. 188,186
Int. Cl. B01j *11/06;* **C08f** *15/00, 1/66*
U.S. Cl. 260—88.2 R **9 Claims**

A catalyst and a method of employing that catalyst are disclosed, the catalyst being comprised of a mixture of two supported catalysts active for olefin polymerization, the catalysts differing in respect to their titanium contents.

3,798,203
ANALOGUES OF HUMAN THYROCALCITONIN MODIFIED WITH CORRESPONDING AMINO ACIDS OF SALMON THYROCALCITONIN AND DERIVATIVES THEREOF
Max Brugger, Birsfelden, Bernhard Riniker, Frenkendorf, and Werner Rittel, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Oct. 15, 1970, Ser. No. 81,110
Claims priority, application Switzerland, Oct. 22, 1969, 15,786/69
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **10 Claims**

Hypocalcaemic peptide amides of the formula

```
1  2   3   4   5   6   7   8   9   10  11  12  13  14  15
H-Cys-Gly-Asn-Leu-Ser-Thr-Cys-X-Leu-Gly-Thr-Tyr-Thr-Gln-Asp-
16  17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
Phe-Asn-Lys-Phe-His-Thr-Phe-Pro-Gln-Thr-Ala-Ile-Gly-Val-Gly-Ala-
32
Pro-NH2
```

wherein X represents the radical of L-methionine, L-valine, L-norvaline, L-leucine, L-isoleucine, L-norleucine or L-α-aminobutyric acid and wherein at least one of the aminoacids in positions 11, 12, 16, 17, 19, 20, 22 and 24 is replaced by another aminoacid, namely L-threonine[11] by L-lysine, L-tyrosine[12] by L-leucine, L-phenylalanine[16] by L-Leucine, L-asparagine[17] by L-histidine, L-phenylalanine[19] by L-leucine, L-histidine[20] by L-glutamine, L-phenylalanine[22] by L-tyrosine and L-glutamine[24] by L-arginine.

3,798,204
ASPARTYL-(O-ALKYL)-SERINE METHYL ESTER SWEETENERS
Nobuo Nakajima, Hyogo, Hisashi Aoki, Osaka, Masahiko Fujino, Hyogo, and Osamu Nishimura and Mitsuhiro Wakimasu, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Aug. 20, 1971, Ser. No. 173,636
Claims priority, application Japan, Aug. 21, 1970, 45/73,597
Int. Cl. A23l *1/26;* **C07c** *103/52*
U.S. Cl. 260—112.5 **6 Claims**

Dipeptide ester sweeteners are provided herein of the formula:

```
                R
                |
   COOH         O
   |            |
   CH2          CH2
   |            |
H2N—CHCONHCH—COOCH3
     (L)        (L)
```

wherein R is tertiary butyl or tertiary amyl and its physiologically acceptable salt. The present invention also relates to methods of preparing the aforementioned compounds as well as sweetening compositions containing dipeptide esters.

3,798,205
DERIVATIVES OF THE KALLIKREIN INHIBITOR AND THEIR PRODUCTION
Eugen Werle and Hans Fritz, Munich, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of abandoned application Ser. No. 743,889, July 10, 1968. This application Nov. 5, 1971, Ser. No. 196,232
Claims priority, application Germany, July 26, 1967, F 53,061
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **5 Claims**

Novel derivatives of the kallikrein inactivator are provided which are polypeptidyl-kallikrein inhibitors or polypeptidyl-polykallikrein inhibitors. These are useful in the therapy and prophylaxis of pancreatitis, some form of shock and the treatment of hyperfibrinolytic bleeding. They are produced by reacting the kallikrein inactivator with an N-carboxy-anhydride of an α-amino acid in solution at a temperature of −5° C. to +15° C.

3,798,206
METHOD OF PRODUCING α-DIPEPTIDE ESTERS OF L-ASPARTIC ACID
Noboru Uchiyama, Naohiko Yasuda, and Tetsuo Yamatani, Kawasaki, Yasuo Ariyoshi and Koji Toi, Yokohama, and Naotake Sato, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Jan. 21, 1971, Ser. No. 108,555
Claims priority, application Japan, Jan. 31, 1970, 45/8,742; Feb. 23, 1970; 45/15,401; June 26, 1970, 45/55,722
Int. Cl. C07c *103/52;* **C07g** *7/00;* **C08h** *1/00*
U.S. Cl. 260—112.5 **10 Claims**

α-Dipeptide lower alkyl esters of L-aspartic acid of the formula

```
H2N—CH—CO—NH—CH—COOR
     |          |
     CH2        CH2
     |          |
     COOH       X
```

wherein R is lower alkyl, X is phenyl or p-hydroxyphenyl and the stereochemical configuration is L—L, are prepared by reacting a strong acid salt of L-aspartic anhydride with a lower alkyl ester of L-phenylalanine or L-tyrosine.

3,798,207
METHOD OF PURIFYING α-L-ASPARTYL-L-PHENYLALANINE METHYL ESTER
Yasuo Ariyoshi, Yokohama, and Yohko Koguchi and Naotake Sato, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,671
Claims priority, application Japan, Oct. 26, 1970, 45/94,076
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 **8 Claims**

α-L-aspartyl-L-phenylalanine methyl ester, a known artificial sweetener, is separated from the bitter tasting β-isomer and other impurities by converting it to the hydrochloride or hydrobromide which is practically insoluble in aqueous solvents 0.3 to 6.0 normal with respect to the hydrohalide.

3,798,208
MODIFICATION OF PROTEIN WITH ETHYLENIMINE
David M. Miller, Skaneateles, N.Y., assignor to Swift & Company, Chicago, Ill.
No Drawing. Filed May 8, 1972, Ser. No. 251,377
Int. Cl. A23j *3/02;* **C07g** *7/00*
U.S. Cl. 260—119 **8 Claims**

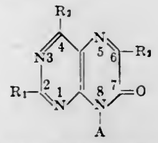
An improved method for preparing protein derivatives comprising reacting protein with ethylenimine in a non-aqueous medium in the presence of a Lewis acid catalyst. The reaction product is a modified protein characterized by an increased isoelectric pH.

3,798,209
1,2,4-TRIAZOLE NUCLEOSIDES
Joseph T. Witkowski, Laguna Niguel, and Roland K. Robins, Santa Ana, Calif., assignors to ICN Pharmaceuticals, Inc., Pasadena, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 149,017, June 1, 1971. This application Mar. 31, 1972, Ser. No. 240,252
Int. Cl. C07c *95/04*
U.S. Cl. 260—211.5 R **28 Claims**

As antiviral agents and intermediates therefor, 3-substituted 1-(β-D-glycosyl)-1,2,4-triazoles, O-acylated analogs thereof, and 5'- and 3',5'-cyclic phosphates of the triazole nucleosides, "glycosyl" being a pentofuranosyl moiety, preferably one whose 2'-oxygen is trans to the triazole aglycon, e.g., xylofuranosyl, ribofuranosyl, 2'-O-methylribofuranosyl, etc., the triazole aglycon being 3-substituted with cyano, methylcarboxylate, carboxamidoxime, carboxamido-, thiocarboxamido, or carboxamidine. Preparation of these nucleosides is by silylation of the substituted triazole followed by glycosylation with the appropriate blocked glycosyl halide. Alternatively, acid-catalyzed fusion of the requisite 1,2,4-triazole with an O-acylated pentofuranose yields the nucleosides.

3,798,210
GLYCOSIDYL-PTERIDINES
Wolfgang Pfleiderer, Constance, Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Dec. 31, 1970, Ser. No. 103,350
Claims priority, application Switzerland, Jan. 6, 1970, 39/70; Nov. 18, 1970, 17,024/70
Int. Cl. C07c *95/04, 51/50*
U.S. Cl. 260—211.5 R **11 Claims**

Compounds of the formula



(I)

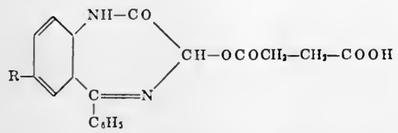
wherein A stands for a member selected from 1-aldopentosidyl, 1-aldohexosidyl, partially desoxygenated 1-aldopentosidyl, partially desoxygenated 1-aldohexosidyl, one of said radicals with free hydroxyl groups, hydroxyl groups esterified by a member selected from lower alkanoyl and aroyl or etherified by aryl-lower alkyl, R_1, R_2 and R_3 each stands for a member selected from hydrogen, lower alkyl, aryl-lower alkyl, phenyl, lower alkyl phenyl, lower alkoxy phenyl, halogeno phenyl, trifluoromethyl phenyl, free amino, mono-lower alkylamino, di-lower alkylamino, aryl amino, N-aryl-N-lower alkylamino, hydroxy, lower alkoxy, aryl-lower alkoxy, halogen, mercapto, lower alkylmercapto, aryl-lower alkylmercapto, carboxy, lower alkoxy carbonyl and aryl-lower alkoxy carbonyl, their tautomers and salts are useful as antibacterial and antiviral agents.

3,798,211
PROCESS FOR REMOVING CYANIDE IONS FROM SOLUTIONS OF COBALT (I) CORRINOIDS
Leonard Mervyn, Ickenham, England, assignor to Glaxo Laboratories Limited, Greenford, England
Filed Nov. 30, 1970, Ser. No. 93,777
Claims priority, application Great Britain, Dec. 1, 1969, 58,631/69
Int. Cl. C07d *55/62*
U.S. Cl. 260—211.7 **10 Claims**

Free cyanide ions occurring in an alkaline solution of a cobalt (I) corrinoid formed by reduction of a corresponding cyano cobalticorrinoid, can be removed so that they no longer interfere in subsequent reactions of the cobalt (I) corrinoid: the removal is effected by providing a cyanide-complexing agent in said alkaline solution.

3,798,212
RESOLUTION OF BENZODIAZEPINE DERIVATIVES
Giancarlo Jommi, Milan, Francesco Mauri, Sesto San Giovanni, and Giovanna Riva, Milan, Italy, assignors to Ravizza S.A., Lausanne, Switzerland
No Drawing. Filed June 16, 1971, Ser. No. 153,851
Claims priority, application Great Britain, June 25, 1970, 30,851/70
The portion of the term of the patent subsequent to Apr. 4, 1972, has been disclaimed
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.30 **7 Claims**

The invention relates to the resolution into optical antipodes of racemic compounds of the general formula:



(I)

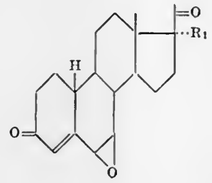
wherein R is NO_2, Cl, F or Br by differential solubility in acetone containing a small percentage of water of the corresponding salts with (+)ephedrine or (−)ephedrine.

3,798,213
7α-METHYL-20-SPIROXANE-3-ONES AND PROCESS
Glen E. Arth, Cranford, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,677
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R **11 Claims**

The invention disclosed herein relates to novel ring A unsaturated 7α-methyl-20-spiroxane-3-one compounds including 7α-methyl-20-spirox-4-ene-3-ones and their 19-nor and 19-nor-18-methyl derivatives, and $\Delta^{5(10)}$, $\Delta^{1,4}$,$\Delta^{4,9(10)}$ and $\Delta^{4,9(10),11}$ analogs thereof; and to processes for preparing these compounds from the corresponding 20-spiroxa-4,6-diene-3-one compound. These new ring A unsaturated 7α-methyl-20-spiroxane-3 one compounds are potent anti-estrogens, possess effective anti-implantation activity, and are useful in fertility control.

3,798,214
PROCESS FOR THE MANUFACTURE OF NEW STEROID EPOXIDES OF THE 19-NOR-PREGNENE SERIES
Georg Anner and Jaroslav Kalvoda, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed Jan. 20, 1972, Ser. No. 219,562
Claims priority, application Switzerland, Feb. 5, 1971, 1,731/71
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R **6 Claims**

The invention relates to new gestagenic compounds of the formula



(I)

wherein R_1 represents a free or esterified hydroxy group.

The compounds are prepared by conventional methods.

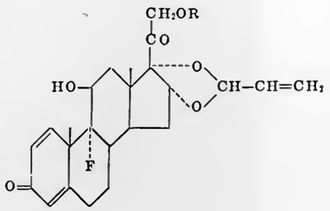
They display a strong gestagenic action at low doses at which an ovulating inhibiting action is not present.

3,798,215
PROPADIENYL-SUBSTITUTED CARBINOLS
Eugene E. Galantay, Morristown, and Dietmar A. Habeck, Dover, N.J., assignors to Sandoz-Wander Inc., Hanover, N.J.
No Drawing. Continuation-in-part of applications Ser. No. 39,546, May 21, 1970, Ser. No. 71,279, Sept. 10, 1970, and Ser. No. 114,080, Feb. 9, 1971, which is a continuation-in-part of application Ser. No. 778,777, Nov. 25, 1968, now abandoned. This application July 6, 1971, Ser. No. 160,057
The portion of the term of the patent subsequent to Mar. 6, 1990, has been disclaimed
Int. Cl. C07c *169/08*
U.S. Cl. 260—239.55 C **22 Claims**

A process is provided for the preparation of 17β-hydroxy - 17α - propadienyl - substituted compounds of a steroidal nature, said compounds being useful as pharmaceutical agents.

3,798,216
9-FLUORO - 11β,21 - DIHYDROXY-16α,17-(2-PROPENYLIDENEDIOXY)-PREGNA - 1,4-DIENE-3,20-DIONE AND DERIVATIVES THEREOF
Jacques Robert Boissier, Paris, and Roger Ratouis, Saint Cloud, France, assignors to Societe Anonyme dite: Societe Industrielle pour la Fabrication des Antibiotique (S.I.F.A.), Puteaux, France
No Drawing. Continuation of abandoned application Ser. No. 14,196, Feb. 25, 1970. This application May 8, 1972, Ser. No. 251,513
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D **4 Claims**

Pregnan derivatives of the general formula:



(I)

wherein R: hydrogen atom or acyl radical of a saturated aliphatic carboxylic acid, containing from 2 to 6 carbon atoms and eventually substituted by a free carboxylic group (—COOH), or by a salified carboxylic group (—COOA: A being an alkaline metal or the ammonium), said carboxylic group being separated from the —CO— group of the acyl radical by at least 2 carbon atoms.

These products are very useful drugs more particularly as antiinflammatory drugs.

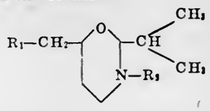
The products are prepared by action of 9-fluoro-11β-16α,17,21 - tetrahydroxy-pregna-1,4-diene-3,20-dione with acrolein in the presence of an acid catalyst, and isolation of the resulting 9-fluoro-11β,21-dihydroxy-16α,17-(2-propenylidenedioxy)-pregna-1,4-diene-3,20-dione, or esterification of said product with the anhydrid of an acid of formula R'—OH [R': acyl radical of a saturated aliphatic carboxylic acid containing from 2 to 6 carbon atoms and eventually substituted by a free carboxylic group (—COOH)] and eventual salification by an alkaline agent.

3,798,217
NOVEL C-16,17 SPIRO-ORTHOESTER STEROIDS AND PREPARATION
Jack Ackrell, Norfolk, England, and John A. Edwards, Los Altos, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Apartado, Panama
No Drawing. Continuation-in-part of application Ser. No. 37,292, May 14, 1970, now Patent No. 3,716,529. This application Aug. 11, 1972, Ser. No. 279,755
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D **5 Claims**

C-16,17 spiro-orthoesters and method of preparation involving reacting a 16,17-dihydroxy steroid with an O-alkyl alkanoic acid lactonium tetrafluoroborate in the presence of a base. The novel spiro-orthoesters are useful anti-inflammatory agents.

3,798,218
2-ISOPROPYL TETRAHYDRO-1,3-SUBSTITUTED OXAZINES
Claude P. Fauran and Colette Douzon, Paris, Gerald J. Huguet, Malesherbes, Guy M. Raynaud, Paris, and Yves A. Bailly, Nanterre, France, assignors to Delalande S.A., Courbevoie, France
No Drawing. Filed May 9, 1972, Ser. No. 251,776
Claims priority, application France, May 11, 1971, 7116981
Int. Cl. C07d *87/06*
U.S. Cl. 260—246 R **4 Claims**

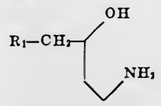
Compounds of the formula



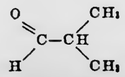
in which:

R_1 is methoxy, phenoxy or morpholino, and
R_2 is hydrogen, benzoyl, substituted benzoyl, p-toluenesulfonyl, alkylaminocarbonyl or arylaminocarbonyl,

is prepared by cyclizing



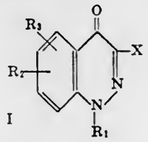
with



to produce the compounds of the first-named formula in which R_2 is hydrogen. Compounds of the first-named formula in which R_2 is other than H are prepared by acylation. The compounds possess analgesic, antiinflammatory, analeptic respiratory, hypotensive, spasmolytic and antiulcerous properties.

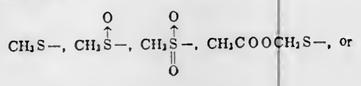
3,798,219
3-(METHYLSULFINYL)CINNOLINONES AND THEIR DERIVATIVES
Maximilian von Strandtmann, Rockaway, John Shavel, Jr., Mendham, Sylvester Klutchko, Hackettstown, and Marvin Cohen, New Milford, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed Oct. 18, 1971, Ser. No. 190,293
Int. Cl. C07d *51/08*
U.S. Cl. 260—250 A **11 Claims**

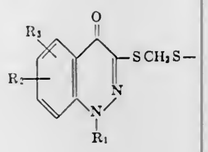
3-substituted cinnolinones having the following structural formula are disclosed:



I

wherein R_1 is hydrogen, lower alkyl, aralkyl or acyl and R_2 and R_3 are hydrogen, halogen, lower alkoxy or lower alkyl, and X is





These compounds are useful as immunosuppressants.

3,798,220

PROCESS FOR PREPARING 4-HYDROXY 5-SUBSTITUTED PYRIMIDINES AND PRODUCTS OBTAINED

Kurt Klemm and Erhard Langenscheid, Constance, Germany, assignors to Byk-Gulden Lomberg Chemische Fabrik G.m.b.H., Constance, Germany

No Drawing. Continuation-in-part of application Ser. No. 864,168, Oct. 6, 1969. This application Nov. 4, 1969, Ser. No. 874,077

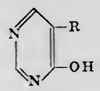
Claims priority, application Germany, Nov. 4, 1968, P 18 06 867.2

Int. Cl. C07d

U.S. Cl. 260—251 R **14 Claims**

The process is useful to make intermediates useful to make drugs.

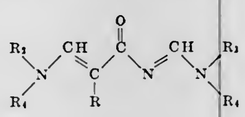
4-hydroxy 5-substituted pyrimidines of the formula



wherein R is —CN, —$COOR_1$ or —$CONR_1R_2$ in which R_1 and R_2 are the same or different alkyl groups, preferably lower alkyl containing up to 4 carbons; cycloalkyl or aryl, such as cyclohexyl, phenyl, benzyl, etc.; or when taken together with the N atom to which they are attached, are morpholino, piperidino, piperazino or N-methylpiperazino which are prepared by reacting an acid amide of the formula R—CH_3—$CONH_2$ with an acid amide O,O-acetal of the formula OR_3OR_4CH—$N(R_3)(R_4)$ or an acid amide O,N-acetal of the formula

$$(OR_3)CH(N(R_3)(R_4))_2$$

wherein R_3 and R_4 may be the same as R_1 and R_2, preferably lower alkyl, to form a compound of the formula



and subjecting said compound to ring closure, preferably with an ammonium salt solution or an ammonium salt solution containing ammonia, to form the pyrimidine ring by splitting off the two secondary amines

$$HN(R_3)(R_4)$$

3,798,221

COMPOUNDS OF PROPANOLOL AND BARBITURIC ACIDS FOR THE TREATMENT OF CARDIOVASCULAR AILMENTS

Francis A. Langlumé, Paris, France, assignor to Etablissements Nativelle S.A.R.L., Paris, France

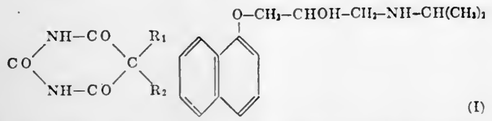
No Drawing. Continuation of abandoned application Ser. No. 697,303, Jan. 12, 1968. This application Aug. 2, 1971, Ser. No. 168,386

Claims priority, application France, Jan. 16, 1967, 91,205

Int. Cl. C07d *51/22*

U.S. Cl. 260—258 **1 Claim**

The invention has for its object new compounds having anti-arrhythmic, hypotensive and sedative properties particularly useful for the treatment of cardiovascular disorders, of the formula:



(I)

wherein R_1 and R_2, which may be the same or different, represent hydrogen, alkyl, cycloalkyl, aryl or aralkyl radicals, each of these radicals, if desired, carrying one or halogenated substituents. It also contemplates a process for the preparation of said compounds and a therapeutical composition containing same as active ingredient.

3,798,222

SULFONATE DERIVATIVES OF 1,4-BIS (PROPIONYL)PIPERAZINE

Alexander Senning, Braband, and Hans Christian Buchholt, Risskov, Denmark, and Robert Bierling, Wuppertal-Elberfeld, Dieter Steinhoff, Bochum, and Gerhard Trossmann, Bonn-Bad Godesberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,501

Claims priority, application Germany, Sept. 18, 1970, P 20 46 087.1

Int. Cl. C07d *51/70, 51/72*

U.S. Cl. 260—268 C **6 Claims**

Derivatives of 1,4-bis[3-(methylsulfonyloxy)propionyl]piperazine in which the methylsulfonyl groups are substituted by at least one halogeno, cyano or methylsulfonyl group and the piperazine ring optionally bears up to two lower alkyl groups are cytostatic agents. The compounds, of which 1,4-bis[3-(chloromethylsulfonyloxy)propionyl]piperazine is a typical embodiment, are obtained through the reaction of the appropriate 1,3-bis(3-iodopropionyl)piperazine and a salt of a substituted methanesulfonic acid.

3,798,223

OXOHEXAHYDROPYRAZINOISOQUINOLINES

Sydney Archer and John W. Schulenberg, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Application Apr. 8, 1970, Ser. No. 26,767, now Patent No. 3,684,813, which is a division of application Ser. No. 826,681, May 21, 1969, now Patent No. 3,557,120, which in turn is a continuation-in-part of abandoned application Ser. No. 569,021, Aug. 1, 1966. Divided and this application Dec. 7, 1971, Ser. No. 205,751

Int. Cl. C07d *51/72*

U.S. Cl. 260—268 TR **14 Claims**

3 - oxo-1,3,4,6,7,11b-hexahydro - 9,10 - dimethoxy-2H-pyrazino[2,1-a]isoquinolines and 2,4-dioxo-1,3,4,6,7,11b-hexahydro-9,10-dimethoxy-2H - pyrazino[2,1-a]isoquinolines, prepared by cyclization reactions of the corresponding 1 - aminomethyl-1,2,3,4-tetrahydro-6,7-dimethoxyisoquinolines and 1,2,3,4-tetrahydro - 6,7 - dimethoxy-1-isoquinolinecarboxamides, respectively, are intermediates in the preparation of 1,3,4,6,7,11b-hexahydro - 9,10 - dimethoxy - 2H - pyrazino[2,1-a]isoquinolines, which possess sedative, tranquilizing and related pharmacodynamic effects.

3,798,224

NAPHTHALIMIDE HYDRAZINAMIDES

Seiji Hotta, Hirakata, and Takashi Akamatsu, Ashiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

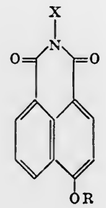
No Drawing. Filed Dec. 22, 1970, Ser. No. 100,816

Claims priority, application Japan, Dec. 30, 1969, 45/1,862, 45/1,863, 45/1,864, 45/1,865, 45/1,866; May 8, 1970, 45/39,536; May 23, 1970, 45/44,291; July 15, 1970, 45/62,427; Sept. 18, 1970, 45/82,-103, 45/82,104; Nov. 6, 1970, 45/98,113; Nov. 12, 1970, 45/100,011, 45/100,012, 45/100,013

Int. Cl. C07d *39/00*

U.S. Cl. 260—281 **3 Claims**

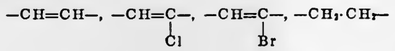
A naphthalimide derivative having the formula



wherein

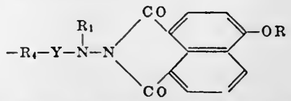
R is an alkyl, a cycloalkyl, an aralkyl, a haloalkyl, an alkoxyalkyl, a hydroxyalkyl, an N,N-dialkylaminoalkyl, an unsubstituted or halogen-, alkyl-, alkoxy- or hydroxy-substituted aryl, or an ammoniumalkyl; X is a group of the formula,

wherein A is



or an unsubstituted or halogen-substituted arylene, or a group of the formula,

wherein R_1 is hydrogen, an alkyl, phenyl, a hydroxyalkyl, or an alkoxyalkyl; Y is —CO—, —COO—, —$CONR_3$— (where R_3 is hydrogen or an alkyl), or —SO_2—; R_2 is hydrogen, an alkyl, a cycloalkyl, an aralkyl, a haloalkyl, an alkyl- or aryl-substituted aminoalkyl, an unsubstituted or halogen-, alkyl-, alkoxy-, hydroxy-, amino- or alkylamino-substituted aryl, a group of the formula,



(where R, R_1 and Y are as defined above and R_4 is a bivalent group), or a group of the formula,

$$—R_5—Q^+ \cdot a^-$$

(where R_5 is direct linkage or a bivalent group; Q^+ is a substituted ammonium, a cycloammonium or a hydrazinium; and a^- is an anion),

which is useful for optically brightening an organic polymer material.

3,798,225

3(2H)-ISOQUINOLONES

William Eugene Kreighbaum and William Timmey Comer, Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,197

Int. Cl. C07d *35/28*

U.S. Cl. 260—286 R **19 Claims**

New 2-substituted-3(2H)-isoquinolones and 2-substituted-3-alkoxyisoquinolines are disclosed. They are orally active hypotensives and peripheral vasodilators with an extended duration of action. Representative embodiments of this invention are 6,7-dimethoxy-2-methyl-1-veratryl - 3(2H) - isoquinolone hydrochloride, 2-allyl-6,7-dimethoxy - 1 - veratryl - 3(2H) - isoquinolone hydrochloride, 2 - cyclopropyl - 6,7 - dimethoxy - 1-veratryl-3(2H) - isoquinolone hydrochloride, 2-amino-6,7-dimethoxy - 1-veratryl-3(2H)-isoquinolone hydrochloride, and 3-ethoxy-6,7-dimethoxy-1-veratrylisoquinoline.

3,798,226

3-ACYLAMINO-4-PHENYLQUINOLINES CARRYING A SUBSTITUENT ON THE BENZENE RING

Kanji Meguro, Nishinomiya, Yutaka Kuwada, Ashiya, Teruji Henmi, Amagasaki, and Togo Yamano, Nara, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

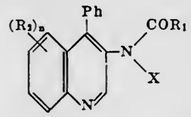
No Drawing. Filed Apr. 2, 1971, Ser. No. 130,853

Claims priority, application Japan, Apr. 4, 1970, 45/28,850

Int. Cl. C07d *33/56*

U.S. Cl. 260—287 R **11 Claims**

Compounds of the general formula



wherein

R_1 is hydrogen, alkyl, cycloalkyl, alkylene, or aralkyl, such groups being substituted or unsubstituted,

X is hydrogen or an acyl group of the formula —COR_1,

R_2 is halogen, trifluoromethyl, alkyl, alkoxy, nitro, amino or an acylamino group of the formula —$NHCOR_1$,

n is an integer of 1 to 4, and

Ph is substituted or unsubstituted phenyl

are antitrichomonas or antiulcer agents.

3,798,227

PROCESS OF CYCLIZING ALKYLIDENE SUBSTITUTED AMINOMETHYLENEMALONATES

George Y. Lesher, Schodack, N.Y., assignor to Sterling Drug, Inc., New York, N.Y.

No Drawing. Application June 10, 1968, Ser. No. 735,566, now Patent No. 3,642,797, dated Feb. 15, 1972, which is a continuation-in-part of application Ser. No. 640,359, May 22, 1967, which in turn is a continuation-in-part of application Ser. No. 464,850, June 17, 1965, both now abandoned. Divided and this application Oct. 19, 1970, Ser. No. 82,170

Claims priority, application Great Britain, June 15, 1966, 26,787/66

Int. Cl. C07d *33/18*

U.S. Cl. 260—289 **4 Claims**

Alkylidene Ar-aminomethylenemalonates, where Ar is an aromatic radical having one or two aromatic rings which can be benzenoid or five- or six-membered heteroaromatic, are prepared by reacting the appropriate aromatic-amine with a mixture of a trialkyl orthoformate or trialkyl orthoacetate and an alkylidene malonate. The alkylidene Ar-aminomethylenemalonates are then cyclized by heating to provide an improved process for preparing various heterocyclic compounds, e.g., a 4-hydroxyquinoline from an alkylidene anilinomethylenemalonate, a 4H-pyrido[1,2-a]pyrimidin-4-one from an alkylidene 2-pyridylaminomethylenemalonate, a 4H - pyrimido[1,2 - a] pyrimidine-4-one from an alkylidene 2-pyrimidylaminomethylenemalonate. The cyclized products are useful as intermediates for the preparation of antimalarials and anti-inflammatory agents.

3,798,228

METHOD FOR THE PREPARATION OF DIFLUOROPYRIDINES

Max M. Boudakian, Pittsford, and Stanley J. Chiras, Hilton, N.Y., assignors to Olin Corporation

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,025

Int. Cl. C07d *31/26*

U.S. Cl. 260—290 HL **6 Claims**

This invention relates to the preparation of difluoropyridines and substituted difluoropyridines by the simultaneous replacement of two amino groups by diazotization of selected diaminopyridines in hydrogen fluoride.

3,798,229

PROCESS FOR PREPARING 1,3,4-THIADIAZOLE-2-THIOL COMPOUNDS

Kazuo Kariyone, Kyoto, Hirokichi Harada, Nishinomiya, Masaru Kurita, Takatsuki, Yutaka Ueda, Toyonaka, Takahiro Furuhashi, Fukuoka, Hitoshi Nakamura, Toyonaka, and Hirotoshi Watanabe, Ikeda, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,192

Claims priority, application Japan, Dec. 30, 1970, 46/129,466

Int. Cl. C07d *91/62*

U.S. Cl. 260—302 SD **4 Claims**

A process for preparing 1,3,4-thiadiazole-2-thiols which comprises reacting a salt of dithiocarbazic acid with ortho-acid esters or with iminoethers or with thio-acid esters.

3,798,230

O,O-DIALKYL-O-[1-OXA-2,4-DIAZOLIDINON-5-YL-3]-THIONOPHOSPHATES

Peter Beutel, Mannheim, Karl-Heinz Koenig, Frankenthal, Wolfram Dietsche, Altrip, and Heinrich Adolphi, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 17, 1971, Ser. No. 116,231

Claims priority, application Germany, Mar. 5, 1970, P 20 10 396.2

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 A **6 Claims**

O,O-dialkyl-O-[1 - oxa - 2,4 - diazolidinon-5-yl-3]-thionophosphates having a substituent in the 4-position, said thionophosphates having a good insecticidal action and a process for controlling insects with these compounds, such compounds including O,O-diethyl-O-[4-n-propyl-1-oxa - 2,4 - diazolidinon-5-yl-3]-thionophosphate and O,O-diethyl - O - [4-phenyl-1-oxa-2,4-diazolidinon-5-yl-3]-thionophospnate.

3,798,231

BIS-AROXAZOLYL-PARA-POLYPHENYLENES

Fritz Fleck, Bottmingen, Basel-Land, Hans Kittl, Riehen, Basel-Stadt, and Horst Schmid, Munchenstein, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

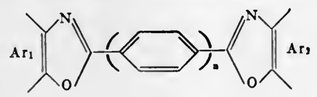
No Drawing. Filed Oct. 5, 1971, Ser. No. 186,791

Claims priority, application Switzerland, Oct. 12, 1970, 14,971/70

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D **11 Claims**

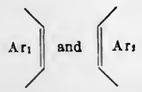
Bis-aroxazolyl-para-polyphenylenes of the formula



(I)

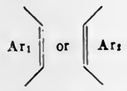
where

the value of n is at least 3 but not greater than 8 and



represent benzene or phenanthrene radicals which may be substituted and, if they are benzene radicals, each radical bears not more than one second-order (meta directing) substitutent,

and, if n has the value 3 the molecule contains at least one-second-order (meta-directing) substituent bound to one of the benzene radicals



which are excellent brighteners for polyolefins, polyester or polyamides.

3,798,232

2-(FURFURYLAMINO)-1-(2-IMIDAZOLIN-2-YL)-2-IMIDAZOLINE HYDROIODIDE

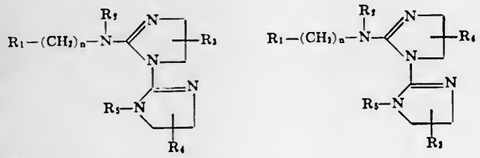
Raymond R. Wittekind, Morristown, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 6,639, Jan. 28, 1970, now Patent No. 3,666,767, dated May 30, 1972. This application May 15, 1972, Ser. No. 253,074

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 **1 Claim**

The present invention relates to 2-amino-1-(2-imidazolin-2-yl)-2-imidazolines, the free base of which has the following structural formulas:



wherein

R_1 is hydrogen, lower alkyl, cycloalkyl, aryl, substituted aryl, heterocyclic, substituted heterocyclic or aryloxy;

R_2 is hydrogen, lower alkyl, aryl and substituted aryl; or R_1 and R_2 taken together with the nitrogen atom to which they are attached form a heterocyclic ring;

R_3 and R_4 are hydrogen, lower alkyl, aryl or substituted aryl;

R_5 is hydrogen, lower alkyl, aryl or substituted aryl;

n is an integer from 0 to 10.

The compounds of this invention are useful as anti-arrhythmic agents as well as antibacterial agents.

3,798,233

3-HALOPHENYL DERIVATIVES OF THIOHYDANTOINS

Keiichiro Akiba, Ikeda, Akira Fujinami, Ashiya, Akihiko Mine, Toyonaka, Takeo Satomi, Takarazuka, and Naganori Hino, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

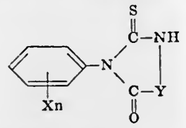
No Drawing. Filed Jan. 15, 1971, Ser. No. 106,909

Claims priority, application Japan, Jan. 21, 1970, 45/5,955

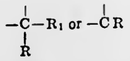
Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **5 Claims**

A thiohydantoin derivative having the formula,



wherein X is a halogen atom, n is an integer of 1 to 3, and Y is



in which R_1 and R_2 each are hydrogen atom, an alkyl, a hydroxyalkyl, an alkenyl, an alkoxycarbonyl or an alkoxycarbonylalkyl group, and R is an alkylidene or an alkoxycarbonylalkylidene group, which may be useful as herbicides.

3,798,234

PROCESS FOR THE PREPARATION OF 3-ANILINO-PYRAZOLONES-(5)

Ernst Meier and Karl Kuffner, Munich, and Hans Glockner, Pullach, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

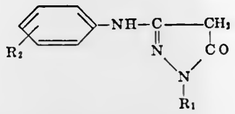
No Drawing. Filed Aug. 27, 1971, Ser. No. 175,701

Claims priority, application Germany, Aug. 29, 1970, P 20 42 920.3

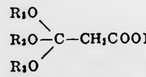
Int. Cl. C07d *49/16*

U.S. Cl. 260—310 A **6 Claims**

Preparation of 3-anilino-pyrazolone-(5) of the general formula



by reacting a β,β,β-trialkoxy propionic acid alkyl ester of the general formula



with a substituted aniline, and condensation of the intermediate product with a hydrazine of the formula

$$R_1—NH—NH_2$$

R_1 is an alkyl, aralkyl or aryl, substituted or unsubstituted, group

R_2 is H or alkyl, alkoxy, alkylthio, halogen, carboxy sulfo acid, alkylsulfonic, carbamido, acylamino, sulfofluorido, cyano, or nitro group

R_3 and R_4 are a short chain alkyl group.

3,798,235

NOVEL METHOD FOR PRODUCING 1-PHENYL-3-INDOLYLACETIC ACID DERIVATIVES

Hisao Yamamoto, Nishinomiya, Atsuko Hirohashi, Ashiya, and Takahiro Izumi and Masao Koshiba, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

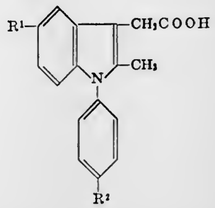
No Drawing. Filed Sept. 9, 1971, Ser. No. 179,182

Claims priority, application Japan, Dec. 9, 1967, 42/79,170

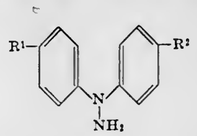
Int. Cl. C07d *27/56*

U.S. Cl. 260—326.13 R **1 Claim**

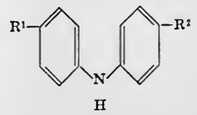
1-phenyl-3-indolylacetic acid derivatives having anti-inflammatory, analgesic and anti-pyretic activities, of the formula,



wherein R^1 is an alkyl group having up to 4 carbon atoms or an alkoxy group having up to 4 carbon atoms, and R^2 is a hydrogen or halogen atom, can be produced by contacting levulinic acid with diphenylamine derivatives of the formula,



wherein R^1 and R^2 are defined as above, which are prepared by contacting diphenylamines of the formula,



3,798,236

INSECTICIDAL TRIENIC COMPOUNDS AND PROCESS

Daniel Hainaut, Villemomble, Edmond Toromanoff, Paris, and Jean-Pierre Demonte, Montreuil-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

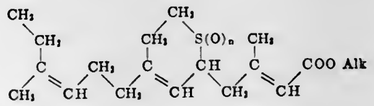
No Drawing. Filed July 25, 1972, Ser. No. 275,104

Claims priority, application France, July 27, 1971, 7127448

Int. Cl. C07d *65/08*

U.S. Cl. 260—327 TH **13 Claims**

Products having the formula:



wherein n represents an integer from 0 to 1 and Alk represents an alkyl having from 1 to 5 carbon atoms. These compounds possess remarkable insecticidal properties and are intermediates in the synthesis of the juvenile hormone.

3,798,237

THIEPIN DERIVATIVES

Hans Blattner and Walter Schindler, Riehen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Dec. 16, 1970, Ser. No. 98,927, now Patent No. 3,682,959. Divided and this application June 15, 1972, Ser. No. 263,045

Int. Cl. A61k *27/00*

U.S. Cl. 260—332.5 **3 Claims**

Compounds of the class of 2,3-dihydro-1H-thieno-[2′,3′:2,3][1]benzothiepino[4,5 - c]pyrrole, 2,3-dihydro-1H-thieno[3′,2′:2,3][1]benzothiepino[4,5-c]pyrrole, and the N-allyl and N-alkyl derivatives thereof are prepared from 4,5-disbromomethylthieno[3,2-b][1]benzothiepin or 4,5 - bisbromomethylthieno[2,3 - b][1]benzothiepin and amines, these compounds and the pharmaceutically acceptable acid addition salts thereof have a depressant effect upon the central nervous system and are active ingredients of pharmaceutical compositions.

3,798,238

TRIMELLITIC ACID ANHYDRIDE PRODUCT RECOVERY FROM PSEUDOCUMENE OXIDATION EFFLUENT

Delbert H. Meyer, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Feb. 24, 1971, Ser. No. 118,292

Int. Cl. C07c *63/02, 63/32*

U.S. Cl. 260—346.4 **4 Claims**

Fluid effluent from pseudocumene oxidation under liquid phase conditions or concentrate thereof is subjected to simultaneous stripping of reaction medium and thermal conversion of its trimellitic acid content to crude trimellitic acid anhydride followed by vacuum flash distillation or evaporation of the acid anhydride from a mixture of such crude acid anhydride and a small arount of strong mineral acid to recover product acid anhydride. Such acid anhydride recovery avoids subjecting said fluid oxidation effluent to crystallization for trimellitic acid recovery which leaves 30 to 40 percent of the oxidation product tricarboxylic acid dissolved in the reaction medium mother liquor requiring further processing to obtain such solute for conversion into the desired acid anhydride product.

3,798,239

NAPHTHYLOXYALKOXYANTHRAQUINONE DYES

Guido Roger Genta, 38 Church St., Lock Haven, Pa. 17745

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,705

Int. Cl. C09b *1/54*

U.S. Cl. 260—380 **3 Claims**

New anthraquinone dyes, 1-amino-2-naphthyloxy-alkoxy-4-hydroxy anthraquinones, are provided. Synthetic textile fibers, in particular, polyethylene terephthalate fibers, when dyed with the new dyes, are colored in bright pink shades which are substantive, light fast, and sublimation resistant.

3,798,240

3-(HYDROXYMETHYL)CHROMONES

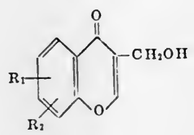
Maximilian von Strandtmann, Rockaway, John Shavel, Jr., Mendham, Sylvester Klutchko, Hackettstown, and Marvin P. Cohen, New Milford, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,765, Feb. 4, 1971. This application Nov. 24, 1972, Ser. No. 309,329

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 **26 Claims**

The present invention relates to compounds of type I:



wherein R_1 and R_2 are hydrogen, halogen, alkyl, aralkyl, aryl, alkoxy, acylamino, hydroxy, or taken together R_1 and R_2 form an aromatic ring. These compounds are prepared from the corresponding o-hydroxy-ω-(methylsulfinyl)acetophenones. These compounds are useful in alleviating allergic manifestations.

3,798,241

BIDENTATE COORDINATES, THEIR MANUFACTURE AND APPLICATION

Henri Kagan, Orsay, and Tuan Phat Dang, Antony, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants

No Drawing. Filed Dec. 7, 1971, Ser. No. 205,744

Claims priority, application France, Dec. 10, 1970, 7044632

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **4 Claims**

Bidentate coordinates of the formula $R_2X—R'—YR_2$, in which X and Y are phosphorus, arsenic, antimony or nitrogen, R′ is a hydrocarbon group containing an asymmetric carbon atom and the R groups are hydrocarbon radicals, may be associated with rhodium complexes to yield hydrogenation catalysts useful in asymmetric synthesis. The synthesis of optically active aminoacids or amines is concerned.

3,798,242

N,N′-DIGLYCIDYL-DICARBOXYLIC ACID DIANILIDES

Hans Batzer, Arlesheim, Juerger Habermeier, Pfeffingen, Basel-Land, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,234

Claims priority, application Switzerland, Sept. 25, 1970, 14,268/70

Int. Cl. C07d *1/04*

U.S. Cl. 260—348 A **2 Claims**

Compounds of aromatic amines with polycarboxylic acids which possess at least 2 glycidyl groups bonded to the nitrogen atoms of the amide groups, such as, for example, N,N′-diglycidylsebacic acid dianilide or N,N′-diglycidyltetrahydrophthalic acid dianilide. These compounds, together with curing agents for epoxide resins, are suitable for the manufacture of mouldings, coatings or adhesive bonds.

3,798,243

PROCESS FOR THE PRODUCTION OF 1-NITROANTHRAQUINONE

Istvan Toth, Bottmingen, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,459

Claims priority, application Switzerland, Dec. 22, 1970, 18,948/70; June 10, 1971, 8,411/71; July 27, 1971, 11,038/71

Int. Cl. C09b *1/00*

U.S. Cl. 260—369 **13 Claims**

By nitration of anthraquinone in an excess of concentrated nitric acid 1-nitroanthraquinone with a very low content of nitration by-products, especially β- and dinitroanthraquinones can be obtained in a very short time if 1 mole of anthraquinone is nitrated with at least 20 moles of nitric acid of at least 90% strength at temperatures between −40° and +35° C. After separation of the solid nitration product the mother lye can be regenerated and used again for nitration. The nitration can be carried out with great advantage in a continuous manner.

3,798,244

PROCESS FOR THE PRODUCTION OF 1-NITROANTHRAQUINONE SUBSTANTIALLY FREE FROM DINITROANTRAQUINONE

Fred Mueller, Munchenstein, Basel-Land, and Rudolf Winkler, Reinach, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,326

Claims priority, application Switzerland, Feb. 16, 1971, 2,251/71

Int. Cl. C09b *1/00*

U.S. Cl. 260—369 **8 Claims**

Disclosed is a process for the removal of dinitroanthraquinone impurities from a mixture containing 1-nitroanthraquinone and such impurities, the process comprising treating the mixture with an aqueous solution of an alkali metal or ammonium sulphite with heating, at least 0.5 part by weight of the sulphite being employed to each part by weight of the mixture.

3,798,245

PROCESS FOR INTERESTERIFICATION OF A MIXTURE OF GLYCERIDES

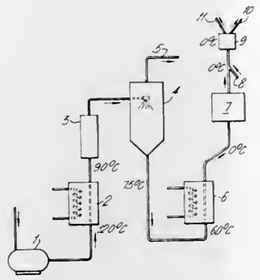
Alex Maarten van Buren, Barendrecht, and Aloysius Bernardus Maria Cloosterman, Johannes Henricus Maria Rek, and Hendrik Frits Zock, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,261

Claims priority, application Great Britain, Apr. 13, 1972, 17,041/72

Int. Cl. C07c *53/00, 57/00, 59/00*

U.S. Cl. 260—398 **1 Claim**



An improvement is described in the preparation of glyceride-fractions by directed interesterification followed by fractionation; after addition of alkali-metal to form the interesterification catalyst the mixture is degassed. By use of this improvement an excellent yield of a polyunsaturated fraction can be obtained from sunflower seed oil.

3,798,246

PROCESS FOR PREPARING SOYBEAN PHOSPHATIDES

Hideo Shimazaki, Nobuhiro Mitsuura, and Shuji Tsukamoto, Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,746

Int. Cl. C07f *9/02;* **A23j** *7/00*

U.S. Cl. 260—403 **8 Claims**

Crude phosphatides recovered from soybean oil in a conventional manner are purified of undesirable color and odor by contacting a solution thereof in n-hexane with activated silica gel for at least 20 minutes, separating the silica gel from the solution, and evaporating the solvent. The purified material has a lighter color, more pleasing odor and flavor, and reduced acid and peroxide values. The silica gel may be returned to the process after washing in lower alkanols.

3,798,247

OIL SOLUBLE ALIPHATIC ACID DERIVATIVES OF MOLECULAR WEIGHT MANNICH CONDENSATION PRODUCTS

Edmund J. Piasek, Chicago, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed July 13, 1970, Ser. No. 54,558

Int. Cl. C09f *7/00*

U.S. Cl. 260—404.5 **2 Claims**

Novel aliphatic acid derivatives of high molecular weight Mannich condensation products of (1) high molecular weight alkyl-substituted hydroxy aromatic compounds whose alkyl-substituent has a number average molecular weight ($\overline{M}n$) from about 600–100,000, (2) a compound containing at least one HN< group, (3) an aldehyde in the respective molar reactant ratio of 1:0.1–10:1.0–10, and (4) 0.1–10.0 weight percent of an aliphatic acid having at least 6 carbon atoms are oil soluble and impart highly efficient ashless type (metal free) dispersant-detergent properties to lubricant oil addition agents. Lubricating oils containing these compositions provide a high degree of protection against the deposition of sludge and varnish and corrosion when used as crankcase lubricants.

3,798,248

ARYL COPPER COMPOUNDS AND THE SALT COMPLEXES THEREOF

Gerard van Koten, Utrecht, and André J. Leusink, Leusden Zuid, Netherlands, assignors to International Copper Research Association, New York, N.Y.

No Drawing. Filed June 14, 1971, Ser. No. 152,990

Claims priority, application Netherlands, July 2, 1970, 7009840

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **23 Claims**

This invention relates to arylcopper compounds having the general formula

$$CuY_pAr[(CH_2)_nX]_m$$

wherein Y represents a halogen atom or an alkyl, alkoxy, aryl or aryloxy radical, p is a number from 0 to 2, Ar is an aryl radical, n is a number from 0 to 6, X represents the radical ZRR′, OR or SO_2NRR' in which Z is an atom taken from Group V of the Periodic Table of the Elements and R and R′ each is an alkyl, aralkyl, cycloalkyl or aryl radical and m is a number from 1 to 3 and the salt complexes thereof.

The arylcopper compounds and salts thereof of this invention have numerous uses as chemical intermediates. For example, the presence of the stable copper-carbon bond permits the compounds to undergo exchange type

reactions wherein the copper atom is replaced by various organo groups. In addition, the oxidation and/or pyrolysis of the arylcopper compounds of this invention results in symmetrical biarylic compounds which are useful in the preparation of various known synthetic dyestuffs.

The arylcopper compounds and salt complexes thereof of this invention are also useful as toxins against various pest organisms. Particular compounds have been found to be quite selective as mollusicicides and algicides and may advantageously be formulated as the active ingredient in anti-fouling paints, particularly marine paints and in petroleum products to prevent microbial contamination and degradation of the same. The metal salt complexes in which the stability of the copper-carbon bond is enhanced as well as the arylcopper compounds per se, have been found to be effective catalysts in various types of chemical reactions including oxidation reactions and as catalysts for oligomerization and polymerization of unsaturated monomers such as the olefins.

3,798,249

CATALYST SYSTEM FOR THE POLYMERIZATION OF EPOXIDES

Henricus G. J. Overmars, Zeist, and Jan G. Noltes, Huis ter Heide, Netherlands, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

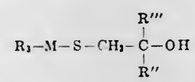
No Drawing. Filed June 23, 1971, Ser. No. 156,027

Claims priority, application Netherlands, July 2, 1970, 7009841

Int. Cl. C07f *3/06, 7/22, 7/24*

U.S. Cl. 260—429.9 **11 Claims**

A catalyst system for polymerizing epoxides which comprises a complex formed by reacting (a) a diorganozinc compound having the formula RZnR′, wherein R represents a substituted or unsubstituted alkyl radical having from 1 to 6 carbon atoms or a substituted or unsubstituted aryl radical having from 6 to 8 carbon atoms and R′ is the same as R or an alkoxy, aryloxy or diarylamine radical and (b) a triorganometal thiolate compound having the formula



wherein R has the same meaning as above and R″ and R‴ are selected from the group of radicals including hydrogen, methyl, hydroxymethyl, chloromethyl, the alkyl radicals $(CH_2)_n—CH_3$ in which *n* may be 1 to 16, and substituted and unsubstituted phenyl, and M is the metal silicon, germanium, tin or lead. The polymerization process using relatively small amounts of this catalyst system gives excellent yields of polymers with high crystallinity.

3,798,250

TETRAALKYLCHROMIUM COMPOUNDS

Walter M. Kruse, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,018, Feb. 2, 1971. This application July 7, 1972, Ser. No. 269,693

Claims priority, application Canada, Dec. 30, 1971, 131,388

Int. Cl. C07f *11/00*

U.S. Cl. 260—438.5 R **5 Claims**

A new class of organochromium compounds are described, namely, tetravalent chromium compounds having the formula Y_4Cr where Y is alkyl, cyclohexyl-substituted alkyl or phenyl-substituted alkyl. Typical compounds are tetra(neopentyl)chromium, tetra(cyclohexylmethyl)chromium and tetra(neophyl)chromium. These compounds are new catalysts for the polymerization of 1-olefins and can be used in solution or extended on a solid support such as silica.

3,798,251

ALKYL FLUOROHEXAHALOGENOISOPROPOXYCARBOXYLATE SILICON DERIVATIVES AND POLYMERS AND COPOLYMERS THEREOF

Francois Meiller, Palaiseau, France, assignor to Produits Chimiques Pechiney-Saint Gobain, Neuilly-sur-Seine, France

No Drawing. Filed June 30, 1971, Ser. No. 158,614

Claims priority, application France, July 6, 1970, 7024957

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 B **3 Claims**

This invention is addressed to derivatives of alkyl fluorohexahalogenoisopropoxycarboxylate silicon derivatives, and polymers and copolymers formed thereof. The silicon derivatives of the present invention are useful as intermediates in the preparation of such polymers and copolymers which are useful as lubricants, as water repellent and oil repellent agents and as solvent resistant fluorinated elastomers.

3,798,252

PROCESS FOR THE ADDITION OF SILICON COMPOUNDS WITH Si-BONDED HYDROGEN TO COMPOUNDS WITH ALIPHATIC MULTIPLE BONDS

Siegfried Nitzsche, Ignaz Bauer, Werner Graf, and Norbert Zeller, Burghausen, West Germany, assignor to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed June 22, 1972, Ser. No. 265,114

Claims priority, application Germany, June 25, 1971, P 21 31 741.9

Int. Cl. C07f *7/08, 7/18*

U.S. Cl. 260—448.2 E **3 Claims**

A process for the addition of silicon compounds with Si-bonded hydrogen to compounds with aliphatic multiple bonds in the presence of platinum catalysts which are obtained from the reaction of chloroplatinic acid and ketones.

3,798,253

BICYCLIC OLEFINIC POLYOXYALKYLENE POLYMERS AND SILOXANE-POLYOXYALKYLENE COPOLYMER DERIVATIVES THEREOF

Edward A. Rick, Charleston, W. Va., and George M. Omietanski, Marietta, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,595

Int. Cl. C07f *7/08*

U.S. Cl. 260—448.2 B **17 Claims**

This invention relates to novel polyoxyalkylene polymers characterized by certain bicyclic olefinic endblocking groups (e.g., norbornenyl end-blocking groups). The novel polymers readily undergo addition reactions with siloxanes containing SiH in the presence of chloroplatinic acid to produce novel siloxane-polyoxyalkylene block copolymers that are useful as foam stabilizers for polyurethane foams. The olefinic double bonds under go relatively little isomerization or other side reactions during such addition reactions and so the products are relatively free of materials other than the desired block copolymers.

3,798,254

SUBSTITUTED S-DICHLOROMETHYL ORGANOTHIOSULFONATES AND THEIR MANUFACTURE

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,252

Int. Cl. C07c *141/00*

U.S. Cl. 260—453 R **8 Claims**

Substituted S-dichloromethyl organothiosulfonates are prepared from substituted dichloromethane sulfenyl chlorides by reaction with an ionized organosulfinate in the presence of water and an immiscible organic solvent. These compounds are pesticidally active and particularly useful as pre-emergent herbicides.

3,798,255

ETHERS OF POLYCHLORINATED BENZONITRILES

Lewis William Watts, Jr., Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed May 3, 1971, Ser. No. 139,868

Int. Cl. C07c *121/52*

U.S. Cl. 260—465 F **1 Claim**

Novel ethers are prepared via the interaction of pentachlorobenzonitrile with alkali metal salts of saturated aliphatic alcohols such as methanol, ethanol, propanol, t-butanol and aromatic alcohols such as phenol or substituted phenols. These new compounds have biological activity and are also useful as chemical intermediates.

3,798,256

HYDROCYANATION OF OLEFINS

Charles Morgan King, William Carl Seidel, and Chadwick Alma Tolman, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,352

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.8 R **11 Claims**

A process for hydrocyanating an ethylenically unsaturated organic compound in the presence of a zero valent nickel complex of the formulae $Ni(PXYZ)_3R^2CN$ and $Ni(PXYZ)_2A$, wherein X is OR, Y and Z are R or OR and R is an alkyl or aryl radical, a given PXYZ ligand having a cone angle with an average value between 130° and 170°; "A" is an ethylenically unsaturated organic compound containing 2 to 20 carbon atoms; R^2 is an alkyl, alkenyl, cyano substituted alkyl, or aryl group having 1 to 20 carbon atoms.

A Lewis acid such as $AlCl_3$, $ZnCl_2$ or $(C_6H_5)_3B$ may be used in conjunction with the complex.

3,798,257

PROCESS FOR THE PRODUCTION OF BIS(2-HYDROXYETHYL)TEREPHTHALATE

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 5, 1972, Ser. No. 250,586

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 P **6 Claims**

A method of producing bis(2-hydroxyethyl)terephthalate which involves reacting an alkali metal salt of terephthalic acid with ethylene oxide in the presence of carbon dioxide.

3,798,258

SALICYLANILIDES

Arthur A. Patchett, Cranford, Helmut Mrozik, Matawan, and Dale R. Hoff, Basking Ridge, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 634,442, Apr. 28, 1967, which is a continuation-in-part of application Ser. No. 573,474, Aug. 10, 1966, which in turn is a continuation-in-part of application Ser. No. 555,694, June 7, 1966, all now abandoned. This application Mar. 13, 1970, Ser. No. 19,487

Int. Cl. C07c *103/30*

U.S. Cl. 260—479 R **10 Claims**

Salicylanilides having an aromatic ring linked to the aniline moiety by one or more non-metallic atoms. Processes for the preparation of novel salicylanilides. Compositions useful in the treatment of parasitic diseases containing a substituted salicylanilide as an active ingredient.

3,798,259

SYNTHESIS OF γ-KETOESTERS

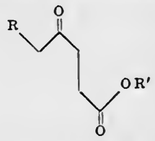
Pius Anton Wehrli, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Apr. 9, 1973, Ser. No. 349,594

Int. Cl. C07c *67/00, 69/66*

U.S. Cl. 260—483 **6 Claims**

Alkanoyl propionates of the formula



wherein R and R′ are each lower alkyl

are prepared from the corresponding alkanoyl succinates by treatment with boric acid. These compounds are useful in the preparation of 2-alkyl-cyclopentan-1,3-diones which are valuable intermediates in the synthesis of natural products, particularly steroids.

3,798,260

PROCESS FOR PRODUCING ACYLOXYDODECATRIENES

Saburo Hattri, Tokyo, and Naoshi Imaki, Kawasaki, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,649

Claims priority, application Japan, Dec. 30, 1970, 46/125,874; Mar. 29, 1971, 46/18,561

The portion of the term of the patent subsequent to Jan. 29, 1990, has been disclaimed

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A **8 Claims**

Acyloxydodecatriene is produced by reacting an octatriene, butadiene, and a carboxylic acid in the presence of a catalytic amount of palladium or a palladium compound, and an amine.

3,798,261

PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT SULFONIC ACIDS

Paul C. Kemp, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Aug. 26, 1968, Ser. No. 755,446

Int. Cl. C07c *143/00*

U.S. Cl. 260—504 R **15 Claims**

This disclosure concerns a process for preparing high-purity, high molecular weight sulfonic acids from a petroleum fraction (e.g., bright stock). Briefly, the process comprises the steps of: (1) sulfonating the petroleum fraction, (2) adding to the sulfonation mass, water and a volatile hydrocarbon solvent (e.g., hexane), (3) allowing the admixture to settle, (4) withdrawing the aqueous layer, and (5) thereupon obtaining a solution of the sulfonic acids.

A salient feature of the process is the use of *both* water and the volatile hydrocarbon solvent.

If desired, in order to reduce settling time, a low molecular weight sulfonic acid can be added to the admixture of sulfonation mass, water and volatile hydrocarbon solvent. The low molecular weight sulfonic acid can be formed in situ by including a suitable sulfonatable hydrocarbon in the petroleum fraction subjected to sulfonation.

3,798,262
SULFONYLBENZENESULFONIC ACIDS

Carl Ziegler, Glenside, and James M. Sprague, Gwynedd Valley, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,617
Int. Cl. C07c *143/24*
U.S. Cl. 260—505 R 1 Claim

Sulfonylbenzenesulfonic acids and salts and esters thereof wherein the benzene ring may be substituted by halo, alkyl, trihalomethyl, nitro, carboxy or a hydrocarbylene moiety. The products are prepared by treating a sulfonylbenzenesulfonyl halide with water and are useful as uricosuric agents in the treatment of gout and gouty arthritis.

3,798,263
PROCESS FOR MAKING DL-S-BENZYL-N-ACETYL CYSTEINE

Paul Rambacher, Stettinerstrasse 4, Rosenheim, Germany, and Siegfried Make, Kufsteiner Strasse 85, Kirchdorf am Inn, Germany

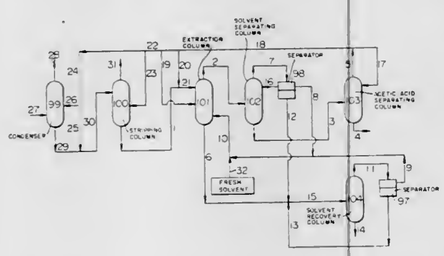
No Drawing. Filed June 10, 1969, Ser. No. 831,987
Claims priority, application Germany, June 11, 1968, P 17 68 647.4; July 29, 1968, P 17 93 094.8
Int. Cl. C07c *149/42*
U.S. Cl. 260—516 1 Claim

The application discloses a proces for making racemic cysteine, inactive cystine and DL - S - benzyl-N-acetyl cysteine by reacting serine and acetic anhydride in the presence of a thioacid, such as thioacetic acid, or in the presence of thiourea, whereby the thio-compound is attached to the azlactone of acetamino acrylic acid in statu nascendi. The attachment product is then hydrolyzed by an alkaline or acid hydrolyzing agent, or by both successively, thereby forming racemic cysteine. This product may be used as such, or it may be oxidized to form inactive cystine, or it may be benzylated and acetylated to form DL-S-benzyl-N-acetyl-cysteine.

3,798,264
PROCESS FOR PURIFICATION OF ACRYLIC ACID BY EXTRACTION AND DISTILLATION

Kunihiro Kubota and Noboru Shimizu, Osaka, and Takashi Ohara, Nishinomiya, Japan, assignors to Nippon Shokubai Kogaku Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 23, 1971, Ser. No. 211,239
Claims priority, application Japan, Dec. 26, 1970, 45/118,788
Int. Cl. C07c *57/04*
U.S. Cl. 260—526 N 1 Claim



A process for the purification of acrylic acid comprising extracting an acrylic acid aqueous solution formed by the gas phase catalytic oxidation of propylene or acrolein, with an extracting solvent in an extraction zone, separating the extracting solvent from the extract in a distillation zone, and thereafter distilling off a mixture of acrylic acid and acetic acid from the remaining portion of the extract in a rectification zone, thereby to obtain acrylic acid substantially free of of acetic acid, said process being characterized in that the distillate from the rectification zone containing acrylic acid and acetic acid is recycled to the extraction zone.

3,798,265
POLYFLUOROALKOXY ALKYL AMIDOCARBOXYLIC ACIDS AND SALTS THEREOF

Philip Lee Bartlett, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,597
Int. Cl. C07c *103/50*
U.S. Cl. 260—534 M 8 Claims

Surfactant and emulsifying compounds derived from hexafluoropropylene oxide polymer acid halides and aminoacids having the formula:

$$R_fO[CF(CF_3)CF_2O]_nCF(CF_3)CO\overset{\overset{R^1}{|}}{N}-R^2X$$

wherein R_f is a perfluoroalkyl radical having from 1 to 6 carbon atoms, n is an integer from 0 to about 8, R^1 is hydrogen or an alkyl radical having from 1 to about 12 carbon atoms, R^2 is an alkylene radical having from 1 to about 12 carbon atoms, arylene or a substituted alkylene radical having the formula

$$-\underset{\underset{(CH_2)_bR^3}{|}}{CH}-(CH_2)_a-$$

wherein the sum of a and b is from 1 to about 12, and R^3 is OH, SCH_3 or CO_2H, R^1 and R^2 together may be an alkylene radical having 4 or 5 carbon atoms and X is CO_2M or SO_3M wherein M is hydrogen, alkali metal, ammonium or substituted ammonium.

3,798,266
PROCESS FOR PREPARING CITRIC ACID

Giorgio Bottaccio and Gian Paolo Chiusoli, Novara, Alfredo Coassolo, Vogogna, and Vittorio Carletti, Meda, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Sept. 18, 1972, Ser. No. 290,160
Claims priority, application Italy, Sept. 20, 1971, 28,832/71
Int. Cl. C07c *59/16*
U.S. Cl. 260—535 P 16 Claims

A process for preparing citric acid, comprising carboxylating acetone with carbon dioxide in an inert dipolar aprotic medium, selected from the group consisting of N-dialkyl-substituted amides of organic acids, N-alkyllactams having up to 10 carbon atoms, and dimethyl sulphoxide, in the presence of at least 4 moles of phenol alkaline salts per each mole of acetone, at a temperature between 0° and 60° C. and at a substantially atmospheric pressure, to yield a 3-ketoglutaric acid alkaline salt. Cyanurating said 3-ketoglutaric acid alkaline salt with HCN in excess with respect to the theoretical amount necessary to obtain the cyanohydrin of the 3-ketoglutaric acid, at a temperature ranging from 0° to 10° C. Subsequently hydrolyzing the cyanohydrin thus obtained with sulphuric acid in excess with respect to the present alkali and nitrogen to yield citric acid. Recovering the citric acid as an alkaline earth metal salt.

3,798,267
PROCESS OF PRODUCING ACETIC ACID FROM METHYL FORMATE

Hachiro Wakamatsu, Tokyo, Jiro Sato, Yokohama, and Tatsunori Hamaoka, Hayama, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 114,065, Feb. 9, 1971. This application Aug. 10, 1972, Ser. No. 279,719
Claims priority, application Japan, Feb. 25, 1970, 45/16,018; Aug. 19, 1971, 46/63,253
Int. Cl. C07c *51/00*
U.S. Cl. 260—541 7 Claims

Methyl formate is isomerized to acetic acid in the presence of activated carbon and a halogen promoter at 200° to 450° C.

3,798,268
1-BENZYL-3-[2-PHENOXY-5-(N-ETHYL-N-PHENYLSULFAMOYL)PHENYL] - 2 - THIOUREAS AND CONGENERS

Robert C. Tweit, Wilmette, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,024
Int. Cl. C07c *157/06*
U.S. Cl. 260—552 R 14 Claims

Preparation of 1 - benzyl-3-[2-phenoxy-5-(N-ethyl-N-phenylsulfamoyl)phenyl]-2-thioureas and congeners such as 1 - (2,5 - dimethylbenzyl)-3-[2-phenoxy-5-(N-ethyl-N-phenylsulfamoyl)phenyl]-2-thiourea, and valuable biological properties thereof including anti-ulcerogenic activity, are disclosed.

3,798,269
AMIDINOUREAS AND AMIDINOTHIOUREAS

Royal A. Cutler, Box 442, Sand Lake, N.Y. 12196, and Samuel Schalit, 56 Forest Ave., Albany, N.Y. 12208

No Drawing. Application Aug. 5, 1968, Ser. No. 749,986, now Patent No. 3,652,766, dated Mar. 28, 1972, which is a continuation-in-part of application Ser. No. 556,897, June 13, 1966, which in turn is a continuation-in-part of application Ser. No. 462,077, June 7, 1965, both now abandoned. Divided and this application Oct. 8, 1970, Ser. No. 79,266
Int. Cl. C07c *127/16*
U.S. Cl. 260—553 R 6 Claims

Antibacterial and antifungal mono- and disubstituted amidinoureas and amidinothioureas are obtained by interaction of guanidines and isocyanates or isothiocyanates.

3,798,270
ALPHA-IMINO AMINES

Richard J. Lee, Downers Grove, Ill., and Clarence M. Loane, Highland, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,712
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R 4 Claims

Reaction of an alpha-nitro alkyl amine containing nitro and amino groups on adjacent carbon atoms with an aliphatic primary amine or an aliphatic polyamine and sulfur dioxide reduces the nitro group and forms the corresponding aliphatic alpha-imino amine containing imino and amino groups on adjacent carbon atoms. Such aliphatic alpha-imino amines are useful per se as antioxidants, surfactants, detergents, anti-rust agents, and flotation agents in aqueous and hydrocarbon systems, or as chemical intermediates, for example, for preparation of dyes.

3,798,271
PROCESS FOR THE MANUFACTURE OF 1-AMINO-2,5-DIALKOXY-4-CHLOROBENZENES

Gerhard Podschus, Glashutten, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 31, 1970, Ser. No. 60,089
Claims priority, application Germany, Aug. 14, 1969, P 19 41 377.5; July 11, 1970, P 20 34 590.8
Int. Cl. C07c *91/44*
U.S. Cl. 260—575 9 Claims

1 - amino-2,5-di-lower alkoxy-4-chlorobenzenes are obtained in excellent space-time-yields and in high purity when in the reduction process with iron and lower alkane carboxylic acids the 1-nitro-2,5-di-lower alkoxy-4-chlorobenzene is introduced as solution in an organic solvent. The products are valuable diazo compounds for the manufacture of azo dyestuffs.

3,798,272
PHENANTHRENE DERIVATIVES

Wataru Nagata, Nishinomiya, Tadao Terasawa, Takatsuki, and Tsutomu Aoki, Amagasaki, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Original application Dec. 6, 1968, Ser. No. 781,964, now Patent No. 3,661,999. Divided and this application Apr. 22, 1971, Ser. No. 136,597
Claims priority, application Japan, Dec. 26, 1967, 42/85,159, 42/85,160; Feb. 13, 1968, 43/9,012
Int. Cl. C07c *49/54*
U.S. Cl. 260—586 H 10 Claims

Phenanthrene derivatives useful as medicaments for anti-androgenic therapy and acne-prophylactic or treatment thereof.

3,798,273
INTERMEDIATE FOR SYNTHESIS OF HOUSEFLY SEX ATTRACTANT

Robert L. Cargill, Columbia, S.C., assignor to Research Corporation, New York, N.Y.

No Drawing. Filed Nov. 29, 1972, Ser. No. 310,556
Int. Cl. C07c *49/20*
U.S. Cl. 260—593 R 3 Claims

The invention relates to compounds of the formula

$$CH_3(CH_2)_x\overset{\overset{H}{|}}{C}=\overset{\overset{H}{|}}{C}(CH_2)_yC(=O)(CH_2)_7CH_3$$
(Cis)

wherein x is an integer from 7 to 11, inclusive, and y is an integer from 0 to 4, inclusive, said ketone containing 23 carbon atoms which are useful in the synthesis of the housefly sex attractant of the formula

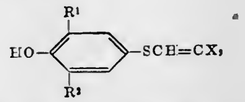
$$CH_3(CH_2)_x\overset{\overset{H}{|}}{C}=\overset{\overset{H}{|}}{C}(CH_2)_{11}CH_3$$
(Cis)

3,798,274
INSECTICIDAL PHENOLS

Joseph E. Moore, Richmond, and Gustave K. Kohn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Oct. 24, 1972, Ser. No. 300,082
Int. Cl. C07c *149/36*
U.S. Cl. 260—609 F 4 Claims

2,6-di-(branched alkyl)-4-(halovinylthio) phenol compounds of the formula



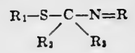
wherein R^1 and R^2 are branched alkyl groups of 3 to 6 carbon atoms and X is hydrogen, fluorine, chlorine, bromine or iodine, with the proviso that at least one X is halogen, have morphogenetic hormonal mimetic activity on mosquitos. The compounds are prepared by the reaction of a 2,6-di-(branched alkyl) phenol and a halovinylsulfenyl halide.

3,798,275
ETHERIFIED MERCAPTO-METHOXYAMINES

Neville Finch, West Orange, and Isidoros Vlattas, Millburn, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,423
Int. Cl. C07c *131/02*
U.S. Cl. 260—609 R 3 Claims

Prostaglandinoximes, e.g. those of the formula



R=9-desoxo-prostaglandin moiety
R_1=aliphatic, araliphatic or aromatic radical
$R_{2,3}$=H or R_1, or R_2+R_3=alkylene

are valuable intermediates in the preparation of PGE_1 or analogs thereof.

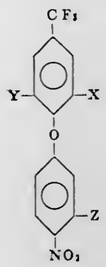
3,798,276

HERBICIDAL 4-TRIFLUOROMETHYL-4'-NITRODIPHENYL ETHERS

Horst O. Bayer, 186 Red Rose Drive, Levittown, Pa. 19056; Colin Swithenbank, 1'710 W. Rock Road, Perkasie, Pa. 18944; and Roy Y. Yih, 73 Townview Drive, Doylestown, Pa. 18901

No Drawing. Filed Mar. 14, 1972, Ser. No. 234,651
Int. Cl. C07c *43/28*
U.S. Cl. 260—612 R **6 Claims**

Compounds of the formula



wherein

X is a hydrogen atom, a halogen atom, a trihalomethyl group, an alkyl group, or a cyano group,
Y is a hydrogen atom, a halogen atom, or a trihalomethyl group, and
Z is an alkoxy group, an alkoxyalkoxy group, a hydroxyalkoxy group, an alkyl group, a halogen atom, an alkylamino group, a dialkylamino group, an alkylthio group, a carboxy group, a carbalkoxy group, a carboxyalkyl group, a carbalkoxyalkoxy group, a carboxyalkyl group, a carbalkoxyalkyl group, a dialkylureido group, an alkanoylamino group, or a carbalkoxyamino group,

and compositions containing these compounds exhibit herbicidal activity.

3,798,277

PROCESS FOR THE PREPARATION OF HYDROQUINONE

Masatoshi Sugiyama, Yasuo Nishigaki, and Sadayoshi Itagaki, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 18, 1971, Ser. No. 154,334
Claims priority, application Japan, June 18, 1970, 45/52,986
Int. Cl. C07c *37/08*
U.S. Cl. 260—621 C **13 Claims**

A process for obtaining hydroquinone is disclosed wherein the decomposition reaction products of para-diisopropyl benzene di-hydroperoxide in the presence of an acid is neutralized with an alkali, the precipitated alkali salt of the acid is filtered off, the acetone is distilled off, the residue is extracted with an aliphatic halogenated hydrocarbon, and finally, the resulting hydroquinone is separated from the residual aqueous solution left on the extraction.

3,798,278

PROCESS OF PRODUCING ALCOHOLS

Herbert August Jung, New York, N.Y., assignor to Esso Research and Engineering Company

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,360
Claims priority, application Great Britain, Aug. 17, 1970, 39,498/70
Int. Cl. C07c *33/02, 69/80*
U.S. Cl. 260—638 R **10 Claims**

A process for the preparation of unsaturated higher alcohols from conjugated dienes and aldehydes by contacting said dienes and aldehydes in the presence of a salt or chelate or coordination compound of palladium or platinum and a ligand of the type YR_3 wherein Y is phosphorus or arsenic and R is a hydrocarbyl radical characterized as being more bulky in proximity to Y than a straight chain alkyl radical or an unsubstituted aromatic ring.

3,798,279

PROCESS FOR HYDROGENATING AROMATIC HYDROCARBONS TO NAPHTHENIC HYDROCARBONS OF HIGH PURITY AND CATALYST THEREFOR

Maurice Cessou, Chez M. Alberto, Rue la Vesina 69, Irigny, France, and Jean Cosyns, Rue de Sannois 92, Nanterre, France

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,320
Claims priority, application France, Sept. 8, 1970, 7032661
Int. Cl. C07c *5/14*
U.S. Cl. 260—667 **9 Claims**

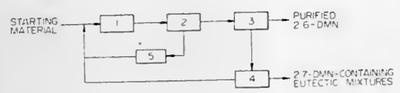
Aromatic hydrocarbons are hydrogenated to the corresponding naphthenic hydrocarbons in a two-step process. The first step is carried out in the liquid phase with a group VIII metal as catalyst. The second step is carried out in the liquid or gaseous phase with a group VIII metal oxide as catalyst. For example, benzene is hydrogenated to cyclohexane with Raney nickel and supported nickel as respective catalysts.

3,798,280

PROCESS FOR PREPARATION OF 2,6-DIMETHYL NAPHTHALENE

Keizo Shimada, Takeo Nishikawa, Toshiaki Harada, Seizi Kurozumi, Yoshinobu Takeuchi, and Shizuo Nagahama, Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jan. 24, 1972, Ser. No. 219,994
Claims priority, application Japan, Jan. 27, 1971, 46/2,734
Int. Cl. C07c *15/24*
U.S. Cl. 260—668 F **5 Claims**



In the preparation of 2,6-dimethyl naphthalene by feeding 1,5-dimethyl naphthalene, 1,6-dimethyl naphthalene, a mixture thereof, or a mixture containing such dimethyl naphthalene as the main component to the zone of an isomerization reaction, isomerizing the dimethyl naphthalene in the presence of an isomerization catalyst, cooling the resulting isomerization reaction product to crystallize 2,6-dimethyl naphethalene, and separating and recovering the same, the improvement wherein 2,7-dimethyl naphthalene or its eutectic mixture is removed before the mother liquor remaining after the recovery of 2,6-dimethyl naphthalene from the isomerization reaction product is recycled to the isomerization reaction zone.

3,798,281

PROCESS FOR PRODUCTION OF POLYARYLENES

Chen-Shen Wang, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of abandoned application Ser. No. 169,429, Aug. 5, 1971. This application July 31, 1972, Ser. No. 274,587
Int. Cl. C07c *15/12*
U.S. Cl. 260—670 **19 Claims**

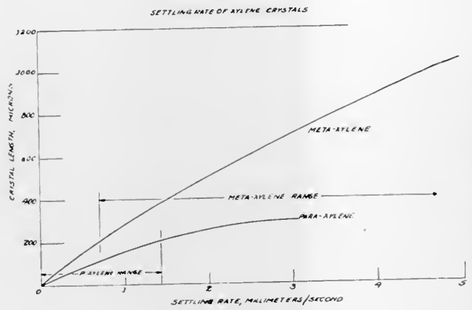
An improved rapid process for obtaining polyarylenes, i.e., polymers of aromatic compounds, by contacting aromatic compounds with an Al_2O_3-SiO_2 catalyst system.

3,798,282

SELECTIVE SEPARATION OF XYLENES BY CRYSTAL SIZE CLASSIFICATION

Alan G. Bemis, John K. Darin, and Melvern C. Hoff, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 11, 1972, Ser. No. 279,853
Int. Cl. C07c *7/14*
U.S. Cl. 260—674 A **32 Claims**



A process is provided for recovering high purity meta-xylene from mixtures of primarily C_8 aromatic isomers (1) by cooling such a mixture to form a slurry of liquor and discrete meta- and para-xylene crystals of different size and shape, (2) by classifying crystals of the two species on the basis of their different size and shape and/or settling rates to obtain a crystal stream enriched in meta-xylene, and (3) by concentrating the meta-xylene rich crystal solids. Partial melting or complete melting and recrystallizing can be used for further purification to obtain very high purity meta-xylene.

3,798,283

NON-CATALYTIC OXIDATIVE DEHYDROGENATION PROCESS

Lou S. Bitar, Rikswijk, Netherlands, David S. Smallwood, Philadelphia, Pa., and Elliot N. Lang, Guadalajara, Jalisco, Mexico, assignors to Atlantic Richfield Company, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 56,722, July 20, 1970. This application Mar. 8, 1972, Ser. No. 232,928
Int. Cl. C07c *3/28*
U.S. Cl. 260—683.3 **9 Claims**

Conversion of propane to propylene by oxidative dehydrogenation with a high selectivity to propylene at a given propane conversion level is carried out by the reaction of propane and sufficient molecular oxygen at temperatures of about 890° F. to 940° F. to maintain an excess partial pressure of oxygen in the reaction zone either by the use of total pressures above atmospheric pressure or by the use of an oxygen-rich feed or by a combination of both, the excess partial pressure of oxygen in the reaction zone being characterized by a specific oxygen partial pressure range in the effluent gas stream.

3,798,284

PROCESS FOR THE PREPARATION OF SYNTHETIC LUBRICATING OILS FROM OLEFINES

Renato Tesei, Pierleone Girotti, and Telemaco Floris, San Donato, Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato, Milanese, Italy

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,974
Claims priority, application Italy, Dec. 30, 1969, 26,427/69
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D **20 Claims**

Lubricating oils having improved characteristics may be synthesized by polymerizing certain linear alpha olefines in the presence of an inorganic catalyst system comprising:

(a) a compound of a transition metal from the IV to the VIII group of the Periodic System, and
(b) a compound of aluminum which is a linear polymer of polyiminic nature having the formula:

$$-\left[\begin{matrix}-Al-N-\\ \quad | \quad |\\ \quad H \quad R\end{matrix}\right]_n-$$

wherein *n* is a number not higher than 50 and R is a hydrocarbon radical.

3,798,285

OLEFIN OLIGOMERIZATION PROCESS

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 824,268, May 13, 1969. This application Nov. 26, 1971, Ser. No. 202,653
Int. Cl. C07c *3/20*
U.S. Cl. 260—683.15 D **12 Claims**

A catalyst composition for the oligomerization, including dimerization, of olefins is provided by combining (A) manganese, (B) a monophosphine electron donor ligand, and (C) a Lewis acid-reducing agent, in molar ratios of (B) to (A) of about 1 to 10:1 and (C) to (A) of about 5 to 25:1. Preferred catalyst components are manganic acetylacetonate, triphenylphosphine and ethylaluminum sesquichloride.

3,798,286

STABILIZED POLYOLEFINS USEFUL AS WIRE INSULATION IN PETROLEUM-JELLY FILLED CABLES

Donald E. Reid, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed May 18, 1972, Ser. No. 254,553
Int. Cl. C08f *29/10, 45/58;* **C08g** *37/20*
U.S. Cl. 260—848 **4 Claims**

Polyolefins useful for insulating wire for use in petroleum jelly-filled cables are stabilized by a combination of additives including a phenolic antioxidant, a polymeric ester of a thiodialkanoic acid and an inhibitor against copper induced degradation.

3,798,287

METHOD FOR PRODUCING A MIXED POLYMER OF VINYLIDENE FLUORIDE POLYMERS

Naohiro Murayama, Toshio Hosokawa, and Morio Shirai, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed July 25, 1972, Ser. No. 274,983
Claims priority, application Japan, July 26, 1971, 46/55,873
Int. Cl. C08d *9/08;* **C08f** *29/22*
U.S. Cl. 260—878 R **5 Claims**

A method of producing a mixed polymer of vinylidene fluoride having excellent crystallization characteristic, wherein a monomer which is polymerizable by itself without reacting with the resulting polyvinylidene fluoride is

added to and polymerized by itself within or on the surface of the vinylidene fluoride polymer particles.

3,798,288

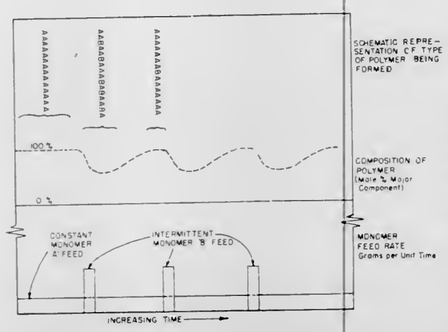
ETHYLENE/PROPYLENE BLOCK COPOLYMERS

Robert J. McManimie and William R. Richard, Jr., Dayton, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed June 11, 1959, Ser. No. 819,649

Int. Cl. C08f *1/42, 15/04*

U.S. Cl. 260—878 B **9 Claims**



A method of preparing block copolymers from ethylene and propylene monomers which comprises alternately polymerizing one of said monomers and a mixture of said monomers in the presence of a catalyst comprising a vanadium halide and an aluminum alkyl compound.

3,798,289

VINYL HALIDE POLYMER-OLEFIN COPOLYMER ALLOYS

James Edward McGrath, Somerville, and Markus Matzner, Edison, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,851

Int. Cl. C08f *33/08, 37/18*

U.S. Cl. 260—895 **12 Claims**

Compatible alloys or blends of at least one vinyl halide polymer and at least one copolymer of an olefin and a nitrogen-containing comonomer having a basic characteristic are produced; e.g. an alloy of poly(vinyl chloride) and a copolymer of ethylene and N-methyl-N-vinylacetamide or N,N-dimethylacrylamide.

3,798,290

MIXED POLYALKYLENE GLYCOL POLYPHOSPHORUS COMPOUND

Kyung S. Shim, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 86,313, Nov. 2, 1970, which is a continuation-in-part of application Ser. No. 63,262, Aug. 6, 1970, now abandoned. This application July 26, 1971, Ser. No. 166,289

Int. Cl. C07f *9/08;* **C08g** *22/44*

U.S. Cl. 260—929 **5 Claims**

Mixed polyalkylene glycol polyphosphorus compounds containing both phosphite and vinyl phosphate linkages are prepared by reacting certain polyalkylene glycol polyphosphites with less than a stoichiometric amount of a halogenated carbonyl compound.

3,798,291

HALOGENATED POLYHYDROCARBONS HAVING A REGULAR STRUCTURE, AND PROCESS FOR OBTAINING SAME

Gino Dall'Asta, Milan, and Pietro Meneghini, Pioltello, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation of abandoned application Ser. No. 870,424, Oct. 21, 1969. This application Jan. 17, 1972, Ser. No. 218,556

Claims priority, application Italy, Oct. 21, 1968, 22,766/68

Int. Cl. C08f *5/00*

U.S. Cl. 260—931 **6 Claims**

Linear, high molecular weight poly(dihalogenalkenamers) are disclosed. The polymers show the repeating unit

$$—CHX—CHX(—CHR)_n—$$

in which X is chlorine or bromine, R is hydrogen, methyl or phenyl, and *n* is a whole number from 3 to 10. Some of the polymers are amorphous. Other of the polymers, those prepared from stereoregular polyalkenamers by the present process, appear to be crystalline when subjected to X-ray examination. All of these polymers are vulcanizable. The new polymers are prepared by reacting a polyalkenamer, the repeating unit of which is essentially $—CH=CH—(—CHR)_n—$ in which R and *n* have the significance mentioned above, in solution, with chlorine or bromine until the double bonds present in the starting polyalkenamer totally disappear.

3,798,292

PESTICIDALLY ACTIVE O-ETHYL-O-PHENYL OR NAPHTHYL-S-(2-ALKOXYETHYL) PHOSPHOROTHIONOTHIOLATES

Shigeo Kishino, Akio Kudamatsu, and Kozo Shiokawa, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

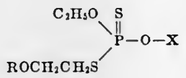
No Drawing. Filed Apr. 22, 1971, Ser. No. 136,584

Claims priority, application Japan, Apr. 30, 1970, 45/36,305

Int. Cl. A01n *9/36;* **C07f** *9/18*

U.S. Cl. 260—950 **11 Claims**

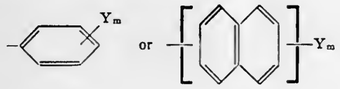
O-ethyl-S-(2-alkoxyethyl)-dithiophosphoric acid phenyl or naphthyl esters, i.e. O-ethyl-S-(2-alkoxyethyl)-O-optionally substituted phenyl or naphthyl-phosphorothionothiolates, of the formula



(I)

in which

R is a lower alkyl radical, and
X is a group of the formula



(IIa) (IIb)

in which
Y is a halogen atom or a lower alkyl, lower alkoxy, lower alkylmercapto, lower alkylsulfinyl, nitro, cyano or phenyl group, and
m is 0, 1, 2 or 3,

which possess insecticidal, acaricidal and nematocidal properties.

3,798,293

O-ALKYL-S-SUBSTITUTED-O-NAPHTHYL-PHOSPHOROTHIOLATES

Shigeo Kishino and Yasuo Yamada, Tokyo, Akio Kudamatsu, Kanagawa-ken, Yoshio Kurahashi, Shoozo Sumi, and Morisuke Seki, Tokyo, and Koozo Shiokawa, Kanagawa-ken, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,762

Claims priority, application Japan, Oct. 21, 1969, 44/83,602

Int. Cl. A01n *9/36;* **C07f** *9/16*

U.S. Cl. 260—964 **8 Claims**

O-alkyl-S-substituted-O-naphthylphosphorothiolates, i.e. O-lower alkyl-S-lower alkyl, lower alkenyl or lower alkoxyethyl-O-naphthylphosphorothiolates which may contain up to three halogen atoms on the naphthyl ring, which possess insecticidal and fungicidal properties, as well as compositions containing such phosphorothiolates and methods of combating insects and fungi using such phosphorothiolates.

3,798,294

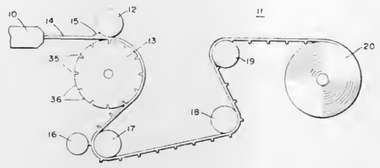
METHOD FOR PRODUCING BATTERY SEPARATOR SHEET

Bonderinko Hollenbeck, Pelham, N.H., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 10, 1972, Ser. No. 225,205

Int. Cl. B29d *7/06, 27/00*

U.S. Cl. 264—41 **5 Claims**



A plastic material is formed into a sheet suitable for conversion into a battery separator. An extruded sheet is formed by calendering to produce projections on at least one surface and thereafter its thickness is made more uniform. The method preferably includes transporting the calendered sheet on the calendering roll to partially harden it. The sheet is removed from the calendering roll by withdrawing the projections substantially straight out of the depressions in the calendering roll. The plastic material is preferably oil filled.

3,798,295

PROCESS FOR BLOW MOLDING CONTAINERS UTILIZING DOUBLE PINCH

Richard MacDuff, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 102,692, Dec. 30, 1970. This application Nov. 6, 1972, Ser. No. 304,285

Int. Cl. B29c *17/07*

U.S. Cl. 264—99 **3 Claims**

Containers are made from a continuous oriented crystalline mono-α-olefin tubing. Orientation of the tubing is effected by heating the crystalline tubing in an oven to a few degrees below its crystalline melting point and then stretching or orienting the tubing in an axial direction. A first mold is closed about a length of tubing and internal pressure is applied to expand the tubing within the mold to form a container. The mold is then moved away from the oven at a rate which is faster than the rate that the tubing is emerging from the oven thereby stretching or orienting a length of the tubing. A second mold then closes on the newly oriented length of tubing and proceeds in the same manner as the first mold which opens and discharges its container after the second mold closes. A

double pinch is utilized at the rear of the mold to prevent "blow-back" of air pressure past the first pinch into the tubing in the oven and is also utilized to prevent pulling material away from the first pinch area due to the magnitude of force required to orient the tubing.

3,798,296

SPINNING SELF-CRIMPING COMPOSITE FIBERS

James Kellett Thomas, Pensacola, Fla., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 28, 1972, Ser. No. 276,192

Int. Cl. B29f *3/10*

U.S. Cl. 264—171 **6 Claims**

Self-crimping composite fibers of acrylonitrile polymer components, all of the same acrylonitrile polymer but some of which contain finely dispersed silica particles to reduce shrinkage thereof and the rest of which contain water-insoluble plasticizer, e.g., organic phosphate or phosphite to increase shrinkage thereof on exposure to heat so crimp is developable at elevated temperature. Such fibers are made by preparing a plurality of polymer solutions of the same polymer and the same polymer concentration, dispersing finely divided silica particles in some but not all these polymer solutions, dispersing a water-insoluble liquid plasticizer in the rest of the polymer solutions, and spinning such spinning solutions to form composite fibers by a process which includes the steps of stretching the fibers and subsequently relaxing the fibers at elevated temperature in a free-to-shrink condition to develop crimpiness therein.

3,798,297

METHOD FOR SPINNING FILAMENTS WHICH HAVE BEEN REGENERATED FROM A SOLUTION OF CUPRAMMONIUM CELLULOSE AND FILAMENTS PRODUCED THEREBY

Oreste Gallina, Stresa, Italy, assignor to Bemberg S.p.A., Milan, Italy

Filed Sept. 10, 1971, Ser. No. 179,415

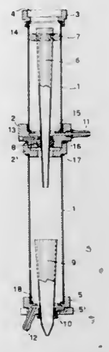
Claims priority, application Italy, Sept. 22, 1970, 30,065/70

Int. Cl. D01d *5/14*

U.S. Cl. 264—181 **12 Claims**

A method for spinning cuprammonium yarns is disclosed in which the filaments, as they emerge from the spinneret are contacted by a downward flow of a coagulation liquor (e.g. water) whose tension is adjusted to be virtually zero, then the filaments pass through a second area in which the filaments acquire a substantial tension due to their free falling while their diameter is substantially reduced, whereafter the filaments are passed through a third area where they are contacted by another

discrete stream of coagulation liquor to complete the coagulation. Thus the tension is raised to the expected



final drawing value and the filaments can now be regenerated in an acidic bath (e.g. diluted H_2SO_4).

3,798,298

PROCESS FOR PREPARING A FIBRE FLEECE

Pieter C. A. van Krimpen, Stein, and Victor M. B. Wetzler, Munstergeleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Feb. 1, 1972, Ser. No. 222,592
Claims priority, application Netherlands, Feb. 6, 1971, 7101603
Int. Cl. D01f *3/10*
U.S. Cl. 264—210 F **4 Claims**

A process and an apparatus for preparing a fibre fleece, in which a polymer material is spun into filaments which are subsequently so cooled that the major portion of the polymer material is in crystallized form, whereupon the filaments are heated to a temperature close to the melting point, led over a contact area, pneumatically stretched and spread on a conveying surface.

3,798,299

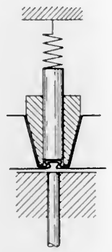
PROCESS FOR THE MANUFACTURE OF A STRUCTURE OF POSITIVELY CONNECTED CORRUGATED AND FLAT SHEETS OF THERMOPLASTIC MATERIAL

Peter Gumm, Frankfurt am Main, Karl-Heinz Krubig, Hattersheim, Jorg Lohmann, Dortmund, and Josef Zimmermann, Niederhofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Apr. 19, 1972, Ser. No. 245,347
Claims priority, application Germany, Apr. 21, 1971, P 21 19 321.5
Int. Cl. B29c *17/02*
U.S. Cl. 264—249 **5 Claims**

A process for manufacturing a structure is described which consists of a corrugated and a flat sheet or film of thermoplastic material, which sheets are positively connected by matching depressions with undercuts arranged along the grooves of the corrugated sheet and at corresponding points of the flat sheets. The structure is especially suited to make inserts for trickling-filter towers.

Matching depressions are produced simultaneously in the flat and the corrugated sheet in their areas of contact, and the depressions are then compressed whereby an undercut positive connection is formed.



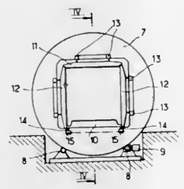
The device may be operated continuously or intermittently, its main part consisting of the tool for making the positive connections. Said tool comprises as the essential parts a series of female molds designed to fit in the grooves of the corrugated sheet, and a counteracting plug. In the female mold a spring-loaded punch is guided. To form the positive connections the plug advances into the female mold against the spring-loaded punch, and thereby depressions are formed in the corrugated and the flat sheet which are guided one upon the other through the tool. As the plug retracts, the spring-loaded punch advances to compress the depressions whereby the undercut is formed and the sheets are firmly connected.

3,798,300

METHOD FOR PRODUCING CAST THREE DIMENSIONAL BUILDING COMPONENTS

Albert C. Verbeke, Lille, France, assignor to BATIR

Filed Apr. 21, 1971, Ser. No. 136,140
Claims priority, application France, Sept. 17, 1970, 7033663
Int. Cl. B28b *1/20*
U.S. Cl. 264—250 **5 Claims**



A method of producing cast three-dimensional building components having four substantially flat walls defining a tubelike portion of said component, the component having the four adjacent walls thereof successively flat cast on the four walls of a rotating mold. Prior to casting, longitudinally extending corner members are

fixedly but detachably positioned adjacent the four corners formed by the four walls of the rotating mold. The corners are positioned at a distance from the walls of the mold equal to the thickness of the walls of the component. After each wall of the component has been cast, a rigid panel is positioned against the exposed inner surface of the cast wall and is held in position by means of braces which extend between the corresponding corner members, thereby enabling rotation of the mold to permit sequential casting of the four walls.

3,798,301

PROCESS FOR IMPROVING THE SHAPE OF A STICK OF LONGITUDINALLY SHIRRED ARTIFICIAL SAUSAGE CASING

Felix Rassbach and Rolf Buttner, Wiesbaden, and Stephan Schuck, Wiesbaden-Frauenstein, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 28, 1971, Ser. No. 213,031
Claims priority, application Germany, Dec. 29, 1970, P 20 64 192.3
Int. Cl. B29c *15/00*
U.S. Cl. 264—294 **2 Claims**

A stick of artificial sausage casing of regenerated cellulose or thermoplastic material which has been longitudinally shirred and reinforced by compression is passed through a narrow, round, resiliently expandable passage. The passage is maintained at an elevated temperature and the stick is maintained at a constant length during travel through the passage causing the entire round outer surface of the stick to be smoothed.

3,798,302

PROCESS FOR IMPROVING THE SHAPE OF A STICK OF LONGITUDINALLY SHIRRED ARTIFICIAL SAUSAGE CASING

Armin Kostner, Wiesbaden, and Richard Lenhart, Wiesbaden-Frauenstein, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 28, 1971, Ser. No. 213,030
Claims priority, application Germany, Dec. 29, 1970, P 20 64 147.8
Int. Cl. B29c *15/00*
U.S. Cl. 264—310 **2 Claims**

Process for improving the shape of a stick of longitudinally shirred artificial sausage casing of regenerated cellulose or thermoplastic material which comprises smoothing the entire round outer surface of the stick while maintaining the length thereof constant. Smoothing is performed by passing the stick through a closely calibrated round zone while heating the stick and without twisting it or by contacting the stick with heated rollers.

3,798,303

METHOD FOR THE PRODUCTION OF URANIUM MONOCARBIDE

Yumi Akimoto, Omiya, and Koji Tanaka, Urawa, Japan, assignors to Mitsubishi Kinzoku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed May 18, 1970, Ser. No. 38,604
Claims priority, application Japan, May 27, 1969, 44/40,579
Int. Cl. C01g *43/00*
U.S. Cl. 423—5 **3 Claims**

An improved method for the production of uranium monocarbide adapted to manufacture a nuclear fuel and having a composition of high density, a carbon content of which is approximately equivalent to the stoichiometric composition, in which uranium carbide as a raw material is subjected to fusing treatment by an inert plasma flame consisting of argon and hydrogen, thereby to carry out fusing of the carbide and control of carbon content of said carbide in one step.

3,798,304

HYDRO-METALLURGICAL TREATMENT OF NICKEL COBALT AND COPPER CONTAINING MATERIALS

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada

No Drawing. Continuation-in-part of application Ser. No. 221,437, Jan. 27, 1972, which is a continuation of abandoned application Ser. No. 869,376, Oct. 24, 1969. This application June 8, 1972, Ser. No. 260,991
Claims priority, application Canada, Dec. 13, 1968, 37,790
The portion of the term of the patent subsequent to Feb. 19, 1991, has been disclaimed
Int. Cl. C22b *3/00*
U.S. Cl. 423—36 **26 Claims**

A process for the recovery by leaching of nickel cobalt and copper using sulphuric acid and employing agents capable of introducing alkali metal ion or ammonium ion to the pulp whereby the dissolution of desired metals is controlled and the iron content of the solution is reduced to a desired level. The leaching may be carried out at temperatures and pressures below or above atmospheric pressure and the atmospheric boiling point of the pulp.

3,798,305

RECOVERING RHENIUM VALUES FROM ORGANIC EXTRACTANT SOLUTIONS

L. Rita Pagnozzi, James C. Patton, Jr., and Martin B. MacInnis, Towanda, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed May 19, 1972, Ser. No. 255,234
Int. Cl. C01g *47/00, 39/00*
U.S. Cl. 423—49 **3 Claims**

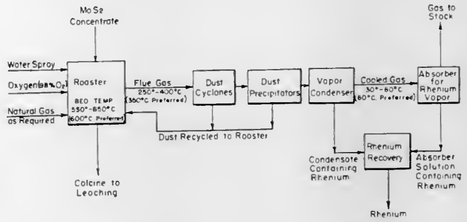
A process is disclosed wherein essentially all of the rhenium can be recovered from organic extractant solutions which selectively extract rhenium from aqueous solutions containing molybdenum A stripping solution of nitric acid removes the rhenium and can be recycled to obtain a high concentration of rhenium in the stripping solution.

3,798,306

RECOVERY OF RHENIUM FROM MOLYBDENITE

Philip E. Lapat, New Haven, and Walter C. Hellyer, Danbury, Conn., assignors to Newmont Exploration Limited, Danbury, Conn.

Filed Dec. 6, 1971, Ser. No. 205,058
Int. Cl. C10g *47/00, 39/00*
U.S. Cl. 423—50 **6 Claims**



The conventional oxidative roasting of molybdenite concentrate to molybdenum trioxide with separation of a gaseous effluent containing the indigenous rhenium content of the molybdenite is modified to reduce the dilution of the oxidized rhenium vapor species in the gaseous effluent by substituting a mixture of oxygen and water for air in the roasting reaction, the water serving to prevent excessive temperature generation during roasting so as to maintain the roasting zone temperature at about 600° C. The resulting gaseous effluent is then cooled to condense much of its water vapor content.

3,798,307

SEPARATION OF NICKEL FROM SALT MIXTURES CONTAINING NICKEL AND OTHER METAL SALTS

Roald R. Skarbo, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,234
Int. Cl. C22b *23/04;* **C01g** *53/12*
U.S. Cl. 423—143 **6 Claims**

A new method for the separation of nickel from a metal salt mixture is disclosed. The method involves dissolution of the salt mixture at an elevated temperature in a solution of ammonium hydroxide and ammonium chloride, rapidly cooling the solution under controlled condition of pH and ammonium chloride concentration to selectively separate nickel as crystalline nickel ammine chloride.

3,798,308

METHOD FOR TREATING COKE OVEN GAS

Benjamin F. Tatterson, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Jan. 19, 1972, Ser. No. 219,068
Int. Cl. C01b *17/00, 17/02*
U.S. Cl. 423—574 **7 Claims**

The elimination of atmospheric pollution resulting from sulfur-containing tail gases produced in a hydrogen sulfide conversion process associated with a coke oven gas by-product recovery system is described. The sulfur-containing components of the tail gas are removed by first combining the tail gas with crude coke oven gas in the by-product recovery system. Sulfur dioxide and the other gaseous sulfur-containing components of the tail gas are removed from the combined gases by the various gas-treatment phases of the by-product recovery system or pass through the system and are subsequently burned or vented to the atmosphere at less objectionable concentrations.

3,798,309

PROCESS FOR RECOVERING SULFUR DIOXIDE FROM GASES USING AQUEOUS SALT SOLUTION OF GLUTARIC ACID

William S. Knowles and Sabet Abdou-Sabet, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of abandoned application Ser. No. 2,585, Jan. 19, 1970. This application July 31, 1972, Ser. No. 276,350
Int. Cl. B01d *53/34*
U.S. Cl. 423—243 **10 Claims**

Gases containing sulfur dioxide, such as flue gases, are passed into effective contact with an absorbent liquid comprising an aqueous solution of a water-soluble alkali metal or amine salt of a polybasic acid at a temperature below about 90° C. to effect removal of sulfur dioxide from the gases and, if desired, the sulfur dioxide is thereafter recovered by heating the organic salt solution in which it is dissolved to a temperature in excess of about 90° C.

3,798,310

METHOD OF REMOVING SULFUR OXIDE FROM GASES

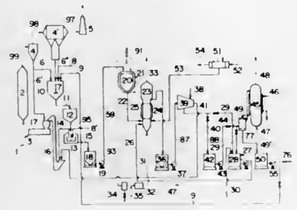
Masumi Atsukawa, K1-1304 Mitsubishi Apartment House, 5, 1-chome, Kougominami-machi; Yoshihiko Nishimoto, 522-12 Danbarahinode-machi; and Kazuhiro Matsumoto, % Mr. Ono, 641-1, Kusatsuminami-machi, all of Hiroshima, Japan

Continuation-in-part of application Ser. No. 864,961, Oct. 6, 1969, which is a continuation of application Ser. No. 548,340, Mar. 4, 1966, both now abandoned. This application Dec. 8, 1970, Ser. No. 96,162
Claims priority, application Japan, Mar. 24, 1965, 40/17,091
Int. Cl. B01d *53/16, 53/34*
U.S. Cl. 423—244 **14 Claims**

A process of employing an economically-attractive sulfur oxide absorbent, the absorbent being an activated hydrated-manganese oxide characterized by electron microscope-determined microscopic particles of one or more of string or plate or foil shape(s), by 4.6 or 7.18 angstroms distance between atomic planes at maximum defraction strength of line, by a formula

$$MnO_{1.5-1.8} \cdot (0.1-1.0)H_2O$$

and by a sulfur oxide-absorption capacity ranging from about 0.2 (i.e., 20%) greater to about 10 times greater absorption capacity as compared to typically: ammonium



persulfate/manganese sulfate-derived and electrolytically-derived $MnO_{1.88}$, and sodium carbonate/manganese sulfate-derived Mn_2O_3. A preferred cyclic process employing pressurized air or oxygen bubbles of small size to thereby rapidly oxidize an aqueous mixture of manganese sulfate and an excess of ammonium hydroxide results in an industrially-attractive process which heretofore has been industrially unacceptably inefficient and high-cost when employing other types of manganese oxide.

3,798,311

DIRECT SYNTHESIS OF FAUJASITE ZEOLITES CONTAINING SODIUM AND LITHIUM

Jean-Louis Guth, Mulhouse, Albert Pereyron, Brunstatt, and Raymond Wey, Mulhouse, France, assignors to Azote et Produits Chimiques S.A.

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,204
Claims priority, application France, Sept. 18, 1970, 7033911; Mar. 10, 1971, 7108244
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 **15 Claims**

Lithium-containing faujasites are produced without the necessity of an ion exchange step. A gel is first formed of an aluminosilicate containing all of the alumina required for the crystallization mixture. The gel is then modified by the addition of reactive silica and, if necessay, other components to yield specified molar ratios relating to Al_2O_3, SiO_2, Na_2O, Li_2O and H_2O values. The resultant crystallization mixture is treated to crystallize out the lithium-containing faujasite.

3,798,312

PROCESS FOR PREPARATION OF CHLORINE NITRATE

Donald Pilipovich, Agoura, Calif., and Charles B. Lindahl, Sand Springs, Okla., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,651
Int. Cl. C01b *21/20, 21/52;* **C01f** *11/22*
U.S. Cl. 423—386 **3 Claims**

A novel preparation of chlorine nitrate by reacting FNO_2 and $Ca(OCl)_2$.

3,798,313

PRODUCTION OF BISMUTH OXYCHLORIDE CRYSTALS OF ENHANCED LUSTER AND COVERING POWER

Paul W. Wetzold, Armonk, N.Y. (% Paispearl Products, Inc., 24 Acqueduct Lane, Hastings-on-Hudson, N.Y. 10706)

No Drawing. Filed Nov. 11, 1971, Ser. No. 197,975
Int. Cl. C01b *11/00*
U.S. Cl. 423—472 **13 Claims**

Bismuth oxychloride crystals of enhanced luster and covering power are provided by forcing the crystal to grow small and thin. This is accomplished by hydrolyzing bismuth salt dissolved in water using hydrochloric acid with the bismuth salt being first caused to form crystal nuclei using a relatively stable aqueous solution thereof in which the Bi/HCl weight ratio is from 0.2:1 to 0.8:1, and then completing crystal growth using a relatively unstable solution having a Bi/HCl weight ratio of from 1:1 to 2:1.

3,798,314

PROCESS OF MANUFACTURING ANHYDROUS MAGNESIUM CHLORIDE

Yuichi Suzukawa, Waichi Kobayashi, Kinzi Uehori, Satoshi Ohtaka, and Kozaburo Yoshida, Ube, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

No Drawing. Filed June 26, 1972, Ser. No. 266,302
Claims priority, application Japan, July 22, 1971, 46/54,195
Int. Cl. C01c *1/16;* **C01f** *5/30*
U.S. Cl. 423—498 **7 Claims**

High purity anhydrous magnesium chloride useful for producing metallic magnesium is manufactured by the process wherein hydrous ammonium carnallite is converted to anhydrous ammonium carnallite ammonate by contacting it with gaseous ammonia, the anhydrous ammonium carnallite ammonate is further converted to anhydrous magnesium chloride by thermally decomposing it, and the anhydrous magnesium chloride is isolated by evaporating ammonium chloride and ammonia from the decomposition product.

3,798,315

TREATMENT OF GASES

Thomas Nicklin, Bamford, Rochdale, England, assignor to The Gas Council, London, England

Filed Oct. 26, 1971, Ser. No. 192,032
Claims priority, application Great Britain, Oct. 27, 1970, 51,062/70
Int. Cl. C01b *17/04*
U.S. Cl. 423—574 **2 Claims**

A process for the production of sulphur from a gaseous mixture containing hydrogen sulphide and sulphur dioxide. The gaseous mixture in a reactor vessel is contacted with a catalyst comprising oxides of nickel and uranium whereby hydrogen sulphide and sulphur dioxide are reacted together to yield sulphur.

3,798,316

PURIFICATION OF CLAUS PLANT TAIL GAS BY WATER WASHING

David K. Beavon, Los Angeles, Calif., assignor to The Ralph M. Parsons Company, Los Angeles, Calif.

Filed Sept. 8, 1972, Ser. No. 287,589
Int. Cl. C01b *17/04*
U.S. Cl. 423—574 **5 Claims**

The effluent from a Claus sulfur plant is passed to a relatively high temperature reaction-absorption zone where, in the presence of water as the absorption-reaction medium, there is formed sulfur by reaction of the hydrogen sulfide and sulfur dioxide and other sulfurous compounds such as polythionic and sulfurous acids.

The water containing sulfur and the other sulfurous compounds is recycled back to one of the Claus conversion stages where the formed sulfurous compounds dissociate into sulfur, hydrogen sulfide and sulfur dioxide for conversion to elemental sulfur in the Claus reactor.

The residual gas stream is then passed to a second absorption zone to remove residual sulfur dioxide and to a final water condensation zone before being vented to the atmosphere.

3,798,317

NON-CAKING AEROSOL ANTI-PERSPIRANT COMPOSITION

Larry Austin Gorum, Winter Park, Fla., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,989
Int. Cl. A61k *7/00*
U.S. Cl. 424—47 **4 Claims**

An aerosol anti-perspirant formulation comprising a fluorocarbon propellant, a dispersion of aluminum chlorohydroxide and fumed silica in an ethanol and 1,2-propylene glycol solution of aluminum chlorohydroxide-propylene glycol complex wherein the concentration of fumed silica is from about 1.0 to about 1.7 weight percent.

3,798,318

METHODS AND COMPOSITIONS FOR SELECTIVELY ATTRACTING YELLOW-JACKET WASPS

Robert H. Wright, Vancouver, British Columbia, Canada, assignor to British Columbia Research Council, Vancouver, British Columbia, Canada

Continuation of abandoned application Ser. No. 1,140, Jan. 7, 1970. This application July 12, 1972, Ser. No. 270,989
Int. Cl. A01n *17/14*
U.S. Cl. 424—84 **2 Claims**

There is disclosed improvements in the methods of selectively attracting yellow-jacket wasps and compositions for this purpose. A composition comprising any one or any combination of normal pentyl pentanoate, normal butyl benzoate, or dimethyl benzyl carbinyl acetate is placed in a trap and exposed to the atmosphere to attract the wasps.

3,798,319

THERAPEUTIC AND DIAGNOSTIC ALLERGENIC EXTRACT AND PROCESS FOR PREPARING SAME

Kermit Maynard Espey, Elkhart, Ind., and John Joseph Gavin, Hamden, Conn., assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed June 4, 1968, Ser. No. 734,235
Int. Cl. A61k *23/00*
U.S. Cl. 424—91 **1 Claim**

A process for preparing therapeutic and diagnostic antigenic or allergenic extracts comprising extracting and treating substances known to contain physiologically active principles which elicit allergenic responses with an aqueous-organic solvent extracting fluid, separating the extracting fluid containing the active principles from the insoluble material therein and then volatilizing and removing the extracting fluid to thereby isolate said active principles in the form of a dry powder. The dry powder may then be further processed to provide an allergenic extract in a selected one of various forms known in the art of therapeutic and diagnostic immunology.

3,798,320

PRECIPITATION OF BACTERIAL CELLS WITH POLYMERS

Karl Eugene Weiss and Colin McKenzie Cameron, Pretoria, Transvaal, Republic of South Africa, assignors to South African Inventions Development Corporation, Scientia, Pretoria, Transvaal, Republic of South Africa

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,200
Claims priority, application Republic of South Africa, Sept. 18, 1970, 70/6,404, 70/6,407
Int. Cl. C12k *1/00*
U.S. Cl. 424—92 **18 Claims**

Bacteria are rendered indispersable in aqueous medium, e.g. aqueous culture fluid by means of a linear fila-

mentary non-charged polymer precipitant, preferably a polyalkylene glycol such as PEG within the preferred molecular weight range of 2,000 to 30,000. The invention can be applied to a wide range of applications in the field of immunology, particularly in the manufacture of vaccines. Bacterial matter can be concentrated as a useful product or removed from other substances, e.g. toxins to purify the latter. Thus, i.a. novel vaccine against pulpy kidney disease is produced, containing the immunologically valuable toxoids free of bacteria cells.

3,798,321

PRESERVATIVE AND NITRATE REDUCING AGENT FOR RAW AGRICULTURAL CROPS

Rolland W. Nelson, 1125 18th St., West Des Moines, Iowa 50265

No Drawing. Original application Mar. 22, 1966, Ser. No. 542,441, now Patent No. 3,624,222, dated Nov. 30, 1971. Divided and this application June 1, 1970, Ser. No. 42,560

The portion of the term of the patent subsequent to Nov. 30, 1988, has been disclaimed

Int. Cl. A01n *13/00*

U.S. Cl. 424—128 **1 Claim**

A preservative and nitrate reducing agent for raw agricultural crops consisting of an inorganic acid, namely, phosphoric acid and an organic acid consisting of propionic acid. The method of reducing the nitrate value of crops by treating said crops with the foregoing composition is disclosed.

3,798,322

6 OR 7-SUBSTITUTED 4 OR 8-(AMINO-1-METHYLBUTYLAMINO)QUINOLINES AS HYPOLIPIDEMIC AGENTS

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,310

Int. Cl. A61k *27/00*

U.S. Cl. 424—200 **7 Claims**

6 or 7-substituted 4 or 8-(4-amino-1-methylbutylamino)quinolines, e.g., 6-methoxy-8-(4-amino-1-methylbutylamino)quinoline or 7-chloro-4-(4-diethylamino-1-methylbutylamino)quinoline. The compounds are useful as hypolipedemics.

3,798,323

METHODS OF CONTROLLING MYCOTOXIN PRODUCTION USING CERTAIN DIALKYL ENOL PHOSPHATES

John S. Leary, Jr., Alamo, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,975

Int. Cl. A01n *9/36*

U.S. Cl. 424—212 **11 Claims**

Mycotoxin production by a fungus is controlled or inhibited by subjecting the fungus to an effective amount of a dialkyl enol phosphate.

3,798,324

METHOD FOR CONTROLLING TREMOR SYMPTOMATIC OF PARKINSONISM UTILIZING 1-(2-PYRIDYL) PIPERAZINE

Rodolfo Rodriguez, Mexico City, Mexico, assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,112

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **4 Claims**

Administration of an effective amount of 1-(2-pyridyl) piperazine or a nontoxic acid addition salt thereof controls tremor symptomatic of parkinsonism in mammals. Daily doses ranging from 10 mg./kg. to 90 mg./kg. are considered effective.

3,798,325

IMIDAZOLIDINONE DERIVATIVES AS CENTRAL NERVOUS SYSTEM DEPRESSANTS

Walter Schindler, Riehen, Basel-Land, and Armin Zuest, Birsfelden, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Aug. 5, 1970, Ser. No. 61,435, now Patent No. 3,720,676. Divided and this application Dec. 21, 1972, Ser. No. 317,341

Claims priority, application Switzerland, Aug. 11, 1969, 12,120/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **4 Claims**

Compounds of the class of 1-[2- and 3-[4-(10,11-dihydro-5H-dibenzo[a,d]cyclohepten - 10 - yl) - 1 - piperazinyl]-allyl] - 3 - alkyl - 2 - imidazolidinone which can be substituted in 8-position by chloro, methyl or methoxy, and the pharmaceutically acceptable acid addition salts thereof, have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and a method of producing a depressant effect on the central nervous system of warm-blooded animals, are provided; an illustrative embodiment is 1-[2-[4-(8-methyl-10,11-dihydro - 5H - dibenzo[a,d]cycolhepten-10-yl)-1-piperazinyl]-ethyl] - 3 - methyl - 2 - imidazolidinone-bis-maleate.

3,798,326

5,5 - DIMETHYL - 10 - HYDROXY-8-(3-METHYL-2-OCTYL)-2-(2-PROPYNYL) - 1,2,3,4-TETRAHYDRO-5H - (1)BENZOPYRANO[3,4-d]PYRIDINE AS AN ANTI-HYPERTENSIVE AGENT

Louis Selig Harris, Chapel Hill, N.C., Harry George Pars, Lexington, and Raj Kumar Razdan, Belmont, Mass., assignors to Sharps Associates, Cambridge, Mass.

No Drawing. Filed Aug. 24, 1972, Ser. No. 283,440

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **2 Claims**

A method of reducing blood pressure in hypertensive mammalian patients comprising administering a therapeutically effective amount of 5,5-dimethyl-10-hydroxy-8-(3-methyl - 2 - octyl)-2-(2-propynyl)-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-d]pyridine to said patient.

3,798,327

FUNGICIDAL COMPOSITIONS AND THEIR USE

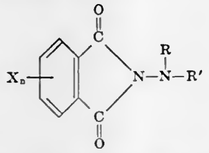
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.Y.

No Drawing. Original application Feb. 8, 1971, Ser. No. 113,710, now Patent No. 3,734,925. Divided and this application Oct. 26, 1972, Ser. No. 301,000

Int. Cl. A01n *9/22*

U.S. Cl. 424—274 **10 Claims**

Fungicidal compositions that are suitable for use on living plant materials contain as their fungicidally-active component a compound havng the structural formula



wherein X represents a lower alkyl group or phenyl; *n* represents an integer in the range of 1 to 4; R represents hydogen or a lower alkyl group; R′ represents hydrogen, a lower alkyl group, or the group —COOR″; and R″ represents a lower alkyl group.

3,798,328

PROPIOLIC ACID ESTERS AS INDUSTRIAL MICROBICIDES

Akira Fujinami, Ashiya, Masaaki Hosomi, Amagasaki, Toshikazu Minami, Osaka, and Jasakazu Asai, Kyoto, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

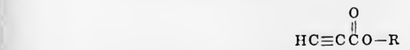
No Drawing. Filed Apr. 13, 1971, Ser. No. 133,745

Claims priority, application Japan, Apr. 15, 1970, 45/32,556

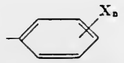
Int. Cl. A01n *9/00, 9/24*

U.S. Cl. 424—314 **5 Claims**

Propiolic acid ester having the formula,



wherein R is a cyclohexyl group or a group of the formula —CH_2—R′ where R′ is a lower aralkyl group, a saturated or unsaturated phthalimide group, or a group of the formula



where X is a halogen atom, a nitro group, a lower alkyl group or a lower alkoxy group, and *n* is an integer of 1 to 5 is strong in microbicidal activity. Particularly, it is extremely high in biological activity against molds, low in toxicity and high in workability, and hence is quite useful as an industrial microbicide.

3,798,329

1-AMINOALKYL-DIBENZOSEMIBULLVALENES AS ANTIDEPRESSANTS

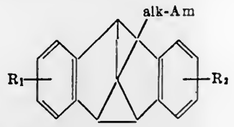
Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 854,270, Aug. 29, 1969, which is a continuation-in-part of application Ser. No. 779,257, Nov. 26, 1968. This application Apr. 22, 1970, Ser. No. 30,988

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **4 Claims**

1-aminoalkyl-dibenzosemibullvalenes, e.g. those of the formula



Am=an amino group

alk=alkylene

$R_{1,2}$=H, alkyl, free, etherified or esterified OH or SH, CF_3, NO_2, amino or acyl, ocyl derivatives, N-oxides, quaternaries and salts thereof are antidepressants.

3,798,330

METHODS AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS USING POLYPENTAERYTHRITOL HALOACETALDEHYDE HEMIACETALS

Roger C. Parish, King of Prussia, and John E. Trei, Malvern, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of applications Ser. No. 881,868, Dec. 3, 1969, now abandoned, Ser. No. 881,915, Dec. 3, 1969, now Patent No. 3,615,649, and Ser. No. 78,188, Oct. 5, 1970, now Patent No. 3,745,-221. This application Mar. 17, 1971, Ser. No. 125,371

Int. Cl. A61k *27/00*

U.S. Cl. 424—342 **14 Claims**

Polypentaerythritol haloacetaldehyde hemiacetals are potent inhibitors of methanogenesis in the ruminant animal. Consequently these chemical agents improve the feed efficiency in ruminants at levels which do not have general antifermentation effects in the animal. The most useful and representative compounds are the dipentaerythritol penta- and hexachloral hemiacetals and tripentaerythritol hexa-, hepta- and octachloral hemiacetals. Methods of administration, feed compositions and premixes containing said inhibitors are described. The preparation of feed mixtures using these compounds is much easier due to their physical stability.

3,798,331

NEUTRAL FERMENTED ALCOHOLIC BEVERAGE

Vincent S. Bavisotto, Simsbury, Conn., and Joseph J. Tschida, Jr., Cumberland, Wis., assignors to Theodore Hamm Company, St. Paul, Minn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 810, Jan. 5, 1970. This application Sept. 13, 1972, Ser. No. 288,849

Int. Cl. C12c *11/00*

U.S. Cl. 426—16 **4 Claims**

A neutral tasting fermented alcoholic base substrate is prepared by yeast-fermenting a boiled aqueous medium containing malt or malt extract, glucose, hop extract or hops, soya flakes and inorganic salts.

3,798,332

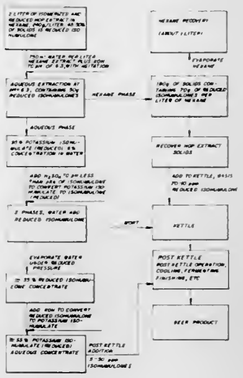
PREPARATION OF HOT EXTRACTS AND USE IN BEER MAKING OPERATION

Donald H. Westermann, Brookfield, and Etzer Chicoye and Darrell R. Hoffmann, Milwaukee, Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Filed Jan. 10, 1972, Ser. No. 216,424

Int. Cl. C12c *9/02*

U.S. Cl. 426—29 **13 Claims**



Hop extract in, e.g., hexane, preisomerized, optionally prereduced, is extracted with aqueous KOH to give potassium isohumulate of 80%+ and preferably 90%+ purity. The hexane phase containing the remainder of the isohumulones is stripped of solvent and is suitable for kettle addition.

In order to prevent foaming during subsequent concentration, the aqueous extract containing about 6% solids is acidified to a pH less than the pK_a of isohumulone and is concentrated under reduced pressure. After concentration, the material is treated with KOH to form the water soluble isohumulone salt which is added to beer post-kettle. At a critical optimum pH range, dependent upon the ratio of water to hexane phase used in the initial extraction, from 0.1 to 0.75 of the isohumulones may be extracted in the highly purified form.

A generalized technique for establishing conditions that will give such desired fractions and residues is disclosed.

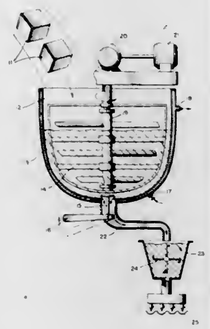
3,798,333
PACKAGING BANANAS IN CARBON DIOXIDE PERMEABLE FILM
Alfred Samuel Cummin, Westfield, Henryk Daun, New Brunswick, and Seymour George Gilbert and Yair Henig, Piscataway, N.J., assignors to Borden, Inc.
No Drawing. Filed Mar. 31, 1972, Ser. No. 239,867
Int. Cl. B65b *25/04*
U.S. Cl. 426—106 **8 Claims**

The ripening time of green bananas can be prolonged and the period of time they remain ripe can be extended by packaging the bananas in a film which has an oxygen permeability of 1,000 or more, a carbon dioxide permeability of 3,000 or more, and a ratio of carbon dioxide permeability to oxygen permeability of at least three.

3,798,334
MEAT TENDERIZATION METHOD
Roscoe T. Earl, Glenview, Ill., and Leonard M. Waldt, Springfield, N.J., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.
No Drawing. Filed Dec. 21, 1971, Ser. No. 210,553
Int. Cl. A22c *18/00*
U.S. Cl. 426—58 **3 Claims**

The method of tenderizing meat by injection of enzyme solution in admixture with 0.1% to 0.4% by weight of the solution of tragacanth.

3,798,335
METHOD FOR EMBOSSMENT PACKAGING OF WARM BUTTER
Leo Peters, 750 Plymouth Road SE., Grand Rapids, Mich. 49506
Filed Nov. 26, 1971, Ser. No. 202,168
Int. Cl. A33c *15/00;* **B65b** *25/00*
U.S. Cl. 426—130 **12 Claims**

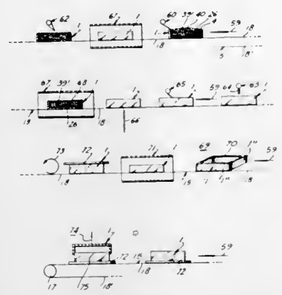


Nonwhipped butter or margarine is packaged, after it has been churned, by elevating its temperature until it is flowable under its own weight, and then, while under agitation, flow-filling it into embossing dies or packages.

3,798,336
METHOD FOR CENTERING SOLID BODIES WITHIN A COAGULABLE LIQUID
Robert Lyle Hawley, Webster Groves, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
Filed Mar. 15, 1971, Ser. No. 124,054
Int. Cl. A23l *1/32*
U.S. Cl. 426—279 **11 Claims**

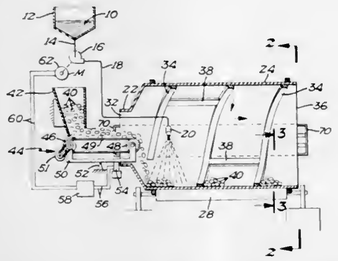
A container having a discrete body and liquid coagulable material therein is subjected to cyclical or vibratory motion while being heated whereby the discrete body floats within the coagulable material as it is coagulated substantially concentrically about the discrete body.

3,798,337
PROCESS FOR THE CONTINUOUS MANUFACTURE OF FOAMED SWEETS
Juan Manuel Abalo, Buenos Aires, Argentina, assignor to Noel y Compania Limitada Sociedad Anoniam Argentian de Dulces y Conservas
Filed July 22, 1971, Ser. No. 165,064
Int. Cl. A23g *31/18;* **B29d** *27/04*
U.S. Cl. 426—279 **13 Claims**



Process and equipment for continuously manufacturing foamed sweets preferably sheathed with a noncellular shell by housing the foamable mass in a mold which may already include the shell, subjecting the foamable mass to progressive expansion by stepwise increasing vacuum in a moving sealed inclosure and then subjecting to high vacuum and simultaneous decreasing cooling.

3,798,338
METHOD FOR APPLYING THERMOPLASTIC COATINGS TO FOOD AND PHARMACEUTICAL PRODUCTS
Edward L. Galle, St. Paul, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
Filed May 30, 1972, Ser. No. 258,139
Int. Cl. A23b *7/00;* **A23g** *3/00;* **A23l** *1/00*
U.S. Cl. 426—307 **4 Claims**



Thermoplastic protective or moisture resistant coatings, e.g. hydrogenated vegetable oil, are applied to a food product by metering the food product and the thermoplastic coating into a coating zone, maintaining the thermoplastic coating material in a liquid consistency in the coating zone while minimizing the heating of the food product to thereby establish a temperature differential between the coating and the food product and agitating the food product to spread the heated liquid coating over the surface of the food product as a continuous film and allowing the liquid to congeal on the surface of the food product. Typically, heat is applied to the outside surface of a rotating coating cylinder to heat or maintain the coating material in a liquid condition by conduction.

3,798,339
PREPARATION OF A MILK SUBSTITUTE PRODUCT
Andrew Chung-Yen Peng, Columbus, Ohio, assignor to Swift & Company, Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 644,788, June 9, 1967. This application May 13, 1968, Ser. No. 728,763
Int. Cl. A23c *11/00*
U.S. Cl. 426—357 **7 Claims**

A highly nutritious milk-substitute type product is prepared by mixing soybean material with certain milk materials or by-products, particularly whey, in a liquid mixture and then boiling and grinding the mixture to a smooth consistency. The characteristic beany flavor of soybean materials will thereby be greatly reduced. Full-fat, defatted toasted and untoasted whole and cracked beans as well as flaked beans and soy flour may be utilized. The mixture thus prepared may be further processed to produce a dry powder that can be reconstituted by mixing with water.

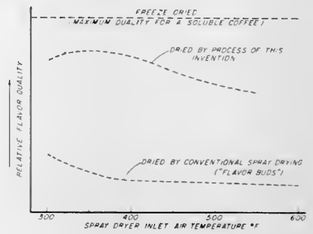
3,798,340
MANUFACTURE OF SALTED CHEESE
George W. Reinbold and Earl G. Hammond, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed Jan. 3, 1972, Ser. No. 214,739
Int. Cl. A23c *19/02*
U.S. Cl. 426—361 **15 Claims**

Rindless Swiss cheese, or other brine-salted or dry-salted cheese, is manufactured by an improved process in which porous absorbent coverings, such as sponge pads, are applied to outer absorptive surfaces of the formed curd bodies. An aqueous salt brine of a concentration promoting osmotic diffusion is provided within the porous coverings and impermeable close-fitting coverings are applied around the cheese bodies and porous coverings. The cheese bodies are then held while the salt is transferred from the porous coverings into the cheese bodies, the holding being continued until curing is complete, and/or the cheese bodies contain the desired amount of salt. The process is particularly advantageous for producing rindless, salted, cured cheese without significant loss of moisture.

3,798,341
PERCOLATION PROCESS
Irwin L. Adler, River Vale, N.J., assignor to General Foods Corporation, White Plains, N.Y.
No Drawing. Filed Apr. 24, 1972, Ser. No. 247,125
Int. Cl. A23f *1/08*
U.S. Cl. 426—432 **3 Claims**

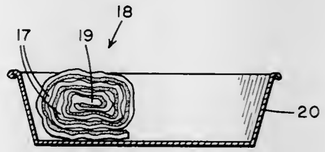
A process of producing coffee extract by contacting roasted and ground coffee with an aqueous extraction liquor in a percolator set is disclosed wherein the direction of flow of the aqueous extraction liquid through each of the extraction columns in a cycle is reversed in the succeeding cycle. The process of this invention significantly decreases the heat exposure differences which a bed of coffee receives during extraction resulting in a more uniform extraction and a higher quality coffee extract.

3,798,342
PROCESS FOR PRODUCING HIGH QUALITY SPRAY DRIED COFFEE
Arno Huste, Rego Park, N.Y., assignor to General Foods Corporation, White Plains, N.Y.
Continuation of abandoned application Ser. No. 20,949, Mar. 19, 1970. This application Aug. 23, 1972, Ser. No. 282,994
Int. Cl. A23f *1/08*
U.S. Cl. 426—471 **6 Claims**



A spray dried soluble coffee of improved quality is produced by carefully controlling the spray drying conditions within specified limitations. The extract is concentrated to a solids content of 31 to 40% and is cooled to between 30 to 60° F. prior to drying. The dryer inlet air temperature is maintained from 300 to 550° F., and the outlet temperature is maintained between 190 to 230° F. The pressure at the spray dryer nozzle is maintained at from 700 to 2500 p.s.i.g. and must be sufficient to produce droplets with a maximum size of from 100 to 300 microns.

3,798,343
PROCESS FOR PREPARING FROZEN ROLLED LASAGNA
Constance Vitale, St. Paul, Minn., assignor to Vitale's Italian Foods, Inc., St. Paul, Minn.
Filed Oct. 27, 1971, Ser. No. 192,887
Int. Cl. A23b *1/00*
U.S. Cl. 426—502 **4 Claims**



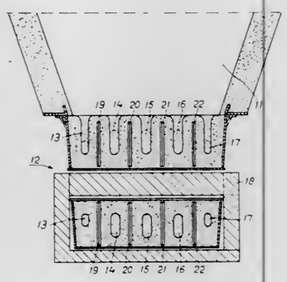
Precooked, frozen lasagna is prepared by coating a noodle with a meat composition, rolling the noodle into a spiral roll with the meat surface facing inward, and freezing the rolled noodle.

ELECTRICAL

3,798,344
CHANNEL TYPE INDUCTION FURNACE

Conny Andersson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 21, 1973, Ser. No. 372,190
Claims priority, application Sweden, June 26, 1972, 8360/72
Int. Cl. F27d *11/06*; H05b *5/12*
U.S. Cl. 13—29 12 Claims

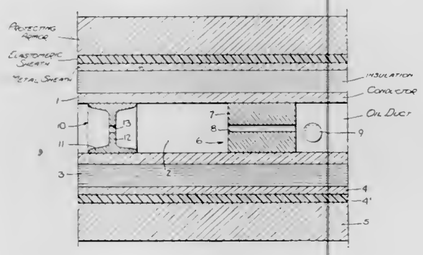


A channel type induction furnace with a furnace body having a hearth and an inductor arranged below the hearth has melt channels opening into the hearth below the normal surface of the bath. The melt channels are vertically directed. At least two disc cores of substantially greater height than thickness are provided with their windings located substantially parallel to the plane of the channel and positioned on both sides of all the channels except the outermost one.

3,798,345
OIL FILLED ELECTRIC SUBMARINE CABLE WITH OIL DUCT RESTRICTORS

Paolo Gazzana Priaroggia, Milan, and Antonio Ferrentino, Monza, both of Italy, assignors to Industrie Pirelli Societa Per Azioni, Milan, Italy

Filed June 18, 1973, Ser. No. 371,123
Claims priority, application Italy, July 3, 1972, 26535 A/72
Int. Cl. H01b *9/06*
U.S. Cl. 174—14 R 5 Claims

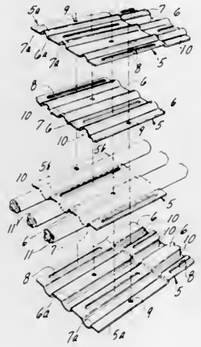


An oil-filled, electric, submarine cable having an oil duct with a plurality of water blocking restrictors, e.g., blocks or diaphragms with holes of the size which prevent the passage of water drops but which permit the passage of oil, thereby confining, in the event of damage to the cable, water drops to the section of the cable between restrictors.

3,798,346
POWER TRANSMISSION APPARATUS, ESPECIALLY CABLE AND CABLE BUS HOUSINGS

Julius E. Kreuzer, Sewickly, Pa., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Apr. 16, 1973, Ser. No. 351,294
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 C 5 Claims

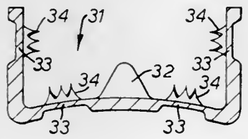


Cables of round cross section, e.g., circular or ovate, and a cable bus housing assembly therefor are disclosed wherein the housing assembly is based essentially on similar panels which may be connected together into two opposed series of end-to-end connected panels. Normally, a plurality of cables are received between the panels with the opposed series secured together to cause substantial contact of concave surfaces of the panels with the peripheral surfaces of the cables. The housing assembly is designed especially for conducting heat out of the enclosed electrical conductors and dissipating the heat to the surrounding atmosphere by radiation and convection.

3,798,347
IMPROVEMENTS IN OR RELATING TO A CRIMPING CLIP FOR ELECTRICALLY CONNECTING TOGETHER ELECTRICAL CONDUCTORS

John Patrick Harding, Bushey; David Sydney Butler, Hassocks, and Frank James Lee, Okehampton, all of England, assignors to The Post Office, London, England

Filed Jan. 10, 1972, Ser. No. 216,410
Claims priority, application Great Britain, Jan. 11, 1971, 1192/71
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C 7 Claims

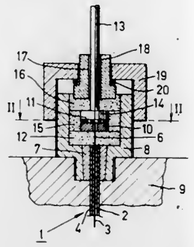


A crimping clip for jointing individual conductors in a multi-conductor cable has tangs formed in areas of the clip over which the thickness is reduced as compared with other areas. Alternatively, the tangs are formed in a liner placed inside the clip and whose thickness is less than that of the clip.

3,798,348
CONNECTOR FOR AN ELEMENT OF THE COAXIAL TYPE

Cornelis Hendrik van Toorn, Bennebroekerdijk 213, Haarlemmermeer, Netherlands

Filed June 22, 1971, Ser. No. 155,599
Claims priority, application Netherlands, June 23, 1970, 7009163; June 23, 1970, 7009164
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 S 6 Claims

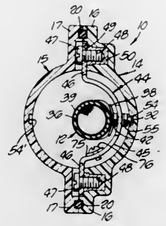


The invention relates to a contact connection between a heating element of the coaxial type and a thicker connection pin. The connector comprises a sleeve closed by a pressure member in which a disk of soft sintered ceramic material is pulverized by moving said pressure member and is compressed as a compact mass around the bare part of the conductor projecting beyond the sheath, the end of the conductor being connected to the connection pin in a clamping connection.

3,798,349
MOLDED PLASTIC SPLICE CASING WITH COMBINATION CABLE ANCHORAGE AND CABLE SHIELDING GROUNDING FACILITY

John T. Thompson, 244 Loring St., Los Angeles, and George W. Gillemot, 2331 20th St., Santa Monica, both of Calif.

Continuation-in-part of Ser. No. 12,819, Feb. 19, 1970, Pat. No. 3,614,298.
Filed July 27, 1971, Ser. No. 166,386. The portion of the term of this patent subsequent to Oct. 19, 1988, has been disclaimed.
Int. Cl. H02g *15/08*
U.S. Cl. 174—92 2 Claims

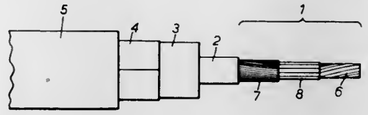


A cable splice casing cast in two mating halves from high strength plastic material and equipped with one or more conductive anchor assemblies for mechanically and electrically connecting the cable shield and sheath jackets to each end of the casing while the latter is open. The casing acts to interconnect the cable sheath across the splice area and to provide electrical continuity between the respective cable shield jackets. A heavy gauge conductor along the interior of the casing interconnects the cable anchor assemblies located at the opposite ends of the casing to carry heavier electrical charges whereas a conductive liner for the splice casing provides electrical shielding for the portion of the cabling exposed for making splice connections. The anchorages are spaced inwardly of a sealing gasket at each end of the casing and the latter can be opened for servicing and testing without disturbing the cable anchorage or the grounding connection between the cables and the casing.

3,798,350
CO-AXIAL CABLE WITH STRENGTH MEMBER

Eric Fifield Stuart Clarke, Harrow, England, assignor to The Post Office, London, England

Filed Jan. 22, 1973, Ser. No. 325,450
Claims priority, application Great Britain, Jan. 28, 1972, 4232/72
Int. Cl. H01b *7/18*
U.S. Cl. 174—102 R 9 Claims

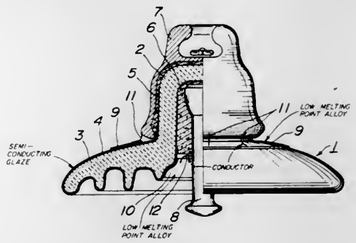


A telecommunication submarine cable of co-axial construction has a multistrand centre core imparting tensile strength to the cable, the core having adjacent layers of the core separated by a layer of soft metal.

3,798,351
ELECTRIC INSULATORS HAVING NON-CORONA AND ANTI-POLLUTION PROPERTIES

Kaoru Tsuzuki, Nagoya, and Setsuo Kozaka, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Oct. 25, 1972, Ser. No. 300,574
Claims priority, application Japan, Nov. 1, 1971, 46-86280
Int. Cl. H01b *17/42*, *17/50*
U.S. Cl. 174—140 C 4 Claims



An electric insulator for maintaining excellent non-corona property and pollution resistant property for a long period of time, comprises a porcelain body provided at its both poles with metal fittings fixed thereto by means of cement, a semi-conducting glaze applied to the porcelain body and projected slightly into the cement and connecting said both poles, low melting point alloy portions applied directly on said semi-conducting glaze and kept in a substantial insulation from said metal fittings, and conductors connecting electrically said metal fittings to said low melting point alloy portions, respectively.

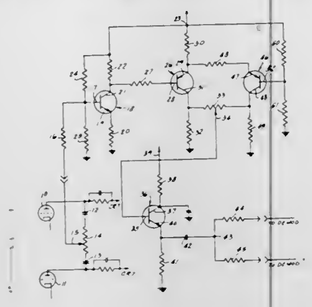
3,798,352
AUTOMATIC TINT CONTROL CIRCUIT

Roy A. Ekstrand, 1209 Woodlane, Prospect Heights, Ill.

Filed Apr. 1, 1971, Ser. No. 130,095
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 HE 11 Claims

An automatic tint control circuit having means for developing an error signal in response to the deviation of the phase of the chroma signal from a preselected phase such as a flesh

tone phase and for using the error signal to recombine with the chroma signal to shift the phase of the chroma signal in a direction toward the predetermined phase. Means are provided to sample a given proportion of the outputs of each of the R-Y and B-Y color difference amplifiers. The proportion of each determines the predetermined phase about which correction is desired. The sample proportion of each is combined and coupled through a transistor circuit to the inputs of both the R-Y and B-Y color demodulators. The result is an ex-



tremely simplified circuit for accomplishing the desired phase shift of the chroma signal The transistor circuit employed includes an arrangement to cancel the error or correction signal when the chroma signal is in a highly saturated green position. This prevents the operation of the correction circuit for colors which are not close to the flesh tone region and which preferably not be shifted. The same circuit arrangement also has means for cancelling the horizontal blanking pulse in the correction signal to avoid interference with DC restoration at the color difference amplifiers.

3,798,353

CORRECTING VERTICAL RESOLUTION IN TELEVISION COLOR IMAGES

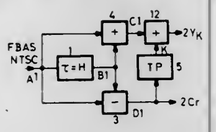
Gerhard Illetschko, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Filed Oct. 28, 1971, Ser. No. 193,886

Claims priority, application Germany, Oct. 31, 1970, 2053513

Int. Cl. H04n *5/14*

U.S. Cl. 178—5.4 **14 Claims**



A luminance signal is formed by adding an undelayed color signal and a delayed color signal. A chrominance signal is formed by subtracting the undelayed and delayed signals. A low frequency component in the chrominance signal is removed and is added to the luminance signal as a correction signal.

3,798,354

COLOR RESOLVING OPTICAL SYSTEM FOR A COLOR TELEVISION CAMERA

Michiko Asou, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

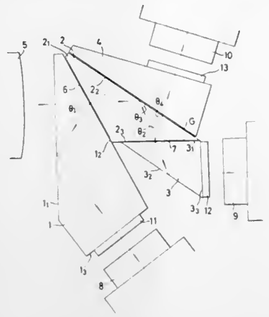
Filed Apr. 12, 1972, Ser. No. 243,196

Claims priority, application Japan, Apr. 17, 1971, 46-24268

Int. Cl. H04n *9/12*

U.S. Cl. 178—5.4 E **12 Claims**

A color resolving optical system for a color television camera which is characterized by that in a color resolving optical system for a color television camera being positioned between a photographing lens and color image pickup tubes, the system comprises three prisms, three prism planes of which are utilized, and one prism, two prism planes of which



are utilized, and two dichroic mirrors provided at the planes where said prisms are adjoining together, wherein same number of reflections are made in each of three primary colors.

3,798,355

FLYING-SPOT SCANNER SYSTEM

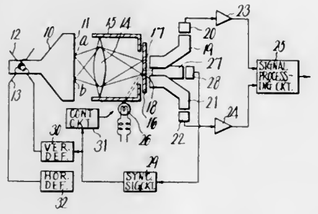
Senri Miyaoka, Kanagawa, and Akio Ohgoshi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 23, 1972, Ser. No. 265,809

Claims priority, application Japan, July 24, 1971, 46-45822

Int. Cl. H04n *9/04*

U.S. Cl. 178—5.4 CD **6 Claims**



A flying-spot scanner system for light scanning a plurality of film or slide images simultaneously to produce electric signals corresponding to the images and employing a single cathode ray tube forming a plurality of separate rasters on its screen as flying-spot light sources. An optical lens device common to the plural rasters is provided to project images of the rasters on the respective film or slide images, so that the flying-spot scanning is performed with accurate synchronization between the plural images.

3,798,356

SATURATION CONTROL CIRCUIT

Sachinori Furuya, Ibaragi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 21, 1972, Ser. No. 273,715

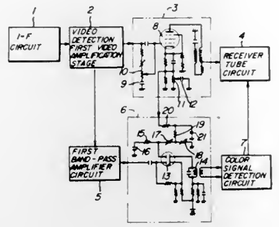
Claims priority, application Japan, Sept. 16, 1971, 46-72816

Int. Cl. H04n *9/48*

U.S. Cl. 178—5.4 AC **6 Claims**

A saturation control circuit for color television receivers and the like which uses a multi-gate field-effect transistor serving as an amplifying element in a band-pass amplifier circuit, an amplifier section being constituted by a first gate, source

and drain of the multi-gate field-effect transistor, and in which a voltage varying in response to an adjustment of brightness or contrast is supplied to a second gate of the multi-gate field-ef-



fect transistor, whereby the amplification factor of the aforesaid amplifier section is automatically changed in response to the brightness or contrast control for automatic saturation control.

3,798,357

MAGNETIC RECORDING AND REPRODUCING SYSTEM

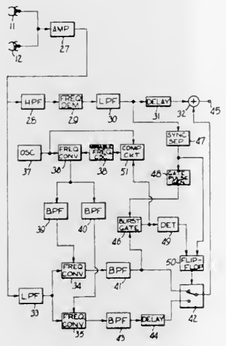
Hisaaki Narahara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1972, Ser. No. 310,863

Claims priority, application Japan, Nov. 30, 1971, 46-96504

Int. Cl. H04n *5/78, 9/32*

U.S. Cl. 178—5.4 CD **8 Claims**



In a system in which at least the chrominance components of composite color television signals are recorded during alternate line intervals and omitted during the remaining line intervals to form a checkerboard array on the recording medium and are recreated by combining reproduced chrominance components with delayed replicas, additional phase inversion circuits are provided to recreate PAL signals. The red color difference components of PAL composite signals are modulated on the color subcarrier in one phase on alternate lines and the opposite phase during the remaining lines. The inversion circuits include circuits for generating two conversion frequencies of such values that one of them reconverts alternate line intervals to have one phase condition and the other reconverts the remaining line intervals to have the opposite phase condition, thus recreating a PAL signal.

3,798,358

FACSIMILE TRANSMISSION SYSTEM

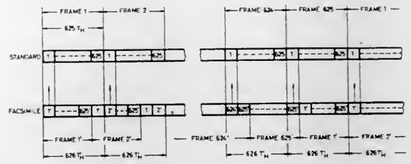
Norbert Adolf Mayer, Unertlstrasse 25, and Gerhard Moll, Unertlstrasse 24, both of 8000 Munich 23, Germany

Filed Apr. 25, 1972, Ser. No. 247,437

Claims priority, application Germany, Apr. 27, 1971, 2120515

Int. Cl. H04n *5/04*

U.S. Cl. 178—5.6 **14 Claims**



The invention describes a facsimile transmission system which allows facsimile pictures to be additionally transmitted in the field-blanking intervals over a normal transmission path for television signals. The mechanical relative movement between facsimile scanner and subject copy, which has been common in facsimile so far, is replaced by a selective electronic slippage between the facsimile frame produced with normal frame pickup units and the frame in whose field-blanking intervals the facsimile picture is to be transmitted line by line. Through the easily controllable slippage, sequential lines of the facsimile picture are transmitted in sequential field-blanking intervals, so that at the receiving end of the transmission path the facsimile frame can be reproduced without any special problems of synchronizing mechanical movements having to be solved.

3,798,359

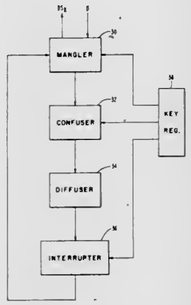
BLOCK CIPHER CRYPTOGRAPHIC SYSTEM

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,360

Int. Cl. H04l *9/00*

U.S. Cl. 178—22 **13 Claims**



A cryptographic system for encrypting a block of binary data under the control of a key consisting of a set of binary symbols. The cryptographic system is utilized within a data processing environment to ensure complete privacy of data and information that is stored or processed within a computing system. All authorized subscribers who are permitted access to data within the network are assigned a unique key consisting of a combination of binary symbols. The central processing unit within the computing network contains a complete listing of all distributed authorized subscriber keys. All communications transmitted from terminal input are encrypted into a block cipher by use of the cryptographic system operating under the control of the subscriber key

which is inputed to the terminal device. At the receiving station or central processing unit, an identical subscriber key which is obtained from internal tables stored within the computing system is used to decipher all received ciphered communications.

The cryptographic system develops a product cipher which is a combination of linear and nonlinear transformations of the clear message, the transformation being a function of the binary values that appear in the subscriber key. In addition to the transformation, the key controls various register substitutions and modulo-2 additions of partially ciphered data within the cryptographic system.

3,798,360

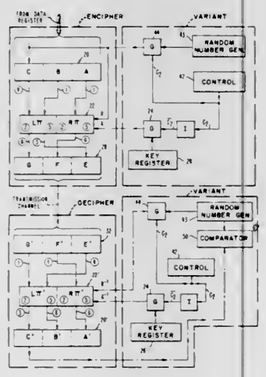
STEP CODE CIPHERING SYSTEM

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,174

Int. Cl. H04l *9/02*

U.S. Cl. 178—22 **7 Claims**



This specification discloses a system that provides multiple level encipherment of a block of data by means of a stepped block cipher process. A data stream consisting of digital information is segmented into blocks of dimension D, each block is enciphered by means of a block cipher cryptographic system operating under the control of a unique subscriber digital key. The cryptographic system develops a first cipher text of equal dimension as the block D. Then the cryptographic system is effectively shifted to accept a plurality of data bits from a second data block and a plurality of bits from the first cipher. The combination of block data bits and ciphertext data bits forms a composite block of dimension equal to the data block D. This combination is introduced to the cryptographic device for developing a second cipher text. The combined output of the second ciphertext and those information symbols from the first ciphertext which were not reintroduced to the cryptographic device are transmitted as a complete unit to a receiving station which will decipher the received multiple level cryptogram by an inverse process.

The multiple level encipherment process is also utilized in a variant key embodiment which would encipher a data block D into a cipher C which is a function of a key control block consisting of a random combination binary digits that are continuously changing.

In a further embodiment which utilizes multiple level encipherment, there is presented a method for providing secrecy in communications between a central processing unit and its data banks.

3,798,361

MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM

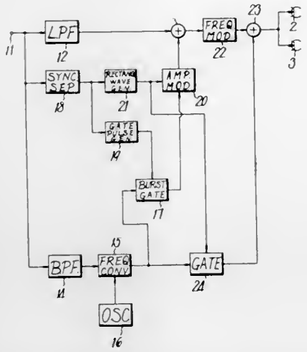
Hisaaki Narahara; Toshihiko Numakura, both of Tokyo, and Yoshimi Watanabe, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 22, 1972, Ser. No. 308,655

Claims priority, application Japan, Nov. 26, 1971, 46-95500

Int. Cl. H04n *5/78, 9/32*

U.S. Cl. 178—5.4 CD **10 Claims**



An improved system for magnetic recording and/or reproducing a color television signal including a luminance signal and a chrominance signal which contains a burst signal therein. Before recording the television signal, the chrominance signal is frequency-converted to a frequency band lower than its original one and the burst signal is extracted from the chrominance signal. The burst signal is then amplitude modulated by a rectangular waveform signal, derived from the horizontal synchronization signal, whose frequency is equal to two scanning line periods. The amplitude modulated burst signal is combined with the luminance signal to frequency-modulate a carrier signal having a predetermined frequency. The frequency-converted chrominance signal is gated by the rectangular wave signal and recorded along with the frequency-modulated signal on a magnetic medium. When the magnetic medium is played back, the frequency-converted chrominance signal is frequency-reconverted to the original frequency band by means of a reference signal the phase of which is controlled by the burst signal reproduced by frequency-demodulation so that phase errors of the reproduced chrominance signal are diminished. The frequency-reconverted chrominance signal is then gated by a rectangular waveform signal derived by detecting the amplitude modulation of the reproduced, frequency demodulated burst signal. The gated, frequency-reconverted chrominance signal is then combined with a portion of the same signal delayed by one scanning line period to produce a continuous chrominance signal.

3,798,362

AUTOMATIC SHUT-OFF DEVICE

Teruo Saito; Susumu Ide; Tooru Yasuda, all of Osaka, and Shigeru Enomoto, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 24, 1972, Ser. No. 256,293

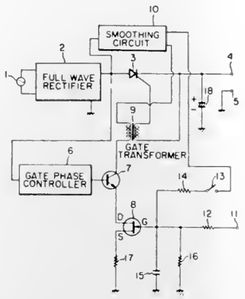
Claims priority, application Japan, May 31, 1971, 46-37946; May 27, 1971, 46-36862; May 29, 1971, 46-37364

Int. Cl. H04n *5/44*

U.S. Cl. 178—5.8 R **10 Claims**

In a television receiver, the rectified power input is applied to the receiver by way of a control device having a control terminal. A phase controlling circuit responsive to the output of the rectifier applies a control signal to the control terminal for stabilizing the voltage applied by way of the control device to

the receiver. Circuit means responsive to the reception of signals by the receiver are connected to control the application of the control signals to the control terminal, so that in the



absence of received signals, the control signal is not applied to the control device. A time delay circuit is provided to enable energization of the circuit for a predetermined time following the cessation of the reception of signals by the receiver.

3,798,363

COLOR SELECTION CIRCUIT FOR VISUAL DISPLAY UNIT

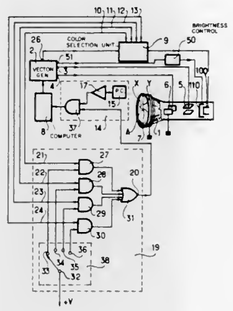
Gerard Melchior, Paris, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed June 8, 1972, Ser. No. 261,109

Claims priority, application France, June 8, 1971, 71.20689

Int. Cl. H04m *7/18*

U.S. Cl. 178—6 **8 Claims**



In a visual display unit including a color cathode ray tube, a vector generator for controlling the tracing of vectors on the cathode ray tube, a color control unit for changing the color of the trace by varying the voltage applied to the tube and a light pen to be placed in proximity to the screen of the tube for detecting the vectors traced on the tube, a color selection circuit is provided including a switching arrangement for actuating the light pen only in connection with control by said color control unit to produce a trace of a selected color.

3,798,364

VIDEO SIGNAL REPRODUCING SYSTEM

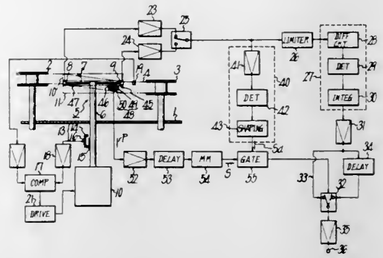
Hiroyuki Hayashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 7, 1971, Ser. No. 205,529

Claims priority, application Japan, Dec. 11, 1970, 45-110879

Int. Cl. H04n *5/21, 5/78*

U.S. Cl. 178—6.6 DC **3 Claims**



In a reproducing system for a video signal recorded on a magnetic medium, which is provided with a dropout compensator for compensating a dropout in the reproduced video signal, the dropout compensator including a gate means which is operative to prevent dropout compensation in the case of a dropout occurring in the vicinity of the vertical synchronizing signal.

3,798,365

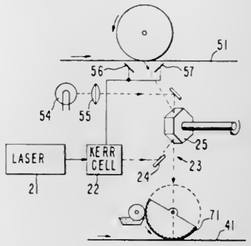
RECORDING METHOD AND APPARATUS UTILIZING LIGHT ENERGY TO MOVE RECORD FORMING MATERIAL ONTO A RECORD MEDIUM

Iben Browning, 1052 Pomeroy Ave., Santa Clara, Calif., and Peter R. Johnson, 41 Beverly Ter., Mill Valley, Calif.

Filed July 14, 1969, Ser. No. 841,435

Int. Cl. G03g *15/04*

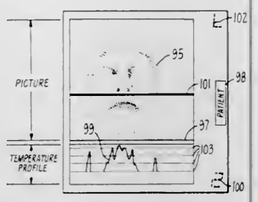
U.S. Cl. 178—6.6 A **2 Claims**



A recording method and apparatus useful for a photocopy device are disclosed utilizing light energy to move a record forming material onto a record medium. Light energy, particularly from a laser, is focused to minute size and scanned across a member supporting a record forming material. The intensity of the light beam is modulated with information between a level at which said record forming material remains on the support member and a level at which the record forming material is caused to move from the support member to a record medium. A lens mosaic can be used to concentrate the light beam at minute cavities on the support member for containing the record forming material, and this support member can take the form of a screen or a member integral with the lens mosaic having cavities therein. The lens mosaic can be in the form of a semi-cylindrical surface, and a plurality of record forming material support members can be used, each

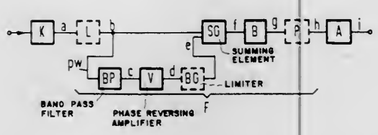
member supporting a material of a different color for producing a color copy.

3,798,366
INFRARED IMAGING SYSTEM
Robert P. Hunt, 331 Concord Dr., Menlo Park, Calif., and Richard H. Winkler, 4051 Scripps Ave., Palo Alto, Calif.
Filed Mar. 6, 1972, Ser. No. 232,015
Int. Cl. H04n *3/08, 5/22, 7/18*
U.S. Cl. 178—6.8 **15 Claims**



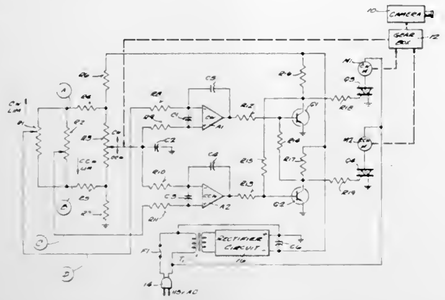
A pair of scanning mirror systems scans an object image in two dimensions over an infrared detector. The detector signal and signals proportional to the position of the mirror systems permit display of an image of the object on a video monitor. The video monitor display includes a portion thereof which is an image of the object and another portion thereof which is a temperature profile curve of the infrared intensity across one line of the image. A memory is optionally employed to store a frame of video information and to replay it at a much faster rate than it is scanned in order to form a persistent image on the video monitor. Automatic brightness control circuitry adjusts the displayed signal level according to the maximum temperature of the object being imaged.

3,798,367
APPARATUS FOR ELIMINATION OF INTERFERENCE FROM VIDEO SIGNALS
Adolf Schneider, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Oct. 14, 1971, Ser. No. 189,318
Claims priority, application Germany, Oct. 23, 1970, 2052290; Jan. 26, 1971, 2103585
Int. Cl. H04n *5/21*
U.S. Cl. 178—7.2 **10 Claims**



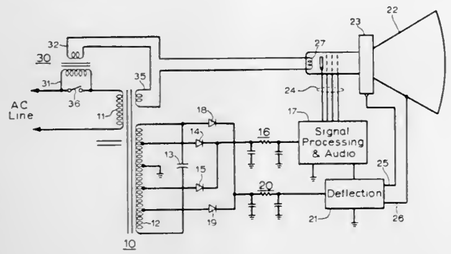
Apparatus is described for eliminating interferences in the video signals in video telephony or in other applications where the image receiving tube at the transmitter has a short storage time. A filter circuit is described for accomplishing the elimination of such interference, and this filter circuit is preferably placed at the transmission end of the video telephone circuit. The filter basically comprises a series arrangement of a logarithmic amplifier, a band elimination filter tuned to double the power frequency, a limiter and a potentiometer. The video signal is clamped to the black level prior to being coupled to the aforementioned filter arrangement. After the signal has been so filtered, the necessary picture gating, line gating and synchronizing signals may be added, as necessary. Other arrangements are described in which the interference frequency is branched off from the main circuit to be mixed with the disturbed video signal. This branching may be accomplished either electrically or optically.

3,798,368
PANNING CIRCUIT FOR SURVEILLANCE CAMERA
Gerald E. Kardach, South Milwaukee, and Robert E. Treleven, Milwaukee, both of Wis., assignors to Videosonics, Inc., Milwaukee, Wis.
Filed Sept. 25, 1972, Ser. No. 291,877
Int. Cl. H04n *5/24*
U.S. Cl. 178—7.2 **13 Claims**



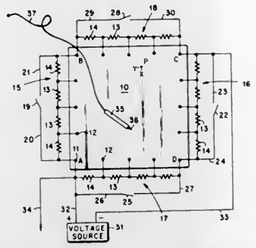
A surveillance camera is panned back and forth by electric motor means between predetermined clockwise and counterclockwise limits of rotation. The limits of rotation are established by two adjustable reference voltage levels, one of which represents the clockwise limit and the other of which represents the counterclockwise limit. A feedback voltage is generated representing the rotary position of the surveillance camera. When the feedback voltage equals either of the reference voltages, a switching circuit is activated to reverse the camera's direction of rotation. This automatically pans the camera back and forth between the clockwise and counterclockwise limits of rotation established by the reference voltages.

3,798,369
INSTANT PLAY TELEVISION RECEIVER WITH CONSTANT VOLTAGE TRANSFORMER
Leonard Dietch, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed May 22, 1972, Ser. No. 255,350
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.5 R **7 Claims**



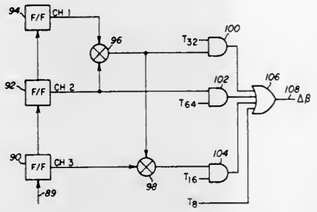
A solid state television receiver incorporates a voltage regulating transformer having a filament winding supplying substantially constant operating voltage to the picture tube filament for prolonging picture tube life. Instant play operation is achieved by providing a filament transformer having a high impedance primary winding, connectable in series with the input of the regulating transformer, and a secondary winding connected in series with the regulating transformer filament winding. The single pole, single throw on-off switch of the receiver is connected across the primary winding of the filament transformer. When the switch is open, the regulating transformer input and the primary of the filament transformer are in series with substantially reduces the voltage across the regulating transformer primary and drops the secondary voltages below operating levels for the television receiver. The filament transformer secondary winding supplies the tube filament with reduced power during standby operation.

3,798,370
ELECTROGRAPHIC SENSOR FOR DETERMINING PLANAR COORDINATES
George S. Hurst, Oak Ridge, Tenn., assignor to Elographics, Incorporated, Oak Ridge, Tenn.
Filed Apr. 17, 1972, Ser. No. 244,629
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **16 Claims**



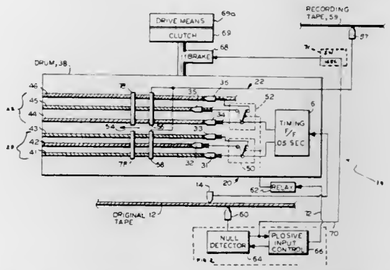
An electrographic sensor for determining planar coordinates with good resolution, e.g., about 0.1 mm, and an overall accuracy of about 0.4 mm. A rectangular single sheet of extremely uniform resistive material has a row of small electrodes arranged along each edge with discrete resistors connected between adjacent electrodes of each row so as to form resistor networks along each edge of the resistive sheet. A switching circuit applies a voltage across the resistive sheet by applying one polarity to both ends of the resistor network of one edge and the opposite polarity to both ends of the resistor network at an opposite edge. At a desired time interval, voltage is switched to the second set of resistor networks so as to produce orthogonal electric fields in the resistive material during mutually exclusive time intervals. The sensor is contacted with probe at selected points to produce voltage signals which are proportional to the coordinates of any such points. Specific embodiments are described for punched-card reading, the preprogrammed interpretation of graphical data, and the movement of a probe across the sensor to produce continuous contacting for many applications.

3,798,371
DATA MODEM APPARATUS
William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.
Division of Ser. No. 187,675, Oct. 8, 1971. This application May 16, 1973, Ser. No. 360,709
Int. Cl. H04l *27/24*
U.S. Cl. 178—67 **1 Claim**



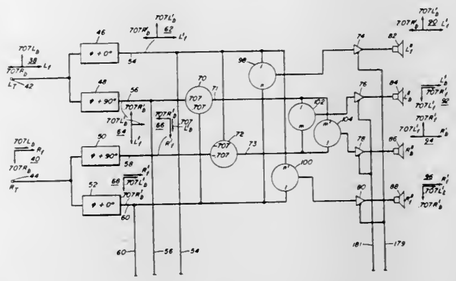
Apparatus for and the method of providing three channel, eight phase data modulation and demodulation whereby the system may be used for either two or three channels with no detrimental effects in either mode of operation due to the additional circuitry. The invention discloses additional apparatus for connection to a conventional two channel, four phase system to produce a three channel, eight phase system. The coding of the eight phase system modifies the basic phase change of a two channel, four phase system by ±22.5° depending upon the inclusive OR result of the first two channels as compared to the binary logic level of the third channel.

3,798,372
APPARATUS AND METHOD FOR RETARDATION OF RECORDED SPEECH
David Thurston Griggs, 5128 S. Rolling Rd., Baltimore, Md.
Filed May 12, 1972, Ser. No. 252,568
Int. Cl. G10l *1/16*
U.S. Cl. 179—1 SA **3 Claims**



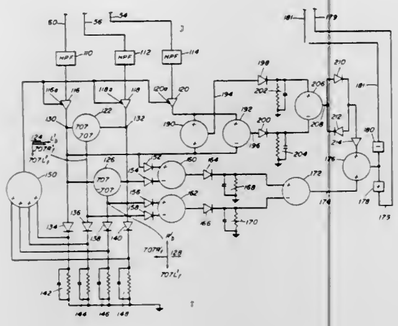
A method and system for translating or processing recorded speech to a slower rate of speech while retaining its original frequency values, with interposition of compensations which include intensification of "plosive" and other sounds which follow silences or breaks in the stream of speech.

3,798,373
APPARATUS FOR REPRODUCING QUADRAPHONIC SOUND
Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.
Filed June 23, 1971, Ser. No. 155,976
Int. Cl. H04r *5/00*
U.S. Cl. 179—1 GQ **25 Claims**



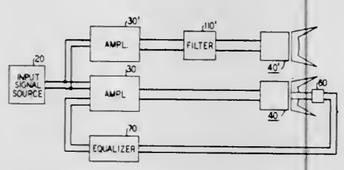
Apparatus for decoding four separate channels of information transduced from a medium having only two separate tracks and presenting it on four loudspeakers to give the listener the illusion of sound coming from a corresponding number of separate sources. The realism is enhanced by a decoding system which accepts the two outputs from the medium, which may be a stereophonic disc record, separates them into four independent channels each carrying predominantly the information contained in the four original recorded

sound signals, and, utilizing a wave-matching technique derives control signals for controlling the gains of amplifiers associated with the four loudspeakers. The control circuitry improves the separation of the four independent channels,



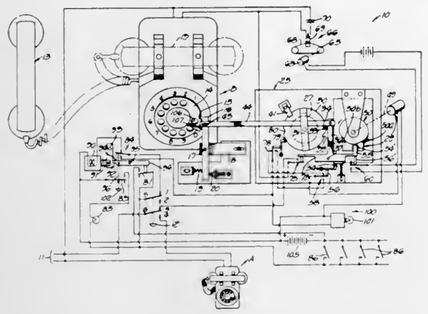
particularly the generally "front" from the generally "back" signals. In another aspect of the encoder, the front-to-back separation is improved by intermixing some of the "left" output signal into the "right" output signal, and vice versa, at both the front and the back sets of decoder output terminals.

3,798,374
SOUND REPRODUCING SYSTEM UTILIZING MOTIONAL FEEDBACK
Stanley Thayer Meyers, Red Bank, N.J., assignor to Rene Oliveras, Madison, N.J., a part interest
Filed Apr. 3, 1972, Ser. No. 240,495
Int. Cl. H04r *3/04*
U.S. Cl. 179—1 F **16 Claims**



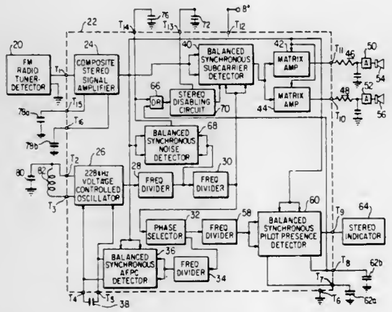
A sound reproducing system utilizes motional feedback to reduce loudspeaker distortion and to extend the loudspeaker's frequency response. The system substantially comprises an amplifier which is jointly responsive to the input source signal and to a feedback signal, a moving-coil loudspeaker including a main electromagnetic structure which is responsive to the amplifier's output signal for effecting axial speaker-cone motion, motional sensing means for providing a signal which is functionally related to axial cone velocity, and an equalizer exhibiting a predetermined nonlinear attenuation versus frequency characteristic and which is responsive to the motional signal for providing the feedback signal. The feedback signal is degeneratively applied to the amplifier which, in turn, forces the loudspeaker to respond linearly to the input source signal and thereby provide a uniform sound energy output. It is a feature of the present invention that the loudspeaker cone exhibits a substantially constant acceleration at low frequencies and a substantially constant velocity at higher frequencies.

3,798,375
SILENT ALARM SYSTEM AND MEANS FOR DIRECTING AIRBORNE PERSONNEL TO EMERGENCY SITE
Gaston A. Delisle, 15935 Skytop Rd., Encino, Calif.
Continuation-in-part of Ser. No. 170,587, Aug. 10, 1971, which is a continuation-in-part of Ser. No. 849,073, Aug. 11, 1969. This application July 12, 1972, Ser. No. 271,171
Int. Cl. H04m *11/04*
U.S. Cl. 179—2 R **18 Claims**



An emergency alarm system utilizing a telephone system to relay pertinent information to public officials including the address and a pair of direction finder vectors from local direction finger range stations which sectors intersect at the point of emergency and useful to airborne emergency personnel in proceeding to the site. The alarm includes a plurality of sensors any one of which is effective to activate a cycling mechanism to signal the phone system operator to connect local officials and silently relay the emergency information for a period of time following which the components are automatically conditioned for the next operating cycle. The alarm includes a blinking beacon located exteriorly of the premises to pinpoint the premises to airborne personnel.

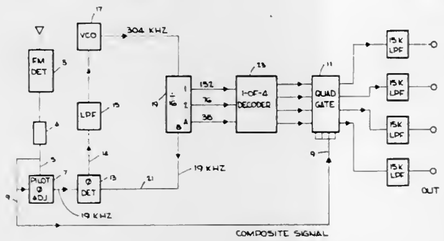
3,798,376
MULTIPLEX DECODING SYSTEM
Allen Leroy Limberg, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.
Continuation of Ser. No. 888,308, Dec. 29, 1969. This application Jan. 18, 1972, Ser. No. 218,786
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT **34 Claims**



A decoder circuit for stereophonic FM broadcast receivers adapted for construction by integrated circuit techniques. A local oscillator arranged to operate at an even harmonic of the 19 KHz stereo pilot signal is locked in phase and frequency to the pilot signal by means of an automatic frequency and phase control (AFPC) loop. The AFPC loop includes frequency

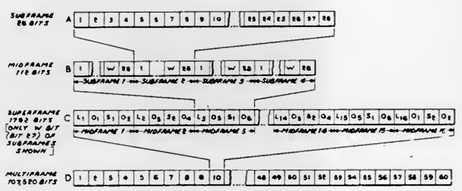
dividing means coupled to the oscillator output and balanced synchronous detection means coupled to the output of the frequency dividing means and to a source of composite stereophonic signals (including the pilot signal) for producing oscillator control signals. Additional synchronous detection means are coupled to the source of composite signals and to further frequency dividing means for producing indications of pilot signal presence and above-band noise and for demodulating the difference channel (L—R) information. Matrixing and sterophonic-monophonic switching means are also incorporated in the decoder system.

3,798,377
FOUR CHANNEL FM DECODER UTILIZING A ONE-OF-FOUR DECODER
Louis Dorren, Milbrae, Calif., assignor to Matsushita Electric Corporation of America, New York, N.Y.
Filed Apr. 7, 1972, Ser. No. 242,073
Int. Cl. H04h *5/00*
U.S. Cl. 179—15 BT **3 Claims**



A four channel FM system decoder wherein the usual 19 kHz pilot signal actuates a phase lock loop circuit, said phase lock loop circuit actuating a one-of-four decoder and quadraplex gate to switch an FM composite signal containing four information elements to extract each of the elements separately.

3,798,378
FRAME SYNCHRONIZATION SYSTEM
Marvin A. Epstein, Monsey, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Nov. 7, 1972, Ser. No. 304,435
Int. Cl. H04j *3/06*
U.S. Cl. 179—15 BS **24 Claims**

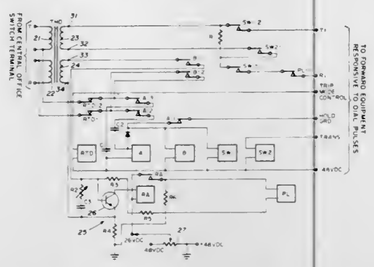


There is disclosed herein a frame synchronization system for a binary data TDM signal including a multiframe having X superframes, each of the X superframes including M midframes, each of the M midframes including m subframes, and each of the m subframes including x ports or channel times. The data signal includes an overhead channel having overhead data including a first sync signal having a first predetermined pattern composed of Y bits disposed in adjacent ones of the M midframes and a second sync signal having a second predetermined pattern different than the first predetermined pattern composed of M bits, each of the M bits being disposed in a different one of the M midframes, where X, M, m, x and Y are all integers greater than one. The data bit rate clock is extracted from the data signal and applied to a cascade connection of a port counter, a subframe counter, a midframe counter and a superframe counter which together with decoding and gating logic associated with each of the above-mentioned counters produces local timing signals including a first reference signal for the first sync signal of the data signal and a second reference signal for the second sync signal of the data signal. In response to one of the local timing signals, such as the overhead channel port timing signal, the overhead data is demultiplexed from the data signal. A first comparator compares the first reference signal to the bits of the data signal to produce a first output signal indicating matches and mismatches between the first reference signal and the data bits. A second comparator circuit compares the overhead bits with the second reference signal and produces a second output signal indicative of the matches and mismatches therebetween. A decision circuit including a digital integrator in the form of an up-down counter and threshold detectors produce a first control signal when the output signal of the counter is equal to or less than a predetermined lower threshold level and a second control signal is produced when the output of the counter is equal to or greater than a predetermined upper threshold level. A mode control capable of producing signals indicative of three different modes of operation is coupled to the threshold detectors and responds to both of the control signals. Gates are coupled between the first and second comparators and the decision counter which under control of the mode control circuit output signal representing a first mode couples the first output signal to the decision counter and under control of the mode control circuit output signal representing a second mode couples the second output signal to the decision counter. The second reference signal is produced by the states of the stages of the superframe counter and in a third mode between the first and second modes mentioned hereinabove the overhead data, under control of the mode control circuit output signal representing the third mode, is coupled to the stages of the superframe counter to provide an assumed error free second reference signal. During the first mode of operation the first output signal is coupled to the decision counter and when the first control signal is below or equal to the lower threshold level and there is a mismatch indicated in the first output signal a gate disposed between the bit clock and the port counter is operated to block the application of the bit clock to the port counter to cause a shift in the phase of the local timing signals to establish and maintain synchronization to midframes of the received data signal. In the second mode of operation if the proper phase of the second sync signal is detected synchronization of the superframe and hence the multiframe is established and maintained. If the proper phase of the second sync signal is not detected, the mode control circuit will cause the framing circuit to revert to the first mode of operation and start the framing operation cycle again to properly establish and maintain the desired synchronization.

3,798,379
CONNECTOR TERMINAL DIAL REPULSER
Dell Royce Brooks, Ballinger, Tex., assignor to Telephone Industries, Inc., Ballinger, Tex.
Filed Sept. 22, 1971, Ser. No. 182,890
Int. Cl. H04q *1/32*
U.S. Cl. 179—16 E **4 Claims**

A trunk circuit interface between a connector terminal of a conventional telephone switching system and a plurality of dial access stations forward of the connector terminal. A conventional repeating coil and a plurality of relays respond to ringing on the connector terminal by providing a ring-trip loop closure and a path for receiving further dial pulses. Dial pulses actuate the relays to provide loop pulsing to the forward equipment. When enough pulses have been received to select a particular station in the forward equipment, ground is pro-

vided back to the circuitry of the invention to inhibit further pulses and close a tip and ring transmission path between the



output of the connector terminal and the selected station within the forward equipment.

3,798,380

TELEPHONE APPARATUS

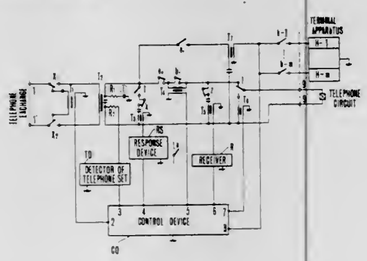
Yoshimitu Hoshi, Tokyo; Takeshi Wakabayashi, Sagamihara, and Saburo Uchida, Tokyo, all of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed May 6, 1971, Ser. No. 140,694

Claims priority, application Japan, May 9, 1970, 45-39102

Int. Cl. H04m *3/42, 1/64*

U.S. Cl. 179—18 B **7 Claims**



In telephone apparatus there are provided a telephone set; terminal apparatus; means for receiving a push button dialing signal for selecting the telephone set; a response device having a recording tape containing a first information block in which the dial number of the called party, the dial number of the terminal apparatus and the information regarding thereto are recorded, and a second block in which a signal representing the absence of the called party is recorded; and a control device. The response device is operated by a received signal and returns to its original state when the information reproduced in the first block is transmitted to the calling party and thereafter the telephone set or the terminal apparatus is seized by the dialing signal.

3,798,381

INHIBITING TRUNK CALLS FROM PRIVATE BRANCH EXCHANGES

Luigi Placente, and Giovanni Gandolfi, both of Milan, Italy, assignors to Societa' Italiana Telecomunicazioni S.p.A., Milan, Italy

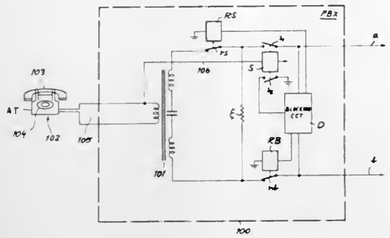
Filed Nov. 8, 1971, Ser. No. 196,318

Claims priority, application Italy, Nov. 9, 1970, 31483/70

Int. Cl. H04m *1/66*

U.S. Cl. 179—18 DA **12 Claims**

To prevent the unauthorized initiation of toll calls from a local telephone station served by a private branch exchange (PBX), the latter is equipped with monitoring circuitry working into a binary/decimal counter which is activated during the dialing of an initial digit (or combination of digits) and, in response to one or more predetermined values thereof, trips a flip-flop to disconnect the station from the line. The flip-flop is also tripped if dialing is commenced before reception of a dial



tone from the central office, or if dialing is continued after the arrival of a second a-c signal (line free or busy) from that office. To forestall the generation of a spurious dial tone by voice frequencies, the a-c path from the local station to the PBX is opened during dialing.

3,798,382

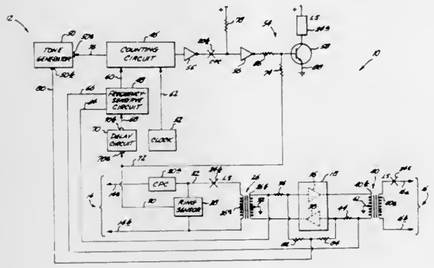
VOICE-MONITORING CONTROL CIRCUIT

El Don L. Hoven, Lake Oswego, Oreg., assignor to Ford Industries, Inc., Portland, Oreg.

Filed May 22, 1972, Ser. No. 255,730

Int. Cl. H04m *1/00*

U.S. Cl. 179—81 R **5 Claims**



A circuit for assuring automatic breaking of a talking connection in a telephone line a preselected time interval after talking has ceased on the line. The circuit has particular ultility in connection with apparatus such as a call diverter, or a telephone answering and message-recording device. The circuit includes a digital-type counting circuit which is fed pulses to be counted, and which effects breaking of a talking connection on reaching a certain count. A frequency-sensitive circuit responsive to a limited range of voice frequencies (found to recur frequently in normal male and female conversation) monitors voice frequencies on the line, and on sensing a frequency within such range, effects resetting of the counting circuit to a zero-count condition to prevent breaking of a talking connection.

3,798,383

RINGING DEVICE FOR AN ELECTRICAL TELEPHONE

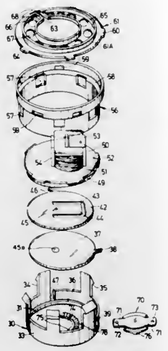
Horst Brandstatter, Zirndorf, Germany, assignor to Georg Brandstatter, Zirndorf, Germany

Filed Feb. 4, 1972, Ser. No. 223,551

Claims priority, application Germany, Feb. 5, 1971, G 71 04 305.5; Nov. 29, 1971, P 21 59 003.4

Int. Cl. H04q *9/00*

U.S. Cl. 179—84 R **9 Claims**



A telephone such as a toy telephone is provided with a ringing device in the form of the earpiece of the handset of the telephone.

3,798,384

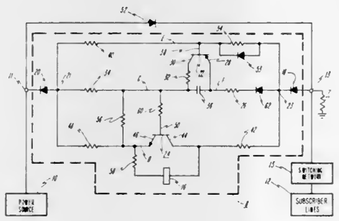
RING TRIP CIRCUIT

William E. Shaffer, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 8, 1972, Ser. No. 287,390

Int. Cl. H04m *3/02*

U.S. Cl. 179—84 R **9 Claims**



A ring trip circuit for telephone systems for supplying ringing signals and DC potentials to a called party and for detecting when a called party goes off hook. The ring trip circuit includes two unidirectional conducting paths, wherein each path conducts during opposite polarities of alternating current ringing signals. At least one of the unidirectional current paths includes a circuit for detecting when the called subscriber goes off hook.

3,798,385

MAGNETIC RECORDING AND REPRODUCING DEVICE WITH SPEAKER CUT OFF WHEN DRIVING SYSTEM IS STOPPED

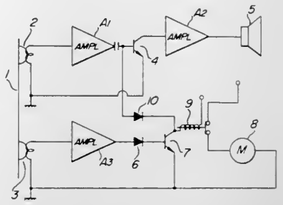
Kazunori Saito; Toshio Tsubaki; Shoichi Ito, and Sadaaki Fujiyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 22, 1971, Ser. No. 191,591

Claims priority, application Japan, Nov. 9, 1970, 45-97872; Nov. 9, 1970, 45-97897

Int. Cl. G11b *23/30, 27/30, 31/00*

U.S. Cl. 179—100.2 S **3 Claims**



A magnetic recording and reproducing device used primarily with an educational slide projector with a built-in tape recorder, wherein an erroneous operation of a synchronizing system and generation of a discordant sound caused by continued feed of magnetic tape due to the inertia of a driving system including a motor is prevented when releasing the magnetic tape driving elements by a stop signal picked out to temporarily stop the reproduction of a sound recorded on the magnetic tape.

3,798,386

METHOD OF RECORDING A MODULATED CARRIER FOR RADIATION REPRODUCTION

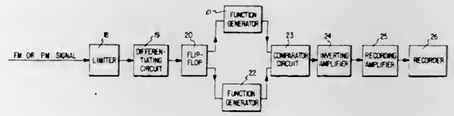
Gerhard Dickopp, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Division of Ser. No. 5,341, Jan. 23, 1970. This application Sept. 13, 1971, Ser. No. 179,990

Claims priority, application Germany, Jan. 23, 1969, P 19 03 822.3

Int. Cl. G11b *11/18*

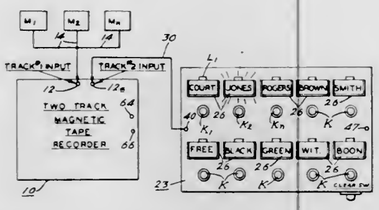
U.S. Cl. 179—100.4 M **4 Claims**



A method and apparatus for reproducing signals stored on a carrier in the form of undulations corresponding to the signals, the undulations generally being formed is a spiral groove. The undulations on the carrier are moved past a suitable radiation source, such as a light source, and the density of the radiation emanating from the undulations, which is a function of the curvature of the undulation, is detected by a suitable radiation detecting means after it passes through a suitable slit aperture arranged at a predetermined distance from the carrier surface, so that variations in the density are a function of the undulations. The undulations may be either frequency or phase modulated with respect to the signal and their amplitude can be modified as a function of their recorded wavelength in such a manner that the curved surface portions of the undulations have nearly the same focal length for all occurring wavelengths. The carrier can have at least one recording surface in which is formed a groove having a trapezoidal cross

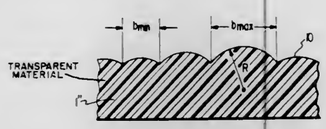
section and having its bottom surface provided with the undulations.

3,798,387
RECORDING SYSTEM FOR JUDICIAL PROCEEDINGS
Bernard J. Gallagher, Jr., 332 Oxford Rd., Morristown, Pa.
Filed Oct. 4, 1971, Ser. No. 186,165
Int. Cl. G11b *23/18, 23/36, 27/30*
U.S. Cl. 179—100.2 MD **7 Claims**



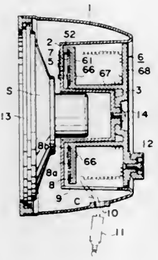
An electronic recording and playback aid for use in stenographic reporting, by means of which the speakers' voices are recorded and later played back to prepare a typewritten transcript of their words. Identification of which speaker is speaking at a given time is enabled by a unit associated with the recording apparatus and having a key for each speaker, the court reporter or attendant operating the appropriate corresponding key when a given speaker is speaking. Operation of the key applies a particular frequency of signal to a channel or track separate from that in which the speech is recorded, the frequency or tone continuing throughout the speech by that speaker, until a different key for a different speaker is operated. A light associated with each key is also automatically turned on when that key is operated, so that the operator can assure himself that the proper key is operated. When the recording is later played back, the particular speaker's identification signal is automatically detected and used to turn on the light associated with the corresponding speaker's key, while the speaker's words are also being played back. This enables the operator on playback to start at any point on the tape with the speaker automatically identified by the light associated with his key, and without any interference with the sound of the recorded words.

3,798,388
RECORD CARRIER FOR STORING ANGULARLY MODULATED SIGNALS
Gerhard Dickopp, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany
Division of Ser. No. 5,341, Jan. 23, 1970. This application Sept. 13, 1971, Ser. No. 179,991
Claims priority, application Germany, Jan. 23, 1969, P 19 03 822.3
Int. Cl. G11b *23/00, 11/18, 25/04*
U.S. Cl. 179—100.4 R **8 Claims**



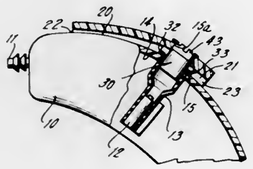
A method and apparatus for reproducing signals stored on a carrier in the form of undulations corresponding to the signals, the undulations generally being formed in a spiral groove. The undulations on the carrier are moved past a suitable radiation source, such as a light source, and the density of the radiation emanating from the undulations, which is a function of the curvature of the undulation, is detected by a suitable radiation detector after it passes through a suitable slit aperture arranged at a predetermined distance from the carrier surface, so that variations in the density are a function of the undulations. The undulations may be either frequency or phase modulated with respect to the signal and their amplitude can be modified as a function of their recorded wavelength in such a maner that the curved surface portions of the undulations have nearly the same focal length for all occurring wavelengths. The carrier can have at least one recording surface in which is formed a groove having a trapezoidal cross section and having its bottom surface provided with the undulations.

3,798,389
EARPHONE WITH REEL
Teru Tokizaki, Tokyo, Japan, assignor to Eko Denshi Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 8, 1972, Ser. No. 287,261
Int. Cl. H04m *1/15*
U.S. Cl. 179—101 **3 Claims**



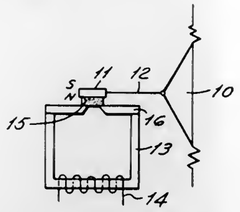
A headphone having a reel for the internal storage of the cord.

3,798,390
HEARING AID WITH VALVED DUAL PORTS
Franklin A. Gage, Croton, and Richard P. Muttick, Yorktown Heights, both of N.Y., assignors to Gould Inc., Chicago, Ill.
Filed July 24, 1972, Ser. No. 274,448
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 FD **10 Claims**



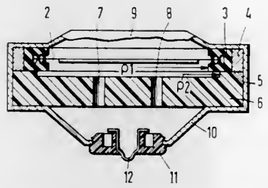
A hearing aid casing having a plurality of sound conducting passages, preferably a forwardly directed passage and a rearwardly directed passage, each communicating through a "mixer" valve to a microphone interiorly of said casing; the valve may be operated to close either passage leaving the other open or to reduce the effective cross-sectional input of one passage while leaving the other open. The valve may support a sound filter in the sound path to the microphone; the passages may each be provided with filter plugs.

3,798,391
MOVABLE MAGNET LOUDSPEAKER
Rollin James Parker, Greenville, Mich., assignor to General Electric Company, New York, N.Y.
Filed June 22, 1972, Ser. No. 265,250
Int. Cl. H04r *11/02*
U.S. Cl. 179—114 R **3 Claims**



A transducer device such as a loudspeaker or microphone has the electrical coil stationary with respect to the acoustic diaphragm. The diaphragm is actuated by a movable permanent magnet which interacts with the field of the stationary electrical coil. The preferred permanent magnet is one having a high torque-to-weight ratio with respect to an external field. The cobalt-rare earth magnets are examples of such permanent magnets.

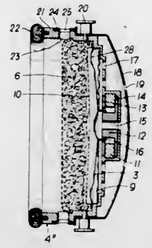
3,798,392
ELECTROACOUSTIC TRANSDUCER
Erwin Martin, Munich, and Franz Beil, Germering, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Apr. 18, 1972, Ser. No. 245,105
Claims priority, application Germany, Apr. 23, 1971, 2119911
Int. Cl. H04r *17/10*
U.S. Cl. 179—115.5 ES **6 Claims**



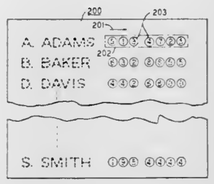
An electroacoustic transducer with a diaphragm strained to curvature and which is gripped at its edge regions with an elastic storage structure is described. The elastic storage structure adjoins an annular surface on at least one side. The inside diameter of the annular surface is larger than the inside diameter of the storage structure for the diaphragm.

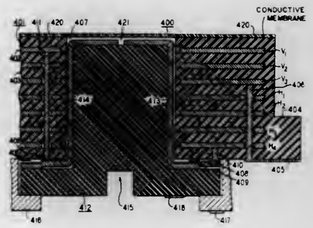
3,798,393
HEADPHONE CONSTRUCTION
Rudolf Gorike, Wien, Austria, assignor to Akg Akustische u. Kino-Gerate Gesellschaft m.b.H., Wien, Austria
Continuation of Ser. No. 10,868, Feb. 12, 1970, abandoned. This application Mar. 3, 1972, Ser. No. 231,762
Claims priority, application Austria, Feb. 17, 1969, 1583 A/69; Jan. 12, 1970, 243 A/70
Int. Cl. H04r *1/10*
U.S. Cl. 179—182 R **8 Claims**

A headphone construction includes freely radiating sound converters whose diaphragms, when the earphones are attached, are not loaded by the impedance of the wearers' ear. The diaphragm of the electrostatic converter is primarily mass-inhibited and damped by acoustic or mechanical friction resistances. Supporting elements are provided between the head and the earpiece which provide minimum spacing distance between the diaphragm and the inlet of the ear which corresponds practically to the contact-free wearing of the sound converters. The supporting elements may advantageously comprise a pair of ring members which are concentrically arranged one within the other around the ear and which support the earphone at a spaced location from the ear. The rig members include openings which may be aligned and enlarged for varying the opening space defined between the diaphragm and the ear opening.



3,798,394
KEYBOARD SWITCH ASSEMBLY WITH CONDUCTIVE DIAPHRAGM OPERATORS AND ROTARY SWITCH OPERATORS FOR ADJUSTABLY SELECTING A MULTIDIGIT NUMBER
Rembert Ryan Stokes, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.
Filed Oct. 11, 1972, Ser. No. 296,576
Int. Cl. H01h *13/66, 41/14*
U.S. Cl. 200—5 A **12 Claims**





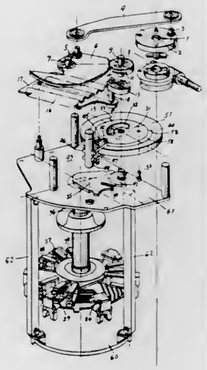
Different segments or bits of encoded information each of which is represented by signals produced by the connection of a plurality of conductors can be generated by a single encoding device which can be readily modified to interconnect different pluralities of conductors. Lands of conductive material are connected to respective ones of the conductors. A rotor having a plurality of wipers thereon is rotatably mounted with respect to the lands. The wipers simultaneously contact a different plurality of lands depending upon the angular orientation of the rotor with respect to the lands. The wipers are connected by a deformable membrane in response to an operating force thereby interconnecting a plurality of the conductors

and proucing signals representing one of the segments of information.

3,798,395
OPERATING MECHANISM FOR TAP CHANGER SWITCHES

Sivert Norman; Ernst Flytstrom, and Folke Johansson, all of Ludvika, Sweden, assignors to Almanna Svenslsa Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 6, 1972, Ser. No. 304,246
Int. Cl. H01h *3/00*
U.S. Cl. 200—17 R **5 Claims**



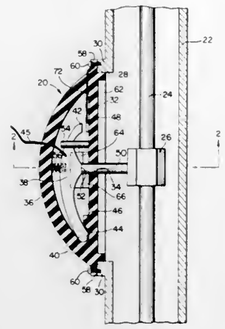
A tap changer for transformers includes a selector switch and a diverter switch. The drive device for the switch includes a gear segment which drives a gear wheel mounted on a shaft which gear wheel also carries a slewing bracket on which is pivoted on a pivot pin a link which is connected to one end of a spring, the other end of which is stationary. The gear wheel has a notch extending partly around its periphery, into which the pivot pin extends so that the gear wheel can turn freely through a limited distance without affecting the spring. On the same shaft is mounted a fly wheel which has an arcuate slot into which the pivot pin extends. A braking arrangement is provided which holds the fly wheel against movement until it is forceably turned by the pivot pin. The fly wheel carries a projection which engages in a Maltese-cross arrangement for shifting the contacts of the diverter switch.

3,798,396
IGNITION POINT ASSEMBLY WITH GUIDE POSTS FOR MOVABLE CONTACT

Eugene H. Mann, 1240 10th Ave., North, Naples, Fla.

Filed Sept. 25, 1972, Ser. No. 292,249
Int. Cl. H01h *19/62*
U.S. Cl. 200—30 A **11 Claims**

This invention provides an easily replaceable ignition point assembly that is designed to be operated by the point cam of a conventional distributor of an internal combustion engine. The ignition point assembly comprises a base, a contact arm pivotally mounted on the base for movement toward and away from the base, a stationary contact located on the base for making and breaking electrical engagement with the contact arm, and actuator means projecting through an opening in the base for engaging the contact arm and a cam located on the opposite side of the base from the contact arm to pivot the contact arm into and out of electrical engagement with the stationary contact upon rotation of the cam. Guide posts on

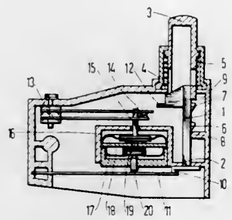


the base to engage the contact arm to limit its movement to a perpendicular path.

3,798,397
TIME DELAY SWITCH HAVING CONTACT RAM ACTUATOR AND ENERGY STORAGE MEANS

Albert Geese; Herbert Hoher, both of Munich, and Erwin Awakowicz, Bocholt, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 10, 1972, Ser. No. 305,248
Claims priority, application Germany, Nov. 10, 1971, 2155916
Int. Cl. H01h *7/03, 43/28*
U.S. Cl. 200—34 **6 Claims**

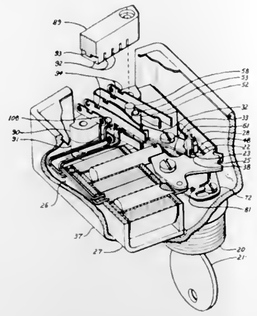


A short time switch for carrying out switching operations of limited duration is described. The switch is actuated by, for example, a pushbutton, but the remainder of the switching operation is carried out automatically. A contact spring arrangement is provided upon which are mounted the switch contacts, and a force-proportional retarding element, associated with the contact spring, which controls the return time of the control spring arrangement to its original or rest position. A ram, operated axially by the pushbutton has a shoulder which engages with a free end of one of the contact springs. A cam, mounted on the ram, during the axial travel of the ram, causes it to disengage from the pushbutton at a given point. At the point of disengagement, further movement of the ram is under the impetus of an energy storage element, such as a leaf spring, and independent from the pushbutton.

3,798,398
KEY-RECEIVING LOCK ASSEMBLIES AND APPARATUS INCORPORATING SUCH ASSEMBLIES

Austin Ariss Hills, 227 Hespeler Rd., R.R. 3, Galt, Ontario, Canada

Continuation-in-part of Ser. No. 240,996, April 4, 1972, abandoned. This application Jan. 29, 1973, Ser. No. 327,709
Int. Cl. E05b *11/00*
U.S. Cl. 200—44 **44 Claims**

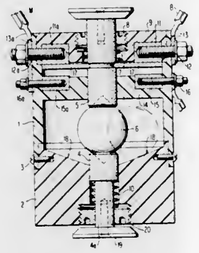


In a key-receiving lock assembly for controlling access to or use of leased apparatus, two remotely energized electromagnets may be operated alternately to engage and disengage a securing member relative to the operable elements of the lock, said securing member, when engaged, securing the key within the lock and securing the operable elements of the lock in a position preventing access to or use of the apparatus protected by the lock. A switch inhibits engagement of the securing member unless the key is in the lock and the lock is in the securing position. A second switch, closed by lock rotation to a position other than the securing position or the position in which the key is insertable into and removable from the lock, provides continuous operational access to the apparatus protected by the lock. A third switch provides transient energization of a circuit such as required for starting of an internal combustion engine. Disconnectable remote control means, with protective features, are included.

3,798,399
ANTI-INCENDIARY DEVICE FOR AUTOMOTIVE VEHICLES

Joseph Corporandy, Clos Manou Bikini, 06 La Roquette Sur Siagne, France

Filed Aug. 25, 1972, Ser. No. 283,762
Claims priority, application France, Aug. 27, 1971, 71.32044; June 26, 1972, 72.24034
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R **6 Claims**

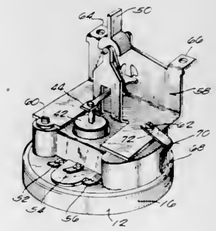


An anti-incendiary device for preventing fires upon the collision of an automotive vehicle having an internal combustion engine with an ignition system, comprises a ball held between two vertical coaxial plastic pistons that are spring urged toward the ball. Upon collision, the inertia of the ball dislodges the ball from between the pistons and permits the pistons to move toward each other. One of the pistons carries an electrically conductive cross piece that forms a portion of the circuit between the battery and the ignition system of the engine when the ball separates the pistons, but which moves into a position to interrupt the ignition circuit and ground the ignition system when its associated piston moves toward the other piston. When dislodged, the ball rests on a conical seat and the lower of the two pistons may be withdrawn against the action of its spring to permit the ball to roll back to operative position for resetting.

3,798,400
FULLY GROUNDED PRESSURE SWITCH

Irving Gebel, Oak Park, and Abed G. Kahale, Roselle, both of Ill., assignors to Controls Company of America, Schiller Park, Ill.

Filed Mar. 16, 1973, Ser. No. 341,911
Int. Cl. H01h *35/34, 9/12*
U.S. Cl. 200—83 R **1 Claim**



The pressure switch has a switch mounted in the plastic, electrically insulative case above the diaphragm. The perimeter of the diaphragm is captured between the plastic case and the cup which has a tubular connector for connection to a source of pressure to be sensed. The chamber below the diaphragm between the diaphragm and cup is the pressure chamber and pressure variations cause flexure of the diaphragm and operation of the switch. The rim of the cup is rolled over the case flange to hold the parts assembled. The mounting bracket is secured to the case and to the appliance (or other equipment) frame — which is electrical ground — and, therefore, satisfies more stringent electrical requirements. In order to ground the cup — even though it is electrically dead — one end of a conductive ground strap is captured between the case and the cup when the cup rim is rolled over the case flange. The other end overlies the bracket and is captured by a screw mounting the bracket to the case. The arrangement meets demanding electrical requirements at very low cost and without requiring added costy manufacturing operation.

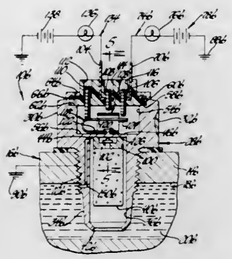
3,798,401
LIQUID LEVEL RESPONSIVE SWITCH ASSEMBLY

Aloysius J. Kochanski, 27312 Spring Arbor Dr., Southfield, Mich., and Charles J. Hire, 6 Cranswick La., Rochester, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,910
Int. Cl. H01h *35/40*
U.S. Cl. 200—84 C **13 Claims**

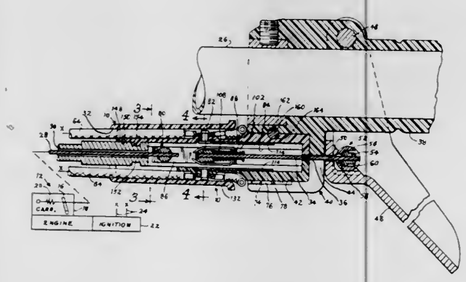
An electrical switch assembly has a body or housing containing a moveable magnetic member and a float member carrying an armature; when the float member senses a reduction

of the liquid level below a predetermined minimum level, the float causes the armature to move thereby permitting the



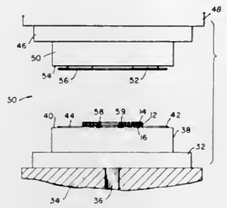
moveable magnetic member to move and complete a related electrical circuit.

3,798,402
SAFETY SWITCH AND CONTROL SYSTEM FOR VEHICLES
Andrew F. Raab, 8908 Mango St., Morton Grove, Ill.
Filed Apr. 19, 1972, Ser. No. 245,406
Int. Cl. H01h *17/06;* **F02b** *77/08;* **H01h** *9/06*
U.S. Cl. 200—161 **22 Claims**



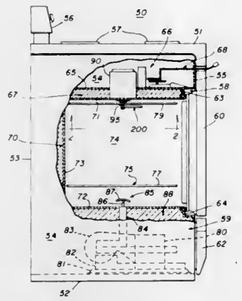
A throttle safety switch is connected into the throttle control cable for a snowmobile or other vehicle. When the normal tension in the throttle control cable is lost due to freezing or sticking of the throttle in the open position, the switch is actuated so as to short circuit or otherwise disable the ignition system for the engine on the snowmobile. The switch involves first and second movable members with relative lost motion therebetween. The tension in the control cable normally takes up the lost motion in one direction. When such tension is lost, the lost motion is taken up in the opposite direction by a spring acting between the members. As a result, a pair of contact arms on one of the members are moved outwardly by a camming element on the other member so that the arms engage stationary elongated contact elements connected to the ignition system, such elongated contact elements being engageable by the contact arms throughout the range of movement of the movable members.

3,798,403
APPARATUS FOR ADHERING FRICTION MATERIAL TO RING-LIKE ELEMENT
David C. Mitchell, Bloomfield Hills, and Charles W. Latreille, Detroit, both of Mich., assignors to D.A.B. Industries, Inc., Detroit, Mich.
Division of Ser. No. 204,859, Dec. 6, 1971, Pat. No. 3,740,512. This application Jan. 22, 1973, Ser. No. 325,862
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.53 **1 Claim**



A method is provided for adhering friction material to a metallic ring-like element to form clutch elements of the type generally utilized in automatic transmissions. In a preferred embodiment, the ring-like element is precoated with an adhesive material on both sides. The adhesive is then dried to a non-tacky state. A ring of friction material is then positioned on either side of the metallic ring-like element. This assembly is then placed in a press which includes an electrically conductive ring which constitutes a one turn coil. The press is closed to apply pressure to the assembly. At the same time, alternating current is caused to flow in the one turn coil to create a magnetic field which induces current flow in the metallic ring-like element. The flow of current causes the metallic ring-like element to become hot as a result of resistance and hystereses losses. The heat causes the adhesive material to bond the friction material to the metallic ring-like element.

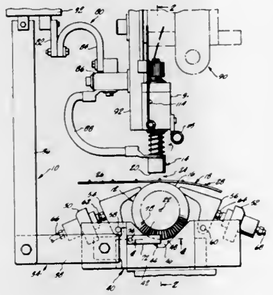
3,798,404
ELECTRONIC OVEN WITH MODE EXCITER
Donald J. Simon, and Louis H. Fitzmayer, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Dec. 21, 1972, Ser. No. 317,206
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **16 Claims**



An electronic oven includes a boxlike enclosure defining a heating cavity therein, a microwave source coupled to an antenna centrally of the bottom wall of the cavity for radiating thereinto microwave energy of a predetermined wavelength for exciting a predetermined primary mode electromagnetic field in the cavity, a drive motor having a grounded conductive output shaft projecting into the cavity centrally of the top wall thereof coaxially with the antenna and parallel to the primary mode electric field, and a generally L-shaped conductive

member having two interconnected leg portions disposed in a plane normal to the shaft, one of which leg portions is connected at the free end thereof to the inner end of the shaft for rotation about the axis thereof, the conductive element being responsive to rotation thereof in the primary mode of the electric field for exciting in the cavity two secondary modes complementary to the primary mode. A generally W-shaped conductive element and a rectangular conductive element are also provided for effecting phase reversal of the secondary modes with respect to the primary mode as the element rotates. A support rack is provided in the cavity having spaced-apart parallel rods extending parallel to the direction of propagation of the electromagnetic field.

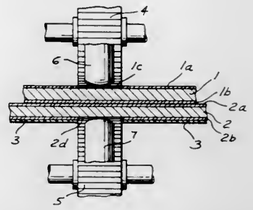
3,798,405
AUTOMATED SPOT WELDING METHOD AND APPARATUS
Clyde O. Boothe, Rolling Hills Estates, Calif., assignor to Farr Company, El Segundo, Calif.
Filed Aug. 23, 1972, Ser. No. 283,080
Int. Cl. B23k *11/00*
U.S. Cl. 219—56 **36 Claims**



In an automated spot welding machine for producing numerous welds, at least one first and one second electrode aligned and normally spaced apart are included with at least the first or second electrode being moveable during the welding of a workpiece positioned between the electrodes. The electrodes each include a welding surface with a designated area thereof adapted to contact the workpiece during the production of each weld thereon. Means associated with at least one of the electrodes are included to selectively provide new designated areas for contact with the workpiece thereby extending the useful life of the electrode.

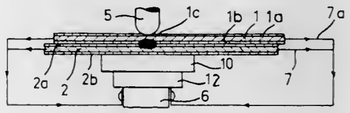
3,798,406
PROCESS FOR WELDING METAL COATED SHEET STRUCTURES
Otto Alfred Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Germany
Filed Mar. 10, 1971, Ser. No. 122,674
Claims priority, application Germany, Mar. 10, 1970, 2013794; Feb. 3, 1971, 2104888
Int. Cl. B23k *9/28, 11/00*
U.S. Cl. 219—92 **11 Claims**

This invention is directed to a method of and apparatus for linearly and/or spot welding metal plates that have either clad, coated or oxidized surfaces. In some instances only the exposed surface coatings are removed from the zone to be welded to bare the underlying metal, after which welding is effected and, if necessary, the exposed welded zones are reclad or recoated with the same type of material as was originally removed. Where relatively thick plates are to be welded, sufficient material is removed from at least one of them to define a remaining thin web in or along the zone of welding that can be displaced or forced into linear contact with an adjacent area as an incident to welding, after which the exposed welded zone is reclad or recoated. For spot welding the plates may be bored or drilled at predetermined intervals to receive and retain sets of weldable inserts which become welded together and to the surrounding metal. Recoating or reclading of the exposed welded zones may be effected either by applying mol-



ten metal to the surface to be coated, or by wiping pre-heated metal against such surface, or by electrolytic deposition. The method is especially effective with zinc or tin coated or clad iron or steel sheets or plates and with aluminum sheets or plates having oxidized faces.

3,798,407
PROCESS FOR WELDING SHEET METAL COATED WITH LAYERS
Otto Alfred Becker, Robert Koch Strasse 59, 66 Saarbruecken 6, Germany
Continuation-in-part of Ser. No. 823,077, May 8, 1969, Pat. No. 3,614,375. This application Sept. 16, 1971, Ser. No. 181,149
Int. Cl. B23k *9/28*
U.S. Cl. 219—92 **11 Claims**

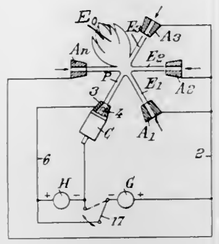


A method for the connection of sheet metal panels coated on at least one surface with a layer by the electrical fusion of a metal, wherein the improvement comprises the steps of supplying an electric current for the fusion of metal indirectly along the sheet metal of at least one panel to the zone at which said panels are to be connected to each other, and keeping the temperature of an outer layer of at least one of said panels below the melting point of said layer.

3,798,408
METHODS AND DEVICES FOR PLASMA PRODUCTION
Marc Foex, Paris; Robert Delmas, and Claude Bonet, both of Odeillo, all of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Neuilly-sur-Seine, France
Continuation-in-part of Ser. No. 888,508, Dec. 29, 1969, Pat. No. 3,714,390. This application Dec. 20, 1971, Ser. No. 209,885
Claims priority, application France, Dec. 23, 1970, 70.46416; Dec. 31, 1968, 68.182839
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 P **25 Claims**

A plasma generating installation comprises a pilot generator and nozzles supplying respectively convergent gas flows. These nozzles are inserted in a circuit capable of being completed across these flows by reducing the electrical resistance therein. This circuit and the supply circuit for the pilot generator are connected in parallel to a single current source. The installation is suitable for generation of plasmas of large volume.

The invention relates to methods and devices for the production of plasma jets in the midst of convergent fluid



flows giving rise to a main flow of plasma and of which at least certain of them are supplied through nozzles devoid of their own electrical supply.

3,798,409

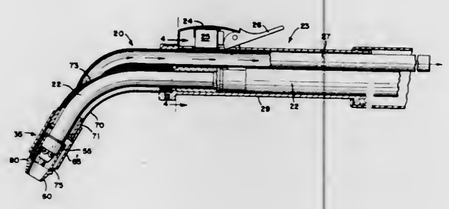
FUME EXTRACTING WELDING GUN NOZZLE

Wade E. Troyer, and Leo E. Wildenthaler, both of Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio

Filed Sept. 22, 1971, Ser. No. 182,596

Int. Cl. B23k *9/00*

U.S. Cl. 219—130 **9 Claims**



A welding gun nozzle including a first passageway through which welding wire may be fed into a weld and a second passageway through which shielding gas may be directed over the weld to protect the molten metal from contamination. The nozzle also includes a fume extracting passageway having an inlet orifice so located with respect to the outlet end of the nozzle that the fumes are drawn into the nozzle from a region laterally outward from the nozzle, and thus from an area removed from the weld, so the shielding gas is relatively unaffected by the operation of the fume extracting feature of the invention.

3,798,410

SHIELD-GAS WELDING GUN

Wilhelm Dinse, Konigsreihe 12, 2 Hamburg 70, Germany

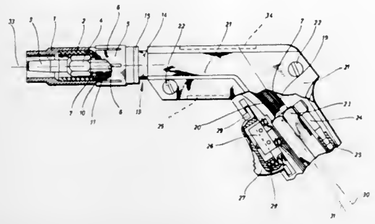
Filed Sept. 8, 1972, Ser. No. 287,590

Claims priority, application Germany, June 3, 1972, 2227118

Int. Cl. B23k *9/00*

U.S. Cl. 219—130 **18 Claims**

A shield-gas welding gun having an insulating housing forming a handle enclosing a double walled tubular body through which the welding filler rod is moved toward the contact tip; the double walled tubular body carrying shield-gas between the internal and external walls thereof, the peripheral confronting surfaces of which are roughened as by threading to increase surface area for heat exchange, and the shield-gas cooling the tubular body as it flows toward the contact tip at the end of the tubular body which is encompassed by a gas nozzle.



3,798,411

ARRANGEMENT FOR GUIDING OF WIRE ELECTRODES FOR A BURNER FOR METAL COATING BY MEANS OF AN ELECTRIC ARC

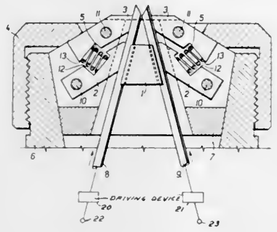
Jaromir Wagner, Prague, Czechoslovakia, assignor to Rukov, sdruzeny podnik Onv Decin, Rumburk, Czechoslovakia

Filed Dec. 26, 1972, Ser. No. 317,938

Claims priority, application Czechoslovakia, Jan. 12, 1972, 204-72

Int. Cl. B23k *9/00, 9/04*

U.S. Cl. 219—136 **5 Claims**



A burner for metal coating by means of an electric arc in which the fusible arc electrodes rest against a stable support, against which they are pressed by first spring loaded chucks. Second spring loaded chucks act on the fusible arc electrodes close to the arc. In case of irregularities of the arc electrodes, maintain thus the arc at a constant place even if the arc electrodes are bent or of irregular thickness.

3,798,412

WELDING ELECTRODE HAVING FRICTIONAL LOOP ENGAGING PORTION

Richard F. Smith, R.F.D. No. 1, Carrollton, Va.

Division of Ser. No. 845,339, July 28, 1969, Pat. No. 3,596,052. This application July 13, 1971, Ser. No. 162,214

Int. Cl. B23k *35/00*

U.S. Cl. 219—145 **3 Claims**

A welding electrode or welding wire having an integrally formed electrically conducting eye or loop at one end thereof that ensures a substantial area of contact with the externally tapered portion of the welding rod receiving member.

3,798,413

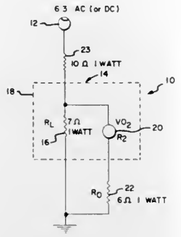
PROPORTIONAL TEMPERATURE CONTROL DEVICE

David Kahn, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 4, 1973, Ser. No. 357,319

Int. Cl. H05b *1/00*

U.S. Cl. 219—210 **13 Claims**



A device for maintaining a relatively constant temperature in an enclosure has a polyconductor connected in parallel to a first resistance element within the enclosure to be heated. The polyconductor is connected in series to a second resistance element located outside of the enclosure and this circuit is connected to a source of current which will cause the first resistance element to heat the enclosure as current passes therethrough; when the transition temperature of the polyconductor is reached, the first resistance element is shunted by the change in conductive state of the polyconductor and heating thereby is proportionally reduced in order to maintain the temperature within the enclosure at the transition temperature of the polyconductor.

3,798,414

HEATING ARRANGEMENT FOR DRY COPYING MACHINES

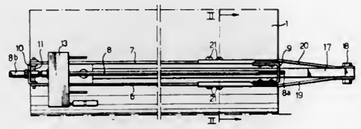
Cesare Marchetti San Martino Di Muriaglio, Turin, Italy, assignor to C.R.T. Italia S.r.l., Turin, Italy

Filed Aug. 1, 1973, Ser. No. 384,537

Claims priority, application Italy, Aug. 22, 1972, 69686/72

Int. Cl. H05b *1/02*

U.S. Cl. 219—216 **2 Claims**



This invention provides an improved heating arrangement for the semi-cylindrical cowl of a dry copying machine, with an automatic cut-out switch operated by thermal expansion of the cowl. The cowl heater is in an external longitudinal rib on the cowl and the switch is operated by a longitudinally extending reaction rod of low expansion coefficient attached at one end to the cowl, the switch itself being carried at one end of a longitudinal bar of high expansion coefficient attached at its opposite end by one or more strips of low expansion coefficient to the end of the cowl adjacent the reaction rod. The thermal expansion of the bar and strips compensates for that of the rod during the warm-up period of the machine, allowing the latter to reach its operating temperature rapidly.

3,798,415

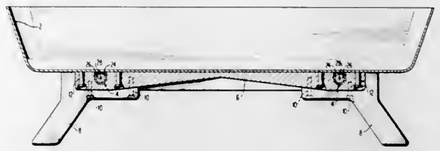
ELECTRICALLY HEATED COOKING UTENSIL

Elwood M. Graham, Biloxi, Miss., assignor to M. H. Graham Corporation, Biloxi, Miss.

Filed Aug. 25, 1972, Ser. No. 283,894

Int. Cl. F27d *11/02*

U.S. Cl. 219—441 **11 Claims**



A cooking utensil having a cooking vessel of heat conductive metal and an electrical heating element is attached to said cooking vessel by a holding means formed of heat conducting metal. The heating element is pressed fit into a recess of the holding means, and the holding means is attached to the cooking vessel by fasteners. The holding means is in heat conducting relationship with a substantial area of the cooking vessel and has a thickness which diminishes progressively toward the center of the cooking vessel to shorten the time required to bring the central portion of the cooking vessel to the desired temperature.

3,798,416

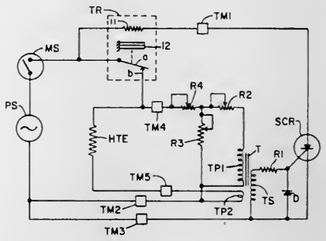
TEMPERATURE CONTROL SYSTEMS

Harold A. Brouneus, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,719

Int. Cl. H05b *1/02*

U.S. Cl. 219—505 **6 Claims**

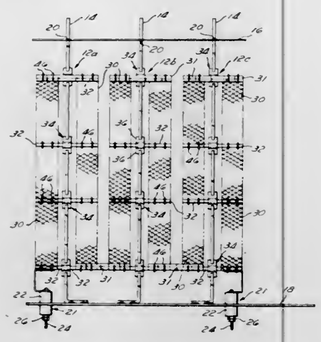


Temperature control systems or regulating circuits for use with electrical heating elements of burners of electric ranges, hot plates or cook-tops, such circuits and elements being directly energized from conventional commercial sources of power, such as 60 c.p.s. alternating current sources of 120 or 240 volts, and which systems provide high-temperature sensing and adequate temperature-limiting. Heating elements having linear positive temperature coefficients of electrical resistance are used in conjunction with thermal devices or relays, solid state circuitry including a silicon controlled rectifier as a switch or switching device, and a three winding transformer. The number of components required in the systems disclosed is substantially reduced from those required in previous known systems and an economic advantage is thereby attained. The control systems are especially suitable for use with electrically heated glass-ceramic cook-tops in order to provide improved performance while at the same time providing temperature-limiting of the burner system of the cook-tops for both electric heating-element protection and cook-top protection.

3,798,417
HEATING ELEMENT ASSEMBLY

W. Ray Bittner, Cookeville, Tenn., assignor to Gould Inc., Chicago, Ill.

Filed July 12, 1973, Ser. No. 378,698
Int. Cl. H05b *3/06*
U.S. Cl. 219—532 13 Claims

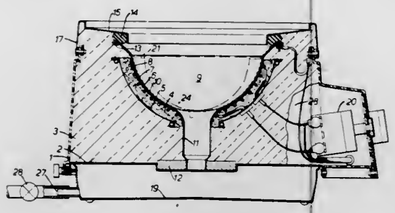


An electric heating assembly for a moving air system is described in which heating elements include thin strips of apertured, foil-like material. These elements are supported in linear reaches and arranged for an efficient element-to-space occupation ratio. The foil of the elements is a mesh that is supported in linear reaches by a plurality of insulators which are adjustably connected to a support rod. When the insulators are fixed in position, they rigidly immobilize the foil relative to the rod. According to one aspect of the invention, the linear reaches are flat. According to another aspect of the invention, the linear reaches are provided with a longitudinal fold to thereby stiffen the reach and minimize the number of supporting insulators along the reach.

3,798,418
ELECTRIC HEATING MANTLES

Michael Kurt Reik, Edgware, and Paul Leonard Johnson, Leagrave, both of England, assignors to Isapad Limited, Barnet Bypass, Borehamwood, England

Filed June 23, 1972, Ser. No. 265,500
Claims priority, application Great Britain, June 25, 1971, 29933/71
Int. Cl. H05b *3/00*
U.S. Cl. 219—535 5 Claims

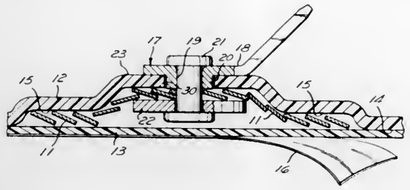


An electric heating mantle for flasks, retorts or other vessels, of the form having a heating cavity heated by electrical resistance heating means positioned close to a layer of metal gauze constituting the cavity defining surface of said mantle has its safety and operational capacity increased by the interposition, between the heating means and said metal gauze, of a moisture-proof membrane, preferably in the form of a rigid metallic cup having a bottom drain outlet for leading any spillage fluid safely away from the cavity and from contact with the heating means.

3,798,419
ELECTRICAL SURFACE HEATING ASSEMBLY

Douglas Herman Maake, Cookeville, Tenn., assignor to Gould, Inc., Chicago, Ill.

Filed Mar. 12, 1973, Ser. No. 340,094
Int. Cl. H05b *3/20*; H01c *3/00*; H01b *7/08*
U.S. Cl. 219—541 15 Claims

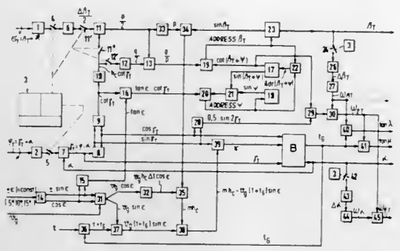


An electric conduction heating assembly for heating a base member comprises a thin strip of apertured, foil-like resistance material encapsulated between two thin sheets of electrical insulation material. The resistance strip is provided with a terminal assembly at each of its ends. Each terminal assembly includes a terminal connector having an apertured base. Prongs having an axial extent corresponding to the thickness of one of the insulation layers extends through the resistance strip, the insulation layer and the aperture in the terminal to clamp the resistance material against the prongs, whereby the prongs limit the plastic flow of the insulation layer during the riveting operation. The other layer of insulation material is provided with a pressure-sensitive adhesive coating covered by a removable protective release laminate so that the assembly may be secured to a surface to be heated. The assembly has particular utility as a heater for automotive mirrors to prevent ice accumulation on the reflecting surface thereof.

3,798,420
METHOD OF CONTROLLING MOTOR-DRIVEN DEVICES ADAPTED TO BE DIRECTED ONTO MOVING TARGETS AND APPARATUS FOR APPLYING THE METHOD

Albert Kaaz, Duisburg-Grossenbaum, Germany, assignor to Rheinmetall GmbH, Dusseldorf, Germany

Filed June 2, 1970, Ser. No. 42,769
Claims priority, application Germany, June 4, 1969, 1928483
Int. Cl. G06f *15/58*; G06g *7/80*
U.S. Cl. 235—61.5 S 17 Claims

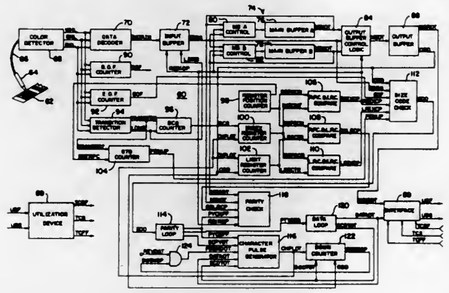


Method and apparatus for controlling motor-driven devices adapted to be directed onto a moving target, such as weapons, particularly guns, or target acquisition devices, particularly optical sighting device, radar apparatus, sound locators or infrared tracking apparatus, the target being followed by at least one of these devices and the control quantities for the drive of the devices adapted to be directed onto a moving target being calculated by computer means, wherein based on the values of the lateral angle and elevation angle which values are derived continuously from one of the devices adapted to be directed onto a moving target, and on the values of the target velocity and the angle of inclination of the target path with respect to the horizontal plane, on the basis of the geometrical relationships which hold true for a rectilinear uniform movement, the lateral angular velocity and the elevational angular velocity are calculated and fed to the drives of the devices adapted to be directed onto a moving target.

3,798,421
DOUBLE FIELD CODE READING SYSTEM

Robert C. Gilberg, Dayton; James P. Donohue, Fairborn, and Ramesh S. Patel, Kettering, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Dec. 7, 1971, Ser. No. 205,540
Int. Cl. G06k *7/12*
U.S. Cl. 235—61.11 E 10 Claims

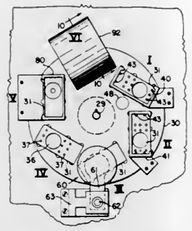


A system for processing a color bar code read optically from a coded medium is disclosed. The system includes logic for determining the binary code from color signals and storage means for temporarily storing the binary code. Logic is also provided which allows the reading of a double field tag and which checks the parity and the size of the captured message. Further, logic is provided for transmitting the captured message to a utilization device.

3,798,422
TICKET READER

Pierre G. Foret, Sudbury, and John William Donohoe, Natick, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Division of Ser. No. 56,281, July 20, 1970, Pat. No. 3,689,065.
This application Mar. 9, 1972, Ser. No. 233,375
Int. Cl. G06k *7/00, 7/015*; G65g *29/00*
U.S. Cl. 235—61.11 R 10 Claims

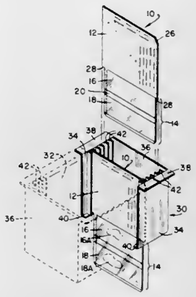


A ticket reader which has a rotatable turret and a vacuum system for moving tickets between different stations, one or more of the stations being adapted to provide tickets, one of the stations including a reader for reading the tickets, and a plurality of the stations adapted to receive the tickets after they have been read and interpreted.

3,798,423
DIAGNOSTIC DATA CARD CONSTRUCTION

Leo R. Mindick, Flushing, N.Y., assignor to Medislide Industries, Inc., Great Neck, N.Y.

Filed Oct. 4, 1971, Ser. No. 185,965
Int. Cl. G02b *21/34*; G06k *19/00*
U.S. Cl. 235—61.12 R 14 Claims

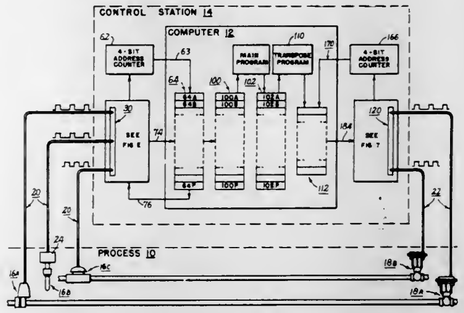


A data card adapted for use in diagnostic equipment. The card includes both an information-receiving region for presenting patient identification and test results, and a testing region which bears the specimen to be examined. The testing region comprises one or more segments which can be removed from the card for further analysis.

3,798,424
INDUSTRIAL CONTROL SYSTEM UTILIZING HIGH SPEED DIGITAL COMPUTER

Manuel P. Freitas, South Easton, and Bernard P. Laeser, Sharon, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Aug. 20, 1971, Ser. No. 173,420
Int. Cl. G05b *11/30, 15/02*
U.S. Cl. 235—150.1 22 Claims



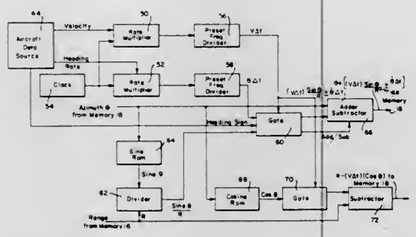
An industrial process control system operated by a general purpose digital computer. A number of controlled process conditions, such as flow rate and temperature, are measured by sensors arranged to send to the computer pulse-train signals the frequencies of which are proportional to the magnitudes of respective conditions. The computer detects the incoming pulses and counts them for a fixed time period to develop corresponding digital measurement signals. These measurement signals are processed to produce corresponding digital command signals for respective process valves. The command signals are converted to respective continuous

pulse-train output signals which are directed to respective process valves to control the positioning thereof.

3,798,425
TARGET MOTION COMPENSATOR

James L. Heard, Torrance; Eugene W. Opittek, Tustin, and Larry G. Rands, Torrance, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 29, 1972, Ser. No. 284,502
Int. Cl. G06f *15/50*; G01s *9/14*
U.S. Cl. 235—150.27 5 Claims

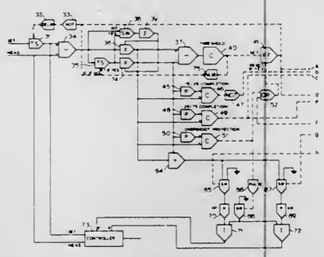


A digital scan converter stores the range and azimuth coordinates of target hits furnished by an aircraft radar processing system. The information is thereafter read out of the memory at a desired rate into a display system. The present invention compensates the stored target hit coordinates for the motion of the aircraft carrying the radar processor. The compensation of the stored targets is achieved by updating this information during memory recirculation.

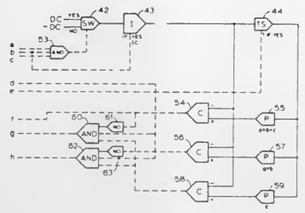
3,798,426
PATTERN EVALUATION METHOD AND APPARATUS FOR ADAPTIVE CONTROL

Edgar H. Bristol, II, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 829,960, June 3, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 209,989
Int. Cl. G06f *15/46*; G06g *7/66*
U.S. Cl. 235—151.1 33 Claims



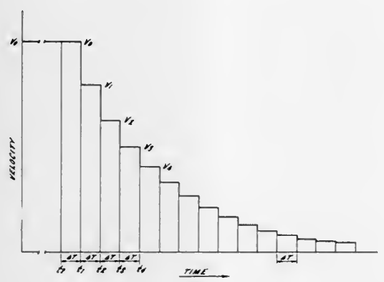
A method is provided for automatic adaptation of process controller parameters according to the requirements of a nonlinear process in order to achieve optimum control action. This method evaluates the response of a measured process variable to upset in the form of a change in set point or load. The upset initiates the adaptation procedure, which determines evaluation intervals related to process dead time and lag characteristics as evidenced by the response of the measured variable over predetermined portions of said upset; the deviation in the measured variable from set point or related demand reference is examined over the evaluation intervals and preferably integrated, the integrated error result being indicative of a required proportional gain change in the case of one type of evaluation interval and indicative of a required reset gain change in another type of evaluation interval. Proportional and reset gains are altered in accordance with this procedure until the gains are optimized as evidenced by maximum conformity to the demand references of the measured variable response to upsets generally.



3,798,427
AUTOMATIC DECELERATION TO ZERO VELOCITY IN ITERATIVELY COMPUTING NUMERICAL CONTROL SYSTEMS

John P. Conners, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Feb. 27, 1973, Ser. No. 336,267
Int. Cl. G06f *15/46*; G05b *19/18*
U.S. Cl. 235—151.11 27 Claims

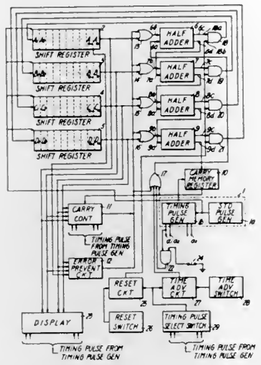


Methods and apparatus embodying improvements in numerical control systems of the genus disclosed in United States application Ser. No. 124,356 filed Mar. 15, 1971 in the name of John K. McGee, now U.S. Pat. No. 3,727,191 and particularly for simplifying and rendering more accurate the look-ahead sensing and automatic deceleration of a movable element to zero velocity as it reaches a commanded end point position. The velocity of an element moving toward a numerically defined stopping position is successively reduced to a predetermined fraction or percentage of its previous value during each iteration period once deceleration is initiated in response to comparison of the remaining distance to the end point with a distance which will be traveled during the deceleration phase. The latter distance is found by simple computations involving essentially a constant which is derived directly from the said selected, predetermined percentage. As a result of reducing the velocity by the same predetermined percentage during successive equal periods, the velocity falls in a substantially exponential fashion and the deceleration is thus smooth but consumes relatively little time.

3,798,428
ELECTRONIC TIME-KEEPING APPARATUS

Minoru Izawa, Matsudo, Japan, assignor to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Mar. 20, 1972, Ser. No. 235,959
Claims priority, application Japan, Mar. 20, 1971, 46-15668
Int. Cl. G06f *7/385*
U.S. Cl. 235—168 10 Claims



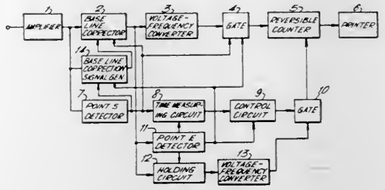
An electronic time-keeping apparatus generating counting pulses for a time count. The counting pulses are stored in registers connected to input gates of adders that develop, from the counting pulses stored by the registers, output signals through gates corresponding to a time count. The adders develop carry signals that are temporarily stored by a carry memory register and are applied back to the adders under control of a carry signal controller and through the latter for developing the time count output of the adders for higher order places in the time count. The time count is displayed on visual display means as a time indication corresponding to the time count. Provision is made for initial counting errors by use of an automatic initial error preventive circuit that detects errors in the counting signals stored which may result from noise or at the start of the count and signals are developed that are applied to the adders thus varying the signal content received by the adders so that the time count output thereof is free of these initial errors. Control circuitry in the form of reset circuitry is provided for resetting the time count by applying signals at will to the adders to reset the time count output and thereby the time indication of the visual display means. The control circuitry includes time advancing circuitry by which the time count output is advanced by applying signals to the adders at will so that the time count indication is advanced and an advanced time or corrected time may be displayed. The apparatus may be embodied in small clocks.

3,798,429
APPARATUS FOR INTEGRATING THE AREA OF A SUCCEEDING PEAK SUPERIMPOSED ON THE TAIL OF A PRECEDING PEAK IN THE OUTPUT OF A MEASURING INSTRUMENT

Tatsuo Sato, Kyoto, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed July 5, 1972, Ser. No. 269,211
Claims priority, application Japan, July 15, 1971, 46-52617; Nov. 10, 1971, 46-89646
Int. Cl. G06g *7/18, 7/74*
U.S. Cl. 235—183 10 Claims

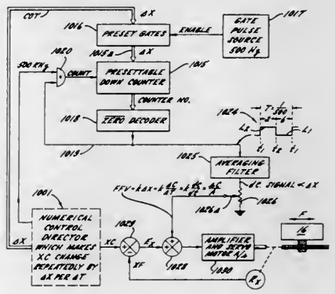
Apparatus for integrating the area of a succeeding peak superimposed on the tail of a preceding peak in the output of a measuring instrument. The apparatus comprises means for providing for the output of the instrument a temporary base line which has the slope of the tail at a point in the valley between the two peaks and which extends under the succeeding peak; means for integrating the area under the succeeding peak and above the temporary base line; means for calculating the excess of the integrated area caused by the temporary base line; and means for subtracting the excess area from the integrated area to obtain the area of the succeeding peak.



3,798,430
REDUCTION OF SERVO FOLLOWING ERRORS IN POSITION AND VELOCITY CONTROL SYSTEMS OF THE ITERATIVELY COMPUTING TYPE

James B. Simon, and Thomas B. Bullock, both of Fond du Lac, Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Feb. 27, 1973, Ser. No. 336,268
Int. Cl. G06f *15/46*; G05b *21/00*
U.S. Cl. 235—151.11 14 Claims

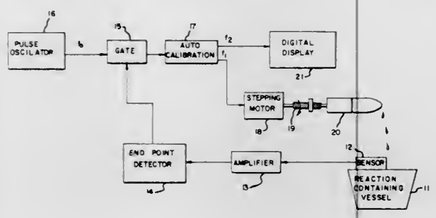


Methods and apparatus for reducing following errors in the servo drives of positioning and velocity control systems wherein the commanded position is signaled and updated by increments ΔX during each successive equal time periods ΔT, —so as to cause the controlled member movable along any axis X to travel at a velocity $V_x = \Delta X/\Delta T$. The commanded position is updated by iterative computations at least once during each period ΔT, and the ΔX increments to be used for such updating are numerically signaled and can be changed as frequently as once during each period ΔT. In order to create a feed forward signal for application to the servo in a sense additive to the position command signal, the digitally signaled number ΔX is converted into a corresponding analog signal. In the preferred arrangement, this conversion is accomplished by a counter which is preset to the number ΔX at regularly recurring instants and arranged to count down whenever the number held in the counter is other than zero. A decoder responsive to a predetermined count, for example zero, not only terminates the counting action until the next presetting but also produces a constant frequency, variable duty cycle squarewave having an average or dc. value proportional to the number ΔX and which serves as an accurate feed forward input to the servo.

3,798,431
ELECTRONIC CALIBRATION OF AN ELECTRO-MECHANICAL SYSTEM

Herbert Schulkind, Natick, and Aage Pettersen, North Reading, both of Mass., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,896
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.12 4 Claims

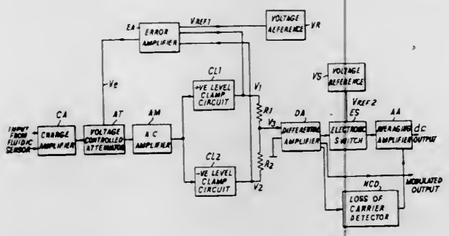


An automatic correction is provided for mechanical deviation in the display of the measured electronic input to a mechanical actuator. In a titration system, pulses are applied to a stepping motor which adds a precise volume of titrant to the mixture to be titrated. A measurement of the number of pulses is an indication of the volume added but this measurement must be corrected for variations in the strength of the titrant and/or for mechanical deviation in the delivery system. An automatic calibration system produces output pulses related in number by a specified calibrating ratio to the number of pulses applied to the stepping motor. This calibrating ratio is automatically set into the system during a calibrate mode using a standard titrant.

3,798,432
MEASUREMENT OF PRESSURE RATIO

Patrick Francis Dobson, Brentwood, and David Alfred Wyman, Goodmayes, both of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed July 24, 1972, Ser. No. 274,694
Int. Cl. G06g *7/16, 7/50*
U.S. Cl. 235—151.34 11 Claims

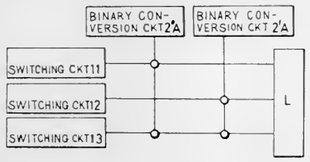


Apparatus for evaluating width-modulated pulse waveforms, more particularly fluidic pulse waveforms which are obtained at the output of a substantially symmetrically constructed two-way switching device, wherein the evaluating means are arranged to form the algebraic sum of two outputs respectively obtained at the two outlets of the said switching device with the sign of one of these outputs reversed, and to determine the pulse width-to-cycle ratio, hereinafter called the duty ratio, of the output waveform at a level halfway between the minimum and maximum levels of the waveform thus obtained.

3,798,433
DECIMAL-TO-BINARY CODE CONVERSION CIRCUIT

Noboru Masuda, Kawaguchi Saitama, and Masasi Kuroyanagi, Tokyo, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1972, Ser. No. 236,844
Claims priority, application Japan, Mar. 23, 1971, 46-16664; Dec. 27, 1971, 46-1951
Int. Cl. H03k *13/02*
U.S. Cl. 235—155 15 Claims

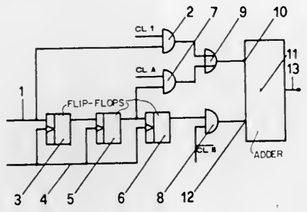


A decimal-to-binary code conversion circuit (hereafter referred to as the "conversion circuit") comprised of switching circuits which perform switching in accordance with variation of the resistance value of electrically contactless type variable resistance devices and binary circuits which generate code signals in response to the operation of said switching circuits, wherein these two types of circuits are connected in different combinations.

3,798,434
ELECTRONIC DEVICE FOR QUINTUPLING A BINARY-CODED DECIMAL NUMBER

Domenic Melcher, Bonstettenstr 26, Uster, Switzerland

Filed Aug. 22, 1972, Ser. No. 282,773
Claims priority, application Switzerland, June 12, 1972, 8738/72
Int. Cl. G06f *7/52*
U.S. Cl. 235—159 1 Claim

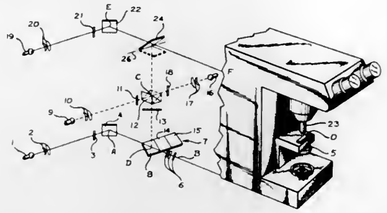


An electronic device for quintupling a binary-coded decimal number in which the several orders of binary digits as well as the powers of ten are transmitted through a single channel and represented serially under the control of a clock pulse.

3,798,435
VERSATILE LIGHT SOURCE FOR A MICROSCOPE

Klaus P. Schindl, Vienna, Austria, assignor to C. Reichert Optische Werke AG, Vienna, Austria

Filed Aug. 9, 1973, Ser. No. 387,081
Int. Cl. F21r *33/00*
U.S. Cl. 240—2 MA 3 Claims

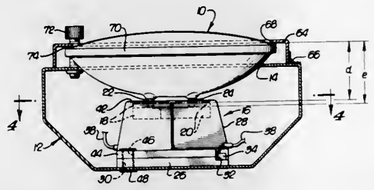


An assembly capable of providing light for incident or transmitted microscopy for ultraviolet light and white light microscopy techniques utilizes four lamps and an arrangement of mirrors capable of changing the light exit path from the assembly and selecting the desired type of light source.

3,798,436
LAMP ROTATION SOCKET

Harold Gross, Woodland Hills, Calif., assignor to Berkey-Colortran, Inc., Burbank, Calif.

Filed June 16, 1972, Ser. No. 263,604
Int. Cl. F21p *5/00*
U.S. Cl. 240—3 11 Claims



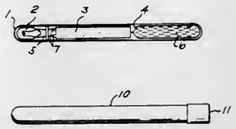
A lamp rotation socket useful in a luminaire comprising an array of standard sealed beam lamps, each of which has a filament orientation and reflector configuration that produces a generally oval field of illumination. A plurality of elongate housings are provided, each housing mounting a set or line of lamps. The housings are mounted in side-by-side relationship and are each individually angularly movable about their longitudinal axes to achieve a desired overlap or separation of illumination fields. By rotating the lamps in their individual sockets, different illumination effects can be achieved. The improvement resides in a vastly simplified socket and lamp mounting in which the socket, fixed to the housing, receives the lamp posts in both of the two alternate 90° lamp positions.

3,798,437
LIGHT SOURCE

Robert I. Sarbacher, Santa Monica, Calif., assignor to John C. Bogue, Santa Monica, Calif.

Filed Aug. 11, 1972, Ser. No. 279,763
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.6 R 3 Claims

A light source particularly adapted to provide emergency lighting and having an extremely long standby life is disclosed. The light source comprises a compartmentalized plastic tube having a light bulb in one compartment, a pair of electrodes in another compartment and an electrolyte in a third compartment. The electrolyte compartment houses an electrolyte which is stored in a frangible envelope. The plastic material which forms the first two compartments is stiff or rigid; while the plastic material surrounding the electrolyte compartment is flexible. To actuate the light source one squeezes or otherwise puts pressure on the flexible portion of the plastic tube to fracture the frangible envelope, thereby permitting the electrolyte to flow from its container and saturate the electrodes.

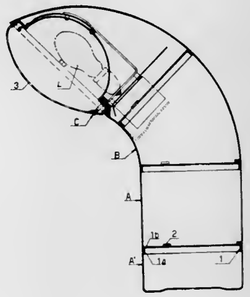


The light bulb compartment is isolated from the electrode compartment to prevent the flow of electrolyte into the light bulb compartment. Further, the light bulb compartment may be detachable. In order to prevent accidental fracture of the electrolyte envelope, the flexible portion of the plastic tube may be covered by a removable thin metallic or plastic shroud.

3,798,438
LAMP CONSISTING OF MODULAR ELEMENTS

Piero Menichetti, Piazza S. Romano 10, Lucca, Italy

Filed Nov. 26, 1971, Ser. No. 202,433
Int. Cl. F21v *1/02*
U.S. Cl. 240—10 R 8 Claims



A lamp comprised of modular elements for selected assembly to provide a multiplicity of lamp forms. Said elements comprehend a cylindric element with planar parallel ends, a toroid sector element, and a bulb-carrying element or hood; there being means integral with said elements for stable interfitting relationship but which permit of ease of disengagement.

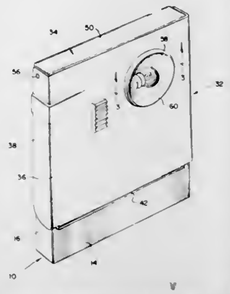
3,798,439
ILLUMINATION AND OTHER DEVICES FOR USE WITH PHOTOGRAPHIC FILM PACK CONTAINER

Edwin H. Land, Cambridge, and Albert J. Bachelder, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 232,060, March 6, 1972. This application July 16, 1973, Ser. No. 379,737
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.65 26 Claims

An illumination or other device adapted to be powered by a battery contained in a photographic film container or cassette from which the film has been removed. The illumination device disclosed is designed to be releasably engaged with and at least partially enclose a "used" photographic film container. It is particularly adapted for use as a flashlight and in-

cludes or provides for a lamp, reflector and switch, and is constructed to achieve compactness by locating at least the major



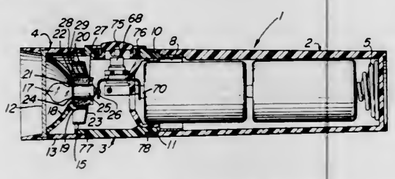
portion of the lamp and reflector within a portion of the film container previously occupied by photographic film.

3,798,440

PUSH BUTTON SWITCHING MODULE FOR FLASHLIGHTS

Robert E. Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,687
Int. Cl. F21l 7/00
U.S. Cl. 240—10.66 12 Claims



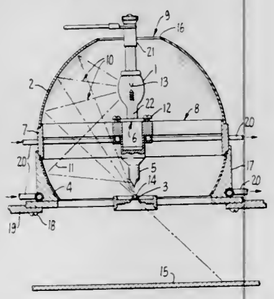
A switching module for detachably mounting to various size lens and reflector units and battery casings, said module comprising a tubular casing having a lamp-circuit controlled push button switch mounted therein with the button segment facing a flexible boot covered opening in the wall of said casing.

3,798,441

ILLUMINATOR FOR EXPOSING COLOR TELEVISION TUBES DURING THE MANUFACTURING PROCESS THEREOF AND THE LIKE

Patrick Oliver Wilson, Sunnyvale, Calif., assignor to Illumination Industries, Inc., Sunnyvale, Calif.

Filed Oct. 16, 1972, Ser. No. 297,729
Int. Cl. F21v 7/00
U.S. Cl. 240—41.35 R 8 Claims



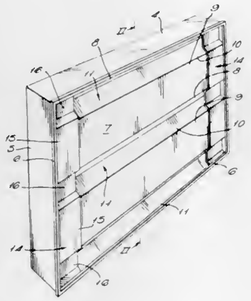
An apparatus and method for projecting light from a high intensity light source onto an object, utilizing first and second double focal point reflectors, and a focusing reflector in concert so as to concentrate the light, traveling from the source, essentially, at a point where the light is gathered and projected onto the object to be illuminated.

3,798,442

LIGHTING UNIT AND REFLECTOR THEREFOR

Alexander Ernest McCracken, Chalfont Saint Peter, England, assignor to Nicol & Andrew Limited, Hillington, Glasgow, Scotland

Filed Dec. 27, 1972, Ser. No. 318,748
Claims priority, application Great Britain, Dec. 28, 1971, 60232/71
Int. Cl. F21v 7/10
U.S. Cl. 240—51.11 R 2 Claims



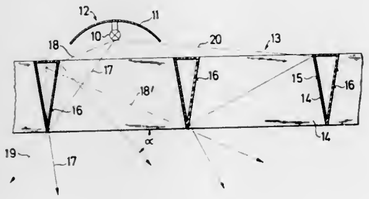
A lighting unit comprising a box-like housing open at one face thereof, a light reflector having inner reflective surfaces, outer reflective surfaces and reflective side surfaces interconnecting adjacent inner and outer surfaces to define a plurality of spaced recesses, and mounting means within each recess for supporting a light source therein.

3,798,443

LIGHT DISTRIBUTING CEILING STRUCTURE

Christian Hermann Bartenbach, Croissant-Rust-Str. 1, 8 Munich 60, Germany

Filed Jan. 26, 1973, Ser. No. 327,176
Claims priority, application Germany, Jan. 27, 1972, 2203825
Int. Cl. F21v 7/00
U.S. Cl. 240—103 R 8 Claims



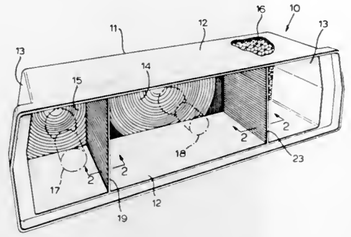
A ceiling structure consists of intersecting vertical reflecting strips or battens with reflecting surfaces with a mirror finish and having two surfaces which converge in a downward direction. Above some of the intermediate spaces, or above all intermediate spaces, between the battens or strips, reflector lights are arranged.

3,798,444

LAMP CONSTRUCTION

Peter E. Brudy, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada

Filed Apr. 5, 1973, Ser. No. 348,116
Int. Cl. F21v 5/00; B60q 1/30
U.S. Cl. 240—106 R 10 Claims



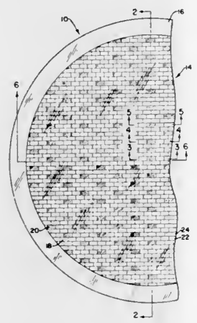
A lamp lens housing made of transparent plastic material and comprising a top wall, side walls, and end walls, the top wall having portions of varying light transmitting characteristics such that a light source mounted within the housing adjacent each portion provides a different colored light emitted to a viewer. A wall of transparent plastic material extends between the side walls from the top wall and defines two chambers within the housing into which the light sources are adapted to project. The surfaces of said wall having angularly related portions defining prisms which function to reflect light striking them back outwardly so that the light from one light source will not affect the light transmitting portion of the housing adjacent the other light source.

3,798,445

TRAFFIC SIGNAL LENS

John R. Miles, Glenview, Ill., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Feb. 18, 1971, Ser. No. 116,386
Int. Cl. F21v 5/04; G02b 27/00
U.S. Cl. 240—106.1 12 Claims



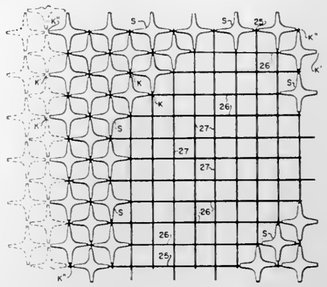
The invention relates to a traffic light lens preferably formed of polycarbonate material. The inner face of the lens is formed in a mosaic arrangement of rectangular, lenticular areas. The lenticular areas of the lens are of two types, flat areas and curved areas. The curved lenticular areas, which form the greater part of the inner surface of the lens, are curved in both vertical and horizontal directions. The flat areas are tilted to project the light downwardly from the horizontal axis of the traffic light assembly.

3,798,446

ILLUMINATOR GRID

Charles U. Deaton, Genessee Mountain, Golden, Colo.

Filed Nov. 24, 1972, Ser. No. 308,994
Int. Cl. F21v 17/00; E04f 19/00
U.S. Cl. 240—146 17 Claims



An egg crate type of illuminator grid panel has longitudinal and transverse baffles intersecting at slots in the top of one and the bottom of the other, with a series of four-legged, star-shaped parts, normally molded of plastic, attached to the underside of the baffles at alternate intersections. These stars mask the intersections and also the abutting or overlapping ends of baffles of adjacent panels, which may be rectangular in shape. The end of each leg of a star has a hook to engage a socket formed in the edge of a notch at the bottom of each baffle, beneath alternate intersections. Also, each star has upstanding fingers near the center to engage the opposite side of each baffle.

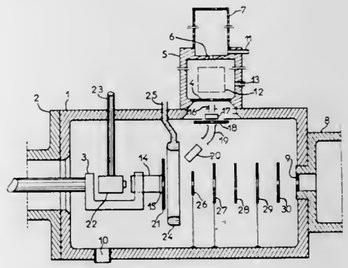
Numerous other features relating to the hangers and panels, as well as to a housing for the panels, are disclosed.

3,798,447

APPARATUS FOR DIRECTING AN ENERGIZING BEAM ON A SAMPLE TO CAUSE SECONDARY ION EMISSION

Pierre Lanusse, Romainville; Rene Hernandez, Antony, and Georges Slodzian, Chatenay-Malabry, all of France, assignors to Office National D'Etudes Et De Recherches Aerospatiales, Chatillon-sous-Bagneux, France

Filed May 17, 1971, Ser. No. 144,078
Claims priority, application France, May 27, 1970, 70.19276
Int. Cl. G01n 23/22
U.S. Cl. 250—49.5 P 14 Claims

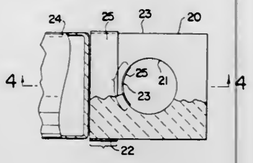


Two enclosures are separated by a diaphragm; one of them contains means for producing a beam of primary ions and the other contains means for focusing the beam of primary ions and the secondary beam emitted by the sample. Means for scanning the sample with the primary beam are provided. The device enables high resolution in spectral analyses.

3,798,448
SCINTILLATION METER-TYPE SPECTROMETER

Julious M. Menefee, Novelty; William P. Novak, Middlefield, and John A. White, Eastlake, all of Ohio, assignors to Bicron Corporation, Newbury, Ohio

Filed May 11, 1972, Ser. No. 252,193
Int. Cl. G01j *39/18*
U.S. Cl. 250—71.5 R 4 Claims

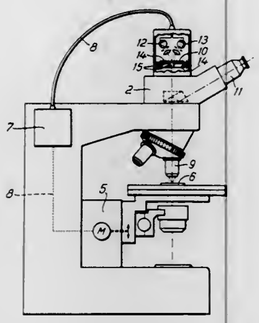


An improved scintillation meter component for a radiation detector having a photomultiplier tube optically coupled to a solid scintillation crystal. The crystal is coated with an optical decoupling agent to balance the light output sensed by the photocathode.

3,798,449
AUTOMATIC MICROSCOPE FOCUSSING DEVICE

Gunter Reinheimer, Am Berg 11, 6301 Fellingshausen, and Ludwig Leitz, Laufdorfer Weg 33, 633 Wetzlar, both of Germany

Filed May 21, 1973, Ser. No. 362,530
Claims priority, application Germany, May 23, 1972, 7219226
Int. Cl. G01j *1/20*; G02b *7/04*
U.S. Cl. 250—201 6 Claims

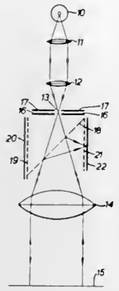


A microscope is provided with an optical grating in the light path of the objective lens at a predetermined distance from the object to focus an image of an object portion thereon. At least one photoelectric sensing device is arranged behind the grating for receiving light transmitted from the objective via the objective lens and for generating an electric control responsive to the deviation of the grating from the exact focussing position. A servo system utilizes the control signal for displacing the object along the optical axis in dependence on the signal so that the image of the object is automatically focussed on the grating. Means are provided for optionally varying the distance between the object and the grating, thereby bringing different object planes into focus.

3,798,450
APPARATUS FOR DETECTING CORRUGATION OF STRIP MATERIAL

Patricia May Reynolds, and Roger David Diamand, both of London, England, assignors to The British Non-Ferrous Metals Research Association, London, England

Filed May 31, 1972, Ser. No. 258,374
Claims priority, application Great Britain, June 1, 1971, 18281/71
Int. Cl. G01b *11/30*; G01n *21/18, 21/30*
U.S. Cl. 250—209 10 Claims

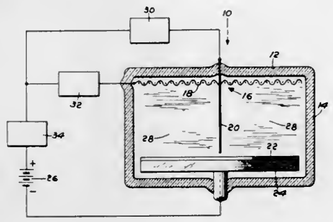


Apparatus for detecting waviness of a strip material includes two or more optical systems spaced laterally across the strip for detecting waviness of the strip along spaced lines parallel to the length of the strip, each such system being arranged to direct a beam of light at a region of the sheet, means responsive to the deflection of the light reflected from the said region for producing a signal proportional to the average or integral of the square of the deflection of the reflected light from its direction when the strip is flat, the said deflection, and means for producing relative movement between the optical system and the strip along the length of the latter. Means may be provided for subtracting the signal that is the minimum from one optical system representing the minimum waviness, from each of the signals from the other optical systems.

3,798,451
LOG PHOTODIODE

Edward H. Eberhardt, Wayne, Ind., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 21, 1972, Ser. No. 282,644
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 R 6 Claims

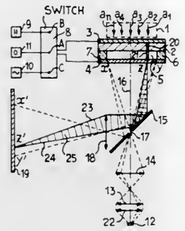


A light sensitive diode comprises an anode including a metal mesh and a wire probe disposed on the inner surface of a faceplate. A photocathode is disposed on a metal plate spaced opposite the anode and faceplate with the wire probe extending from the mesh close to the photocathode. Both anode and cathode have low resistances to permit application of maximum voltage across the gap. The device provides a non-saturating response with output signal current at the anode substantially proportional to the logarithm of input light radiation. Space charge limits, which normally occur at high light levels, are avoided in the area at the tip of the anode wire.

3,798,452
IMAGE INTENSIFIERS

Erich Spitz; Eugene Leiba, and Georges Assouline, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 27, 1971, Ser. No. 192,873
Claims priority, application France, Oct. 30, 1970, 70.39259
Int. Cl. H01l *17/00*
U.S. Cl. 250—213 R 5 Claims

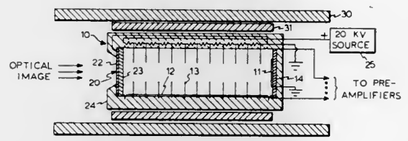


A storage-type image converter of the photoconductor and liquid crystal kind comprises a photoconductive film arranged beside a film of a mixture of nematic-cholesteric liquid crystals; electrical bias means for successively applying to said films a direct write-in voltage and an alternating erase voltage, an auxiliary light source making it possible to recover the information stored, and stigmatic optical means being provided to project said information on to a viewing screen or on to a photographic substrate or carrier associated with a photocopier.

3,798,453
MULTICHANNEL DIGITAL PHOTOMETER

Carl E. McIlwain, La Jolla, and Edward A. Beaver, San Diego, both of Calif., assignors to University of California, San Diego, Calif.

Filed Aug. 3, 1972, Ser. No. 277,690
Int. Cl. H01j *31/26*
U.S. Cl. 250—213 VT 10 Claims

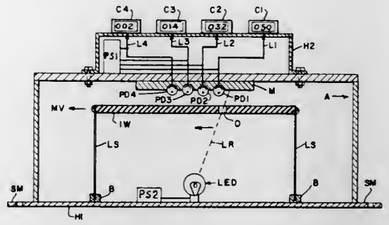


Apparatus for detecting a weak photon image is disclosed comprised of a magnetically focused image tube having a photocathode at one end, to transform a photon image into an electron image, spaced ring electrodes at progressively lower voltages starting at +20kv, to accelerate electrons to 25 kev, and a linear array of diffused p-n junction diodes for detection of photoelectron arrivals along one line of the electron image. A deflection coil permits scanning the entire photoelectron image, one line at a time. Alternatively, a matrix of p-n junction diodes may be used to detect the entire photoelectron image without scanning.

3,798,454
DEVICE FOR COUNTING ACCELERATIONS, MEASURING MAGNITUDES THEREOF, RECORDING AND CLASSIFYING THE SAME ACCORDING TO MAGNITUDE

David E. Weiss, Wyncote, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,480
Int. Cl. H03k *21/30*
U.S. Cl. 250—231 4 Claims

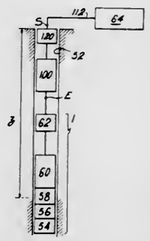


An accelerometer comprising a resiliently mounted shutter element mounted between a light source and an array of light detecting elements so that acceleration forces move the shutter element to permit the light source to activate one or more of the light detecting elements according to the magnitude of the forces and generate signals which are recorded, classified according to magnitude, and counted for evaluation at the end of a predetermined period.

3,798,455
METHOD OF REMOTE ANALYSIS OF THE COMPOSITION OF A MEDIUM AND A DEVICE FOR CARRYING OUT SAID METHOD

Marek Brafman, St. Martin D'Heres; Alain Godeau, Pau; Jean Laverlochere, La Tronche, and Jean-Luc Lecomte, Eghirolles, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Jan. 4, 1973, Ser. No. 320,954
Claims priority, application France, Jan. 21, 1972, 72.02095
Int. Cl. G01t *1/16*
U.S. Cl. 250—256 7 Claims

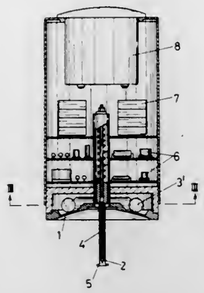


An exciting pulse is transmitted from a probe location to a medium to be remotely analyzed, *n* successive pulses of characteristic back-scattered radiation are detected and converted to *n* successive voltage pulses which are detected, delayed and directed to a buffer store. The contents of the store channels are read successively and periodically, an electric pulse is formed in each channel and proportional in amplitude to its contents, the resultant periodic pulse train being transmitted to amplitude-analyzing elements which indicate the composition of the medium.

3,798,456
PROCESS FOR TESTING THE FILLING CAPABILITY OF TOBACCO AND DEVICES FOR PERFORMING SUCH PROCESS

Josef Marek; Gunther Hayn, and Harald Rotzer, all of Vienna, Austria, assignors to Austria Tabakwerke Aktiengesellschaft vorm. Osterreichische Tabakregie, Osterreich, Germany

Filed June 9, 1972, Ser. No. 261,319
Int. Cl. G01n *23/10*
U.S. Cl. 250—308 **9 Claims**

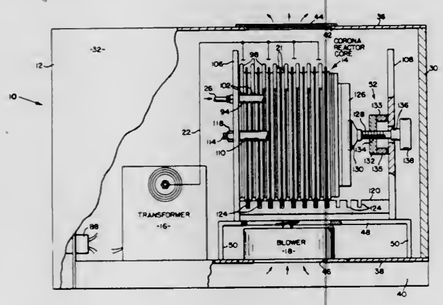


The "filling capability" of tobacco is measured by pressing a pressure plate of fixed area onto a quantity of tobacco with a constant pressure, providing a point source of ionizing radiation at a fixed position on the vertical axis of the plate and determining the quantity of radiation, either reflected by or transmitted through the compressed tobacco, from the radiation source to detection means positioned approximately in the plane of the pressure plate. Several embodiments of apparatus for conducting such measurements are disclosed.

3,798,457
CORONA REACTOR APPARATUS

Frank E. Lowther, Phelps, N.Y., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 4, 1969, Ser. No. 830,248
Int. Cl. C01b *13/12*
U.S. Cl. 250—532 **22 Claims**

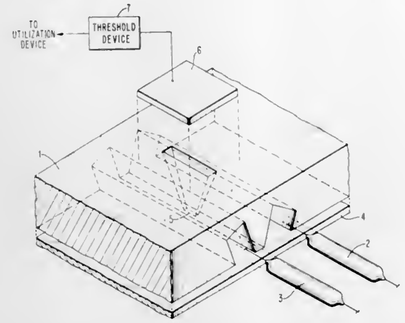


An improved corona reactor method and apparatus for subjecting a fluid reactant to a corona discharge, and particularly for generating ozone. The corona reactor includes a housing containing an air-cooled, modular, corona reactor core comprising a plurality of separate, individually removable, air-tight corona reactor cells. Each corona reactor cell includes two, spaced-apart, metallic electrodes or shell portions defining an air-tight corona discharge chamber therebetween. The exterior surfaces of the electrodes are bare and exposed to ambient; the interior (facing) surfaces are covered with a ceramic discharge dielectric; and the fluid reactant is subjected to the corona discharge within the corona discharge chamber by appropriate inlet and outlet ports. The individual cells are electrically connected in series.

3,798,458
OPTICAL SCANNER INCLUDING AN APERTURE DESIGN FOR NON-SYNCHRONOUS DETECTION OF BAR CODES

Robert L. Buckingham, Hawthorne; Jonathan B. Davis, Mahopac, and Harold H. Herd, Pawling, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1972, Ser. No. 301,917
Int. Cl. G01n *21/30*
U.S. Cl. 250— 569 **11 Claims**



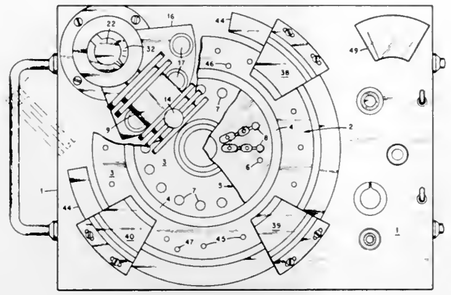
What is disclosed is an optical scanner for reading bar codes. The scanner is designed to be held by hand and moved above and across the bar code which is printed on a suitable record substrate. The scanner is composed of a suitable casing containing lamps in the lower portion thereof which illuminate the bar coded record. The illumination is reflected through a unique aperture in the lower surface of the scanner and directed onto a light sensor arrangement such as a photocell. The code marks are in the form of code bars such as black lines separated by white portions. The code consists of "single" code bars and "double" code bars which are, in one embodiment, twice the width of the "single" bars. The aperture arrangement of the scanner is designed according to a scheme such that the resultant signal from the detection of a single bar will always be a known fraction, such as one-half, the amplitude of the signal produced by the detection of a double bar regardless of the changes in speed at which the hand-held scanner is moved across the bar coded record.

3,798,459
COMPACT DYNAMIC MULTISTATION PHOTOMETER UTILIZING DISPOSABLE CUVETTE ROTOR

Norman G. Anderson, Oak Ridge; Carl A. Burtis, Knoxville; Wayne F. Johnson, Loudon; James C. Mailen, and Charles D. Scott, both of Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 6, 1972, Ser. No. 295,780
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **9 Claims**

A compact analytical photometer of the rotary cuvette type designed to use small disposable cuvette rotors. A power driven cuvette rotor holder having a generally flat, circular configuration is provided with an integral, upstanding, annular lip for receiving, in an easily insertable and removable fashion, small disposable cuvette rotors. A series of axially extending apertures are disposed in a circular array through the rotor holder in axial alignment with respective cuvettes in the rotor to permit light to be transmitted through the cuvettes as the rotor holder and cuvette rotor rotate between a stationary light source and photodetector. Additional apertures extend through the rotor holder near its periphery to permit light passage through the rotor holder for rotor and cuvette synchronization purposes. Movable rotor and cuvette

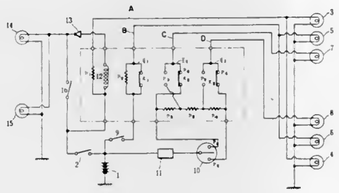


synchronization detectors are positioned along the periphery of the rotor holder for generating signals which are used to synchronize the photometer output with a computer and to provide rotor speed control. Rapid deceleration of the rotor holder and rotor for sample mixing purposes is accomplished by braking means engaging the rotor holder drive shaft.

3,798,460
APPARATUS FOR DECREASING THE INTENSITY OF CAR SIGNAL LAMPS

Tomohiro Takeda, Atsugi, and Morimasa Tanaka, Kanagawa, both of Japan, assignors to Ichiko Industries Limited, Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,874
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 LS **1 Claim**

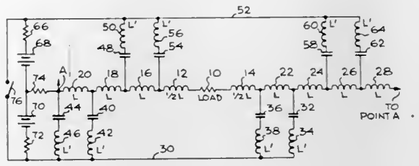


An apparatus for decreasing the intensity of car signal lamps comprises a plurality of signal lamp circuits respectively including pairs of signal lamps such as taillights, stoplights, and turn signal lights, a light intensity decrease-preventing circuit and a switch for a pair of fog lamps. The signal lamp circuits respectively have selector switches and light intensity decreasing resistors. The light intensity decrease-preventing circuit includes a relay coil and a diode connected in series to each other. The switch for fog lamps is connected in parallel to the light intensity decrease-preventing circuit. The selector switches are changed over so that the fog lamps are lighted and the light intensity of the signal lamps is not decreased. Thereby, the fog lamps can be lighted without decreasing the light intensity of the signal lamps. However, the intensity of the signal lamps can be decreased only when the fog lamps are turned off and the lighting switch is closed.

3,798,461
SHORT PULSE GENERATOR

William A. Edson, Los Altos Hills, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Nov. 21, 1972, Ser. No. 308,483
Int. Cl. H03k *3/00, 3/64*
U.S. Cl. 307—106 **8 Claims**

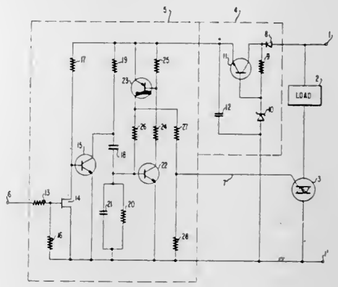


A spark generator is provided which is reentrant, can deliver all output to a single load while being either balanced or unbalanced to ground, as desired. The structure is operable over a wide frequency and power level range.

3,798,462
TOUCH CONTROLLED SWITCHING CIRCUIT

Anthony Rizzo, 40 Center St., Pittston, Pa.

Filed Dec. 21, 1972, Ser. No. 317,153
Int. Cl. H01h *35/00*
U.S. Cl. 307—116 **11 Claims**

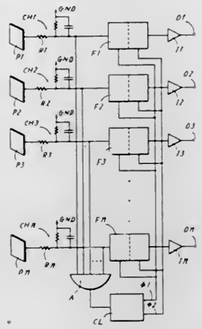


An electronic solid state switching system is disclosed, which is responsive to the touch of the human body and operates to connect an electric load to an alternating current power distribution system, or to disconnect the load. By its presence in the electromagnetic environment attributable to the power distribution system, the human body has an induced potential which, upon contact with a touch point serving as the input connection to the switching system, produces an alternating current for control of the switching system. The circuits of the switching system are shown as including a "latching circuit" responsive to a touch of relatively long duration to establish and maintain the load in connection with the power source in a switched ON condition; a touch of relatively short duration results in disconnection of the load and establishes — or maintains — a switched OFF condition. The switching system is shown as operating from a 12 v., dc, power source provided by a rectifier circuit connected to the alternating current power supply. The ON-OFF switch device controlled by the switching system is indicated as being a suitable solid state device such as a Triac; however, the load to be switched will determine the type of switch device selected.

3,798,463
SWITCH CONTROL SYSTEM

Shigehiko Ikeguchi, and Norio Yamashita, both of Gunma-ken, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu and Tokyo Sanyo Electric Co., Ltd., Gumma-ken, both of, Japan

Filed Oct. 24, 1972, Ser. No. 300,224
Claims priority, application Japan, Oct. 28, 1971, 46-85873; Oct. 28, 1971, 46-85874; Oct. 28, 1971, 46-85875; Dec. 15, 1971, 46-103052
Int. Cl. H01h *47/00*
U.S. Cl. 307—125 20 Claims

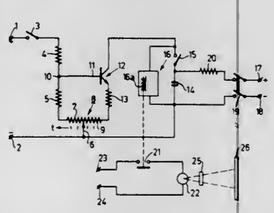


A switch control system of the present invention comprises a plurality of channels each comprising an individual input terminal and a flip-flop, and a clock pulse generator for generating clocks in response to an individual selection signal applied to any one of the channels. The said individual selection signal is written and stored in the flip-flop of the corresponding channel as a function of the clocks for bringing the channel in an active state. A switch control system of a preferred embodiment is also capable of being controlled with a common selection signal applied to a common input terminal as well as the individual selection signals to be applied individually to the respective individual input terminals by means of a ring counter connection formed between the respective flip-flops. In accordance with another embodiment a chain of pulses is applied in a remote control manner to the common input terminal and the first portion of the chain pulses is used to forcibly return the system in an initial condition in which a predetermined flip-flop is in an active state, while the remaining portion of the chain pulses is used to shift the active state in the flip-flops connected in a ring counter manner depending upon the number of chain pulses as determined by manual individual selection.

3,798,464
ELECTRONIC TIMER

Meerten Luursema, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,140
Claims priority, application Netherlands, Sept. 11, 1971, 7112528
Int. Cl. H01h *3/34, 33/59*
U.S. Cl. 307—141 7 Claims



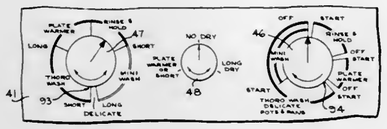
The invention relates to an electronic timer using a constant current discharge of a capacitor. This discharge is effected through the main electrodes of a transistor.

According to the invention a linear potentiometer is incorporated in a circuit between the emitter and the base of the transistor, and the wiper of this potentiometer is connected to both the capacitor and to one of the input terminals of the device. In this embodiment it is achieved that the adjusting range of the switching time is relatively large, and that also the percentual accuracy is substantially the same throughout the adjusting range.

3,798,465
CONTROL ARRANGEMENT FOR A WASHING MACHINE

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 28, 1972, Ser. No. 293,030
Int. Cl. H01h *7/00*
U.S. Cl. 307—141 3 Claims

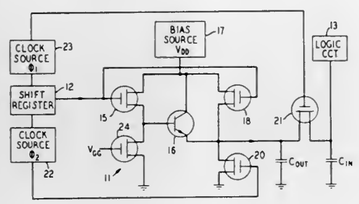


In an automatic dishwasher, apparatus is provided for improving the cleaning efficiency thereof. The dishwasher is of the type having a plurality of electrical components sequentially operable in an operational cycle controlled by an electrical sequence control timer device adapted for automatic advancement and includes rinsing, washing, drain and fill cycle portions. An electro-mechanical device combines the selection of the operational cycle and the selection of the time duration thereof into a single control and operation. This device includes a cam actuated switch having a plurality of contact points in a package with and operatively linked with an adjustable thermally-responsive switch. A cam associated with the sequence control timer automatically cancels the time extension of the drain and fill portions, effectively limiting the time extension effect to the washing and drying cycle portions of an operational cycle.

3,798,466
CIRCUITS INCLUDING COMBINED FIELD EFFECT AND BIPOLAR TRANSISTORS

Glen Trenton Cheney, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 22, 1972, Ser. No. 237,046
Int. Cl. H03k *19/08*
U.S. Cl. 307—205 7 Claims

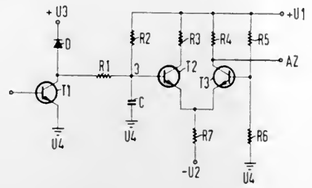


The output signal of a BIGFET is increased by connecting an auxiliary IGFET between the bias source and the output. The gate of the auxiliary IGFET is actuated by the input signal. Current through the BIGFET is periodically controlled to permit voltage "pull-up" by the auxiliary IGFET.

3,798,467
CIRCUIT FOR INTERFERENCE FREE RECOGNITION OF ZERO CROSSINGS OF READ SIGNALS OF MAGNETIC LAYER MEMORIES

Winfried Gottwald, Martinsried, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 31, 1972, Ser. No. 285,553
Claims priority, application Germany, Sept. 17, 1971, 2146631
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 1 Claim

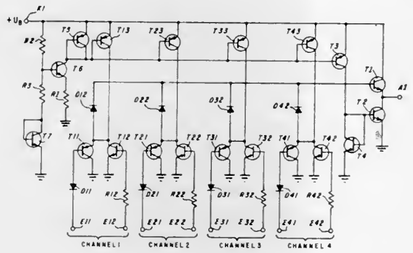


A circuit for interference free recognition of zero crossings of differentiated read signals comprises a zero detector and a signal checking circuit for simultaneously receiving the read signals. The signal checking circuit comprises an amplitude evaluation circuit and a time evaluation circuit. The zero detector and the signal checking circuit are connected to an output circuit which provides an output pulse in response to an output signal from the zero detector and the signal checking circuit. The time evaluation circuit comprises a charging circuit including a capacitor which is charged in accordance with a first time constant when a differentiated read signal exceeds an amplitude evaluation level of the amplitude evaluation circuit and is discharged in accordance with a second time constant when the differentiated read signal is lower than the amplitude evaluation threshold.

3,798,468
ANALOG VOLTAGE SWITCH

Karl Elshuber, Schnotting nr. Gemeinde Kirchdorf, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 22, 1972, Ser. No. 308,926
Claims priority, application Germany, Jan. 18, 1972, 2202250
Int. Cl. H03k *17/00*
U.S. Cl. 307—242 2 Claims

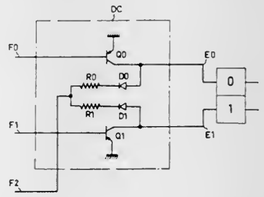


This disclosure concerns an analog voltage switch in which the output thereof reproduces as exactly as possible the analog voltage supplied to the input. The analog voltage switch includes a plurality of channels, each of which is provided with an analog voltage input and a control input for enabling the channel to be selected. The selected channel as determined by the control input receives an analog voltage input which appears at the output thereof. The analog voltage switch employs primarily semiconductor components and is especially applicable to use in an integrated form in that current amplifications of complementary semiconductor components and forward voltages of diodes employed in the analog voltage switch are of substantially the same magnitude and constant current sources included therein supply substantially the same current. By virtue of this arrangement, the temperature-dependent deviations of the semiconductor components employed in the analog voltage switch effectively cancel out each other such that the circuit comprising the analog voltage switch is substantially independent of temperature.

3,798,469
CONTROL CIRCUITS

Gerard Marcel Le Cardonnel, Neuilly-sur-Seine; Jacques Victor Sandre, Fresnes, and Serge Pontois, Paris, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 15, 1972, Ser. No. 263,043
Int. Cl. H03k *17/56*
U.S. Cl. 307—247 R 2 Claims

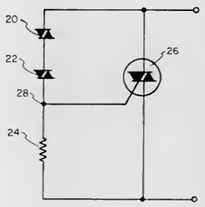


A control circuit which activates a following bistable when it receives simultaneously a signal of one polarity on one of its two data inputs and a signal of the opposite polarity on its control input. This circuit is not sensitive to parasitics of the same polarity which may originate on the data or control inputs.

3,798,470
SELECTIVE D.C. ISOLATION CIRCUIT

Robert V. Burns, Tinley Park, and Lloyd A. Tarr, Berkeley, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 15, 1972, Ser. No. 315,699
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 R 2 Claims

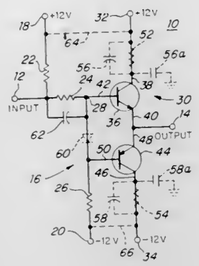


A selective d.c. isolation circuit comprising two series diacs, a resistor, and a triac which exhibits a high impedance to voltages less than a selected threshold value and a low impedance to higher voltages.

3,798,471
SWITCH DRIVER

Heyward Sturges Williams, Amherst, and Robert Robbins, Hudson, both of N.H., assignors to LRC, Inc., Hudson, N.H.

Filed Aug. 9, 1972, Ser. No. 279,258
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 22 Claims



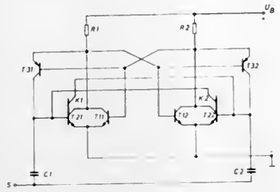
An impedance sensitive switch driver circuit for providing an output which is approximately symmetrical about a reference voltage level in response to an input signal which swings between a first state in which the input source provides a first voltage level and appears as a lower impedance and a second state in which the input source provides a second voltage level and appears as a higher impedance including: an input terminal; an output terminal; a voltage divider circuit having a first power terminal and a second power terminal, and including a first impedance having one end connected to the first power terminal and the other end connected to the input terminal for producing in the second state at the input terminal a voltage approximately equal to the second voltage level, a second impedance having one end connected to the input terminal and the other end connected to a switching terminal for producing a voltage difference between the input terminal and the switching terminal, and a third impedance having one end connected to the switching terminal and the other end connected to the second power terminal for minimizing the change in current through the second impedance between the first and second state; a semiconductor circuit including a first semiconductor having a first load electrode connected to the output terminal, a second load electrode connected to a third power terminal, and a control electrode connected to the switching terminal for turning on the first semiconductor during one of the states and a second semiconductor having a first load electrode connected to the output terminal, a second load electrode connected to a fourth power terminal, and a control electrode connected to the switching terminal for turning on the second semiconductor during the other of said states.

3,798,472
MONOLITHIC INTEGRABLE FLIP FLOP CIRCUIT

Hans Keller, Freiburg i, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 31, 1972, Ser. No. 302,617
Claims priority, application Germany, Dec. 4, 1971, 2160260
Int. Cl. H03k *3/286*
U.S. Cl. 307—291 6 Claims

This invention relates to a monolithic integrable flip flop circuit which provides for information storage and reliable switchover by inserting a transistor between the base and collector of the control transistor of the flip flop. The circuit is improved by providing each control transistor with an additional collector connected to the base of the control transistor of the other flip flop half. Alternatively, the collector of the

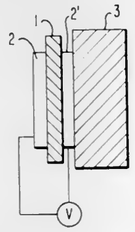


coupling transistor is connected to the base of the control transistor of the other flip flop half.

3,798,473
POLYMER TYPE ELECTROACOUSTIC TRANSDUCER ELEMENT

Naohiro Murayama, and Kenichi Nakamura, both of Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1972, Ser. No. 303,758
Claims priority, application Japan, Nov. 5, 1971, 46-87607
Int. Cl. H01v *7/02*; H04r *17/00*
U.S. Cl. 310—8 15 Claims

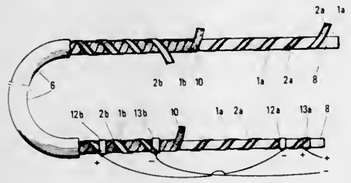


A piezoelectric type electroacoustic transducer element having a high sensitivity in a high frequency region is composed of a piezoelectric polymer sheet having on one surface thereof a backing of a material having a larger elasticity (Young's Modulus) and mass than the elasticity and mass of the piezoelectric polymer sheet.

3,798,474
PRESSURE WAVE PIEZOELECTRIC SENSOR OF CONTINUOUS STRUCTURE

Jean Cassand, Rueil-Malmaison; Jean-Claude Dubois, Royan, and Jacques Cholet, Rueil-Malmaison, all of France, assignors to Institut Francais du Petroles, des Carburants et Lubriflants, Rueil-Malmaison, France

Filed July 5, 1972, Ser. No. 269,092
Claims priority, application France, July 8, 1971, 71.25137
Int. Cl. H04r *17/00*
U.S. Cl. 310—9.6 10 Claims



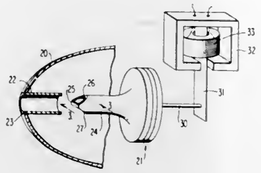
Pressure wave sensor formed of at least one elongated piezoelectric element having two faces, each associated to a flexible conducting electrode substantially over the whole length of the sensitive element.

When the sensor is formed of a plurality of sensitive elements the latter are electrically connected to one another.

3,798,475
SQUARE WEDGE FLUIDIC GENERATOR FOR ELECTRICAL AND MECHANICAL OUTPUTS

Carl J. Campagnuolo, Potomac, and Henry C. Lee, Crofton, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,138
Int. Cl. H02k *35/06*
U.S. Cl. 310—15 9 Claims

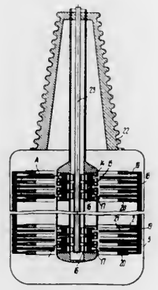


A fluidic generator utilizing a novel fluid intake system for achieving increased power output at low pressures. The resonating cavity of the fluidic generator is provided at its fluid intake end with a mechanical member for separating and converging fluid. The cavity is adjacent an intake orifice with the member being located inside the orifice for separating fluid flowing out of the orifice. The fluid is converged at the entrance to the cavity and ultimately fills and empties the cavity to vibrate a diaphragm at resonance for generating electrical or mechanical output signals.

3,798,476
HIGH VOLTAGE ELECTRON TUBE

Evgeny Aramovich Abramian, ulitsa Tereshkovoi, 15, kv. 1, and Vasily Alexandrovich Gaponov, ulitsa Zolotodolinskaya, 9, kv. 27, both of Novosibirsk, U.S.S.R.

Filed Apr. 28, 1972, Ser. No. 248,525
Int. Cl. H01j *1/46*; H01p *29/02*
U.S. Cl. 313—3 6 Claims

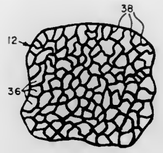


A fully controllable electron tube comprising a plate, a cathode, a first electrode to accelerate an electron beam near the cathode and a second electrode between the first electrode and the plate, used to produce an approximately equipotential space between the first and second electrodes. The tube may be used to rectify and invert voltages in D.C. transmission lines of 1Mv and upward.

3,798,477
STORAGE TUBE WITH TARGET HAVING CONDUCTIVE SURFACE EXPOSED THROUGH RANDOM CRACKS IN DIELECTRIC COATING

Michael N. Soltys, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 3, 1972, Ser. No. 277,556
Int. Cl. H01j *29/30, 29/41*
U.S. Cl. 313—68 R 14 Claims

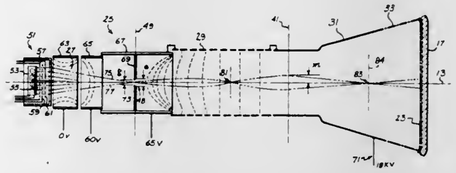


A target for use in an electronic tube is provided on a conductive layer of a support member and it comprises solid dielectric domains adhered to the conductive layer and spaced from one another. The peripheries of the dielectric domains have a random configuration so that the spacing therebetween defines random cracks exposing areas of the conductive layer. The target can also be a metallic mesh having openings of nonregular cell size if the metallic mesh is provided with dielectric thereon which has random cracks therein which exposes areas of the metal.

3,798,478
MULTIBEAM CATHODE RAY TUBE HAVING A COMMON BEAM LIMITING APERTURE THEREIN

Donald L. Say, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Sept. 14, 1972, Ser. No. 288,996
Int. Cl. H01j *29/50*
U.S. Cl. 313—70 R 6 Claims



An improved multibeam cathode ray tube electron gun is provided wherein a plurality of similar electron beams forming an array pattern are directed to crossover at a common point within the plural beam gun structure. Positioned at the point of crossover is an electrode member having a single aperture therein which uniformly and simultaneously sizes or areally limits each of the individual beams passing therethrough. This reduction in cross-sectional area of each beam comprising the pattern array results in a screen pattern array exhibiting markedly improved spot quality and resolution.

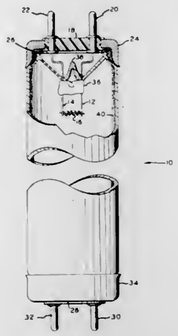
3,798,479
FLUORESCENT LAMP WITH PARTICULAR PHOSPHOR COATING

Vincent Chiola, and Robert W. Ormsby, both of Towanda, Pa., assignors to GTE Sylvania Incorporated, Seneca, N.Y.

Division of Ser. No. 46,593, June 16, 1970, abandoned. This application Sept. 13, 1971, Ser. No. 179,626
Int. Cl. H01j *61/44*
U.S. Cl. 313—109 3 Claims

Halophosphate phosphors having desired particle size distribution, bulk density and improved dispersability and in-

creased lumen output per unit weight of phosphor incorporated into a fluorescent lamp are prepared by firing the raw materials under conventional firing techniques, finely-dividing the fired phosphors, mixing with aqueous solutions of an appropriate acid and base, washing with water to remove



residual acid and base, separating wet solids from the water, freezing the ice within the solids and removing the residual water from the solids by subjecting the frozen solids to an absolute pressure of from about 30 to about 3200 microns of mercury and to a temperature of between about 0° C to −50°C.

3,798,480

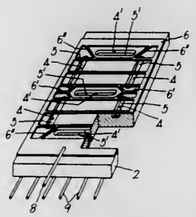
INDICATOR DISCHARGE TUBE

Tokuo Matsushita, and Satoshi Watanabe, both of Tokyo, Japan, assignors to Okaya Denki Sangyo Kabushikikaisha, Tokyo, Japan

Continuation of Ser. No. 849,949, Aug. 14, 1969, abandoned. This application Dec. 27, 1971, Ser. No. 212,779

Int. Cl. H01j *17/10*

U.S. Cl. 313—109.5 **3 Claims**



An indicator discharge tube having an insulating base plate with a plurality of grooves of predetermined shapes formed therein at predetermined locations, an anode electrode disposed opposite the insulating base plate, a plurality of cathode electrodes respectively disposed in the grooves of the insulating base plate, one portion of the anode electrode lying between adjacent cathode electrodes, and a tube having enclosed therein the insulating base plate, the anode electrode and the cathode electrodes in an airtight manner.

3,798,481

FLUORESCENT LAMP HEAT SHIELD

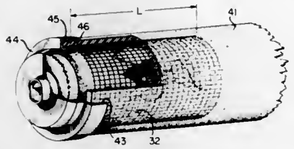
Paul Pollara, South Plainfield, N.J., assignor to Thermoplastic Processes, Incorporated, Stirling, N.J.

Filed Oct. 20, 1972, Ser. No. 299,298

Int. Cl. F21v *13/10;* **H01j** *17/04*

U.S. Cl. 313—110 **4 Claims**

A fluorescent lamp protective assembly employing a plastic shield over the fluorescent tube glass envelope is adapted for use with high output fluorescent lamps that exhibit high intensity localized heating in the vicinity of the lamp cathode. A wire mesh screen formed into a cylindrical roll is inserted with the plastic shield at each end of the lamp. The wire mesh protects the plastic shield from the heat output of the lamp provided the mesh is of the woven wire cloth type in which the crossing wire elements have been deformed during the weav-



ing process so as to be in intimate contact with each other at each intersection and not of the seamless "stocking" type. With the wire cloth mesh, polycarbonate plastic tube shields may be employed to provide implosion protection for high output and very high output fluorescent lamps without subjecting the plastic tube shield to discoloration, blistering, cracking or other heat damage from the filament.

3,798,482

GAS-DISCHARGE DISPLAY PANELS

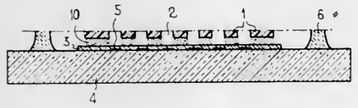
Jean Philippe Reboul, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 31, 1972, Ser. No. 239,963

Claims priority, application France, Apr. 23, 1971, 71.14579

Int. Cl. H01j *61/00*

U.S. Cl. 313—188 **6 Claims**



In gas-discharge display panels consisting of a matrix (1) clamped between two films of insulating material (3) separating it from two networks of electrodes (5), the invention provides for the interposition between said matrix and said insulating material films, of a refractory metal oxide or silicon powder material (10) mixed with a binder, in order to avoid the matrix and the two films of insulating material to stick to one another during the high-temperature operations to which the panel is submitted during its manufacture ; said powder material is preferably a refractory metal oxide.

3,798,483

GASEOUS DISCHARGE DISPLAY DEVICE WITH A LAYER OF ELECTRICALLY RESISTANT MATERIAL

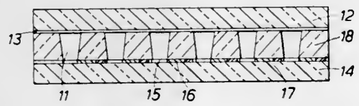
Frank Walters, Bury, England

Continuation-in-part of Ser. No. 144,872, May 19, 1971, Pat. No. 3,735,183. This application Oct. 3, 1972, Ser. No. 294,560

Claims priority, application Great Britain, May 20, 1970, 24359/70; May 30, 1970, 26198/71. The portion of the term of this patent subsequent to May 22, 1990, has been disclaimed.

Int. Cl. H01j *17/34, 61/04*

U.S. Cl. 313—188 **21 Claims**



A visual display device incorporates an array of direct-current devices. A plurality of gas-filled cavities, each forming a discharge space for one discharge device, or a single gas-filled cavity common to all discharge devices is formed between a

first and a second block of electrically insulating material. A plurality of transparent anode conductors on a face of a first block of electrically insulating material, sealed to the first block, and in registration with the cavities, form anode electrodes for one co-ordinate of the array. Cathode electrodes are carried by a face of the second block of electrically insulating material, and those cathode electrodes of the other co-ordinate of the array are connected by way of electrically resistive material to one of a plurality of cathode conductors. The cathode conductors, which are isolated from the discharge space or spaces, cathode electrodes and electrically resistive material are all carried on said face of the second block. The first and second blocks may be spaced through a spacer around the edge of the display device or by a third block defining the discharge spaces. A layer of insulating material covers the face of the block, the resistive material and the cathode conductors, except in the vicinity of the cathode electrodes.

3,798,484

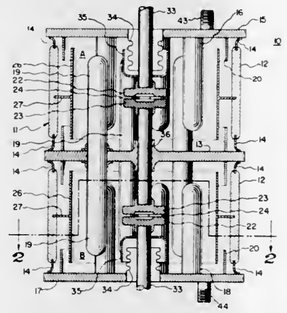
SERIES MULTIPLE BREAK VACUUM ARC DISCHARGE DEVICES

Joseph A. Rich, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,071

Int. Cl. H01j *21/20*

U.S. Cl. 313—198 **8 Claims**



Vacuum arc discharge devices having improved electrode structure are disclosed. Such improved devices comprise a plurality of parallel, electrically conductive paths each having a pair of interrelated arcing gaps disposed therein in a series relationship so as to increase the dielectric strength of such devices and thereby to hold off increased voltages in a cylindrical container whose diameter may be dimensionally limited.

3,798,485

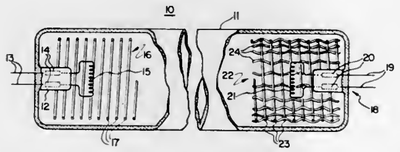
LAMP APPARATUS FOR IMPROVING WALL DARKENING CHARACTERISTICS

Harald L. Witting, Saratoga, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,326

Int. Cl. H01k *1/26;* **H01j** *1/52, 5/02*

U.S. Cl. 313—205 **7 Claims**



Improved electric lamp apparatus exhibiting reduced bulb wall darkening includes a diffusion barrier immediately adjacent the interior of the lamp envelope wall in the general vicinity of the lamp electrode or electrodes. Diffusion barrier is a wire-like mesh or grid spaced only a small distance from the inner surface of the envelope and adjacent thereto. Barrier diameter is a very large fraction of envelope diameter so as to avoid affecting discharge current or constricting discharge. Diffused specie emanating from the electrode selectively deposits upon the diffusion barrier leaving the adjacent envelope wall clear.

3,798,486

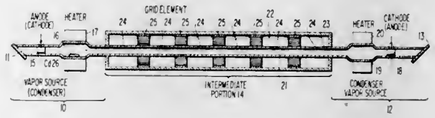
METAL VAPOR LASER DISCHARGE DEVICE

Karl Gerhard Hernquist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 304,011

Int. Cl. H01s *3/00*

U.S. Cl. 313—220 **7 Claims**



A low noise metal vapor laser discharge device of simple construction employing an anode electrode, a cold cathode electrode and condenser therebetween. The device features a relatively long intermediate portion, including a bore region and metal vapor store region, which communicates with the bore region at a plurality of spaced points along the length of the bore region, extending between the anode electrode and condenser.

3,798,487

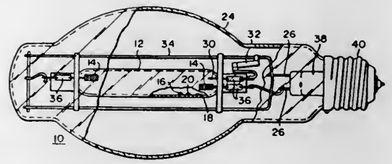
DISCHARGE LAMP WHICH INCORPORATES DIVALENT CERIUM HALIDE AND CESIUM HALIDE AND A HIGH MERCURY LOADING

Robert J. Zollweg, Monroeville; Kenneth K. Blackham, and Walter J. Burnham, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 21, 1972, Ser. No. 273,884

Int. Cl. H01j *61/20*

U.S. Cl. 313—229 **9 Claims**

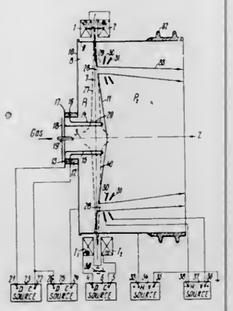


Arc-discharge device wherein the discahrge-sustaining filling includes as essential elements predetermined amounts of at least one of praseodymium halide, neodymium halide and cerium halide plus cesium halide and sufficient mercury to provide an operating mercury-vapor pressure of from 3 to 15 atmospheres, in addition to the usual starting gas. The rare-earth metal halide provides a very efficient discharge and the cesium halide plus the high mercury loading permits a high efficiency to be obtained with a relatively low minimum envelope temperature. The ratio of total gram-atoms of halogen to total gram-atoms of metal in the praseodymium, neodymium or cerium halides is from about 1.8:1 to about 2.7:1, and this provides a very diffuse, stable discharge which improves the performance of the device. Other discharge-sustaining materials desirably are added to the foregoing essential constituents to modify the color of the discharge.

3,798,488
PLASMA SOURCE OF CHARGED PARTICLES

Nikolai Vasilievich Pleshivtsev, ulitsa Rogova, 5, kv. 83; Nikolai Nikolaevich Semashko, ulitsa Birjuzova, 8, korpus I, kv. 137, and Ivan Alexandrovich Chukhin, ulitsa Maximova, 6, kv. 126, all of Moscow, U.S.S.R.

Filed July 28, 1971, Ser. No. 166,694
Int. Cl. H01j *61/28*
U.S. Cl. 313—231 21 Claims

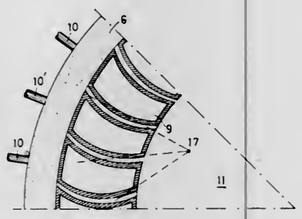


A plasma source of charged particles is provided by an arrangement having two solenoids mounted on a single axis and connected in opposition in a gas-discharge chamber to set up a magnetic field increasing along the radius; the arrangement also includes two electrodes in the gas-discharge chamber one of which made in the shape of a disk having at least one emission slit placed approximately on the median surface of the magnetic field, and a system of charged particle extraction, acceleration and focusing.

3,798,489
PLASMA FURNACE

Pierre Binard, Embourg; Georges Defosse, Wandre, and Jean Marie Jacquerie, Seraing, all of Belgium, assignors to Elphiac, Brussels, Belgium

Filed May 4, 1972, Ser. No. 250,165
Claims priority, application Belgium, May 7, 1971, 103160
Int. Cl. H01j *17/26*
U.S. Cl. 313—231 4 Claims

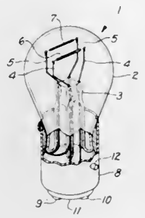


A plasma furnace comprising a chamber having inlet nozzles for a gas to be ionized, a reaction chamber defined by a large number of non-magnetic cooled metallic conduits placed side by side and electrically insulated from each other, a tube for feeding materials to be treated inside the reaction chamber, and an inductor fed by an alternating current surrounding the reaction chamber. The plasma furnace is characterized in that the metallic conduits are secured on the inside surface of a tube made of insulating material protecting the inductor, and in that at least one out of two metallic conduits defining the reaction chamber comprises at least one concave portion into which is inserted one convex portion of an adjacent metallic conduit in such a manner that the insulating tube protecting the inductor is not seen from any location inside the reaction chamber, but that the metallic conduits are separated from each other by a space preventing any contact of the metallic conduits with each other.

3,798,490
VIBRATION RESISTANT LAMP

Stanley C. Ackerman, and Thomas E. Dunham, both of Cleveland Heights, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,938
Int. Cl. H01j *1/05, 1/14, 1/38, 1/48, 19/06*
U.S. Cl. 313—311 6 Claims

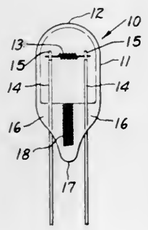


An incandescent lamp having a filament made of tungsten wire containing between 1–2 percent by weight thoria has greatly improved resistance to fracture caused by shock and vibration thereby increasing the service life of the lamp. The thoriated tungsten filament has a recrystallized grain structure which is characterized by approximately equiaxed crystals of tungsten of a smaller and more uniform size and thoria particles which are more uniformly distributed throughout the tungsten matrix than can be obtained by conventional powder metallurgy.

3,798,491
ROUNDED END HALOGEN LAMP WITH SPIRAL EXHAUST TUBE AND METHOD OF MANUFACUTRE

Robert N. Malm, Willoughby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 18, 1972, Ser. No. 315,772
Int. Cl. H01k *3/00, 1/30*
U.S. Cl. 313—315 10 Claims

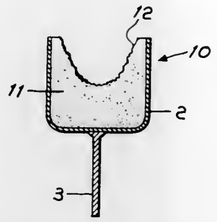


An incandescent lamp of the tungsten-halogen type having an envelope of an aluminosilicate glass comprising in percent by weight SiO_2 between 59 to 70, Al_2O_3 between 10 to 20 and BaO between 7.4 to 28 and having a coefficient of expansion between 36 and 40×10^{-7} per °C and a tungsten filament connected to lead wires which are directly sealed into the envelope. One end of the lamp envelope is rounded and the other end contains the seal and the tipped-off residue of an exhaust tube. Enclosed in the tipped-off residue is a spiral of tungsten wire which keeps the exhaust tube open during the lead wire sealing operation.

3,798,492
EMISSIVE ELECTRODE

Richard A. Menelly, Danvers, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 149,971, June 4, 1971, abandoned, and a continuation-in-part of Ser. No. 144,137, May 17, 1971, abandoned. This application Dec. 8, 1971, Ser. No. 204,469
Int. Cl. H01j *1/14, 19/06;* H01k *1/04*
U.S. Cl. 313—346 R 17 Claims

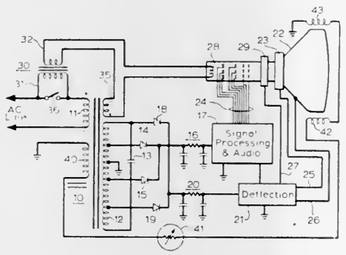


An emissive electrode of the type utilized in fluorescent lamps having a bulk density gradient structure and a method for making such an electrode. A powder of a metal having a high melting point and a low vapor pressure is mixed with an electron emissive material, compressed, and heated until an exothermic reaction occurs. The interior of the resultant fused material electrode has a high density relative to the surface thereof.

3,798,493
AUTOMATIC DEGAUSSING IN A TELEVISION RECEIVER WITH CONSTANT VOLTAGE TRANSFORMER

Hans E. Manske, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed May 26, 1972, Ser. No. 257,327
Int. Cl. H01j *29/06;* H01n *9/16*
U.S. Cl. 315—8 7 Claims

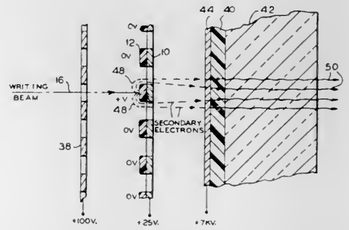


A solid state color television receiver incorporates a voltage regulating transformer having a filament winding supplying substantially constant operating voltage to the picture tube filament for prolonging picture tube life. Instant play operation is achieved by providing a filament transformer having a high impedance primary winding, connectable in series with the input of the regulating transformer and a secondary winding connected in series with the regulating transformer filament winding. Automatic degaussing of the picture tube is accomplished with a thermal element each time the receiver is switched on from a "cold start" with a degaussing circuit coupled across the transformer input. The receiver single pole, single throw on-off switch is connected across the primary winding of the filament transformer. When the switch is open, the regulating transformer input and the primary of the filament transformer are in series which substantially reduces the voltage across the regulating transformer input and drops its secondary voltages below operating levels for the television receiver. The filament transformer secondary winding supplies the tube filament with reduced power during standby operation and is "poled" on the transformer core to generate flux opposing that normally resulting from primary energization, reducing residual current in the degaussing coil and allowing the thermal element to cool.

3,798,494
NON-STORAGE ELECTRON MULTIPLIER OPERATION OF TRANSMISSION STORAGE TUBE

Christopher John Curtin, Portland, Oreg., assignor to Tektronic, Inc., Beaverton, Oreg.

Filed Dec. 8, 1971, Ser. No. 206,073
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 11 Claims



A method and apparatus is described for providing non-storage electron multiplier operation of transmission storage tubes and other cathode ray tubes employing a transmission mesh target and a separate phosphor screen spaced therefrom. The improved operation is achieved by bombarding the dielectric layer on the mesh target electrode with low velocity flood electrons to charge such dielectric to a negative voltage with respect to the target electrode, thereafter bombarding the charged dielectric with a beam of high velocity writing electrons having energies greater than the first crossover potential to cause secondary electron emission at a greater than unity ratio to provide electron multiplication and attracting the secondary electrons through the mesh openings of the target electrode to the phosphor screen. The flood electron gun may be turned off during writing so that the flood electrons do not strike the phosphor screen in order to provide better image contrast. This electron multiplication increases the current of the electron beam striking the phosphor screen and thereby increases the maximum nonstored writing speed and the brightness of the light image.

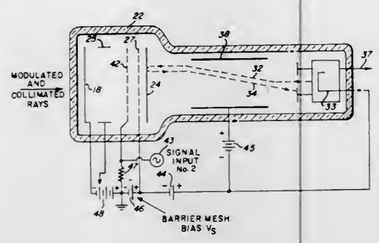
3,798,495
ELECTROOPTICAL CORRELATOR TUBE USING SECONDARY EMISSION MODULATION

Rudolf C. Hergenrother, West Newton, and John W. Lotus, Avon, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 17, 1968, Ser. No. 722,052
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 4 Claims

An electron discharge device of the image orthicon type having a barrier mesh electrode member disposed adjacent to the target mesh electrode of the electron image section. Positive or negative modulation voltage superimposed on the barrier mesh bias relative to the target mesh electrode bias causes secondary electrons produced at the storage target member by the photocurrent to be controlled in such a way as to control

the storage target charge distribution. In an electrooptical correlation system this action causes an uncorrelated input signal



to cancel out to zero charge effect on the storage target member.

3,798,496

ACTIVE HORIZONTAL CONVERGENCE CIRCUIT WITH TWO SEPARATELY ADJUSTABLE WAVEFORMS

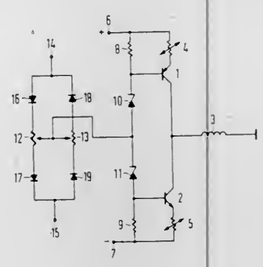
Michael Koubek, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 5, 1972, Ser. No. 259,597

Claims priority, application Germany, June 22, 1971, 2130979

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **8 Claims**



An active horizontal convergence circuit which employs separately adjustable means for converging the right and left halves of the picture. A bridge circuit is fed by two oppositely phased horizontal frequency sawtooth signals. The legs of the bridge have unilateral conducting devices so that only one side of the bridge is conducting at one time. The bridge has a pair of voltage dividers which have outputs connected to a common circuit point and from that point to an active circuit which supplies the oppositely phased currents to the horizontal convergence coil.

3,798,497

SOLID-STATE TELEVISION RECEIVER WITH MAGNETICALLY REGULATED POWER SUPPLY

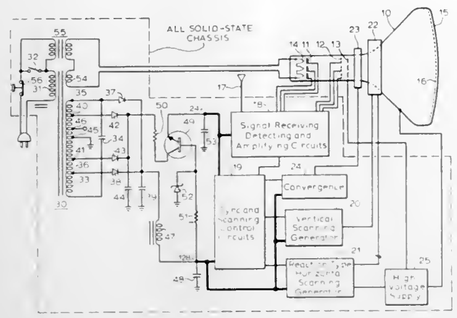
Hans E. Manske, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Dec. 4, 1972, Ser. No. 312,146

Int. Cl. H01j *29/70*

U.S. Cl. 315—29 **4 Claims**

An all-solid-state television receiver chassis is powered from a line-voltage-actuated power supply including a self-limiting voltage-regulating power transformer with associated solid-state rectifiers for developing all DC operating potentials required for the chassis. The combination of an all-solid-state chassis with a voltage-regulating power transformer provides substantially undegraded performance under even extremely low-line voltage conditions while preventing excessive high-voltage and X-ray generation under even extremely high-line



voltage conditions, and also provides greatly improved reliability against component failure.

3,798,498

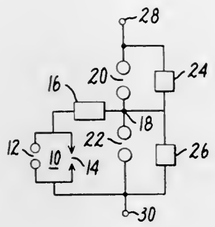
SPARK GAP DEVICE FOR LIGHTNING ARRESTER

Naoya Yamada; Nobuo Nagai, and Shoji Tada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1970, Ser. No. 97,999

Int. Cl. H02h *7/24*

U.S. Cl. 315—36 **9 Claims**



Two discal electrodes are eccentrically and rotatably mounted on each of two metallic rods in superposed relationship with each other to form therebetween discharge gaps in parallel relationship having uniform and nonuniform electric fields. Recesses are formed on those portions of arc quenching plates facing the spark gaps.

3,798,499

DISC-SEALED ELECTRON DISCHARGE TUBES

Hinrich Heynisch, Graefelfing; Josef Kellerer, and Walter Schneider, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 13, 1972, Ser. No. 297,339

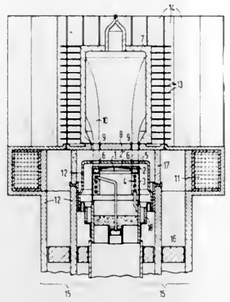
Claims priority, application Germany, Nov. 2, 1971, 2154485

Int. Cl. H01j *7/46, 19/80*

U.S. Cl. 315—39 **6 Claims**

A disc-sealed electron discharge tube wherein the grid electrode or electrodes and a hollow anode each have a flat surface provided with an annular slot for the passage of electrons,

radial spoke-like elements extend across said slots, the radial elements in each electrode being aligned with the radial ele-



ments in the other such electrodes, and wherein means are provided to magnetically focus the hollow electron beam.

3,798,500

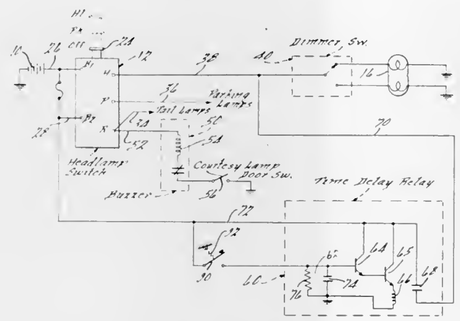
TIME DELAY HEADLAMP CONTROL SYSTEM

Dennis E. Florence, Detroit; Frank R. Winders, Jr., Birmingham, and Charles E. Wontrobski, Southfield, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 3, 1971, Ser. No. 139,333

Int. Cl. B60q *1/04*

U.S. Cl. 315—82 **3 Claims**



A vehicle headlights control system operative to illuminate the headlamps for a preselected period of time after the headlight switch has been opened. The circuit control system is manually operated to energize a switch assembly illustrated in the form of a relay, the relay having a set of contacts associated therewith to interconnect the headlights with a source of electrical energy until such time as the relay is de-energized. A timing circuit is provided which, when timed out, will cause the relay to de-energize and disconnect the headlights from the source of electrical energy. The system further includes a door switch assembly which senses the condition of the headlight switch or running light switch being closed when the operator opens the door of the vehicle. An audio or visual signal is provided to indicate this condition.

3,798,501

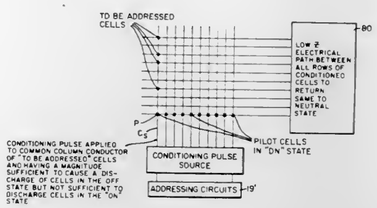
ELECTRONIC CONDITIONING OF GAS DISCHARGE DISPLAY/MEMORY DEVICE

John W. V. Miller, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 14, 1972, Ser. No. 217,989

Int. Cl. H01j *7/30*

U.S. Cl. 315—169 TV **8 Claims**



There is disclosed the improved electronic conditioning of a gas discharge display/memory panel. In the addressing of a row-column gas discharge display/memory panel which comprises a discharge cell matrix wherein one or more discharge cells are to be addressed along a common row or column, the improvement wherein the border of the panel matrix comprises a plurality of pilot cells and wherein the to-be-addressed cells are electronically conditioned before addressing by applying a conditioning voltage pulse to the common row or column of to-be-addressed cells and then providing a low impedance electrical path between the conditioned row or column of cells and all of the rows or columns of cells orthogonal to the conditioned row or column so as to return the conditioned cells to a neutral state, the magnitude of the conditioning pulse being sufficient to cause discharge of cells in the off-state, but not sufficient to cause discharge of cells in the on-state.

3,798,502

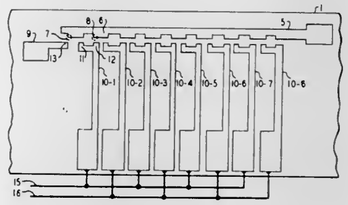
PLANAR GAS DISCHARGE SHIFT REGISTER

Peter Dinh-Tuan Ngo, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 26, 1972, Ser. No. 318,557

Int. Cl. H03b *37/00*

U.S. Cl. 315—169 TV **16 Claims**

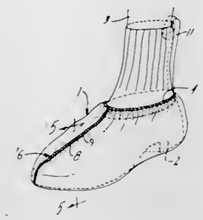


Planar d.c. gas discharge shift registers are disclosed which comprise a single cathode and two sets of anodes to which voltages are applied in alternate clock phases. The shaping of the electrodes allows a glow discharge to be propagated unidirectionally down the shift register as the clock voltages are applied. The cathodes are of planar geometry and are disposed upon a planar substrate. In one embodiment both sets of anodes are on one side of the cathode, while in another configuration the two sets of anodes enclose the cathode. Another alternate embodiment features two sets of cathodes enclosing respective anodes. A "write" anode is also provided to initiate the flow discharge at one end of the shift register.

3,798,503
PROTECTIVE FOOT COVER

Ray E. Larsh, Milwaukee, and Donald I. Urbansky, Thiensville, both of Wis., assignors to Kleen Test Products Inc., Milwaukee, Wis.

Filed June 15, 1972, Ser. No. 263,149
Int. Cl. A61n *1/14*
U.S. Cl. 317—2 B 5 Claims

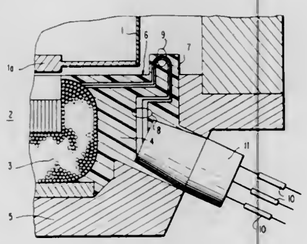


A sanitary and protective foot and shoe cover is formed of a single sheet of flexible material. A top opening in the cover accommodates the leg of the wearer. The cover includes a continuous seamless bottom sole portion and a top portion having a forward toe and rear heel seam extending upwardly from the sole portion to the leg opening. An elastic band is provided about the opening and through the forward toe seam to provide a covering over the foot which generally conforms to the foot and is resiliently attached thereto. A conductive tape is sewed to the seamless sole portion and is extended upwardly through the protective cover at the non-elasticized heel seam.

3,798,504
DEVICE FOR SHUTTING OFF DRIVE MOTORS OF ROTATING MACHINE PARTS IN CASE OF OVERLOAD AND/OR DESTRUCTION OF A MACHINE PART

Ottmar Kreissl, Dachau, and Eckhard Pritsch, Haaren, both of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg, Munich and URANIT Vran-Isotapentrennungs-GmbH, Julich Stetteniche, both of, Germany

Filed Mar. 27, 1972, Ser. No. 238,339
Claims priority, application Germany, Mar. 25, 1971, 2114406
Int. Cl. H02h *7/08*
U.S. Cl. 317—13 R 6 Claims

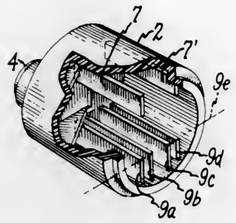


An installation for shutting off the drive motors of rotating machine parts in case of overload or short-circuit by extending the power supply wires between the stator winding of the motor and a connector plug, loop-shaped in a boss protruding into the space accommodating the rotating machine part so that the power supply wires are broken when the boss is sheared off upon mechanical failure of the machine part; in case of short-circuit, fuses connected into the power supply circuit ahead of the connector plug will also open the power supply circuit.

3,798,505
LOW VOLTAGE SURGE ARRESTER

Ronald M. Reckard, and Raymond I. Morse, both of Pittsfield, Mass., assignors to General Electric Company

Filed Sept. 25, 1972, Ser. No. 292,079
Int. Cl. H02h *3/22*
U.S. Cl. 317—68 12 Claims

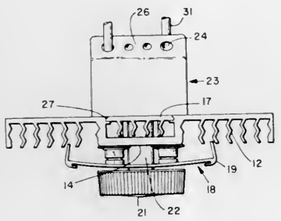


A secondary surge voltage arrester having a high impact resistant molded housing that is provided with supporting struts for mounting a sparkgap assembly in a desired, predetermined spaced relationship with respect to the interior walls of the housing thereby to minimize the risk of flashover of the sparkgap assembly. The arrester is further characterized by incorporatng a special spring that is effective to maintain a precise sparkgap electrode spacing and at the same time to limit lateral movement of the spark-gap assembly within the housing.

3,798,506
POWER CONTROL DEVICE WITH HEAT TRANSFER MEANS

James William English, Dallas, Tex., assignor to Atmos Corporation, Carrollton, Tex.

Filed Nov. 15, 1972, Ser. No. 306,729
Int. Cl. H05k *7/20*
U.S. Cl. 317—100 12 Claims

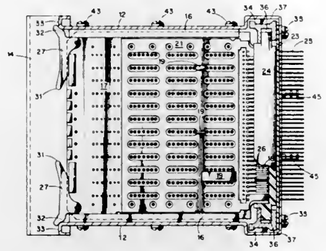


The particular embodiment described herein as illustrative of one form of the invention utilizes a wall plate for mounting a power control device such that the control device is received within a wall opening and a knob or the like projects outwardly therefrom for operating the device. A heat transfer member is utilized which makes a terminal connection between electrical wires and portions of the control device. The heat transfer member provides an electrical insulation barrier and at the same time transmits heat generated by the control device through the wall plate to a cover, with the cover being isolated from the face plate.

3,798,507
RACK ASSEMBLY FOR ELECTRICAL TERMINAL PANELS

Neil F. Damon, Cumberland, and Herbert G. Yeo, Lincoln, both of R.I., assignors to Augat, Inc., Attleboro, Mass.

Filed Nov. 2, 1972, Ser. No. 303,100
Int. Cl. H02b *1/62*
U.S. Cl. 317—101 DH 5 Claims

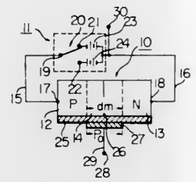


A mounting apparatus of simplified construction suitable for the removable attachment and electrical interconnection of a multiplicity of logic panels which include appropriate electrical circuitry and connection means.

3,798,508
VARIABLE CAPACITANCE DEVICE

Tadao Kohashi, Kadoma, Japan, assignor to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan

Continuation of Ser. No. 72,695, Sept. 16, 1970, abandoned. This application July 10, 1972, Ser. No. 270,270
Claims priority, application Japan, Sept. 18, 1969, 44-75637; Sept. 19, 1969, 44-76061; Sept. 22, 1969, 44-77179
Int. Cl. H01l *3/00*
U.S. Cl. 317—234 R 2 Claims

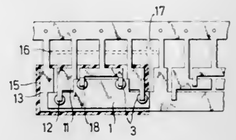


This specification discloses variable capacitance devices which vary their capacitances under the influence of DC bias voltages or radiations. One embodiment comprises a PN junction diode, a dielectric thin film deposited on the surface of said junction diode at which the junction terminates and a conducting electrode deposited on the dielectric thin film, in which the area of an equivalent plate electrode formed in said junction diode is varied by changing the thickness of a depletion region. In another embodiment, a nonlinear resistance layer deposited on the dielectric thin film is employed. As a DC voltage as applied to the nonlinear resistance layer is increased, the lateral conductivity of the nonlinear resistance layer increases and the area of the equivalent plate electrode facing the conducting electrode is increased. A further embodiment employs a thin film transistor or a MIS transistor to vary the area of the equivalent plate electrode provided therein.

3,798,509
SEMICONDUCTOR CIRCUIT ARRANGEMENT

Liboslav Vladik, Nurnberg, Germany, assignor to Semikron Gesellschaft fur Gleichrichterbau und Elektronik mbH, Nurnberg, Germany

Continuation of Ser. No. 93,821, Nov. 30, 1970, Pat. No. 3,708,851. This application Oct. 3, 1972, Ser. No. 294,690
Int. Cl. H01l *5/00*
U.S. Cl. 317—234 R 12 Claims

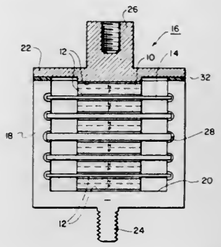


The semiconductor wafers for a rectifier circuit of the type wherein the conductors are formed from a single sheet of conductive material and shaped so that wafers may be inserted therebetween, are all simultaneously inserted and held in place by means of a holding device or jig which then remains in the finished device. The holding device is a sheet or plate of synthetic material having perforations or openings corresponding to the desired locations of the wafers in circuit arrangement and having a thickness substantially equal to that of the wafers. The wafers are held or mounted in the perforations by static friction as a result of an elastic layer provided between the walls of the perforation and the edges of the wafer.

3,798,510
TEMPERATURE COMPENSATED ZENER DIODE FOR TRANSIENT SUPPRESSION

John M. Erickson, and Bernard Reich, both of Ocean County, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 21, 1973, Ser. No. 334,339
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R 3 Claims



A Zener diode unit having zero temperature coefficient for breakdown voltage, for power applications in ground vehicle and aircraft electrical systems for shielding of voltage-sensitive solid-state circuits against voltage transients.

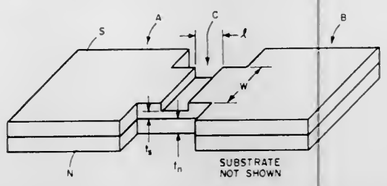
3,798,511
MULTILAYERED THIN FILM SUPERCONDUCTIVE DEVICE, AND METHOD OF MAKING SAME

Harris A. Notarys, Pasadena, and James E. Mercereau, South Laguna, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Mar. 7, 1973, Ser. No. 338,907
Int. Cl. H01l *3/00, 5/02*
U.S. Cl. 317—234 R 21 Claims

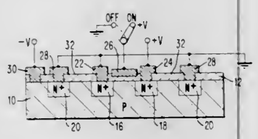
Techniques are disclosed for fabrication of superconducting thin film structures which show Josephson-like effects and

which allow fabrication of standard components, such as resistors and capacitors in circuits, starting with the deposition of superimposed thin films of selected metals at least one of which is superconducting, and all of which are stable (i.e., will not diffuse and are sufficiently inert to be chemically stable under normal use). The thin films are all effectively removed around the desired structure by anodization through a photoresist mask or by ion beam etching. A structure which shows



a Josephson-like effect is produced by so manipulating the thin films that a thin line region across a narrowed section of the layered thin films is produced with a lower transition temperature than in the surrounding layered films. This is done by altering the ratio of the thickness of the superconductive thin film to the thickness of the non-superconductive thin film in the thin line region and controlling the dimension, *l*, of the thin line region in the direction of current flow.

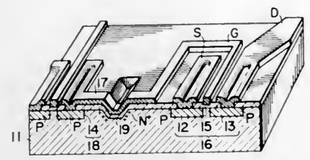
3,798,512
FET DEVICE WITH GUARD RING AND FABRICATION METHOD THEREFOR
Dale L. Critchlow, Lincolndale, and Stanley E. Schuster, Granite Springs, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 766,894, Oct. 11, 1968, abandoned. This application Sept. 28, 1970, Ser. No. 76,286
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R **7 Claims**



An N-channel FET device is provided with an N type guard ring to prevent surface leakage by an inversion layer formed at the surface of the FET device that is covered with an insulating layer. The guard ring is preferably an N+ diffused layer or region that surrounds the FET device. For integrated circuit applications where a plurality of FET devices are used, N+ guard rings either surround each device or a group of devices. The guard ring is electrically connnected to ground and the P type substrate is reverse biased thereby preventing surface leakage.

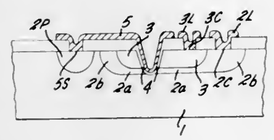
3,798,513
SEMICONDUCTOR DEVICE HAVING A SURFACE PARALLEL TO THE [100] PLANE AND A CHANNEL STOPPER PARALLEL TO THE [111] PLANE
Minoru Ono, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Dec. 1, 1970, Ser. No. 94,089
Claims priority, application Japan, Dec. 1, 1969, 44-95707
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R **6 Claims**

A semiconductor device having a parasitic channel stopper, in which a major surface of the semiconductor substrate lies in a plane parallel to a {100} plane; a predetermined portion of the major surface in which a parasitic channel is induced is converted into a {111} plane by etching the {100} plane; since the converted portion under a passivation film, such as



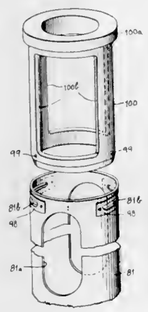
silicon dioxide film is a substantially highly doped region (N+), it acts as a P parasitic channel stopper.

3,798,514
HIGH FREQUENCY INSULATED GATE FIELD EFFECT TRANSISTOR WITH PROTECTIVE DIODES
Yutaka Hayashi, and Yasuo Tarui, both of Tokyo, Japan, assignors to Kogyo Gijutsuin, Japan
Continuation-in-part of Ser. No. 24,167, March 31, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 298,005
Claims priority, application Japan, Nov. 20, 1969, 44/92514
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 317—235 R **7 Claims**



A field-effect transistor comprising a protective element constituted of two or more diodes connected in reversed relation, said protective element having such a structure that a region adjacent to another region at the same potential as a gate electrode has an impurity of higher concentration than that of at least one portion of region adjacent to said first region, or said protective element having at least one Schottky junction.

3,798,515
FUEL IMMERSIBLE CAPACITOR FOR MEASUREMENT OF MASS OF LIQUID FUEL IN A TANK
Sebastian F. DiGiacomo, Merrick, N.Y., assignor to Gull Airborne Instruments, Inc., Smithtown, N.Y.
Filed Mar. 24, 1972, Ser. No. 237,718
Int. Cl. H01g *5/01*
U.S. Cl. 317—246 **6 Claims**



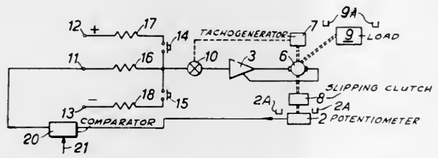
Capacitance apparatus for measuring the mass of liquid fuel in the tanks of an aircraft. The capacitance elements and other parts of the circuit are designed to have very high accuracy, so

that no calibrating adjustment is required during or after installation. Apparatus is provided for electrically inspecting the capacitance elements without removing them from their operating positions. This apparatus includes a fault isolation probe having terminals connected by slack conductors to the capacitance elements. The fault isolation probe is mounted in the tank, and is removable from the tank without interrupting the circuit connections to the capacitors, so that after withdrawing the fault isolation probe from the tank, electrical tests of the capacitors may be made through the slack conductors, while leaving the capacitors in their operating positions. Fuel level measuring capacitors are provided, as well as capacitors for compensating for changes in the dielectric constant of the fuel.

3,798,516
CERAMIC CAPACITORS WITH NOBLE ELECTRODES ALLOY
Oliver Alton Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 260,244, June 6, 1972, Continuation-in-part of Ser. No. 136,190, April 21, 1971, which is a continuation-in-part of Ser. No. 873,055, Oct. 31, 1969, abandoned, which is a continuation-in-part of Ser. No. 705,305, Feb. 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 626,394, March 28, 1967, abandoned. This application Jan. 17, 1973, Ser. No. 324,491
Int. Cl. H01g *1/01*
U.S. Cl. 317—258 **4 Claims**

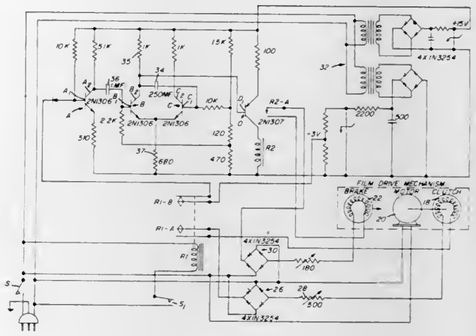
Metalizing compositions comprising alloys of three or more metals are used in ceramic capacitor electrodes and capacitors therefrom. The alloys have a critical surface area. The specific metals of the alloy are palladium, platinum and gold. The metalizing compositions are especially suitable for producing capacitors on ceramic dielectric substrates which contain bismuth stannate.

3,798,517
CAMERA LENS CONTROL MECHANISM
Joseph Colin Whitehouse, Blaby, England, assignor to The Rank Organisation Limited, London, England
Filed Dec. 22, 1971, Ser. No. 210,891
Int. Cl. G03b *3/10*
U.S. Cl. 318—3 **7 Claims**



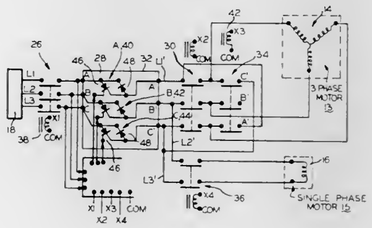
The invention concerns a control module for attaching to a lens and including an actuator and a feedback path, the actuator driving the controlled lens element through a slipping clutch. The invention provides switch means on the module for injecting fixed signals into the feedback system to drive the actuator to either end of the travel of the controlled element to align same with a feedback device (e.g. a potentiometer) on setting up the module on the lens.

3,798,518
VARIABLE DURATION BRAKING CIRCUIT FOR A MOMENTARY INTERMITTENTLY DRIVEN WEB TRANSPORTING MECHANISM
George E. Evan, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 13, 1972, Ser. No. 297,519
Int. Cl. H02p *3/04*
U.S. Cl. 318—6 **8 Claims**



A momentary intermittently driven web transporting mechanism having incorporated therein a variable duration braking circuit for a web supply reel. In those instances where a web drive mechanism is momentarily intermittently operated for successively driving the web short distances, a shorter momentary braking time is required to prevent rotation of the supply reel than in those situations where the web drive mechanism is operated for a time period sufficient to drive a web take-up reel and web at substantially maximum torque or speed. the variable duration braking circuit of this invention provides a momentary braking time period for the supply reel following momentary inactivation of the brake of a duration that is a function of the time period that the braking circuit is inactivated and/or the drive mechanism operated to transport the web.

3,798,519
PLURAL MOTOR CONTROL SYSTEM
Victor J. Habisohn, Hoffman Estates, Ill., assignor to Power Electronics International Inc., Chicago, Ill.
Continuation-in-part of Ser. Nos. 29,869, April 20, 1970, and Ser. No. 284,342, Aug. 28, 1972. This application Feb. 7, 1973, Ser. No. 330,421
Int. Cl. H02p *1/54*
U.S. Cl. 318—46 **37 Claims**



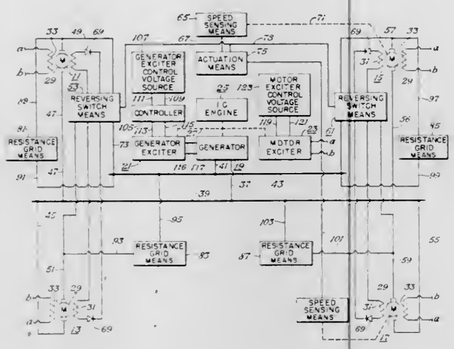
A motor control system including a three phase AC motor means for driving a load at high speed and a single phase AC

motor means for driving the load at a lower speed. The electrical energy transferred to the three phase motor means may be progressively increased until the three phase motor means operates at said high speed; and the electrical energy transferred to the single phase motor means may be progressively increased until the single phase motor means operates at said lower speed. In an elevator application of the subject motor control system, the elevator movement from one vertical level to a second level is started with the three phase motor means, and the elevator speed is progressively increased until reaching a maximum speed as the 3 phase motor reaches the high "full" speed. Prior to levelling the elevator at the second level, the control system is switched from the three phase motor to the single phase motor, to provide a counter torque for decelerating the speed of the elevator until the elevator is slowed to a minimum speed as the single phase motor means reaches the low "full" speed.

3,798,520
REVERSING CONTROL SYSTEM FOR ELECTRICALLY POWERED VEHICLES

Aaron D. Friend; Gary L. Nelson, and Royce A. Yoder, all of Longview, Tex., assignors to R. G. LeTourneau, Inc., Longview, Tex.

Filed May 3, 1971, Ser. No. 139,659
Int. Cl. H02p *5/26*
U.S. Cl. 318—55 **5 Claims**

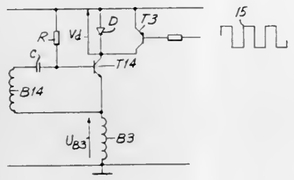


A control system for effecting reversal of electrically powered vehicles, typically heavy duty off-road type work vehicles having electric motor driven wheels, characterized as follows: (1) a reversing switch is actuated, or reversed, in response to speed of at least one wheel motor below a predetermined speed, without requiring waiting for reversal of polarity on the power buses; (2) a reversing switch is reversed in response to the speed of the slowest turning of two wheel motors, one on each side of the vehicle to effect uniform reversal of the vehicle, regardless of whether it is in a turn in either direction or moving straight ahead, and without requiring waiting for reversal of the polarity on the power buses; and (3) a reversing switch is actuated when the voltage drop across a slowest turning motor becomes low enough to operate a current sensitive relay connected with the reversing switches, the two wheel motors being connected such that there is no cross feed therebetween and in bucking relationship with a regulated voltage source to effect optimal response. Also disclosed are specific structure, interconnection, and operational details.

3,798,521
CIRCUITRY FOR SYNCHRONIZING A MECHANICAL RESONATOR

Jean-Claude Berney, Lausanne, Switzerland, assignor to Bernard Golay S. A., Lausanne, Switzerland

Continuation of Ser. No. 173,564, Aug. 20, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,678
Claims priority, application Switzerland, May 4, 1971, 6545/71
Int. Cl. H02k *33/02*
U.S. Cl. 318—128 **10 Claims**

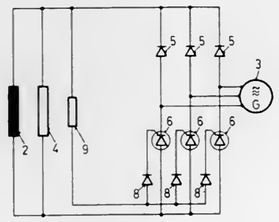


A mechanical resonator, with a pilot frequency *f*, is synchronized by means of an electromagnetic maintenance motor component governed by a modulated voltage generator of frequency *nf*.

3,798,522
ARRANGEMENT FOR EXCITING AN ASYNCHRONOUS START SYNCHRONOUS MOTOR

Hans Pisecker, Tullin, Austria, and Werner Schicht, Birr, Switzerland, assignors to Brown Boveri & Company Limited, Baden, Austria

Filed June 5, 1973, Ser. No. 367,149
Claims priority, application Switzerland, June 26, 1972, 9568/72
Int. Cl. H02p *1/46*
U.S. Cl. 318—174 **6 Claims**

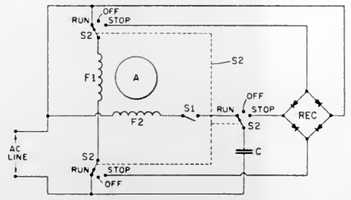


An arrangement for exciting the rotating field winding of a synchronous motor includes an alternating current exciter whose armature is mounted on the motor shaft and delivers direct current to the field winding by means of a main rectifier bridge circuit also mounted on the motor shaft. The negative half of the rectifier bridge consists of controllable semiconductor elements and the positive half of non-controllable type semiconductor elements. The controllable semiconductor elements in the bridge perform in a normal manner during synchronous operation of the motor but means in the form of an auxiliary rectifier arrangement are provided to render them non-conductive during asynchronous starting thus to cut off current flow from the output of the main rectifier bridge to the field winding of the motor.

3,798,523
SINGLE PHASE INDUCTION MOTOR BRAKE

Thomas A. O. Gross, P.O. Lincoln, Concord Rd., Lincoln, Mass.

Filed Mar. 7, 1972, Ser. No. 232,482
Int. Cl. H02p *3/20*
U.S. Cl. 318—212 **5 Claims**

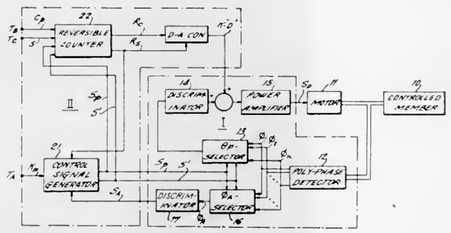


The capacitor in a single phase induction motor is used as a current limiting impedance in a DC braking circuit. The circuit includes the AC source, the capacitor, a rectifier and a field winding.

3,798,524
DIGITAL SERVO COMPRISING MEANS FOR CONTROLLING DRIVING ENERGY IN RESPONSE TO DROOP

Kiyokazu Okamoto, and Hitoshi Tamagawa, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 20, 1973, Ser. No. 333,471
Claims priority, application Japan, Feb. 19, 1972, 47-17437
Int. Cl. G05b *19/24*
U.S. Cl. 318—571 **5 Claims**



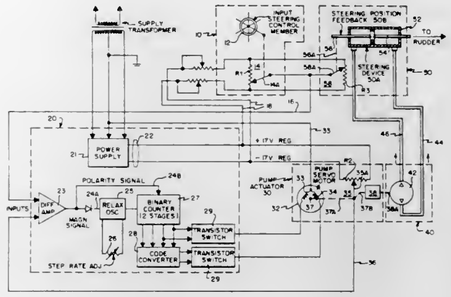
Supplied with driving energy, a digital servo system drives a controlled member with inevitable droop and produces an alarm signal representing whether or not the droop is within a predetermined range. A control pulse generator produces control pulses when the droop is within the range. A reversible counter accumulates an instantaneous number of command pulses supplied to the system in compliance with the sign indicated by a direction command signal also supplied to the system. The control pulses, when produced, reduce the number towards zero. In compliance with the absolute value of the number, the counter adjusts the energy.

3,798,525
ELECTRO HYDRAULIC STEERING SYSTEM

Herbert G. Cooper, Kalamazoo, Mich., assignor to General Signal Corporation, Rochester, N.Y.

Filed May 18, 1972, Ser. No. 254,398
Int. Cl. G05d *1/00*
U.S. Cl. 318—588 **9 Claims**

An electro-hydraulic system especially adapted for the steering of riverboats and the like according to which accurate control is gained in the steering operation. The system includes a variable volume piston pump under the control of a servo controller so as to produce variable rates of fluid flow from the pump to an output steering device which is operative to effectuate precision steering of the vehicle. A steering device position feedback arrangement is provided according

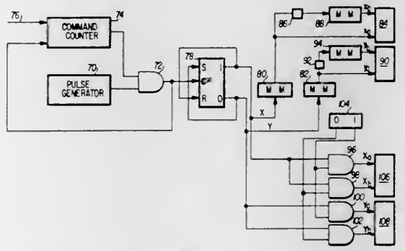


to which a signal is fed back, responsive to movement of the steering device, in such a way as to effectively nullify the initiating signal input to the servo controller, thereby to return the pump to a null position at a time when the steering device has assumed the position desired.

3,798,526
HIGH SPEED STEPPING MOTOR WITH MECHANICAL COMMUTATOR

Yukiharu Takahashi, Yokohama, and Moritada Kubo, Tokyo, both of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Dec. 30, 1971, Ser. No. 214,306
Claims priority, application Japan, Dec. 31, 1970, 45/123622
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **6 Claims**

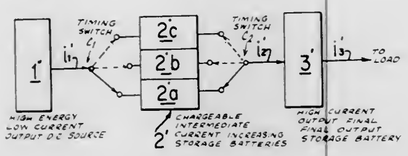


A high speed stepping motor includes a stator having a bore and a plurality of salient poles on which stator windings are wound. A rotor is provided and has a plurality of axial teeth and slots alternatively positioned on a peripheral surface thereof. A plurality of rotor windings are respectively mounted in the slots of the rotor. A commutator is mounted on a shaft of the rotor and has segments which are respectively connected to the rotor windings. Brushes are provided for making contact with the commutator segments to enable electric energy to be supplied to the rotor windings. Means are provided for changing the direction of energization of the stator windings to thereby change the direction of the magnetic field resulting therefrom and for changing the direction of energization of the rotor windings in synchronization therewith.

3,798,527
ELECTROCHEMICAL D.C. CURRENT TRANSFORMER SYSTEM

Michel Guy Marie Jochaud Du Plessix, Paris, and Yves Jacques Felix Lecouffe, Courbevoie, both of France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Continuation of Ser. No. 9,526, Feb. 9, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,369
Claims priority, application France, Feb. 21, 1969, 69.04529
Int. Cl. H02j 7/00
U.S. Cl. 320—6 9 Claims

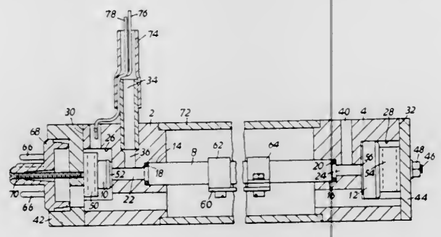


Increasing of direct current of a given intensity from a primary source of high energy and low power is effected via an intermediate direct current stage to current of higher intermediate intensity which stage delivers the intermediate intensity to a terminal storage battery capable of supplying desired higher intensity. The terminal storage battery is effectively charged by the intermediate direct current stage storage battery and the latter is fully and effectively charged by the primary source.

3,798,528
APPARATUS AND METHOD FOR DETECTING THE EVOLUTION OF GAS FROM AN ELECTRIC CELL AND FOR CONTROLLING THE CHARGING OF SAID CELL IN RESPONSE TO SAID DETECTION

Lindsay Molyneux, 4, Leazes Cres., Newcastle-Upon-Tyne, England

Continuation of Ser. No. 140,043, May 4, 1971, abandoned. This application Nov. 16, 1972, Ser. No. 307,146
Claims priority, application Great Britain, May 5, 1970, 21677/70
Int. Cl. G01n 27/42, 31/00; H02j 7/04
U.S. Cl. 320—46 12 Claims

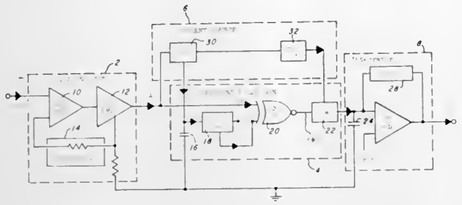


Apparatus for detecting the evolution of gas, particularly from electric storage cells during charging of the cells, comprises a tube, inlet means for supplying the evolved gas to the tube, and electronic sensing means for detecting changes in the velocity of sound in the tube due to changes in the composition rate of evolution of the gas. In the described embodiment the sensing means consists of a transmitter mounted in the tube and emitting a series of sound pulses, a receiver in the tube spaced from the transmitter, and an electronic circuit for measuring the transit time of sound pulses travelling from the transmitter to the receiver through the gas in the tube.

3,798,529
TACHOMETER CIRCUIT

James J. Jones, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,410
Int. Cl. H02m 7/00
U.S. Cl. 321—6 11 Claims

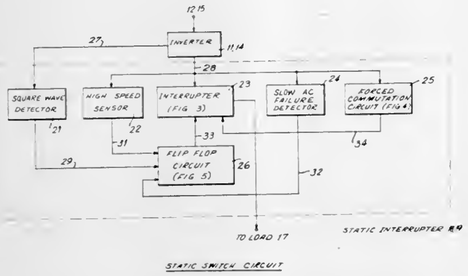


An improved frequency to voltage converter utilizes an exclusive OR logic circuit to reduce the number of required capacitors. A squaring circuit provides a first train of squared pulses from a variable frequency input signal, and a pulse generator in response to the first train of pulses generates a time displaced second train of pulses. The first and second pulse trains are combined in an exclusive OR logic combination to thereby generate a third pulse train having controlled pulse widths. The third pulse train is thereupon integrated into a DC signal having mangitude related to and varying with the frequency of the input signal. Preferably first and second tracking current sources control pulse width and pulse height of the third pulse train so as to provide pulses of substantially constant energy to the integrator.

3,798,530
STATIC SWITCH CIRCUIT

Ross Henderson, North Reading, Mass., assignor to Gould Inc., Mendota Heights, Minn.

Filed Oct. 17, 1972, Ser. No. 298,370
Int. Cl. H02h 7/14
U.S. Cl. 321—11 7 Claims

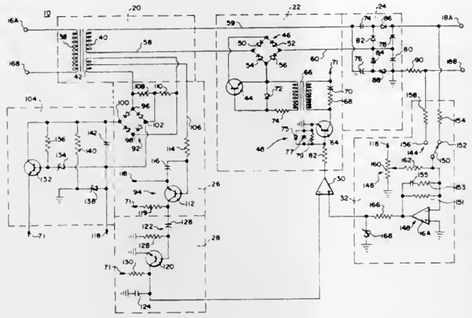


A static switch circuit for switching off a failed inverter of a power supply circuit includes a pair of inverters, each driven by a DC input, and a load supplied by the inverters. The static switch circuit is connected between the inverters and the load and comprises a pair of fault detectors, each having inputs connected to the output of a corresponding one of the inverters and outputs for detecting a fault occuring in the corresponding inverter. Each of a pair of interrupters is connected between the output of the fault detector and the output of the corresponding one of the inverters and the load for instantaneously switching off an inverter in which a fault occurs and is detected by the fault detector. Each of a pair of forced commutated circuits is connected with a corresponding one of the interrupters for reducing the period of time in which the corresponding interrupter switches off the corresponding inverter.

3,798,531
SWITCHING-MODE POWER SUPPLY

Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed June 5, 1972, Ser. No. 259,476
Int. Cl. H02m 1/08
U.S. Cl. 321—18 11 Claims



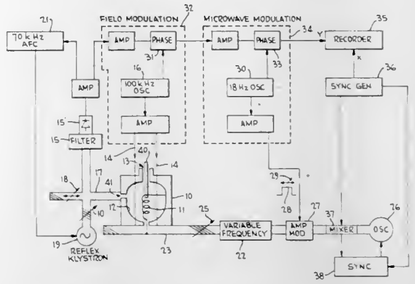
To control the portion of each half cycle of alternating current that is conducted from the transformer to a rectifying voltage multiplier by a feedback-controlled alternating-current switch of a switching-mode power supply, the amplitude of a timing ramp potential which starts with the beginning of each half cycle of alternating current is compared to the amplitude of negative feedback from the power supply output by a differential amplifier that switches a single transistor in the alternating current switch into its conducting state when the timing ramp potential has a lower amplitude than the feedback and into its nonconducting state when the timing ramp potential has a higher amplitude than the feedback, with the transistor controlling the alternating current conducted through a diode bridge circuit connecting the transformer to the rectifying voltage multiplier so that a beginning portion of each half cycle of alternating current is conducted between the transformer and rectifying voltage multiplier until the timing ramp exceeds the feedback in amplitude, whereby the power supply is regulated.

3,798,532
ELECTRON DOUBLE RESONANCE SPECTROMETER WITH A MICROWAVE CAVITY BRIDGE ARRANGEMENT

Karl Hausser, Neuenheimer Landstr. 72, 69 Heidelberg, Germany

Continuation-in-part of Ser. No. 804,553, March 5, 1969, abandoned. This application June 15, 1971, Ser. No. 153,344
Claims priority, application Germany, Mar. 5, 1968, 1698223
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 7 Claims

In a spectrometer for measuring electron spin resonances a microwave cavity resonator is excited in a TEM mode such that the direction of the magnetic component of the microwave field is perpendicular to the direction of the magnetic component of a microwave field introduced in the cavity resonator by a helix giving broadband characteristics without tuning. A sample under test may be inserted in the helix for reaction by both the magnetic components of the microwave fields of the resonator and of the helix without interference. A spectrometer system is arranged to provide output spectrum

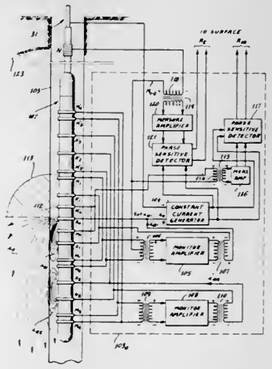


from measurement of samples in the electron-electron double resonance mode, as well as in other modes.

3,798,533
METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 815,265, April 7, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,196
Int. Cl. G01v 3/18
U.S. Cl. 324—10 4 Claims



In accordance with illustrative embodiments of the present invention, an electrode array is utilized for investigating earth formations surrounding a mud filled borehole without undue influence from a conductive mud column. One manner of accomplishing this is to establish a potential distribution in the borehole as if the mud column were of the same resistivity as the formation. Alternatively, a zero potential gradient can be established at various regions in the mud column to effectively block current flow up or down the mud column.

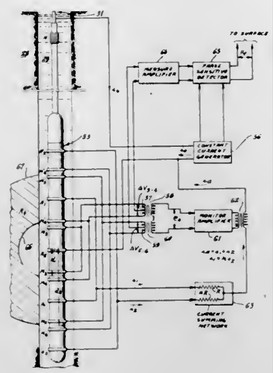
3,798,534
METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 815,265, April 7, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,199
Int. Cl. G01v 3/18
U.S. Cl. 324—10 3 Claims

In accordance with illustrative embodiments of the present invention, an electrode array is utilized for investigating earth

formations surrounding a mud filled borehole without undue influence from a conductive mud column. One manner of accomplishing this is to establish a potential distribution in the

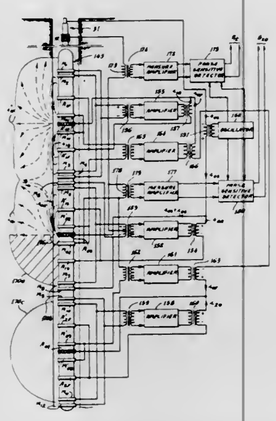


borehole as if the mud column were of the same resistivity as the formation. Alternatively, a zero potential gradient can be established at various regions in the mud column to effectively block current flow up or down the mud column.

3,798,535
METHODS AND APPARATUS FOR INVESTIGATING EARTH FORMATIONS

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 815,265, April 7, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,198
Int. Cl. G01v *3/18*
U.S. Cl. 324—10 5 Claims

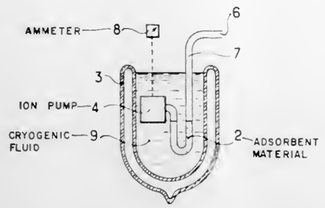


In accordance with illustrative embodiments of the present invention, an electrode array is utilized for investigating earth formations surrounding a mud filled borehole without undue influence from a conductive mud column. One manner of accomplishing this is to establish a potential distribution in the borehole as if the mud column were of the same resistivity as the formation. Alternatively, a zero potential gradient can be established at various regions in the mud column to effectively block current flow up or down the mud column.

3,798,536
DEVICE FOR DETECTING LEAKAGES BY USING HELIUM AS A TRACER GAS

Pierre Maillard, 44 Avenue de la Paix, 44-Donges, and Pierre Roubeau, Place de la Gare de Lozere, 91-Palaiseau, both of France

Filed Mar. 26, 1971, Ser. No. 128,454
Claims priority, application France, Mar. 26, 1970, 7010898
Int. Cl. G01m *3/26*; G01n *27/62*
U.S. Cl. 324—33 1 Claim

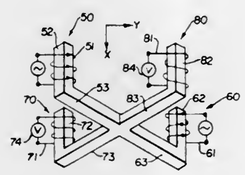


A device for detecting leakages through the walls of an enclosure which includes a tube containing a material which blocks the passage of all gases except helium and having a gas receiving end capable of receiving gases from a wall which is to be detected, and an ion pump connected to the other end of the tube having an ammeter connected thereto to provide an indication of the residual pressure of the helium passing through said material.

3,798,537
METHOD AND APPARATUS FOR MEASURING STRESSES IN FERROMAGNETIC MATERIAL

John R. Dahm, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 707,793, Feb. 23, 1968, abandoned. This application Dec. 10, 1969, Ser. No. 883,975
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 13 Claims



Method and apparatus for measuring stresses in a ferromagnetic material are disclosed. A magnetic means is employed to establish magnetic flux flow paths in a ferromagnetic material in two directions at right angles to one another. Additional means is provided for determining the resultant flux flow developed by said paths whereby the magnitude of a stress applied to the material in one of said two directions is ascertained.

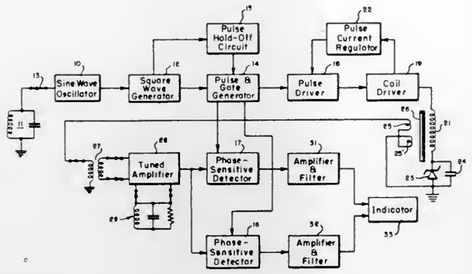
3,798,538
PULSE EDDY CURRENT TESTING APPARATUS WITH RAMP PHASE SHIFTER

Sven E. Mansson, Hollviksnas, Sweden, assignor to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,960
Int. Cl. G01v *33/12*
U.S. Cl. 324—40 9 Claims

Time adjustable pairs of gate pulses for gating phase-sensitive detectors in pulse eddy current testing apparatus are

produced by a ramp generator responsive to pulses corresponding to the driving pulses applied to the test coil assembly, an adjustable level control circuit for changing the DC level of the ramps, a pair of electronic switching circuits which switch at different instantaneous values of the ramps, and means responsive to the switching for producing pairs of gate

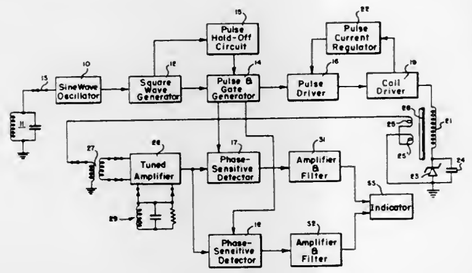


pulses. The pairs of gate pulses may be quadrature-related and their time occurrence shifted with respect to the driving pulses by changing the ramp level. An adjustable clamping circuit for level control, a pair of switching amplifiers, and differentiating the outputs of the switching amplifiers to produce the gate pulses are specifically described.

3,798,539
PULSE EDDY CURRENT TESTING APPARATUS USING PULSES HAVING A 25% DUTY CYCLE WITH GATING AT PULSE EDGES

Robert A. Brooks, Rye, and Paul J. Bebick, Bronx, both of N.Y., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed Feb. 15, 1973, Ser. No. 332,874
Int. Cl. G01r *33/12*
U.S. Cl. 324—40 9 Claims

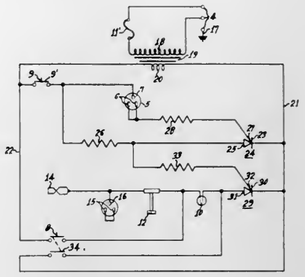


Pulses having a pulse width equal to one-quarter wavelength at a multiple (including 1) of the fundamental frequency of the pulses are applied to the test coil assembly of a pulse eddy current testing apparatus, and the output signals are supplied to an amplifier tuned to said multiple of the fundamental frequency. The output of the amplifier is supplied to a pair of phase-sensitive detectors which are gated at the leading and trailing edges of the applied pulses to produce quadrature signal components. These components are utilized to produce indications of defects or flaws in the object under test. The test coil assembly is advantageously designed to produce an approximately null output in the absence of defects or flaws. The pulses may have a 25 percent duty cycle with the amplifier tuned to the PRF thereof.

3,798,540
ELECTRICAL GROUNDING AND INSULATION RESISTANCE TESTER

Levin D. Darden, P.O. Box 35, Hollister, Fla., and Richard E. Morrison, 509 Bon Ami, Deridder, La.

Filed June 28, 1972, Ser. No. 267,034
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 12 Claims



A fail-safe safety testing device for electrical hand tools and the like which automatically indicates that the insulation resistance of the tool and its associated power cord and plug exceeds a predetermined value and that the connection is continuous between the frame of the tool and the grounding prong of the power cord plug by causing an indicating lamp to be illuminated upon concurrence of such conditions. When the tool is unsafe as to either or both of these conditions, the lamp does not light up.

3,798,541
CAPACITIVE PROBE STRUCTURE FOR TESTING THE INTEGRITY OF ELECTRICAL CABLES AND CONDUCTORS

Richard H. Campbell, Jr., Gilford, and William B. Wilkens, Laconia, both of N.H., assignors to Wilcom Products, Inc., Laconia, N.H.

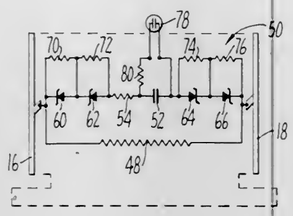
Division of Ser. No. 85,617, Oct. 30, 1970, Pat. No. 3,711,767. This application June 26, 1972, Ser. No. 266,367
Int. Cl. G01r *31/02, 1/06*
U.S. Cl. 324—72.5 12 Claims

This invention relates to a probe structure designed to be capacitively coupled to an insulated electrical cable or conductor, and which is operative to pick up relatively weak electrical signals induced on or carried by a selected part of the cable or conductor, and to convert said signals into output voltages capable of audible or scientific measurement.

3,798,542
ENERGY MEASURING DEVICE FOR PULSE TYPE DEFIBRILLATORS

Robert H. Dempsey, 2505 Oak St., Napa, Calif.

Continuation-in-part of Ser. No. 27,884, April 13, 1970, abandoned. This application July 5, 1972, Ser. No. 269,057
Int. Cl. G01r *21/00, 19/16*
U.S. Cl. 324—133 9 Claims

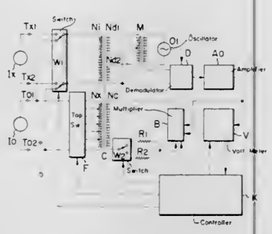


Apparatus and method for testing the energy output of a defibrillator or the like comprising a pair of contacts, a resistance element electrically connected between said contacts, a threshold monitoring device electrically connected between said contacts and parallel with the resistance element, and indicator means electrically connected to the threshold monitoring device for indicating when the energy output of the defibrillator exceeds a predetermined value.

3,798,543
DIRECT CURRENT RATIO MEASURING APPARATUS

Ikuo Takeda; Takashi Suzuki, and Hikaru Furukawa, all of Tokyo, Japan, assignors to Takeda Riken Industry Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 81,296, Oct. 16, 1970, abandoned. This application Dec. 18, 1972, Ser. No. 316,011
Int. Cl. G01r *7/00*
U.S. Cl. 324—140 D 2 Claims

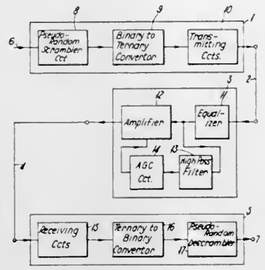


This invention relates to a direct current ratio measuring apparatus wherein the current ratio is determined by first making a reference current and then making an unknown current to be measured flow through an input winding wound on a magnetic core of high magnetic permeability and in each case automatically cancelling out the flux in the core by introducing cancelling currents into another winding on the core, these cancelling currents being measurable to determine the ratio without introducing errors therein as occurs if an attempt is made to directly measure the reference and unknown currents.

3,798,544
MULTILEVEL PCM SYSTEM ENABLING AGC CONTROL OF A TRANSMITTED MULTILEVEL SIGNAL IN ANY SELECTED FREQUENCY PORTION OF SAID TRANSMITTED SIGNAL

Peter Norman, Dartford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,148
Claims priority, application Great Britain, Sept. 23, 1971, 44389/71
Int. Cl. H04b *1/00*
U.S. Cl. 325—38 A 4 Claims

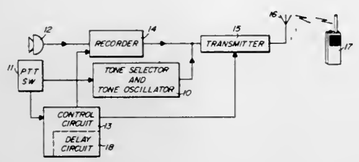


This relates to a PCM system having a substantially constant power amplitude distributed throughout the frequency spectrum of a digital signal. This enables selecting a suitable portion of the spectrum of the digital signal for operation of the AGC circuits of the system, particularly those AGC circuits contained in predetermined ones of repeater incorporated in the system. To accomplish this, the system includes, in the transmitter, a pseudo-random scrambler operating on a binary signal input to provide the substantially constant power amplitude distributed throughout the frequency spectrum of the input binary signal. The output signal of the scrambler is converted to a ternary signal prior to transmission. At the receiver the ternary input signal is converted to a binary signal. The binary signal at the output of the last converter is descrambled to compensate for the scrambling of the scrambler and to produce a replica of the binary input to the system.

3,798,545
HIGH CAPACITY PAGING SYSTEM EMPLOYING SUBAUDIBLE TONES

Norman E. Schultz, North Lauderdale, and Robert J. Schwendeman, Pompano Beach, both of Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 7, 1972, Ser. No. 224,199
Int. Cl. H04b *5/04*
U.S. Cl. 325—55 24 Claims

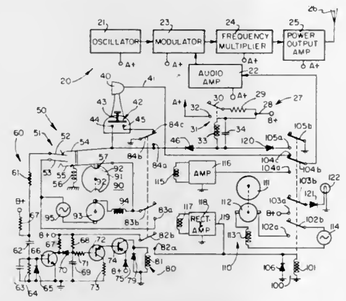


A high capacity paging system includes a transmitter for transmitting a modulated signal in response to a message including address signals followed by audio signals. Each transmission is initiated by actuating the switch and terminated by deactuating the switch. Control circuitry is operative in response to the switch actuation to actuate the transmitter. The control circuitry includes time delay circuitry for holding the control circuitry operative for a first predetermined time period after deactuation of the switch. Address circuitry develops the address signals and is operative in response to actuation of the switch to couple the address signals to the transmitter for a second predetermined time period no greater than the first predetermined time period. Audio delay circuitry is operative in response to operation of the control circuitry to delay audio signals coupled from a microphone by the first predetermined time period and couple the delayed audio signals to the transmitter for transmission thereby. The address signals of the succeeding message are transmitted simultaneously with the terminal portion of the audio signals in the preceding message.

3,798,546
AUTOMATIC IDENTIFICATION SYSTEM

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr.

Filed Nov. 8, 1971, Ser. No. 196,315
Int. Cl. H04h *1/00*
U.S. Cl. 325—166 27 Claims

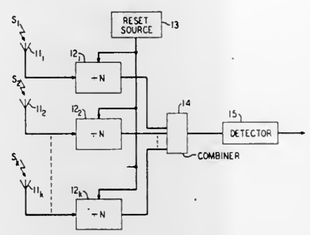


A microphone and a reproducing means are coupled to the modulator of a transmitter. A switch, when actuated to a first position, energizes the transmitter power supply to produce a carrier wave which can be modulated by the user's voice. A holding circuit is provided, so that, when the user releases the switch, the transmitter power supply remains energized so as not to interrupt the carrier wave. Then, a secondary message, such as a set of call letters, automatically modulates the carrier wave. A timer mechanism may be provided to cause the call letters to be sent only after the first voice transmission within a predetermined time interval, such as 15 or 30 minutes.

3,798,547
APPROXIMATE COPHASING FOR DIVERSITY RECEIVERS

Douglas Otto John Reudink, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 29, 1972, Ser. No. 319,552
Int. Cl. H04b *1/06*
U.S. Cl. 325—305 8 Claims

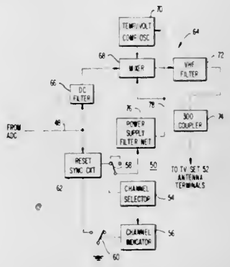


In a predetection combining diversity receiver approximate cophasing of the individual receptions is temporarily achieved by frequency division of the received signals. These signals, which contain independent phase angles so that any two may be randomly out-of-phase, are each applied to identical frequency division circuits. By dividing each carrier frequency by the factor, N, common to all of the dividing circuits, all of the signals will be initially phased within $\pm \pi/N$ radians. In time, the effect of random phase variations may cause the approximately cophased signals to drift apart. Therefore, the frequency dividing circuits are periodically reset to reestablish approximate cophasing.

3,798,548
DISCRETE CABLE TELEVISION DISTRIBUTION SYSTEM

Paul White, and Robert H. Wilson, both of Phoenix, Ariz., assignors to Ameco, Inc., Phoenix, Ariz.

Filed Sept. 8, 1971, Ser. No. 178,693
Int. Cl. H04b *1/06*
U.S. Cl. 325—309 24 Claims



Disclosed is a channel selection and synchronizing mechanism for a Cable Television Distribution System. The system employs a number of main distribution cables each carrying at most three programs within a single relatively low frequency band, and a number of area distribution centers (ADC's). A single communication path connects each subscriber station to one of the ADC's while switching circuitry controlled by the subscriber selectively connects the communication path to the desired one of the cables. Frequency conversion at the subscriber station shifts the incoming band to one of the clear local channels. The selector mechanism includes switching means for providing pulse signals over the communication path for channel selection and synchronization of the switching equipment. A channel selection display is provided by an indicia bearing loop which includes means for operating the synchronizing signal generator. For multiple programs on each distribution cable the selector includes switching means for actuating selective frequency conversion circuitry for converting incoming programs in different frequency transmission bands to the frequency of one of the locally unassigned standard channels.

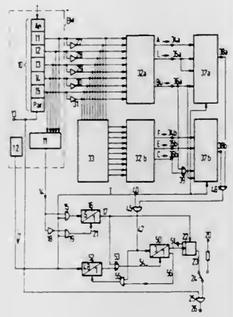
3,798,549
APPARATUS FOR TRANSMITTING DATA OVER RADIO CONNECTIONS

Max Ollinger; Wernhard Markwitz, both of Munich; Dieter Niethammer, Unterhaching, and Oddvar Kvale, Sagdalsveien, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Apr. 13, 1972, Ser. No. 243,586
Claims priority, application Germany, Apr. 21, 1971, 2119489
Int. Cl. H04l *3/02*
U.S. Cl. 325—322 8 Claims

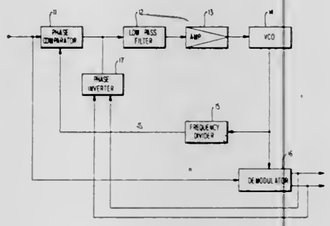
Circuitry is described which facilitates data transmission over radio links by preventing receiver errors, even when call addresses are distorted. The incoming call addresses consisting of several characters are applied to transmission lines, one of which is assigned to each character. The latter character lines are connected to a character counter, over an output of

which a call address signal is emitted when all characters of a given call address are received in proper succession. The call address is coupled to an address counter which emits a



counter signal when it receives a certain number of call address signals within a prescribed time. By means of this counter signal, a switch is operated to effect the transmission of the received data from the receiver to the data terminal.

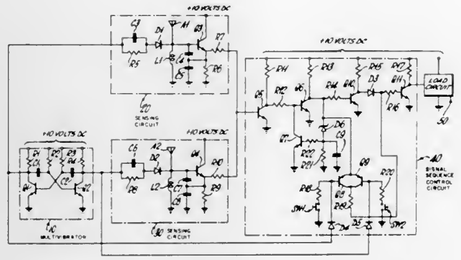
3,798,550
FM RECEIVER
Saburo Takaoka, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Dec. 8, 1972, Ser. No. 313,210
Claims priority, application Japan, Dec. 8, 1971, 45-099270
Int. Cl. H04b *1/06*
U.S. Cl. 325—346 **3 Claims**



A portion of a demodulated signal derived from a demodulator circuit, in an FM receiver having a phase locked loop to generate a subcarrier, is phase-inverted and applied to counterbalance demodulation components generated by a phase comparator circuit of the phase locked loop.

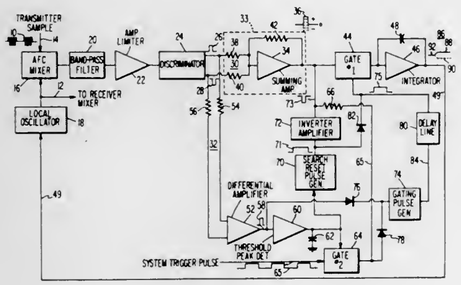
3,798,551
MULTIPLEXED SIGNAL-SEQUENCE CONTROL SYSTEM
Arthur F. Cake, Smithtown, N.Y., assignor to Wagner Electric Corporation, Newark, N.J.
Filed Sept. 15, 1972, Ser. No. 289,573
Int. Cl. H04b *1/06*
U.S. Cl. 325—370 **17 Claims**

A plurality of capacitance-responsive sensor circuits are alternately energized by a free-running multivibrator and generate signals of a first class when a person is detected. The multivibrator also alternately enables a signal-sequence control circuit to sense one of a second class of input signals and to generate a control signal in response to either (1) one or



more signals of only the first class or only the second class, or (2) unrelated signals of both the first and second classes, or (3) related signals of both the first and second classes occurring in an improper sequence.

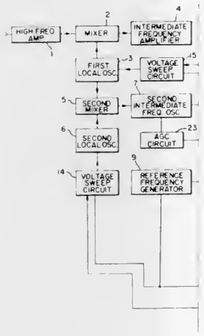
3,798,552
AUTOMATIC FREQUENCY CONTROL FOR PULSE RADAR AND COMMUNICATION SYSTEMS
John Harry Pratt, Los Angeles, Calif., assignor to RCA Corporation, New York, N.Y.
Filed Dec. 7, 1972, Ser. No. 312,900
Int. Cl. H04b *1/16*
U.S. Cl. 325—420 **10 Claims**

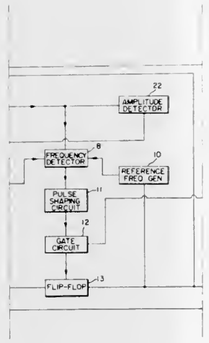


An automatic frequency control (AFC) system particularly suitable for pulse radar and communication systems with improved performance in that (*a*) negligible change in frequency occurs between pulses, assuring that the received signal remains centered in the receiver pass band during the entire receive period, (*b*) the center of the main lobe of the transmitter spectrum is used as the reference by gating out the rising and falling portions of the transmitter pulse where the

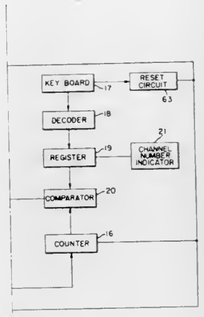
frequency may be changing, and (*c*) the system cannot lock near the "image" frequency where the local oscillator is on the wrong side of the transmitter frequency and the receiver is mistuned.

3,798,553
FREQUENCY SWEEP DEVICE HAVING TWO ALTERNATELY SWEPT OSCILLATORS
Yoichi Sakamoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Osaka, Japan
Filed Feb. 8, 1972, Ser. No. 224,454
Claims priority, application Japan, Feb. 9, 1971, 46/5738; Feb. 9, 1971, 46/5739; Feb. 9, 1971, 46/5740; Feb. 9, 1971, 46/5741; Feb. 9, 1971, 46/5742; Feb. 9, 1971, 46/5743; Feb. 9, 1971, 46/5745; Feb. 9, 1971, 46/5753; Mar. 3, 1971, 46/11430; Mar. 3, 1971, 46/11431; Mar. 3, 1971, 46/11432; Mar. 5, 1971, 46/11900; Mar. 5, 1971, 46/11901; Mar. 5, 1971, 46/11902; June 25, 1971, 46/46140; June 25, 1971, 46/46141; June 25, 1971, 46/46142; June 25, 1971, 46/46143; Jan. 13, 1972, 47/6300; Jan. 13, 1972, 47/6301; Jan. 13, 1972, 47/6302
Int. Cl. H04b *1/16*
U.S. Cl. 325—453 **21 Claims**



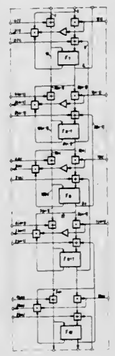


The frequency sweep operation by two frequency sweep oscillators is reversed whenever the difference in oscillation frequency between the two oscillators reaches a predetermined frequency so that they alternately sweep the frequency step by step. The frequency sweep oscillator device is best



suited for use in an automatic channel selector for a television receiver.

3,798,554
DIGITAL SEQUENTIAL CIRCUIT
Zbigniew Sadlak, Komandorska 82/14, Wroclaw, Poland
Filed Dec. 29, 1971, Ser. No. 213,321
Int. Cl. H03k *21/00*
U.S. Cl. 328—43 **3 Claims**

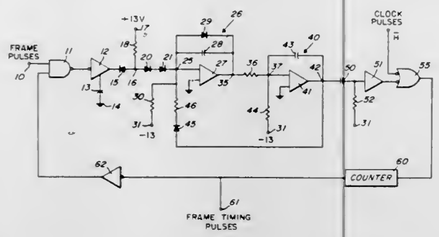


A multi-state digital sequential circuit of unified logic elements provided for sequential testing of single-bit signals and passing into selected states or producing single-bit output signals according to arbitrarily present algorithm. The circuit consists of a plurality of unified elements comprising interconnected flip-flops, inverters, AND-circuits, and OR circuits.

3,798,555
PULSE RECOVERY SYSTEM
John A. Tempka, Glenview, and Elwood C. Reichart, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Nov. 16, 1972, Ser. No. 307,257
Int. Cl. H03k *3/64*
U.S. Cl. 328—74 **5 Claims**

Received pulses and recovered or internally produced pulses are applied to a coincidence gate the output of which is applied to an integrator. The output of the integrator, which gradually increases in amplitude during non-coincidence, is applied to a comparator that operates to produce an output signal when the output of the integrator reaches a predetermined amplitude. The output of the comparator is dif-

ferentiated to produce pulses and applied to an OR gate along with internally generated clock pulses. The clock pulses with



the interspersed additional pulses are applied to a counter that produces the recovered pulses.

3,798,556

METHOD FOR DETECTING MUTUAL HIGHER AND LOWER REVOLUTIONAL SPEEDS OF A PLURALITY AMONG ROTATING MEMBERS

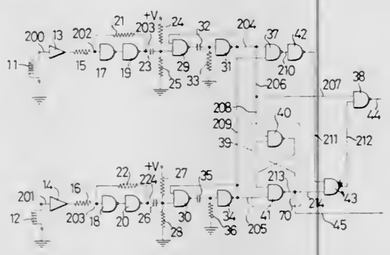
Junichiro Ooya; Katsuki Takayama, and Kazutaka Kuwana, all of Kariya, Japan, assignors to Aisen Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Dec. 15, 1971, Ser. No. 208,149

Claims priority, application Japan, Dec. 15, 1970, 45-112234; Dec. 15, 1970, 45-112235

Int. Cl. H03d *13/00*

U.S. Cl. 328—133 **6 Claims**



A method and apparatus for determining the relationship of the speed of rotation of two members in which one member rotates at a greater speed than the other. A series of pulses proportional to the speed of rotation of each member are generated and applied through a logic circuit to a bistable circuit. The logic circuit is such that it switches the state of the bistable circuit upon the occurrence of a rising edge (or falling edge) of one pulse in the first series followed by a rising edge (or falling edge) of a pulse in the second series.

3,798,557

INTERPOLATION OF SINUSOIDAL SIGNALS

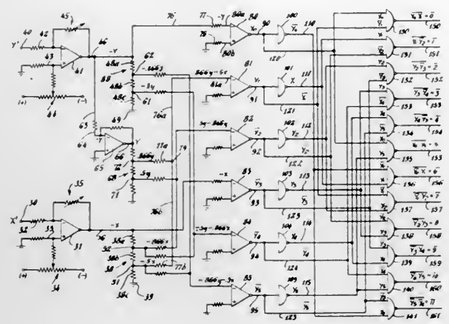
Larkin B. Scott, Fort Worth, Tex., and George Roth, Stamford, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 31, 1972, Ser. No. 239,932

Int. Cl. H03b *3/04*

U.S. Cl. 328—133 **7 Claims**

An interpolating system particularly adapted to obtain finer resolution in the readout of a pair of sinusoidal signals in quadrature, utilizing zero-crossing detecting techniques. The system retains the information as to which of the two signals leads the other. In the specific embodiment twelve evenly spaced, resolved elements (in the form of logic signals) are produced for each original full cycle of the signals, while retaining the advantage of the zero-crossing detection technique, e.g., insensitivity to (simultaneous) amplitude changes in both quadrature signals. The system preferably operates on a pair of pure A. C. sinusoidal waves (i.e., free of any D.C. component) each having equal (even if simultaneously varying) amplitude, but can be used on any pair of signals from which such equal amplitude pure sine waves in



quadrature can be extracted. One field of use is in processing signals from distance-measuring interferometers, so as to obtain a more finely resolved distance measurement of the object being monitored (e.g., in units of 1/24 of the wavelength of radiation, where a whole cycle of the sinusoidal signals corresponds to ½ of a wavelength).

3,798,558

TIMING CURRENT SUPPLY FOR A SYSTEM OF TWO CHANNEL CIRCUITS

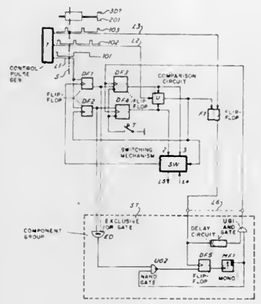
Gerd Kopperschmidt, Weddel, and Heinz-Jurgen Lohmann, Branschweig, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed July 13, 1972, Ser. No. 271,507

Claims priority, application Germany, July 16, 1971, 2135683

Int. Cl. H03b *1/00;* **H03k** *5/00;* **H04b** *1/10*

U.S. Cl. 328—163 **4 Claims**



A timing current supply for a system of two channel circuits using binary switching variables in the form of two rectangular signal voltages of equal frequency in amplitude and 180° phase difference for the two values. Control devices for the anti-phase control on both channels help to switch off data, independently of data flow, during a condition of anti-valence interference. The system operates in the manner of a dynamic self holding circuit during an anti-phase condition.

3,798,559

NOISE REDUCTION SYSTEM

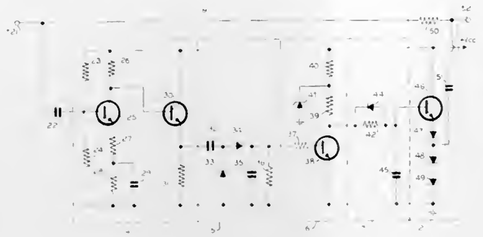
Masao Tomita, Katano, and Kiyoji Fujisawa, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 17, 1972, Ser. No. 244,558

Claims priority, application Japan, Apr. 20, 1971, 46-25892; Aug. 10, 1971, 46-60737

Int. Cl. H03f *1/26;* **H03g** *1/04*

U.S. Cl. 328—167 **11 Claims**



A noise reduction system which has a switching circuit, a charge-and-discharge circuit and a variable gain amplifier. When the input signal is lower than a predetermined threshold level, the charge-and-discharge circuit is changed to charging operation by the switching circuit and a control voltage is applied to the variable resistance means, whereby the resistance thereof is decreased and the input signal is attenuated. When the input signal exceeds the predetermined threshold level, the charge-and-discharge circuit is changed to discharging operation and the control voltage becomes zero, so that the input signal is not attenuated since the variable resistance means has a small resistance. Accordingly, the input noises can be removed during a pause in the input signal.

3,798,560

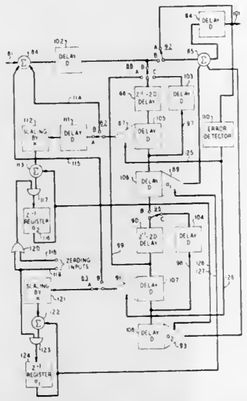
ADAPTIVE TRANSVERSAL EQUALIZER USING A TIME-MULTIPLEXED SECOND-ORDER DIGITAL FILTER

Michael Gordon Taylor, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 29, 1973, Ser. No. 327,622

Int. Cl. H03h *7/14*

U.S. Cl. 328—167 **7 Claims**



A second-order digital filter arrangement having output taps from each of two first-order subsections and a pair of adjustable gain devices connected at each tap is modified by providing reentrant connections around the entire filter and also its first-order subsections to perform the function of a nonrecursive multitap transversal equalizer. One of each pair of gain devices serves as a forward-feeding tap signal multiplier. The remaining one of each pair of gain devices serves as a correlator for tap and error signals to adjust the gain of a tap signal multiplier. Memories for storing output signals and updated tap gain coefficients are programmed on a time-division basis while message signals are being circulated through the digital filter subsections. The capability of reconversion to the recursive digital-filter form under program control is at all times preserved.

3,798,561

METHOD AND APPARATUS FOR DEMODULATION OF PHASE DIFFERENCE MODULATED DATA SIGNALS

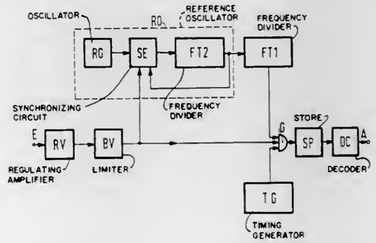
Peter Bocker, Vinzenz-Schupfer-Str. 38, 8 Munich, Germany

Filed Sept. 24, 1971, Ser. No. 183,570

Claims priority, application Germany, Sept. 24, 1970, 2047183

Int. Cl. H03d *3/18*

U.S. Cl. 329—104 **5 Claims**



A method and apparatus are described for demodulating phase difference modulated signals wherein a carrier is modulated by specific, different valued phase shifts corresponding to the various levels of the data signal. Mean value-coherent demodulation is used wherein the transmitted predetermined interval and the phase resulting from the phases received up to that time as the mean value for the preceding predetermined interval. A reference frequency is generated which includes all the possible phase values for the data. A pulse is triggered by a crossover of the carrier signal during the predetermined interval. At the time of the latter crossover, the phase of the received signal is compared with the mean value of phase values received during preceding predetermined intervals. A decoder is provided which, according to the coding used, forms the transmitted data signal from the aforementioned difference information.

3,798,562

EXPANDING CIRCUIT IN A COMPRESSION AND EXPANSION SYSTEM

Nobuaki Takahashi, Yamato; Masao Kasuga, Sagamihara; Nobuhide Ohsaki, Yokohama; Yashuhisa Okabe, Zama, and Hiromo Sekiguchi, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 2, 1972, Ser. No. 294,356

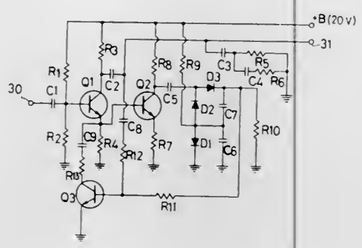
Claims priority, application Japan, Oct. 5, 1971, 46-77532; Apr. 18, 1972, 47-38941

Int. Cl. H03g *3/30*

U.S. Cl. 330—28 **10 Claims**

An expanding circuit is provided for a compression and expansion system. It operates to expand signals compressed in the compression system responsive to a control system of two loops, with respect to the medium-frequency component and the high-frequency component of the signals transmitted to the expanding circuit. The expanding circuit has a control system of only a single loop for varying the gain an input signal by means of control signals obtained in accordance with the levels of the medium-frequency band and the high-frequency

band. An attenuation circuit imparts to signals of gains thus varied, characteristics whereby the level of the high-frequency



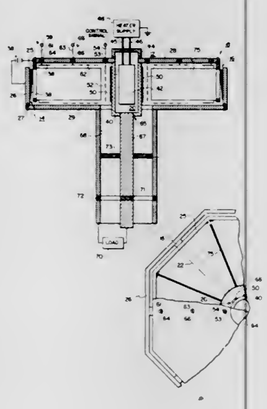
band is attenuated more than that of the medium-frequency band.

3,798,563
ELECTRON BEAM DIODE POWER DEVICE

John L. Carter, Ocean, and Joseph W. McGowan, Spring Lake Heights, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 12, 1972, Ser. No. 314,301
Int. Cl. H03f *3/54*

U.S. Cl. 330—44 **11 Claims**



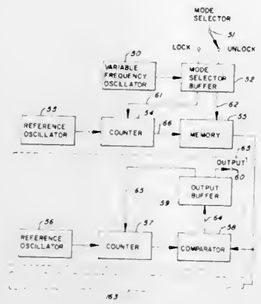
An electron beam semiconductor amplifier tube having a plurality of spaced groups of serially connected back-biased semiconductor diodes mounted near the periphery of a radial waveguide transmission line. Each group of diodes is bombarded by a corresponding distinct electron beam emanating from one of several angularly spaced emissive regions of a cathode disposed at the center of the radial transmission line. The several groups of diodes are arranged in parallel. A radial wave generated by the current induced in the several diodes by the corresponding impinging electron beam propagates toward the center of the radial transmission line and, thence, to a load of typical impedance. The radial wave can be transformed into a TEM wave and propagated along a coaxial line having the center conductor thereof mounted along the central axis of the tube — which axis passes through the cathode and the center of the radial transmission line.

3,798,564
DIGITAL FREQUENCY MULTIPLIER

J. Michael Langham, 1920 Plum St., Peru, Ill.

Division of Ser. No. 121,837, March 8, 1971, Pat. No. 3,675,146. This application Apr. 18, 1972, Ser. No. 245,059The portion of the term of this patent subsequent to July 4, 1989, has been disclaimed.
Int. Cl. H03b *3/04*

U.S. Cl. 331—1 A **5 Claims**



A plural oscillator system with all the characteristics of an analog or variable frequency oscillator, but with the added capability of locking digitally to any frequency within its range. The system has two modes of operation, unlocked and locked. In the unlocked mode, the system employs a variable frequency oscillator together with a reference oscillator and counter to produce the system output and to log the period of the variable frequency oscillator into a memory. In the locked mode, the contents of the memory are held constant, and the variable frequency oscillator no longer drives the system output. Instead, the reference oscillator and counter are used in conjunction with a digital comparator to produce the system output with a frequency determined by the contents of the memory. Thus, the system in the locked mode operates as a digital oscillator at the frequency that the variable frequency oscillator operated before the mode change.

3,798,565
GAS CELL ATOMIC FREQUENCY STANDARD OF COMPACT DESIGN

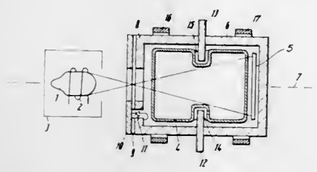
Ernst Jechart, Ishertstrasse 2, 8 Munich, Germany

Filed Dec. 14, 1972, Ser. No. 315,035

Claims priority, application Germany, Dec. 14, 1971, 2162050

Int. Cl. H03b *3/12*

U.S. Cl. 331—94 **14 Claims**



An atomic frequency standard comprising a cell arranged in the radiation path between a light source and a light sensitive signal generating means. Both the light source and the cell contain alkali metal vapor. A cavity resonator surrounds the cell. Means are provided for coupling one resonator to a frequency controllable oscillator. Means for applying a static homogenous magnetic field to the cell are also provided. The device contains an oscillator feedback control system responsive to the increased light absorption occurring when resonator oscillations coincide with an electron transition of the alkali metal. The cell substantially completely fills the cavity resonator and follows its contours. At least one concavity is provided on the cell wall into which a projection extends to promote stable oscillation modes within the cell.

3,798,566
POLYMETHINE DYE LASERS

William C. McColgin, and Frank G. Webster, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,892
Int. Cl. H01s *3/20*

U.S. Cl. 331—94.5 L **15 Claims**

Merocyanine dyes which contain a pyran nucleus as part of the intercyclic chain are useful as laser dyes. These dyes are used in solution with a non-interfering solvent to form lasing media useful in dye lasers. Such lasers generally include a reservoir for containing the laser dye solution and a pumping energy source operably associated therewith for producing stimulated emission of the laser dye solution.

3,798,567
LASER GENERATOR

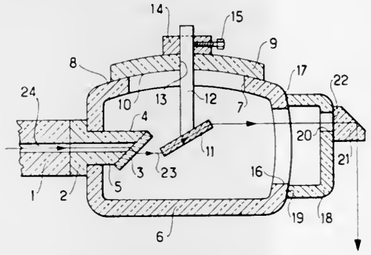
Regis De Wavrechin, Ivry-sur-Seine, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed June 21, 1972, Ser. No. 265,038

Claims priority, application France, June 23, 1971, 71.22886

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **3 Claims**



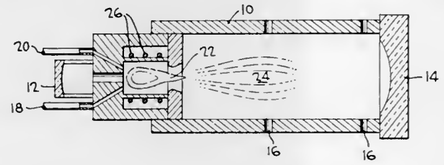
The positions of the reflector and the optical element are regulated with respect to the active medium through a sleeve which surrounds a portion of the optical resonant cavity of a laser generator.

3,798,568
ATMOSPHERIC PRESSURE INDUCTION PLASMA LASER SOURCE

Colin S. Willett, Keedysville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 31, 1972, Ser. No. 276,544
Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 **4 Claims**



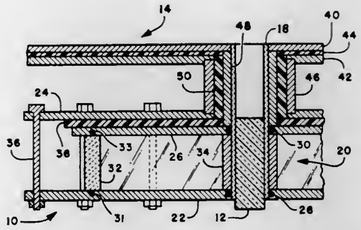
An atmospheric pressure induction plasma laser source which enables high power, large diameter laser systems to be operated at atmospheric pressures in materials having high melting points and which can be selectively excited in charge transfer or Penning reactions. The disclosed apparatus provides a non-molecular laser that is operable at atmospheric pressure in a structure open to the atmospheric or in a circulatory system. It also will enable laser oscillation to be realized in elements and compounds that have heretofore been unable to lase due to their difficulty in vaporizing at reasonable temperatures.

3,798,569
HIGH ENERGY OPTICAL LASER

Nordin C. Anderholm, and Garth W. Gobeli, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 15, 1973, Ser. No. 341,450
Int. Cl. H01s *3/09, 3/02*

U.S. Cl. 331—94.5 **4 Claims**



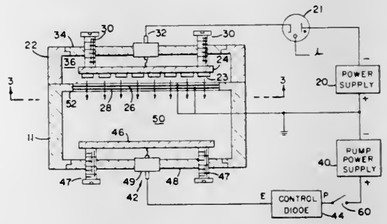
A high energy optical laser which utilizes a coaxial pumping scheme having greater diameter than length coupled through a coaxial transmission line and a planar transmission line to a high energy power source to induce a very high energy optical discharge at a wavelength in the pumping band of a lasing material.

3,798,570
LASER SYSTEM INCORPORATING A FIELD EFFECT EMITTER

Jerry W. Hagood; Charles M. Cason, III, and Joe Shelton, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 29, 1973, Ser. No. 346,200
Int. Cl. H01s *3/09*

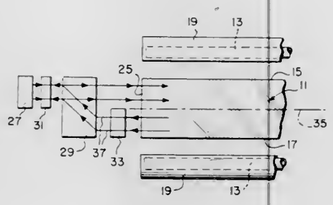
U.S. Cl. 331—94.5 **9 Claims**



An improved laser system is provided which increases laser efficiency, reduces power consumption and affords simplified construction. The improved laser, which can include any one of several electric pulsed systems, is capable of operating over an extended energy and duty cycle range. In operation only the electrical energy that contributes to the lasing action is drained from the energy source, thus greatly increasing the efficiency of the overall system. A mechanically biasable field effect electron emitter functions as either an active part of the

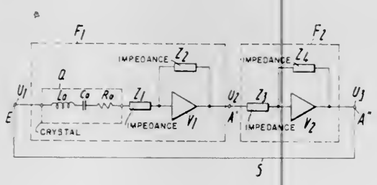
laser or as an adjustable current controlling device, for controlling the period of lasing action.

3,798,571
SLAB LASER SYSTEM WITH MEANS TO OVERCOME THE POSITIVE LENS EFFECT CAUSED BY THE THERMAL GRADIENT IN THE LASER ROD
Joseph P. Segre, Acton, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed June 9, 1969, Ser. No. 831,657
Int. Cl. H01s *3/05*
U.S. Cl. 331—94.5 T **14 Claims**



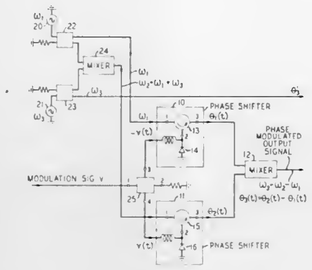
In a glass laser system, the laser glass is in the shape of an elongated slab, which is excited by being irradiated through the larger sidewalls thereof. A calcite block plate in combination with quarter and half wave plates laterally shift the laser rays in the laser cavity to compensate for a positive lens effect caused by one dimensional thermal gradient in the laser glass. The calcite block and quarter and half wave plates also function to polarize the laser rays to have their E vectors parallel with the larger sidewalls of the slab.

3,798,572
TUNABLE CRYSTAL OSCILLATOR
Reinhold Weiss, Berlin, Germany, assignor to Krone GmbH, Berlin, Germany
Filed Dec. 29, 1972, Ser. No. 319,691
Claims priority, application Germany, Dec. 30, 1971, 2165745
Int. Cl. H03b *5/32*
U.S. Cl. 331—108 D **18 Claims**



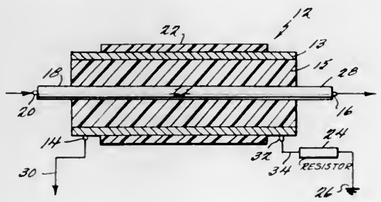
A tunable crystal oscillator having a crystal operated in series resonance and having an oscillating frequency which is detunable in a given frequency range close to the natural frequency of the crystal by means of at least one variable impedance component. The crystal is connected in series with a first operational amplifier having a feedback branch, the output of the first amplifier being coupled to the input of a second operational amplifier. The output of the second amplifier is connected to that terminal of the crystal which is in opposed connection to the first operational amplifier. The crystal oscillator is arranged to satisfy a Laplace transformed differential equation derived from the network of the crystal oscillator, the two amplifiers and associated circuit components.

3,798,573
PHASE MODULATOR USING A FREQUENCY MIXING PROCESS
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 16, 1973, Ser. No. 342,174
Int. Cl. H03c *3/22*
U.S. Cl. 332—16 R **3 Claims**



This application discloses a phase modulator comprising a plurality of phase shifters whose output are coupled to a frequency mixer. Carrier signals at different frequencies are applied to the phase shifters along with modulating signals derived from a common source. The resulting phase modulation impressed upon the output signal extracted from the mixer is related to the phases of the input signals to the mixer in the same way as the frequency of the output signal is related to the frequencies of the several input signals. This technique is used to synthesize specific phase functions. In particular, an arcsine function is generated using two varactor diode phase shifters.

3,798,574
DIRECTIONAL COUPLER HAVING DIRECTLY CONNECTED TAPS
Lester J. Workman, P.O. Box 5547, Sarasota, Fla.
Continuation-in-part of Ser. No. 112,297, Feb. 3, 1971, abandoned. This application Aug. 4, 1972, Ser. No. 278,025
Int. Cl. H01p *5/14*
U.S. Cl. 333—10 **16 Claims**

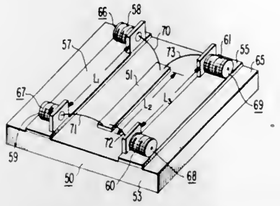


There has been provided an improved directional coupler adapted to be utilized with an electrical distribution line. In a first embodiment a section of coaxial conductor is utilized generally with its center conductor in series with distribution line and its outer conductor as the tap at one end and its other end of outer conductor coupled to ground through a matching resistor.

In a second embodiment printed circuit boards are utilized with relatively short parallel conductors with an insulator therebetween. The conductors are coupled in the distribution line in a manner similar to that of the coaxial embodiment.

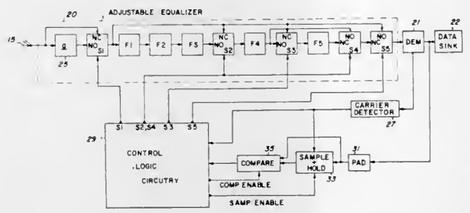
Thirdly a combination of a flat response coupler is connected with either of the above couplers, which have a tilted response, yielding a configuration having tailorable output of controlled gradient.

3,798,575
MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS
Robert Eugene De Brecht, Cranbury, and Louis Sebastian Napoli, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Dec. 14, 1972, Ser. No. 315,087
Int. Cl. H01p *5/14, 3/08*
U.S. Cl. 333—10 **8 Claims**



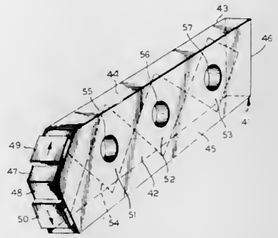
Three coplanar conductive surfaces on the top surface of a dielectric substrate form a microwave transmission line having first and second transmission modes used in the construction and operation of various microwave devices, such as amplifiers and directional couplers.

3,798,576
AUTOMATIC EQUALIZATION METHOD AND APPARATUS
John D. Torpie, Penfield; Allan J. Bell, Fairport; Michael L. Gorham, Rochester, and Walter G. Keating, Baldwinsville, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 30, 1971, Ser. No. 214,146
Int. Cl. H04b *3/04*
U.S. Cl. 333—18 **34 Claims**



This invention relates to a method of and an apparatus for providing equalization to frequency dependent delay and amplitude distortions in a transmission line. The apparatus includes an adjustable equalizer having a plurality of delay networks, an amplifier, a peak-to-average difference detector, and a control logic for selectively switching the delay networks and amplifier into and out of the path for the incoming signal. Adjustment of the equalizer to a given transmission line is carried out under the control of the control logic and in response to peak-to-average difference signals supplied by the detector. To that end, a train of test pulses is transmitted to the equalizer via the transmission line, and the delay networks and amplifier are selectively switched into and out of the signal path in timed synchronism with successive ones of those pulses, thereby providing different combinations of phase and/or amplitude compensation for such pulses. The peak-to-average difference detector responds to the compensated pulses to identify the particular delay network or delay network/amplifier combination that best compensates for the distortion introduced by the transmission line, and the control logic locks that combination into the signal path. In the case where the equalizer is used in an FM transmission system, it is interposed between the transmission line and the FM demodulator so that the equalization takes place prior to the recovery of the demodulated baseband signal.

3,798,577
ULTRASONIC DELAY LINE
Yukio Kasahara; Takashi Iguchi; Masanari Mikoda, and Isao Ueno, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 15, 1972, Ser. No. 253,116
Claims priority, application Japan, May 14, 1971, 46-32849; Mar. 6, 1972, 47-23371
Int. Cl. H03h *9/30*
U.S. Cl. 333—30 R **10 Claims**



An ultrasonic delay line having an ultrasonic beam path with a plurality, preferably seven, reflection points, and comprising a body of lead silicate glass and a transmitting transducer and a receiving transducer. The body has top and bottom major surfaces substantially parallel to each other, first and second side surfaces which are substantially rectangular in shape and substantially at right angles to the top and bottom major surfaces, a third side surface substantially at a right angle to both the top major surface and the first side surface, a fourth side surface which is substantially at an angle of 135° to the first side surface and supporting either the transmitting transducer or the receiving transducer thereon, and a fifth side surface substantially at an angle of 135° to the second side surface and supporting the other of the transmitting and the receiving transducers thereon. In the preferred form, the medium has a shape such that the length of the first and second side surfaces is about three times the length of the third side surface. The medium may have, at a portion adjacent the ultrasonic beam path, at least one hole and at least one diffusion layer zone which has a lower mechanical Q than that of the ultrasonic beam path, and said hole may have an inner wall provided with an ultrasonic adsorber.

3,798,578
TEMPERATURE COMPENSATED FREQUENCY STABILIZED COMPOSITE DIELECTRIC RESONATOR
Yoshihiro Konishi, Sagamihara; Norio Hoshino, and Yosuke Takano, both of Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan
Filed Nov. 18, 1971, Ser. No. 199,888
Claims priority, application Japan, Nov. 26, 1970, 45-103634
Int. Cl. H01p *1/30, 7/00*
U.S. Cl. 333—83 T **14 Claims**

A composite dielectric resonator having stabilized resonant frequency against the variation of ambient temperature, comprising two kinds of low attenuation dielectric elements each

having the temperature coefficient of the dielectric constant in opposite signs. The two dielectric elements are coupled together so that the contact surface is extending substantially parallel to the vector direction of the high frequency electric field. Further improvement of the resonator for obtaining fine adjustment facility is achieved by providing at least an adjustable element, such as a metal post closely arranged to the resonator element for adjusting the electromagnetic energy in the resonator.

3,798,579

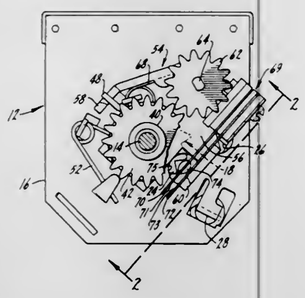
AFC DEFEAT FOR TELEVISION TUBES

Henry H. Tap, Cary, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Jan. 17, 1973, Ser. No. 324,552

Int. Cl. H03j *5/02*

U.S. Cl. 334—52 **9 Claims**



An AFC defeat for a television tuner that provides means for defeating an AFC circuit during channel selection and fine tuning.

3,798,580

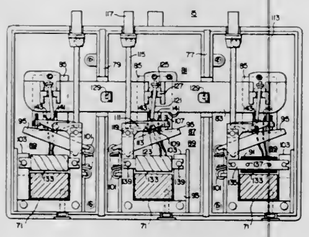
CIRCUIT INTERRUPTER WITH INDUCTION TYPE TRIP UNIT

Albert R. Cellerini, Beaver, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1973, Ser. No. 339,671

Int. Cl. H01h *77/04*

U.S. Cl. 335—37 **9 Claims**



An improved circuit breaker of the type characterized by an enclosed protective device for responding to abnormal currents in the conductors of an electrical distribution system and for actuating the circuit interrupter to open upon the occurrence of predetermined operating conditions, the protective device including a magnetically permeable structure around each conductor, a multiturn winding around a portion of the magnetically permeable structure, a U-shaped bimetal member having leg portions mounted on an insulating housing of the circuit breaker, the lead wires of the multiturn coil being connected separately to the leg portions of the bimetal member and forming an electric loop therewith, and the bimetal member being movable to a tripping position to actuate a trip bar for opening the circuit through the circuit interrupter in response to a predetermined abnormal current through any one of the conductors.

3,798,581

ELECTRO-MECHANICALLY SWITCHED PERMANENT MAGNET HOLDING DEVICE

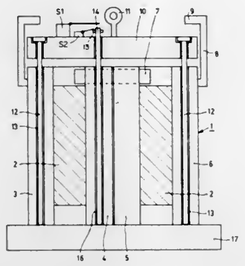
Nigel Anderson, Wigan, and Charles Peter Southworth, Mawdsley, near Ormskirk, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,132

Claims priority, application Great Britain, Nov. 2, 1971, 50797/71

Int. Cl. H01f *7/04*

U.S. Cl. 335—291 **9 Claims**



A magnetic lift device includes a permanent magnet and a pair of pole members disposed to provide first and second magnetic circuits respectively through the load end and the keeper end of the device. A control winding switches the magnet flux between the two magnetic circuits. A movable keeper plate contacts a non-magnetic safety member during a lift operation. Spacer rods extend from the keeper plate to the load end over a predetermined distance chosen to facilitate the separation of light magnetic loads from the lift device.

3,798,582

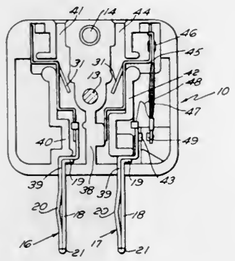
ELECTRICAL FLASHING DEVICE

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Mar. 20, 1972, Ser. No. 236,139

Int. Cl. H01h *61/06*

U.S. Cl. 337—92 **2 Claims**



The device comprises a circuit interrupter which is plugged into an electrical outlet. When an electrical lamp is plugged into the device, the lamp will flash on and off as the device intermittently interrupts the circuit. The flashing device comprises a rectangular housing having a base and a cover. The housing has a plurality of wall portions dividing the housing area into a plurality of segments. The various wall convolutions serve to frictionally retain the electrical parts without screws or other fastening means. A pair of identical blades are mounted for insertion in an electrical outlet. Internally, there

are two identical contact elements. One contact is locked to one end of one of the blades. The other contact is spaced from the other blade. A bimetallic strip extends from the spaced contact toward the adjacent blade and is covered with a coil of fine wire. One end of the wire is attached to the contact and the other end to the blade. The blades are plugged into an electrical outlet. Now, when a lamp is plugged into the device, its blades touch the contacts to complete a circuit. Current will initially flow along the fine wire. The wire does not allow the passage of sufficient current to light the lamp. However, the current will heat up the coil of wire which will heat the bimetallic strip. This causes the strip to bend against the contact to allow the current to bypass the wire and light the lamp. The coil and strip cool sufficiently so that the strip bends away from the contact and the light goes out. The wire again heats up and the entire sequence is repeated, causing the lamp to flash on and off.

3,798,583

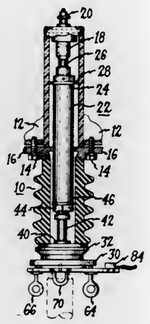
FUSE BUSHING WITH SEALING MEANS PROVIDING HOTSTICK CHANGEOUT OF FUSE

Albert J. Charbonneau; Gerard V. Conway, both of Pittsfield, and Henry Hucko, Littleton, all of Mass., assignors to General Electric Company

Filed June 23, 1972, Ser. No. 265,568

Int. Cl. H01h *85/02*

U.S. Cl. 337—202 **6 Claims**



A fuse bushing for electrical apparatus such as a transformer. The bushing receives a fuse such as a current limiting fuse and is sealed at its outer end. The sealing means includes a cover with an O-ring gasket, the cover having a member extending into the bushing which is connected to the outer end of the fuse. A contact plate is provided fitting over the cover and having two captive eyebolts which are threaded into the flange mounted on the end of the bushing. The eyebolts may be operated by a hotline tool and when tightened into the flange cause the contact plate to contact the cover, firmly holding such cover into the bushing thereby sealing the bushing by the O-ring. A vent device is provided in the cover for direct venting of fuse gases on operation of the fuse.

3,798,584

QUICK CONNECT CEILING ELECTRICAL FIXTURE MOUNTING

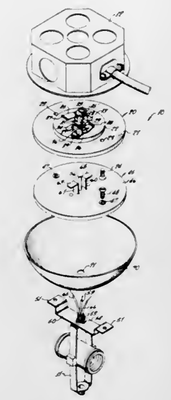
Junius W. Person, 15910 La Forge St., Apt. N., Whittier, Calif.

Filed May 22, 1972, Ser. No. 255,263

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 R **2 Claims**

A mounting for connecting an electrical fixture to a conventional outlet box positioned within a ceiling or wall wherein a first plate having a pair of arcuate slots therein and a pair of concentric, arcuate spring contact members thereon is permanently connected to the outlet box and a second plate having a pair of spaced contacts thereon is connected to the electrical fixture. The contacts on the second plate are adapted to extend into and through the arcuate slots in the first plate when the first and second plates are in mutual engagement. The contacts terminate in laterally extending ears adapted,



upon rotation of the second plate, to engage the arcuate spring contact members on the first plate to mechanically and electrically connect the electrical fixture to the outlet box.

3,798,585

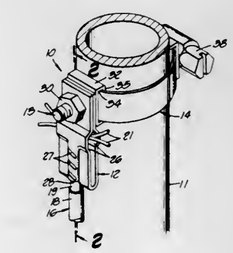
COMBINATION CABLE ANCHORAGE AND GROUNDING ACCESSORY

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.

Continuation-in-part of Ser. No. 159,799, July 6, 1971, abandoned. This application Feb. 7, 1972, Ser. No. 223,860

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 L **22 Claims**



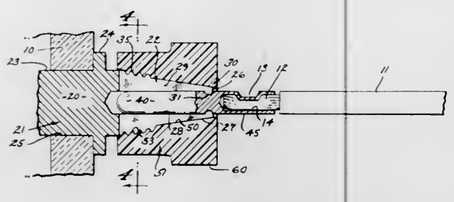
A cable anchorage and grounding accessory usable with cables generally and particularly with those having shield jackets to be grounded. The accessory includes a U-shaped clip provided with a channel having one end opening through its bight portion and sized to make a strong anti-twist mechanical and electrical connection to the exposed cable shield jacket as the free ends of the clip legs are clamped together. The channeled head of the clamping bolt is compressed against a grounded conductor by a clamping band and the clip is preferably formed with slots for assembly to a clamping bolt from one side of the bolt. In certain applications, as when anchoring a shielded cable to a fuse protector, the anchor clip is shrouded with a non-conductive strain relief protective sleeve.

3,798,586

UNION FOR CONNECTING ELECTRICAL CONDUCTORS

Paul Huska, 739 Moreno Ave., Los Angeles, Calif.

Filed May 22, 1972, Ser. No. 255,691
Int. Cl. H01r *13/30*
U.S. Cl. 339—89 R 11 Claims



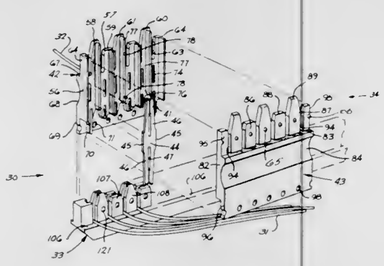
An electrical union comprising socket and pin members having coextensive pressure contact secured by a sleeve member adapted to have locking tapered engagement over the socket member thereby constricting the socket member onto the entire exterior of the pin member inserted therein. In its preferred form, the socket member is segmented with a tapered outer diameter wall and a cylindrical bore, the pin member is of right cylinder form to slideably fit into said outer diameter wall, the sleeve has a tapered inner diameter wall complementary to and axially forceable onto the outer diameter wall of the socket member so as to constrict the same in cylindrical parallelism, and said axial force is applied by locking threads at the interface of said tapered engagement.

3,798,587

DEVICES FOR MAKING ELECTRICAL CONNECTIONS

Benjamin Clement Ellis, Jr., Snellville; Christian Scholly, Atlanta; Charles McGonigal, Grayson, all of Ga., and John Howard Snyder, Fallston, Md., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Ellis and Western Electric Company, Incorporated, New York, N.Y., by said McGonigal, Scholly and Snyder

Filed Jan. 17, 1972, Ser. No. 218,358
Int. Cl. H01r *9/08*
U.S. Cl. 339—97 P 25 Claims



Connectors made from a flat strip of electrically conductive material, each having a center portion with two oppositely extending bifurcated portions cantilevered therefrom, a free end of each of the furcations being tapered and formed with a double bevel, are mounted individually between partitions formed in a first plastic part and secured therein against unintended lateral and longitudinal movement. A second mating plastic part is assembled to the first plastic part to form a connector block assembly having opposed rows of alternating depth teeth protruding from one side of the block with fanning slots formed between adjacent ones of the teeth, and having spaced legs extending from an opposite side of the block. Inwardly projecting guide fins formed on the legs and aligned with associated ones of the fanning slots extend into openings formed in a lower portion of each of the pins to further lock the connectors.

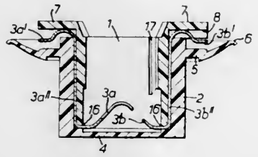
The connector block assembly is mounted on a plastic index strip having opposed rows of alternate depth teeth with fanning slots between adjacent teeth for receiving first conductors straddled across the opposed associated slots. During mounting, the guide fins align the fanning slots in the connector block and the index strip, and the first conductors are caused to be moved along the beveled edges of the connectors which slice through the insulation, after which the conductors are moved through rounded entrance portions and between the furcations of one bifurcated portion of asociated connectors to establish electrical contact between one bifurcated portion of each of the connectors and the associated first conductor. Second conductors are moved into the fanning slots of the connector block assembly between the furcations of the other bifurcated portions of the connectors to establish an electrical connection with the associated ones of the first conductors.

3,798,588

ELECTRICAL SOCKET ASSEMBLY

John Arthur Howe, Tollerton, and David Michael Anthony, Kenworthy, Barnsley, both of England, assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 9, 1972, Ser. No. 305,207
Claims priority, application Great Britain, Nov. 10, 1971, 52175/71
Int. Cl. H02b *1/02*
U.S. Cl. 339—127 3 Claims



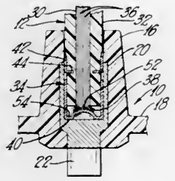
An electrical socket assembly for a lamp or a plug is formed of two body parts in mutual mating engagement. Contact members are positively located in cavities defined between the body parts, and may be shaped to engage directly with conductors on a printed circuit board with which the socket is assembled.

3,798,589

ELECTRICAL LEAD

Lawrence R. Deardurff, Newark, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Sept. 27, 1972, Ser. No. 292,577
Int. Cl. H01r *15/12*
U.S. Cl. 339—223 S 8 Claims



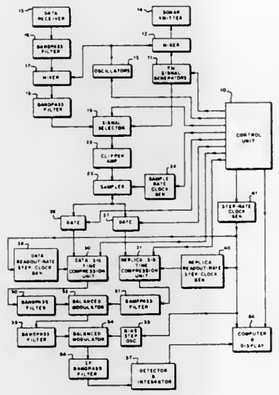
An electrical lead suitable for use in ignition systems for internal combustion engines including an electrical conductor fully surrounded by insulation with an exposed conductor portion extending from the insulation at one end of the lead; and an electrically conductive termination cap fastened at one end including a closed central portion oriented transversely of the conductor in pressed electrically conductive contact with the exposed conductor portion.

3,798,590

SIGNAL PROCESSING APPARATUS INCLUDING DOPPLER DISPERSION CORRECTION MEANS

Arthur J. Jacobson, Fort Wayne, Ind., and Gilbert J. Huey, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 12, 1968, Ser. No. 761,010
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R 17 Claims



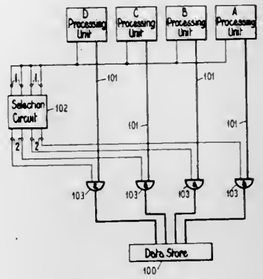
Apparatus for processing data signals such as sonar return signals of the frequency modulated type wherein adverse effects of Doppler dispersion are eliminated which apparatus includes a signal generator providing an inverse replica of that signal which is shifted upwardly in frequency and is transmitted as the sonar signal, a pair of digital time compression units for compressing respective ones of the down-shifted sonar return signal, i.e., a data signal, and the replica signal, a pair of step clock generators each enabling the memory bank contents of the associated time compression unit to be read out at respective various rates thereby varying in steps the time compression ratios of the units and bandpass correlation apparatus including a first balanced modulator for receiving and operating on the compressed output signals of the time compression unit. The output frequencies of the step clock generators vary in steps so that the compressed replica signal frequency is, in effect, translated upwardly by decreasing degrees for a range of predetermined positive relative target velocities and, thereafter, the compressed data signal frequency is translated upwardly by increasing degrees for a range of predetermined negative relative target velocities thereby enabling, in effect, correlation of the data signal with a suitable replica signal for each of a number of predetermined relative target velocities in a predetermined range. The filtered output signal from the first modulator and an output signal of a step oscillator whose output signal frequency varies in steps according to the predetermined relative target velocities are applied to a second modulator to compensate for Doppler-induced frequency shifts in the transmitted sonar signal. The filtered output signal of the second modulator is detected and integrated to provide points on the correlation functions in the range-Doppler plane.

3,798,591

ACCESS CIRCUIT FOR A TIME-SHARED DATA PROCESSING EQUIPMENT

Brian Harry Phillips, Rugby, and Peter Carrington, Coventry, both of England, assignors to The General Electric Company Limited, London, England

Filed Sept. 28, 1971, Ser. No. 184,515
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 4 Claims



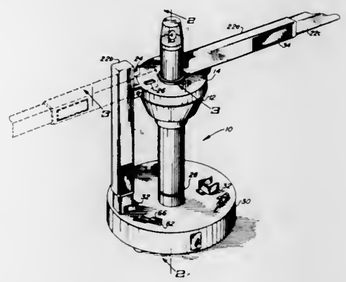
A multiple access circuit for a stored-program-control signalling system and giving access, for example, to a common data store from a number of processing units in such manner that only one processing unit obtains access at a time and additionally so that if two or more other processing units are queueing for access a priority arrangement allots access to a particular one of the waiting units when the data store becomes available. The priority allotment may be fixed or variable.

3,798,592

INTERSECTION TRAFFIC DIRECTOR DEVICE

Glenford Lilly, 1728 W. Argon St., Mesa, Ariz.

Filed Nov. 13, 1972, Ser. No. 305,860
Int. Cl. G08g *1/095*
U.S. Cl. 340—41 A 9 Claims

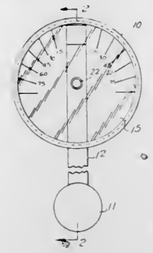


A portable revolving traffic signal device employing telescoping, retractable arms driven through 45 degree movement by a bevel gear drive to provide normal intersection traffic control as well as sequentially controlling lights on the arms for left turn only control. The arms are retractable via separately driven jackscrews controlling telescoping sections and can be folded and held in place on a pedestal of the traffic device.

3,798,593
VEHICLE CURVE SPEED WARNING DEVICE

Raymond A. Sartor, 1518 Zuni, Pueblo, Colo.

Filed June 30, 1972, Ser. No. 268,206
Int. Cl. B60q *5/00*
U.S. Cl. 340—52 H 11 Claims

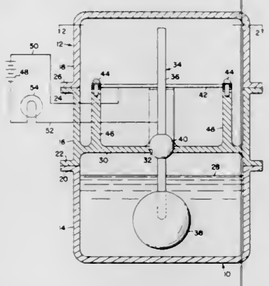


A device is described which provides a visual and audible warning when a vehicle on which it is mounted exceeds a predetermined speed when going around a curve. The device comprises a double potentiometer switch actuated by a pendulum contact arm which acts under the influence of centrifugal force to vary the resistance in circuit with a warning light. The greater the speed of the vehicle in making the turn, the further the contact arm will move along the resistance, decreasing the total resistance in circuit with the lamp, causing it to glow more brightly. When the contact arm passes a predetermined point on either the left resistance or the right resistance, a pushbutton switch will be closed, actuating a buzzer, indicating that the safe speed has been exceeded. The pendulum actuated contact arm is adjustably mounted so that depending upon the particular application to which the device is put, the buzzer can be made to sound at a preselected point, representing the safe speed for any particular curve.

3,798,594
VEHICLE ATTITUDE WARNING DEVICE

Francis Claire Funk, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Nov. 28, 1972, Ser. No. 310,114
Int. Cl. G08b *21/00*
U.S. Cl. 340—52 H 3 Claims

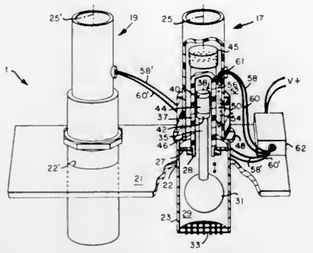


A system is provided for warning an operator of the fact that his vehicle is approaching an undesirable degree of tilt. The system includes a pendulum or gravity-responsive member which is mounted for universal movement in a housing which also supports a conducting ring in surrounding relationship to a stem or pin portion of the pendulum. The pendulum stem is also made of conducting material and cooperates with the conductor ring to define a switch which is normally open but which is closed to energize a warning device at the operator's station when the vehicle becomes tilted to a predetermined undesired position.

3,798,595
BRAKE FLUID LEVEL MONITORING APPARATUS

Elbert S. Dyke, 24 Atlas Ave., San Jose, Calif.

Filed Nov. 4, 1971, Ser. No. 195,685
Int. Cl. G01f *23/12*; B60q *5/00*; B60c *5/32*
U.S. Cl. 340—59 3 Claims

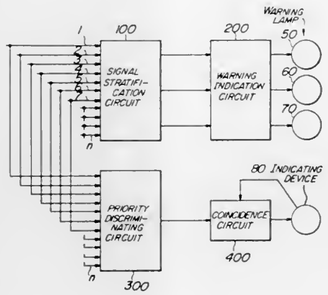


Apparatus for monitoring the level of fluid within a fluid reservoir, e. g. master cylinder reservoir, of a hydraulic brake system during bleeding operations. The apparatus comprises a housing having a fluid collection cavity, said cavity opening to the exterior and adapted to extend within the reservoir such that the fluid level within said cavity represents the fluid level within the reservoir. A sensor means senses the fluid level within the cavity and is adapted to control an indicating means in turn adapted to control an audible, visual or other recording device recording the condition of the indicator means.

3,798,596
CENTRALIZED WARNING SYSTEM FOR VEHICLES

Masaharu Sumiyoshi; Hiroshi Arai, both of Toyota; Hisato Wakamatsu, and Nobumasa Higo, both of Kariya, all of Japan, assignors to Nippondensco Co., Ltd., Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, both of, Japan

Filed Oct. 26, 1971, Ser. No. 192,421
Claims priority, application Japan, Oct. 27, 1970, 45-94544
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 F 11 Claims

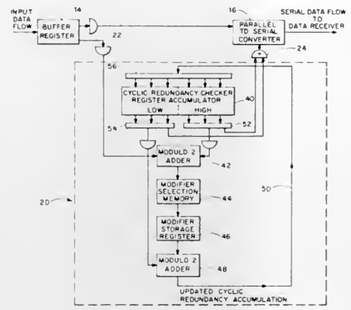


A centralized warning system for vehicle is provided wherein "1" and "0" signals are received from a plurality of sensors mounted at various parts of a vehicle where checking is required, whereby according to preliminary classified conditions of danger for driving of the vehicle "Normal", "Warning" or "Danger" is identified by the "1" and "0" signals to thereby indicate the condition of danger of the defective part. Furthermore, when two or more abnormality signals are simultaneously generated by said plurality of sensors, the location of most dangerous defective part is indicated according to the predetermined orders of priority.

3,798,597
SYSTEM AND METHOD FOR EFFECTING CYCLIC REDUNDANCY CHECKING

Terrence K. Frambs, Medway, and Alejandro B. Marton, Natick, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed June 26, 1972, Ser. No. 266,014
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL 10 Claims



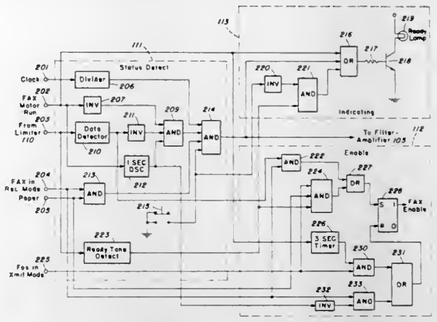
A system is set forth for processing binary coded information defined by bytes in a data stream in order to facilitate detecting of errors resulting from the transmission of the information. The system includes a register accumulator for receiving and storing up-dated bytes of binary data. First means for effecting modulo 2 summing is provided responsive to the application thereto of combinations of binary signals related to selected bytes in the data stream and to a segment of a byte previously stored in the accumulator so as to generate sums defining unique modifiers selection signals. These signals are applied to a memory storage means which stores a plurality of predetermined binary coded modifiers which are selectively retrievable responsive to respective unique modifier selection signals. In addition, a second means for effecting modulo 2 summing is provided responsive to retrieved modifiers and to another of the segments of the byte stored in the accumulator for generating a sum comprising an up-dated cyclic redundancy accumulation. This up-dated cyclic redundancy accumulation is then supplied to the accumulator and stored therein for subsequent transmission.

3,798,598
DATA COUPLING APPARATUS FOR DEDICATED COMMUNICATION LINES

John Tambert, Rochester; Stanley J. Zurakowski, Fairport, and Charles L. Jacobson, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 23, 1971, Ser. No. 165,455
Int. Cl. H04l *15/00*; H04m *11/06*
U.S. Cl. 340—147 R 11 Claims

Data coupling apparatus for establishing a data communication path between a local data device and a remote data device over an existing communication channel. The capability of each of the local data device and the remote data device to receive data is detected; and when data is transmitted by the remote data device the local data device is automatically enabled to receive said transmitted data. If the local data device is adapted to transmit data, the data coupling apparatus initiates a data transmission when the remote data device is detected as being capable of receiving data. At the conclusion

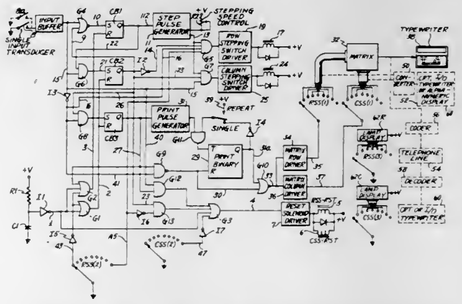


of a data transmission or reception, the data coupling apparatus terminates further operation of the local data device.

3,798,599
SINGLE INPUT CONTROLLER FOR A COMMUNICATION SYSTEM

Haig Kafafian, 4201 Cathedral Ave. N.W., Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 229,089
Int. Cl. H01j *29/00*; G06c *7/00*
U.S. Cl. 340—147 R 7 Claims



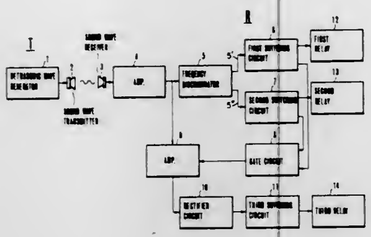
A communication system for the handicapped having a single-input transducer or switch and a dual output for operation of an office machine, typewriter or the like, or a display, or a punched or magnetic storage device, as well as almost any material where data or information is to be stored, printed, displayed, or otherwise used, e.g., through a device which may be a matrix. In a "Hold" embodiment, upon the first actuation of the input switch, a stepping switch is stepped to provide the first coordinate of the matrix. When the switch is deactivated, the stepping switch stops at a desired row, and a second stepping switch automatically moves to the desired column. Upon reactivation of the input switch, the second stepping switch stops at the desired column, and signals are sent out through the matrix to initiate activation of an element or elements. The activated element or elements may cause a letter on a typewriter to be typed or a lamp to light which displays a symbol, letter, or function, or any combinations thereof. Whereupon, the stepping switches are reset and the system is ready to accept other signals.

In a "No-Hold" embodiment of the invention, upon a first actuation of the input switch, the row stepping switch commences to step. Upon a second actuation of the input switch, the row stepping switch stops at the desired row, and at the same time a column stepping switch automatically starts stepping along the matrix. When the desired column is reached, the input switch is actuated a third time, and a signal is fed to actuate an element in the matrix to type a letter, etc.

3,798,600
METHOD AND SYSTEM OF REMOTE CONTROL

Noboru Saikaishi, Tokyo, and Shigeharu Takamatsu, Sagamihara, both of Japan, assignors to Trio Electronics Incorporated, Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,857
Int. Cl. H04q *9/00*
U.S. Cl. 340—148 4 Claims

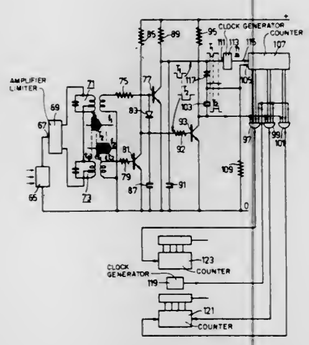


Control waves having different frequencies are generated and successively transmitted from a transmitter. The control waves are received at a receiver and are applied to a frequency discriminator which generates positive, negative and zero voltages in response to the frequencies of the received control waves for generating three control signals which are used to control a controlled device.

3,798,601
REMOTE CONTROL SYSTEM

Cornelis Jozef Hulsbosch, and Dirk Nederlof, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,558
Claims priority, application Netherlands, Apr. 21, 1971, 7105352
Int. Cl. H04b *1/68*
U.S. Cl. 340—148 10 Claims

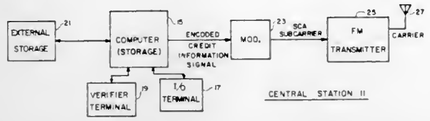


An ultrasonic remote control system in which the influence of echoes on a pulse duration information transmission is prevented by using signals having a first and a second frequency and in which the occurrence of the signal having the first frequency determines the commencement of the pulse duration information and the occurrence of the signal having the second frequency determines the end of this information.

3,798,602
CREDIT AUTHORIZATION SYSTEM

John F. Hynes, Jr., 12356 Greekhaven, Des Peres, Mo.

Filed Jan. 17, 1972, Ser. No. 218,198
Int. Cl. H04q *5/00*
U.S. Cl. 340—149 A 15 Claims



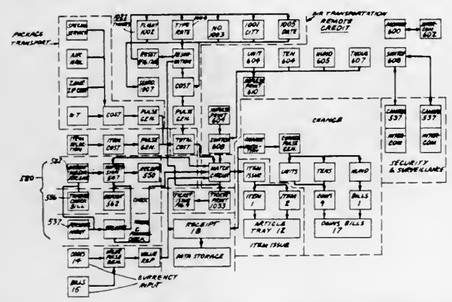
Credit authorization by a method of providing credit account information at remote terminals. A radio frequency carrier is modulated with a signal constituting a sequence of encoded data, i.e., credit information, transmitted from a central station to remote terminals, and there retrieved by demodulation of the carrier. Credit information is derived from the retrieved signal by electronically determining coincidence between credit data (e.g., a credit account number) presented at remote terminals with credit data (e.g., a sequence of "bad" credit account numbers) of the retrieved signal.

This is accomplished by apparatus of the system including central means, e.g., a computer, for generating the signal, a central transmitter for transmitting the signal to the remote terminals (preferably through commercial FM broadcasting subcarrier techniques), and receivers at each of the remote terminals. Digital circuitry at the remote terminals makes the coincidence determination.

3,798,603
BUSINESS TRANSACTION APPARATUS

Eric C. Wahlberg, 32 Eighth St., Stamford, Conn.

Continuation of Ser. No. 170,520, Aug. 10, 1971, Pat. No. 3,705,384, which is a continuation-in-part of Ser. No. 884,620, Dec. 12, 1969, abandoned. This application Sept. 22, 1972, Ser. No. 291,295The portion of the term of this patent subsequent to Dec. 5, 1989, has been disclaimed.
Int. Cl. G07f *7/02*; H04q *1/00*
U.S. Cl. 340—149 A 24 Claims

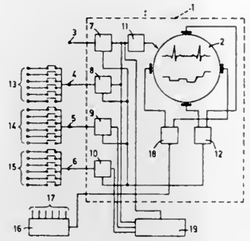


A multiple transaction business machine is provided which includes means for selecting a plurality of transactions, totaling the cost of such transactions and determining the value of payment tendered in satisfaction of the cost of the transactions by payment evaluating means receiving legal tender, credit media and negotiable instruments from the purchaser in tender of satisfaction of the cost of the transactions selected, as well as means for validating the credit media and negotiable instruments presented and means for validating the identity of the purchaser. The machine issues tickets and the like in response to preselection of various modes of transportation, package mailing and handling, etc. A remote data link for the purpose of credit availability verification and purchaser identity is also provided together with remote control, intercom and live identification media.

3,798,604
DEVICE FOR CHECKING CORPORAL FUNCTIONS

Pieter Geert Kuipers, and Jan Albert Meerdink, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 17, 1969, Ser. No. 799,620
Claims priority, application Netherlands, Feb. 16, 1968, 6802208
Int. Cl. G08b *23/00*; G01r *13/20*
U.S. Cl. 340—150 10 Claims

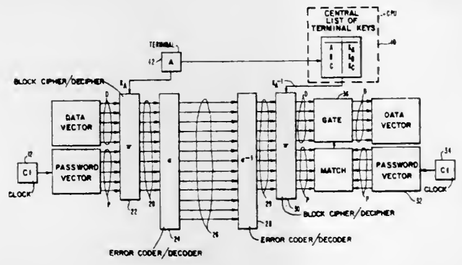


A monitoring device comprising an oscilloscope having three inputs connected to three switching members. The first switching member receives signal voltages corresponding to the monitored parameters, whereas the second and third switching members receive upper and lower limit voltages of the signal voltages. The oscilloscope is scanned horizontally and vertically. The signal voltages and the limit voltages are sequentially scanned during each horizontal trace period and are compared with a sawtooth voltage synchronized with the vertical scan of the oscilloscope to produce control pulses that are applied to the oscilloscope beam control grid to intensity modulate same to simultaneously display the signal and limit voltages.

3,798,605
CENTRALIZED VERIFICATION SYSTEM

Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,183
Int. Cl. H04q *5/00*
U.S. Cl. 340—172.5 6 Claims



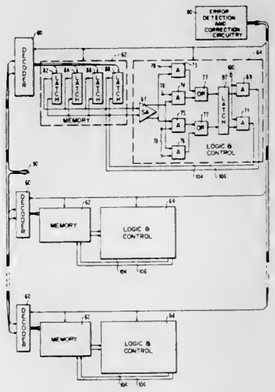
This specification describes a multi-terminal data processing system having means and process for verifying the identity of subscribers to the system. Validity of a terminal request for communication with the data processing system are determined on the basis of a centralized verification system. Each subscriber to the system is identified by a unique key binary symbol pattern. The central data processing unit contains a listing of all valid keys for subscribers to the system.

Two embodiments of the centralized verification system are presented, a password system and a handshaking system. In the password system, all data or information originating at the terminal under use of the subscriber is enciphered in combination with the unique subscriber key. Upon proper deciphering of the key or password at the central processing unit and arriving at a match with one of the keys in the processor's listing, the subscriber may communicate with the processing system. In the handshaking system embodiment, the user and the central processor exchange a plurality of messages each formed by a combination of new and prior received data. Received data messages are also maintained within the registers at both the terminal and the central processor for further verification upon the return of the portion of the message that was previously transmitted.

3,798,606
BIT PARTITIONED MONOLITHIC CIRCUIT COMPUTER SYSTEM

Robert A. Henle, Port Chester; Gerald A. Maley, Fishkill, both of N.Y., and Wilbur D. Pricer, Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,056
Int. Cl. G06f *11/00, 13/00*
U.S. Cl. 340—172.5 9 Claims



A monolithic circuit bit partitioned computer system for processing M bits of data comprising a substrate for providing electrical interconnection paths to a plurality of M monolithic circuit modules. Each of the M modules includes distinct decoder means, memory means, elemental quasi-arithmetic means and control circuitry, and each of the M modules are uniquely associated with the distinct ones of the M bits of data for collectively and universally processing the M bits of data.

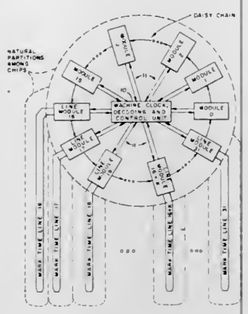
3,798,607
MAGNETIC BUBBLE COMPUTER

Robert C. Minnick, Houston, Tex.; Paul T. Bailey, Creve Coeur; Robert T. Sandfort, St. Charles, both of Mo., and Warren L. Semon, Dewitt, N.Y., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 1, 1972, Ser. No. 311,401
Int. Cl. G06f *3/00*; G11c *11/02*
U.S. Cl. 340—172.5 22 Claims

In a general purpose computer system operating on a fetch-execute cycle, arithmetic, logic, storage and control functions are carried out by means of magnetic bubble circuits. A plurality of logic sub-systems called modules are interconnected by a closed unidirectional buss permitting intermodule transfer of data in the form of magnetic bubbles. The memory for the computer consists of a plurality of serial shift registers

called mark-time lines each comprising a chain of recirculating loops. On signal, data can be advanced in series around the chain. Modules in one subset are specialized to perform various functions. The remaining modules constitute logic inter-



faces between corresponding mark-time lines and the special subset of modules. All instructions include designating an intermodule transfer or of initiating a search for a storage location in a mark-time line.

3,798,608

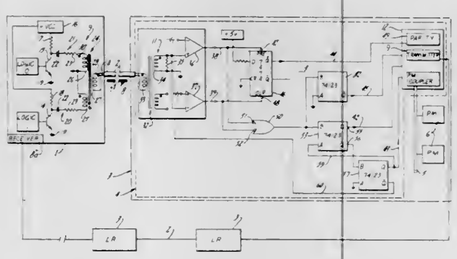
DIGITAL SIGNAL TRANSMISSION APPARATUS

Thomas W. Huebner, New Berlin, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Dec. 15, 1972, Ser. No. 315,464

Int. Cl. H03k *5/00*

U.S. Cl. 340—172.5 **17 Claims**



A bi-polar data signal of a nominal period is transmitted over a loop cable to a plurality of series connected remote stations, each of which includes means to process the bit. Each bit signal is divided into a plurality of three successive intervals. During each of the first two periods, the one polarity pulse signal occurs on one line followed by an opposite polarity pulse on the line. A negative and positive signal detector generates a pair of corresponding pulses. The first pulse fires a timing means to generate a short pre-clock pulse employed as a timing pulse in the processing of the data bit signal. The trailing edge of the pre-clock pulse fires clock timing means having a longer timing period. The output of the clock timing means is connected to the pre-clock means and to the receiving means to inhibit further signal formation. A clock pulse is derived even if one of the data polarity pulse is lost to continue proper transmission of the successive bits of a message frame even if the data bit is transmitted with erroneous information. The processing circuitry further includes a parity check on the received data to indicate such a fault.

3,798,609

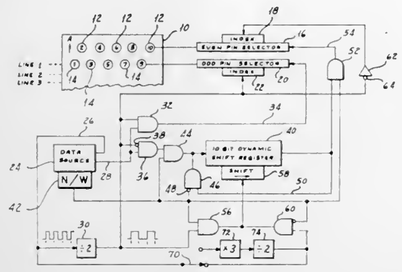
DYNAMIC SHIFT REGISTER FOR STAGGERED PRINTING HEAD

Hugh F. Frohbach, Sunnyvale, Calif., assignor to The Rapifax Company, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,490

Int. Cl. G03g *15/00*

U.S. Cl. 340—172.5 **12 Claims**



A system for applying groups of data bits to an electrostatic writing head having two staggered lines of electrodes in which odd bits of a group are serially fed directly to the electrodes of one line and in which even bits of a group are fed to the electrodes of the other line through a dynamic shift register having a number of places equal to n where n is the number of bits in a group and in which means is provided for recirculating the bits through the shift register in response to a wait signal.

3,798,610

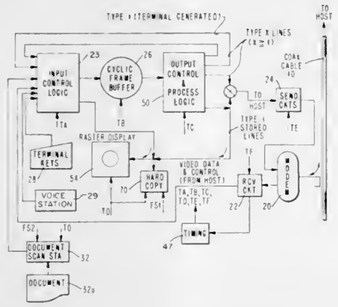
MULTIPLEXED INTELLIGENCE COMMUNICATIONS

Burtt E. Bliss, Hyde Park; James T. Dervan, III, Salt Point, both of N.Y.; Leroy E. Griffith, Boulder, Colo.; Bruce D. Pung, Wappingers Falls, N.Y.; Robert A. Thorpe, and Norman A. Vogel, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,787

Int. Cl. G06f *3/04, 3/14;* **H04l** *5/00*

U.S. Cl. 340—172.5 **17 Claims**



Time multiplexed signal communications between a host computer and subordinate data processing terminals include coded and non-coded information. Coded information originated by the host includes entry-separation marker signals. Individual marker signals are used at terminals to control access to associated particular time spaces of the multiplex frame. The host signals are serially stored by addressed terminals in the time sequence of transmission. The stored marker signals are protected from modification at terminals and control write-in access to storage spaced allocated to the associated time segments; thereby controlling terminal editing

operations. Edited information in unprotected terminal storage spaces is easily segregated -- e.g., for compact transmission to the host -- by reference to the stored marker signals. When the non-coded signals comprise raster scanned picture information displayable at terminal display apparatus the markers are used to generate cursors indicating edit-accessible positions (e.g., character entry spaces). A distinct displaced cursor provides unique indication of the space next accessible for entry in a normal keying (i.e., typing) sequence.

3,798,611

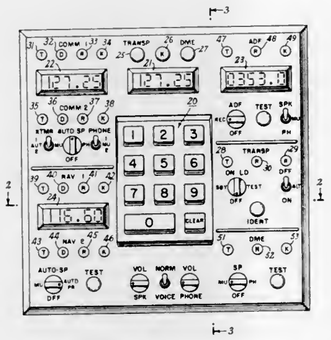
INTEGRATED PUSH BUTTON PANEL FOR CONTROLLING AIRCRAFT INSTRUMENTALITIES

Reginald R. Gallant, Hartford; Roger S. Swain, Wolcott, and Neil S. Waterman, Stamford, all of Conn., assignors to Atlantic Design & Development Corporation, Stamford, Conn.

Division of Ser. No. 835,164, June 20, 1969, Pat. No. 3,701,945. This application June 30, 1972, Ser. No. 165,829

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **4 Claims**



A panel for controlling a plurality of instruments has a centrally disposed numerical keyboard of eleven push buttons and a plurality of digital display means, one display connected with the keyboard to indicate the sequence in which the numerical push buttons have been manipulated, each of the other display means connected with one of the instruments to indicate the digital data by which it is controlled. Digital memory storage units are associated with the keyboard and with each instrument. Switching means on the control panel enables the selected numerical setting in the keyboard storage unit to be transferred to any of the other display means, while servo means directs each instrument to respond to the digital data registered in its digital memory storage unit, as may be shown by its associated display. The eleventh push button serves to clear the keyboard and its associated digital display.

3,798,612

CONTROLLER PROGRAMMER

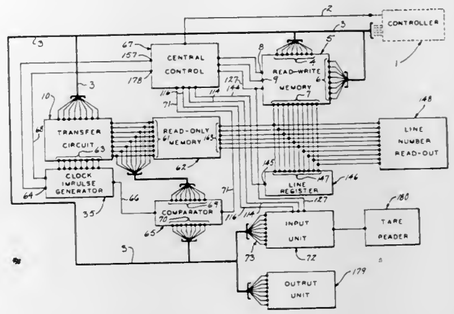
Odo J. Struger, and Joseph D. Radtke, both of Milwaukee, Wis., assignors to Allen-Bradly Company, Milwaukee, Wis.

Filed Sept. 13, 1971, Ser. No. 179,982

Int. Cl. G05b *11/00*

U.S. Cl. 340—172.5 **7 Claims**

A program for a controller is loaded manually or by means of a tape reader into a plated wire, read-write memory contained within the programmer. The programmer operates the controller according to the instructions in the program and any changes necessary to perfect the program are made. A mode switch is then operated and the program is automatically transferred, one instruction at a time, through a transfer circuit to a read-only memory suitable for installation in the controller. The transfer is made in synchronism with a ten-



phase clock and a check is made by a comparator to verify the proper loading of each instruction in the read-only memory.

3,798,613

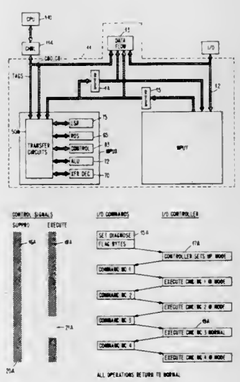
CONTROLLING PERIPHERAL SUBSYSTEMS

Gene H. Edstrom, Longmont; Edward P. Lutter, Boulder, and Francis L. Robinson, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1971, Ser. No. 194,079

Int. Cl. G05b *19/22;* **G06f** *11/04*

U.S. Cl. 340—172.5 **16 Claims**



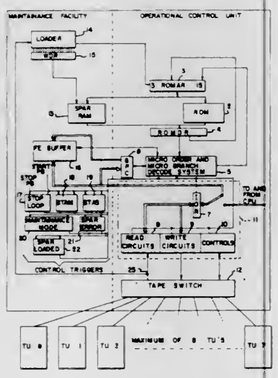
In a set of chained I/O commands, a controller sets up a mode of operation other than that normally executed. Such mode is maintained for all chained commands by a control signal, such as SUPPRO, supplied over the I/O channel to the controller. Upon deletion of the control signal, the I/O controller automatically resets to a normal mode. In a variation, an EXECUTE signal is supplied together with the SUPPRO signal. The I/O controller responds to the EXECUTE signal to execute commands in accordance with the mode previously set up. With the EXECUTE signal being deleted for a given command, chained to the mode set-up command and with SUPPRO maintained, the I/O controller executes the command in a normal mode and then resets to the commanded or imposed mode for subsequently chained commands. Another

aspect is exchanging microprogram control signals between loosely coupled systems for effecting a greater variety of programmed interrelationships while maintaining the loose coupling. A further aspect is enlarged usage of microprogramming techniques.

3,798,614
MAINTENANCE FACILITY FOR A MAGNETIC TAPE SUBSYSTEM

James Edward Meadows; Larry Ray Horsman, and Anthony Louis Carpentier, all of Boulder, Colo., assignors to Storage Technology Corporation, Boulder, Colo.

Filed May 26, 1972, Ser. No. 257,078
Int. Cl. G06f *11/08, 13/00*
U.S. Cl. 340—172.5 6 Claims



A control unit for a magnetic tape subsystem of a data processing system includes a maintenance facility. This maintenance facility permits the exercise of the magnetic tape subsystem for diagnostic and maintenance purposes. The control unit is of the microprogram type, in which a control memory contains micro orders which control the operation of the magnetic tape units. The maintenance facility exercises the tape subsystem in two different manners—with the Input/Output command language of the CPU or with the micro order language of the control unit. This can be performed while the magnetic tape subsystem is switched offline to the CPU, or time-multiplexed with the operational usage of the magnetic tape subsystem by the CPU.

The control unit includes a random access memory connected in parallel with the control memory. In the diagnostic mode, micro orders are transferred from a magnetic tape unit to the random access memory. Then, sequences of these micro orders are performed in the same way that micro orders stored in the control memory are otherwise executed in order to perform diagnostic testing.

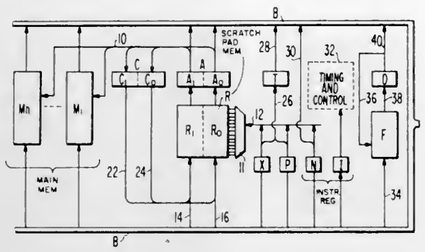
The data path transferring the micro orders from the magnetic tape unit to the random access memory is a simple one which bypasses the normal circuits which might otherwise introduce errors into the diagnostic micro orders. Amplitude sensors, which are otherwise used for error detection and correction, are connected to majority circuits which produce outputs when the amplitude sensors indicate that a majority of the data tracks are written with a "1." In this manner, very reliable micro orders are obtained for performance of the diagnostic testing function.

The maintenance facility provides full micro order control over a Field Engineer Buffer. Data and commands are loaded into and fetched from any buffer position under manual switch control or microprogram control.

3,798,615
COMPUTER SYSTEM WITH PROGRAM-CONTROLLED PROGRAM COUNTERS

Joseph A. Weisbecker, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,680
Int. Cl. G06f *13/00*
U.S. Cl. 340—172.5 1 Claim

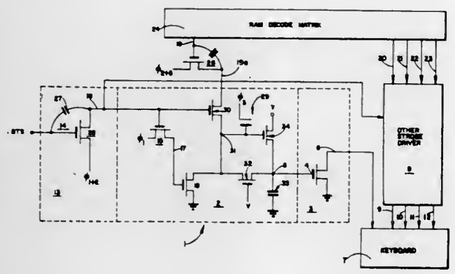


A computer system which is especially suitable for small scale computers, and which includes a main memory, a scratch pad memory having storage locations for main memory addresses and for operands, a P register for containing the address of any storage location in the scratch pad memory currently used as a program counter, and an instruction register including a portion I for an operation code, and a portion N for the address of any storage location in said scratch pad memory. During an instruction fetch cycle, the contents of the P register are used to address the current program counter location in the scratch pad memory, the contents of the program counter location are used to address the main memory and transfer an instruction therefrom to the instruction register, and the contents of the program counter location are incremented. During an instruction execute cycle, the program can cause any other scratch pad storage location to become the current program counter by transferring the contents of the portion N of the instruction register to the P register.

3,798,616
STROBE DRIVER INCLUDING A MEMORY CIRCUIT

John R. Spence, Villa Park, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Apr. 14, 1972, Ser. No. 244,185
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R 10 Claims

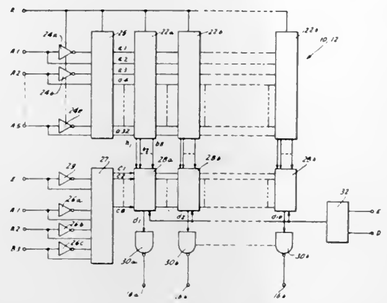


Data is stored in one or more memory circuits of associated strobe drivers for providing strobe signal outputs during appropriate clock intervals of operating cycles. The memory circuits can be addressed through a read-wire (RAM) decode matrix. Each memory circuit includes internal circuitry for maintaining a stored voltage level throughout a cycle.

3,798,617
PERMANENT STORAGE MEMORY AND MEANS FOR ADDRESSING

Andrew G. Varadi, Briarwood; Richard B. Rubinstein, New York, both of N.Y., and Steven Radoff, Nashua, N.H., assignors to General Instrument Corporation, Newark, N.J.

Division of Ser. No. 86,882, Nov. 4, 1970, Pat. No. 3,691,534.
This application May 8, 1972, Ser. No. 251,527
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R 6 Claims

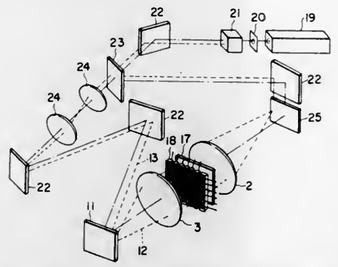


A permanent storage memory comprises a data storing section in which data is stored in a predetermined manner at a plurality of address stations defined by intersecting rows and columns. A plurality of data nodes are operatively associated respectively with the columns of the memory and means are provided for addressing a selected row thereby to develop a plurality of data signals at said data nodes corresponding respectively to the stored bits at the addressed row. A second addressing means is effective to provide a unique signal corresponding to the selected column and is effective to initiate the transfer of data signals to an output terminal from a predetermined one of the data nodes.

3,798,618
HOLOGRAPHY MEMORY APPARATUS USING A SINGLE QUARTER-WAVE SPACIAL MODULATOR

Yoshitada Oshida, Tokyo, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed July 28, 1972, Ser. No. 276,172
Claims priority, application Japan, July 28, 1971, 46-55969
Int. Cl. G11c *13/04, 11/22*
U.S. Cl. 340—173 LM 11 Claims

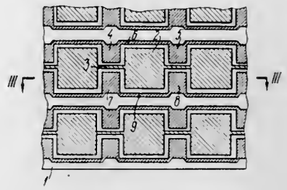


A holography memory apparatus has an object light beam converted into circularly polarized light by a quarter-wave plate. The circularly polarized light beam is caused to impinge upon a digital spacial modulator employing a quarter-wave plate, so as to modulate the polarized direction of the incident light, in response to information to be recorded. A hologram is recorded on a hologram plate resulting from the interference between the modulated object light beam and a reference light beam.

3,798,619
PIEZOELECTRIC TRANSDUCER MEMORY WITH NON-DESTRUCTIVE READ OUT

Konstantin Grigorlevich Samofalov, ulitsa Vandy Vasileveskoi, 10, kv. 52; Tatyana Vasilievna Gruts, prospekt Vossoedinenia 20/2, kv. 61; Jury Pavlovich Zaika, ulitsa Pirogova, 2, kv. 166; Valery Alexandrovich Manzhelo, ulitsa Scherbakova, 36, kv. 25/1; Vladimir Alexandrovich Zavadsky, ulitsa Vyborgskaya, 2/4, and Leonid Sergeevich Voskrekasenko, Rusanovskaya Naberezhnaya, 12, kv. 38, all of Kiev, U.S.S.R.

Filed Oct. 24, 1972, Ser. No. 300,241
Int. Cl. G11c *11/22, 5/06, 7/02*
U.S. Cl. 340—173.2 3 Claims

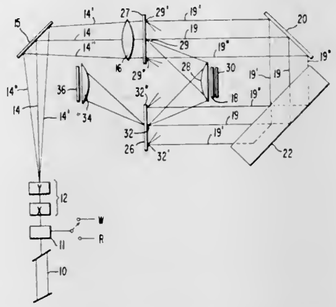


A memory device is disclosed for long-term storage and non-destructive reading of information designed as a strip of a ferroelectric material, which comprises storage cells including at least two piezoelectric transducers. The piezoelectric transducers are made on the basis of sections of said strip of ferroelectric material which acquires piezoelectric properties when affected by an electric field. Input piezoelectric transducers contain excitation electrodes and screening electrodes located on opposite flat surfaces of said strip, which are fed with read signals. Output piezoelectric transducers contain electrodes forming discharge lines and write electrodes located on opposite flat surfaces of said strip which are fed with write signals.

3,798,620
PAGE COMPOSER TRANSLATING INFORMATION FROM ELECTRICAL TO OPTICAL FORM

Louis Salvatore Cosentino, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 312,899
Int. Cl. G11c *11/42*
U.S. Cl. 340—173 LT 5 Claims



A page composer for translating binary information from electrical to optical form includes an insulating substrate having an array of electrodes on one surface thereof connected by feedthrough conductors to the opposite surface of the substrate. Means surrounding each electrode supports an elemental portion of a flexible reflective metallic membrane in spaced relation with a respective electrode. Semiconductor

elements are positioned on the opposite surface of the substrate. Each element may be a MOS field effect transistor having a common ground connection to the metallic membrane, and an individual drain output electrode connected through a respective feedthrough conductor to a respective electrode on the other surface, whereby the portion of the flexible membrane opposite a terminal is planar or deformed depending on whether an electrical charge was supplied to the electrode by the respective transistor. When a read-out light is directed to the exposed surface of the membrane, light is reflected from planar portions of the membrane to a utilization plane, and light is scattered from deformed portions of the membrane.

3,798,621

MONOLITHIC STORAGE ARRANGEMENT WITH LATENT BIT PATTERN

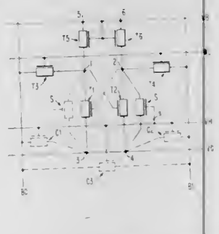
Utz Baitinger, Stuttgart; Knut Najmann, Gartringen, and Rolf Remshardt, Stuttgart, all of Germany, assignors to Internationl Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,147

Claims priority, application Germany, Dec. 30, 1971, 2165729

Int. Cl. G11b

U.S. Cl. 340—173 R **6 Claims**



A monolithic storage arrangement comprising a plurality of symmetrically disposed bistable storage cells operable both as read/write and read-only elements.

3,798,622

BINARY MEMORY DEVICES

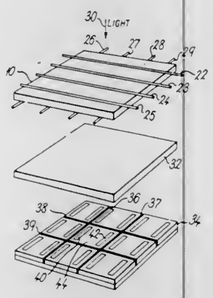
Thomas Henry O'Dell, London, England, assignor to National Research Development Corporation, London, England

Filed June 28, 1972, Ser. No. 267,058

Claims priority, application Great Britain, July 12, 1971, 32624/71

Int. Cl. G11c *11/14, 11/42*

U.S. Cl. 340—174 TF **5 Claims**



A memory device consists of a material containing bubble domains, the state of the memory being determined by the polarity of the bubble domains. Use of a transparent material containing bubble domains is described, read-out being obtained from an image of the domains formed in polarised light.

3,798,623

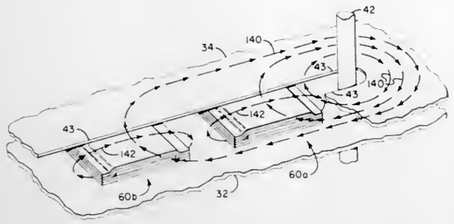
QUAD DENSITY SOLID STACK MEMORY

Alan D. Kaske; Maynard C. Paul, both of Minneapolis, and Charles H. Tolman, Bloomington, all of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed July 20, 1972, Ser. No. 273,663

Int. Cl. G11c *5/08, 11/14*

U.S. Cl. 340—174 MA **4 Claims**



An electrically-alterable, random-access memory system that uses Mated-Film elements as the memory cells is disclosed. The memory cells are arranged on each two-dimensional memory plane along two parallel running sense-digit lines while a single word line, passing orthogonally through the stacked, superposed memory planes of the so-formed three-dimensional Solid Stack memory, is inductively coupled to a pair of memory cells, one associated with each sense-digit line, on each memory plane. Thus, a word drive signal from a single word line is coupled to two memory cells on each memory plane forming a memory word of a length that is equal to 2 bits per memory plane times the number of memory planes in the stack.

3,798,624

TEXTILE YARN TREATMENT MACHINES

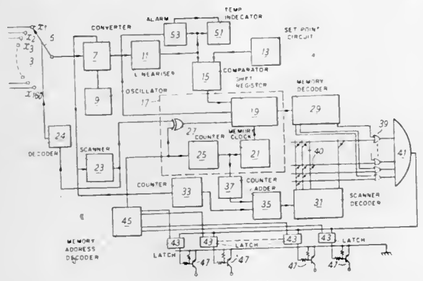
Malcolm John Baxter, and Terrence Graham Shillito, both of Manchester, England, assignors to Fielden Electronics Limited, Manchester, England

Filed Oct. 13, 1972, Ser. No. 297,326

Claims priority, application Great Britain, Oct. 16, 1971, 38242/71

Int. Cl. G06f *13/06, 15/06, 15/46*

U.S. Cl. 340—213 R **12 Claims**



Apparatus for controlling a variable at each of a plurality of locations comprises stations at which are presented analogue values of the variable, scanning means for scanning the stations in sequence, an analogue digital converter which converts the output of the scanning means to an output signal representing in sequence and in digital form the analogue values of the scanning means output, comparator means comparing each digital equivalent with a desired value thereby to provide a sequence of difference signals, a recirculating memory which recirculates very much faster than the scanning speed of the scanning means, means for loading the memory in sequence with the difference signals at the

scanning rate of the scanning means, a mark-space ratio generator for generating mark space ratios for the difference signals and means for presenting a mark-space ratio selected by the memory at each of the said locations.

3,798,625

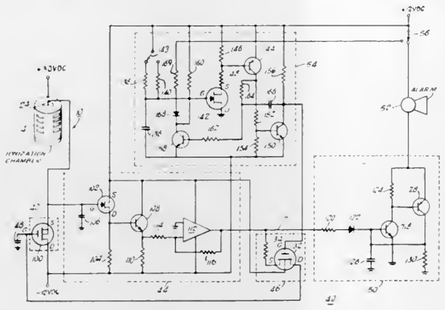
RATE-OF-CHANGE COMBUSTION AND COMBINATION DETECTION APPARATUS

Lonnie S. McMillian, and George E. Frohwein, both of Huntsville, Ala., assignors to SCI Systems, Inc., Huntsville, Ala.

Continuation-in-part of Ser. No. 7,444, Feb. 2, 1970, abandoned. This application Aug. 13, 1970, Ser. No. 63,646

Int. Cl. G08b *17/10*

U.S. Cl. 340—237 S **10 Claims**



An ionization-type gas contamination detector, intended primarily for use as a fire detector, in which a substance which emits predominantly low-energy beta particles is used as an ionizing radiation source in an ionizing chamber. Rapid changes in ionization current, which indicate the presence of a fire or smoke preceding a fire, are detected and an alarm is energized by a rate-of-change circuit in response to such changes. The output of the ionization chamber is amplified, and a level detector energizes the alarm when the amplified chamber output reaches a predetermined level. The output of the amplifier is adjusted relatively slowly to a reference level. In one embodiment, the amplifier output is adjusted to the reference level by the activation of a sample-and-hold feedback loop for a short period of time. In another embodiment, continuous feedback through a circuit with a relatively long time constant provides the desired adjustment. This feature makes the device relatively insensitive to normal atmospheric and environmental changes, while being very sensitive to changes in the level of combustion products in the atmosphere.

3,798,626

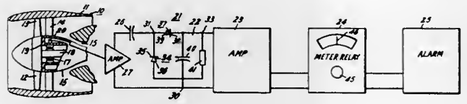
FOREIGN OBJECT IMPACT DETECTION IN MULTI-BLADED FLUID ENGINES

Bjorn Weichbrodt, and Bernard Darrel, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 50,554, June 29, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 229,670

Int. Cl. G08b *21/00*

U.S. Cl. 340—267 R **6 Claims**



Vibrations generated by objects impacting on the blades of the rotor of the engine are sensed by an accelerometer located on the rotor bearing mount. A peak detection circuit with a suitable decay time constant is provided for detection of the peaks in the signal from the accelerometer corresponding to peaks in the vibrations from the rotor. A level detection circuit is provided responsive to a predetermined level of the detected signal to actuate suitable indication means such as an alarm.

3,798,627

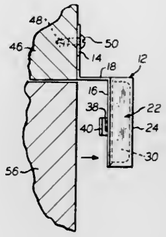
DOOR GUARD AND ALARM

Allan I. Kaufman, 460 Neptune Ave., Brooklyn, N.Y.

Filed Sept. 15, 1972, Ser. No. 289,577

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 **3 Claims**



A portable alarm device adapted to be removably mounted on the frame of a door opening to signal the opening of a door with respect to the frame. The electrically operated components of the alarm device are connected in a circuit having a normally open switch which includes an operating contact and a movably actuating arm normally spaced from said contact. The device is suitably mounted on the door frame for locating the actuating arm in opposed normally spaced relation to the surface portion of the door whereby the opening movement of the door is operative to move said arm into contacting engaging position with the switch to close the said circuit and sound the alarm.

3,798,628

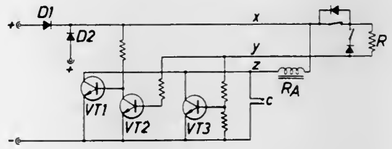
PROTECTIVE SYSTEMS AND APPARATUS THEREFOR

Goodwin Alfred George Ive, Farm Cottage High Rd., Old Chipstead, England

Continuation of Ser. No. 883,375, Dec. 9, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 184,250

Int. Cl. G08b *13/08*

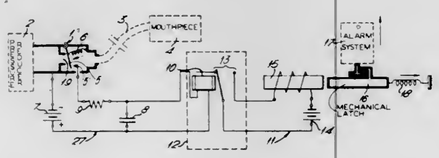
U.S. Cl. 340—276 **6 Claims**



The invention relates to a protective loop system having a two-wire loop terminated by an impedance. The invention is a modification of that forming the subject of copending Patent Application No.818,860, now U.S. Patent 3,626,403. In this prior invention, a bistate control device was included in a protective loop; the device comprising a relay having associated contacts in an alarm circuit which are arranged to be actuated whenever the relay is energised. In the past, in order to nullify or render inoperative a two-wire loop system having an end-of-line impedance and an alarm relay circuit, it has been known to connect a second impedance across the line or in series with the end-of-line impedance in order to maintain an

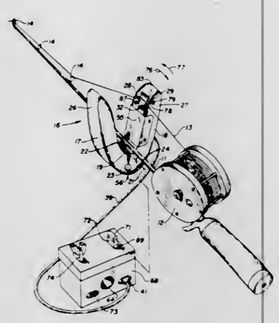
alarm relay connected to the other end of the loop in the non-alarm condition despite the actuation of intruder detection contacts associated with the alarm relay. In the present invention, the bistate control device, i.e. the relay is arranged to have a quiescent range determined by selected values of the relay and the loop impedance, and the impedance means connected across the termination of the loop has a value within the quiescent range such that the relay is energised whenever a whole or partial short circuit or open circuit condition occurs in the loop.

3,798,629
ALARM SYSTEM FOR DIVERS
Jean de La Taillade, and Jacques Degraves, both of I Oustalet, Terron Superieur, 06 Nice, France
Filed Feb. 11, 1972, Ser. No. 225,562
Claims priority, application France, Feb. 11, 1972, 72.05444
Int. Cl. G08b *23/00*
U.S. Cl. 340—279 **14 Claims**



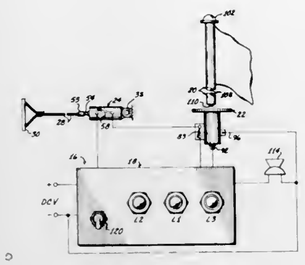
A floatable alarm device is normally restrained to the housing of a diver carried control. The control includes means for sensing respiration rate and causes release of the alarm if respiration rate substantially deviates from normal.

3,798,630
FISHING LINE MOTION SENSING ALARM
Lavurn Crosthwait, 1126 E. 28th, Anderson, Ind.
Filed Aug. 30, 1972, Ser. No. 284,893
Int. Cl. A01k *97/12*
U.S. Cl. 340—279 **12 Claims**



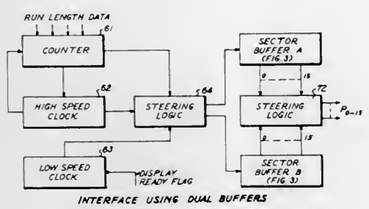
A spring-loaded, clothespin-type clip is provided with a string clutching member movable by string movement to operate a switch mounted on the clip. The clip is securable to a mounting post on a box containing a power supply and speaker for energization of the speaker in response to string movement. A fishing rod can be mounted in or beside the clip, and the clip is mountable wherever there is a surface to which it can be clipped.

3,798,631
SKIER ALARM SYSTEM
Donald C. Langford, 5838 W. Fairmount Ave., Phoenix, Ariz.
Filed Nov. 13, 1972, Ser. No. 306,324
Int. Cl. G08b *21/00*
U.S. Cl. 340—279 **11 Claims**



An alarm system for use with ski boats is automatically operated when a water skier releases his grip on the tow line to produce an alarm indicative of "skier down". The system will continue to produce the alarm until a flag is raised as a warning to other boats whereupon the alarm will cease.

3,798,632
PARALLEL ADDRESSED, MULTIPLEXED-DRIVER PLASMA DISPLAY SYSTEM AND METHOD
David E. Liddle, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 2, 1972, Ser. No. 259,128
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 M **7 Claims**

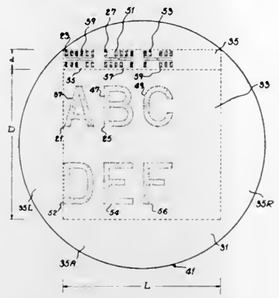


INTERFACE USING DUAL BUFFERS

There is disclosed a plasma display system which permits the simultaneous addressing of an entire multiplex group (16-line sector) without an increase in the number of driving or mixing elements. This allows an entire sector to be addressed each 20 microseconds, rather than a single point, and reduces the full display screen update time from 5.24 seconds to 0.33 seconds.

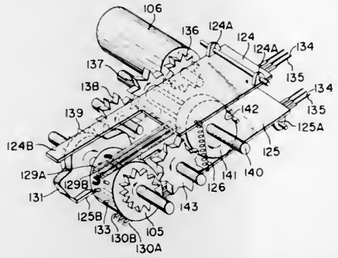
Run-length coding provides an efficient way to store and transmit pictures for the display, rather than a complete 260K-bit map. An external interface containing a simple serial/parallel shift register cascade allows the codes to be translated into a single-sector bit map of only 8K bits. Two such local buffers used alternately allow a continuous stream of run-length codes to be accepted by the interface while allowing the display to write at full speed.

3,798,633
DATA STORAGE AND DISPLAY SYSTEM
Steven R. Hofstein, Princeton, N.J., assignor to Princeton Electronic Products, Inc., North Brunswick, N.J.
Continuation-in-part of Ser. No. 9,752, Feb. 9, 1970, abandoned. This application June 29, 1972, Ser. No. 267,378
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 A **8 Claims**



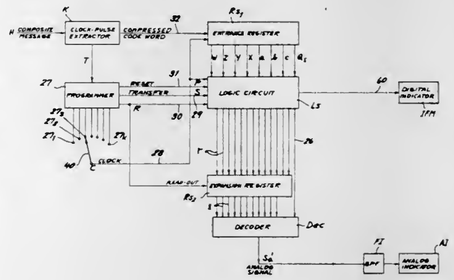
A storage and display system for alphanumeric information or the like utilizing a storage tube, the target of which includes separate storage areas for character configuration and character digital data. Characters are written in common form in the first of said areas which is read and transferred to a visual display and in digital form in the second of said areas which is read and transferred to information storage or utilization means. There is a direct correlation between the information stored in the two areas.

3,798,634
METHOD AND APPARATUS FOR DETECTING AND REPRESENTING IN BINARY FORM DIGITAL INDICATION OF MEASURING INSTRUMENT FOR RECORDING
Takeshi Kamada, Yokohama, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan
Filed Nov. 24, 1970, Ser. No. 92,357
Claims priority, application Japan, Nov. 24, 1969, 44-93579; Dec. 24, 1969, 44-103425; May 25, 1970, 45-44010
Int. Cl. G08c *9/08*
U.S. Cl. 340—347 P **4 Claims**



The invention provides an electric system and apparatus for generating the electrical signals representing in binary code a digital indication of a measuring instrument such as a gas meter, etc. Apparatus comprises coding means such as pins or permanent magnets arrayed in rows and columns around the periphery of each digit disk of a counter in the measuring instrument so as to represent in binary code the decimals, for example, from 0 to 9 positioned around the periphery of each disk; detecting means such as electric contacts or relays actuable by the pins or reed switches actuable by the permanent magnets, disposed along the detecting line at which the pins or permanent magnets represent in binary form the indication of the measuring instrument; and terminals electrically connected to the coding and detecting means so as to derive the electrical signals from the apparatus. Detecting means are selectively closed or opened depending upon the presence or absence of coding means, in the detecting position, representing the indication in binary form so that the electrical signals representative of the presence or absence of the coding means appear at the terminals. That is, electrical signals representing in binary code the indication of the measuring instrument are generated. Automatic recording of the indication or data of the instrument may be possible without involving any human error and these data recorded on a tape may be directly fed to a data processing system such as card-punches. The apparatus may be used also as a coding apparatus for use in on-line telemetering systems. The visual display of the indication is also possible by marking the decimals around the periphery of each digit wheel.

3,798,635
CHANNEL MONITOR FOR COMPRESSED-CODE PCM TRANSMISSION SYSTEM
Giampiero Candiani, Milan, Italy, assignor to Societa Italiana Telecomunicazioni, Siemens S.p.A., Milan, Italy
Filed May 5, 1972, Ser. No. 250,725
Claims priority, application Italy, May 6, 1971, 24160/71
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **6 Claims**

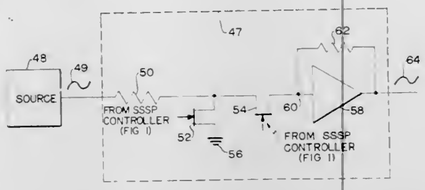


A transmission path carrying interleaved messages in the form of compressed eight-bit code words is tapped for the selective monitoring of any of its message channels by means of a clock-pulse extractor and an entrance register controlled thereby to store an eight-bit word including a sign bit Q_s, three range-indicating bits *a*, *b*, *c* and a group of four significant bits X, Y, Z, W. This compressed code word is converted, through a logic matrix receiving the stored range bits *a*, *b*, *c*, into an expanded 12-bit word inscribed in an expansion register from which a decoder derives a selectively amplified replica of the original analog signal. The selective amplification is achieved by shifting the bits in the expansion register to denominational positions higher than those indicated by the stored range bits, the multiplication factor (i.e. the number of register stages encompassed by the shift) being established by a digital detector determining the highest amplitude range indicated in the monitored channel during a measuring period.

3,798,636
SERIES-SHUNT SWITCHING PAIR, PARTICULARLY FOR SYNCHRO TO DIGITAL CONVERSION, DC OR AC ANALOG REFERENCE MULTIPLYING OR PLURAL SYNCHRO MULTIPLEXING

Bernard M. Gordon, Magnolia, and Leopold Neumann, Lexington, both of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

Division of Ser. No. 823,421, May 9, 1969, Pat. No. 3,611,354. This application Apr. 23, 1971, Ser. No. 137,016
Int. Cl. H03k *5/20, 17/00*
U.S. Cl. 340—347 AD **3 Claims**

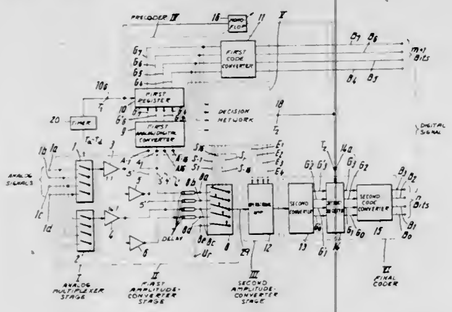


In a multiplexing converter of synchro data to digital form, a plurality of switching devices, associated control logic, and a single analog comparator are provided for specifying the octant in which the synchro shaft angle is located. In a device, particularly for converting synchro data to digital form, for multiplying a DC or AC analog reference signal or for multiplexing plural synchro signals, a series-shunt switching pair is provided for presenting a constant impedance to a driving source in order to eliminate transients reflected back to the driving source when a variable impedance is presented to the driving source.

3,798,637
PCM CODER WITH COMPRESSION CHARACTERISTIC

Waldemar Fruhauf, Berlin, Germany, assignor to Krone GmbH, Berlin-Zehlendorf, Germany

Continuation-in-part of Ser. No. 120,171, March 2, 1971, Pat. No. 3,688,221. This application June 12, 1972, Ser. No. 261,690
Claims priority, application Germany, June 14, 1971, 2129383
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **20 Claims**

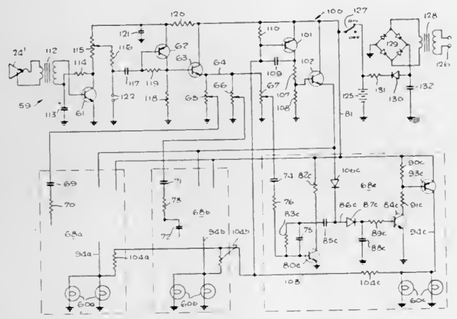


Analog signals within a predetermined amplitude range are subjected, in a first amplifier stage, to parallel amplification with a relatively low gain (e.g. unity) and with a relatively high gain (e.g. 16:1) and are simultaneously rectified to have a single polarity (e.g. positive); the voltages on the four output leads of this stage are fed in parallel to a first analog/digital converter and, via a second amplifier stage, to a second analog/digital converter for temporary storage in a first and a second binary register, respectively. The first converter, which together with the first register forms part of a precoder, operates according to a reflected code (Gray code) to generate a sign bit, indicating the polarity of the incoming analog signal, and a group of m higher-order bits (e.g. $m=3$) specifying $2m$ positive or negative amplitude bands; these $m+1$ bits are delivered to a logic network which controls the operation of a selector switch unblocking one of the output leads of the first amplifier stage and which also modifies the gain of the second amplifier stage to make the voltage swing in its output identical for all $2m$ bands of either polarity. The second converter, also operating in a reflected code, generates a group of n lower-order bits (e.g. $n=4$) giving the amplitude increments or quanta within each band. The contents of both registers may be read out through further code converters translating the reflected code into the natural binary code. The selector switch normally grounds the input of the second amplifier stage to which the output voltage of the first amplifier stage is transmitted with a delay matching the interval between a writing pulse for the first register and a similar pulse for the second register; the latter pulse restores the selector switch to normal after a limited transfer period.

3,798,638
AUDIO RESPONSIVE LIGHT DISPLAY

Sandor F. Goldschmied, 1200 N. Stanford, Fullerton, Calif.

Filed Feb. 9, 1972, Ser. No. 224,707
Int. Cl. G08b *5/00*
U.S. Cl. 340—366 B **6 Claims**



Lamp driver circuitry which permits one or more lamps to be driven from a battery for a significantly longer duration of time between battery recharging or replacement than is possible with prior art driver circuits. The circuit employs two transistors in a voltage gain arrangement driving the lamps at a voltage slightly above their nominal rating. Minimum power is drawn by the lamps. The driver circuits advantageously are incorporated in an audio responsive light display wherein several sets of lamps are modulated in response to selected frequency components of an audio signal.

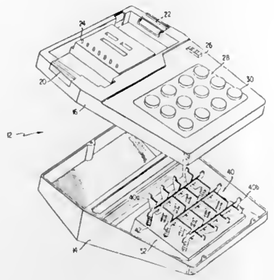
3,798,639
ENCODING SWITCH FOR EDUCATIONAL DEVICE

Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan

Continuation of Ser. No. 98,382, Dec. 15, 1970, Pat. No. 3,735,500. This application Jan. 3, 1973, Ser. No. 320,714
Int. Cl. H01h *63/33*; **G08c** *1/00*
U.S. Cl. 340—365 S **4 Claims**

A toy for teaching young children basic educational and social concepts, e.g., arithmetic, time-telling, etc. The subject matter is visually presented as indicia on a movable tape positioned in a cassette. The cassette is adapted to be snapped into a housing and interacts with the battery circuit provided therein. The tape is also coded to program the circuit, acting

in conjunction with a keyboard. The tape is advanced only when the correct keyboard button is depressed indicating to

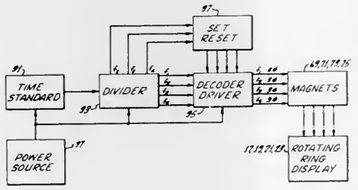


the user that the problem has been solved. Different cassettes are provided for each subject matter.

3,798,640
ROTATING RING DISPLAY

Hans G. Dill, 2870 Tabago Pl., Costa Mesa, Calif.

Division of Ser. No. 146,199, May 24, 1971. This application Aug. 1, 1972, Ser. No. 276,918
Int. Cl. G08b *5/30*
U.S. Cl. 340—378 R **14 Claims**



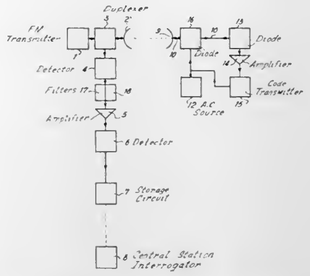
An electronic wristwatch in which time is displayed by means of a plurality of separately sealed, independently rotatable, coplanar concentric rings. Each ring carries a plurality of magnetic domains and is independently stepped by a set of electromagnets driven by a multiphase pulse train. Typically, each ring is stepped at a different rate so as to display a different unit of time, this being achieved by suitably scaling the frequencies of the multiphase pulse trains which drive the different sets of electromagnets.

3,798,641
PROCESS AND SYSTEM FOR THE IDENTIFICATION OF A VEHICLE

Jean Preti, Clamart, France, assignor to Societe de Fabrication d'Instruments de Mesure S.F.I.A., Massy, France

Filed May 3, 1971, Ser. No. 139,431
Claims priority, application France, May 5, 1970, 7016383
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 SS **7 Claims**

A method and system for identifying a vehicle. An interrogation station transmits a frequency modulated continuous microwave to a vehicle having responder equipment which modulates the received microwave in accordance with an identifying binary code which is decoded at the interrogation station which receives the reflected modulated microwave. The modulation may be further frequency modulated at two

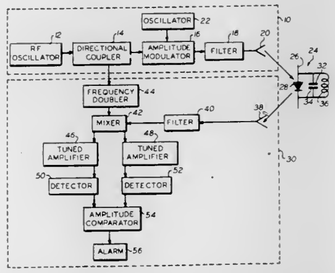


different frequencies or may be modulated to give decoded pulses having different widths.

3,798,642
RECOGNITION SYSTEM

Harry A. Augenblick, Mountain Lakes, and William J. Engle, Ridgewood, both of N.J., assignors to Microlab/Fxr, Livingston, N.J.

Continuation-in-part of Ser. No. 85,127, Oct. 29, 1970, abandoned. This application Sept. 27, 1972, Ser. No. 292,751
Int. Cl. G01s *9/56*
U.S. Cl. 343—7 ED **28 Claims**



A recognition system comprising a transmitter for radiating an amplitude modulated signal to a target that generates a harmonic of the received signal, detects the amplitude modulating signal and modulates the harmonic signal with the detected signal. The target contains a frequency selective network that produces a coded arrangement of signal components which comprise the signal returned by the target. A receiver detects the coded arrangement of signal components.

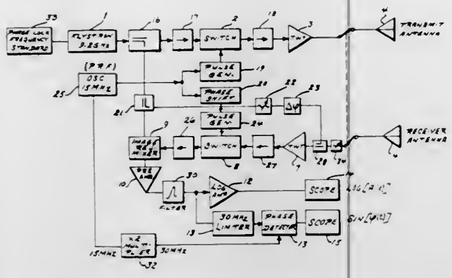
3,798,643
PULSED DOPPLER RADAR

William E. Blore; Srbislav V. Zivanovic, both of Goleta, Calif., and Bernard Charest, Ste-Foy, Quebec, Canada, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed June 27, 1972, Ser. No. 266,815
Int. Cl. G01s *9/44*
U.S. Cl. 343—8 **4 Claims**

A nanosecond pulse doppler radar adapted to hypersonic ballistic range studies is disclosed. The doppler signal is processed to give a continuous record of amplitude and phase using conventional narrow band electronics. The nanosecond pulses transmitted by the radar are obtained through TWT amplification of the amplitude modulated output of a CW X-band oscillator. The received signal is TWT amplified, range-

gated with a nanosecond diode modulator and then passed through a local oscillator-mixer-filter system that selects only



one PRF line for subsequent narrowband amplification and signal processing.

3,798,644

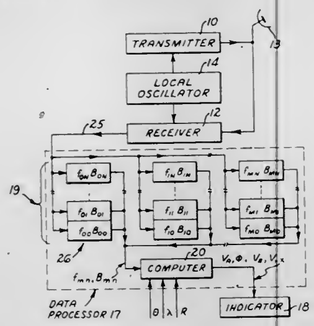
VECTOR VELOCITY SYSTEM

James Nickolas Constant, 1603 Danbury Dr., Claremont, Calif.

Continuation-in-part of Ser. No. 27,731, April 13, 1970, abandoned. This application Aug. 7, 1972, Ser. No. 278,536

Int. Cl. G01s *9/44*

U.S. Cl. 343—8 **25 Claims**



Apparatus and method for measuring the angular velocity of an object in a single illumination utilizing a coherent system such as is utilized in a conventional doppler radar for radial velocity measurements. Apparatus and method for selecting specific frequency and bandwidth signals in the echo from the object illuminated by the coherent system, with the selected signal providing the data for subsequent computation to produce an output corresponding to the angular velocity of the object.

3,798,645

ANGULAR POSITION DETERMINING SYSTEMS USING TIME SCANNED ARRAYS

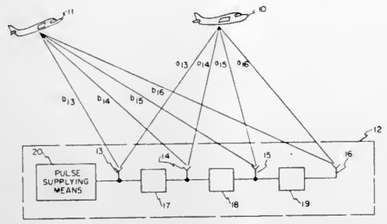
Herbert F. Baurle, and Raymond J. Masak, both of East Northport, N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed Aug. 28, 1970, Ser. No. 67,821

Int. Cl. G01s *1/02*

U.S. Cl. 343—102 **19 Claims**

Disclosed are systems for determining the angular position of a target with respect to a reference location. One such system employs a novel array of antenna units at a reference location. The units of the array are coupled together by delay lines so that a pulse supplied to one of the units is in turn sequentially supplied to the remaining units, causing a pulse train to be radiated from the array. A target located in the field of the array is illuminated by a pulse train which has a phase distribution proportional to the angular position of the target with respect to the array and therefore with respect to the reference location. This phase distribution is detected by



forming a predetermined electrical signal which can be used to provide an indication of the target's angular position either at the reference location alone, the target alone, or at both the reference location and the target.

3,798,646

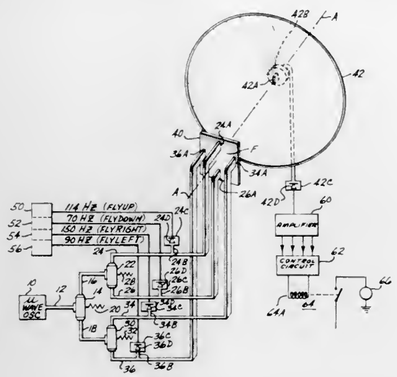
CONTINUOUS-WAVE, MULTIPLE BEAM AIRPLANE LANDING SYSTEM

Walter Erwin Buehler, Issaquah, and Clarence David Lunden, Tacoma, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 7, 1971, Ser. No. 178,003

Int. Cl. G01s *1/14*

U.S. Cl. 343—109 **8 Claims**



A microwave landing system for airplanes is disclosed in which continuous wave energy from a common source is radiated in overlapping beams which are modulated at respectively different audio frequencies detectable by an airplane receiver which detects the separate modulations and indicates relative offset from the overlap axis of the beams by relative levels of the demodulated signals. Modulation of the beams is effected by solid state semi-conductor devices placed in resonant cavities in wave guide system branches in the radiator element feeds. Radiator elements forming the beams comprise rectangular wave guide endings serving as highly compact closely spaced horns directed against a common paraboloidal reflector, with the narrow walls of the wave guides terminating in a common transverse plane and the broad walls terminating in flared triangular extensions beyond such plane. Monitoring of the transmitted beams for the presence and relative energy levels of the modulated beams is achieved by a microwave aperture located at the apex of the paraboloidal reflector and feeding a modulation detector and associated alarm indicator or control means.

3,798,647

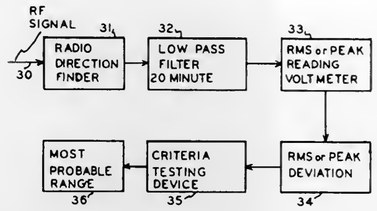
HIGH FREQUENCY PASSIVE RADIO RANGE FINDER

Albert D. Bailey, Champaign, Ill., assignor to The United States of America as represented by Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 256,961

Int. Cl. G01s *3/02*

U.S. Cl. 343—112 D **2 Claims**



The application discloses an invention for determining the direction and distance of a remotely located radio source based on the principle that the distance to a station is inversely proportional to the root mean square value or peak value of the received continuous bearing signal as a function of time which has first been passed through a twenty minute averaging or smoothing window.

3,798,648

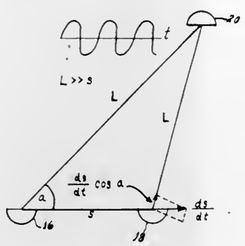
HIGH RESOLUTION AIRBORNE SIGNAL PROCESSING SYSTEM

Uve H. W. Lammers, 5 San Mateo Dr., Chelmsford, Mass.

Continuation-in-part of Ser. No. 833,825, June 16, 1969, abandoned. This application June 27, 1972, Ser. No. 266,779

Int. Cl. G01s *3/52*

U.S. Cl. 343—113 DE **1 Claim**



A two-antenna reception system with fixed-position antennas to receive linearly frequency-modulated signals or linearly position-modulated antennas to receive fixed-frequency signals. The difference frequency generated from the antenna signals represents the angle of arrival with respect to the system baseline. Two such systems with nonparallel baselines yield angular information in space.

3,798,649

ANTENNA CONTROL

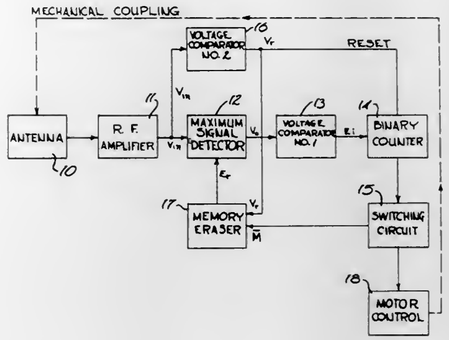
Shunjen Houng, 917 E. DeSmet, Spokane, Wash.

Filed Aug. 28, 1972, Ser. No. 283,951

Int. Cl. G01s *1/44*

U.S. Cl. 343—117 R **4 Claims**

An automatic control for a motorized directional antenna of the type used for reception of a high frequency broadcast signals. The control includes electronic circuitry for monitoring the incoming signal input at a broadcast receiver and electronically comparing the received signal to a signal of maximum strength from the signal source received during movement of the antenna, together with a logic-controlled switching circuit that causes the antenna motor to reverse in a



predetermined pattern to hunt and aim the antenna at an angular position at which the maximum signal strength is received.

3,798,650

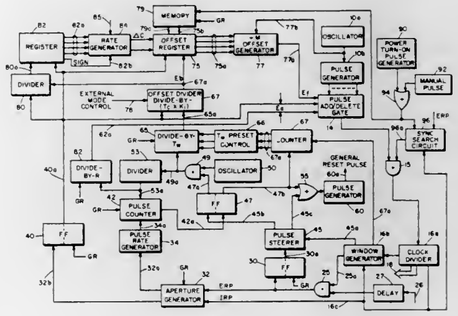
MEANS FOR SYNCHRONIZING CLOCKS IN A TIME ORDERED COMMUNICATIONS SYSTEM

Arthur D. McComas; James R. Ransom; James A. Kessler; Charles H. Doeller, III, and Aaron Mall, all of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1972, Ser. No. 294,055

Int. Cl. H04b *7/00*

U.S. Cl. 343—225 **3 Claims**

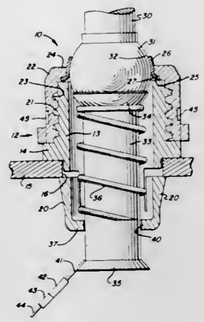


A time ordered communications system wherein a master station equipped with a master clock which includes a reference oscillator disseminates correct time to remote stations equipped with local clocks which include local oscillators by transmitting a synchronization signal whose time of arrival at the remote station with respect to an internal reference pulse generated by the remote station is a measure of remote station clock error. The time interval between receipt of the synchronization signal and generation of the internal reference pulse is digitally determined to produce an error signal which is used to add or delete local oscillator pulses so as to immediately phase correct the local clock. In addition, the first and second time derivatives of the error signal are obtained and used to compensate the local clock for oscillator drift and other errors.

3,798,651
ANTENNA MOUNTING FIXTURE

Roger D. Lehman, 60504 Warwick Rd., Deerfield, Ill.

Filed Aug. 23, 1972, Ser. No. 283,204
Int. Cl. H01q *1/24*
U.S. Cl. 343—702 10 Claims

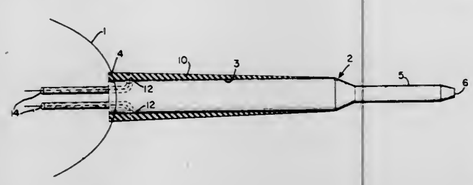


A fixture for holding a whip antenna element in position outside a cabinet housing a television set or the like is assembled with the cabinet by snapping it into place within an aperture in a wall of the cabinet. The fixture allows replacement of the antenna element from outside the cabinet.

3,798,652
PITOT TUBE DIELECTRIC ANTENNA SYSTEM

Earl E. Williams, Poland, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,789
Int. Cl. H01q *1/28*
U.S. Cl. 343—708 2 Claims



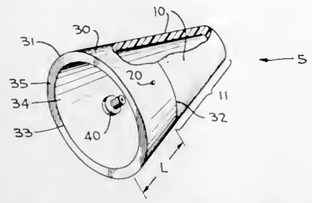
A metallic conductor protruding from a surface, for example, a pitot tube protruding from an aircraft surface is coated on its periphery with a low loss dielectric in order to form an antenna. Functions of the pitot tube and antenna are combined in one structure, and the need for a radome is eliminated. Monopulse feed may be provided to the dielectric rod comprising the antenna.

3,798,653
CAVITY EXCITED CONICAL DIELECTRIC RADIATOR

Howard S. Jones, Jr., Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,504
Int. Cl. H01q *1/28*
U.S. Cl. 343—708 7 Claims

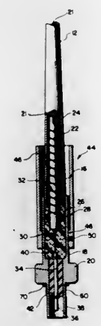
Disclosed is a small, compact, efficient antenna that uses practically no space and is employed on the tip of a projectile. The antenna is in the form of a nose cone body having an electrically conductive inner surface. The electrically coated inner surface extends around the base of the nose cone body and partially coats the outside of the nose cone and forms a band of conductive coating at the base thereof. The antenna is excited by a coaxial probe connected to the metal coating on the inside of the nose cone. Diametrically opposite the input for the coaxial probe a deep post is located across the cavity at its center in order to provide a short circuit. The excited antenna radiates along the tapered dielectric cone (the portion that is not coated) and couples to free space.



3,798,654
TUNABLE SLEEVE ANTENNA

Louis J. Martino, Oakbrook; Herbert R. Blaese, Chicago, and Robert J. Steinhofer, Franklin Park, all of Ill., assignors to Avanti R&D, Inc., Addison, Ill.

Filed Aug. 16, 1972, Ser. No. 281,035
Int. Cl. H01Q *9/00*
U.S. Cl. 343—745 8 Claims



A tunable antenna structure including an elongated radiating element, supported at one end, a resonant tuning coil coupled to the radiating element at the supporting end, and a tuning element electrically coupled to the tuning coil for varying the electrical characteristics of the coil and matching the antenna impedance to a transmission line. A flush mounting base for mounting the radiating element and tuning means with a moisture proof seal. Both fiberglass and metal whip antennas for half wavelength and quarter wavelength operation are described. The movable tuning element is at ground potential so that one's body or hand capacitance does not affect resonance of the tuning coil during antenna tuning.

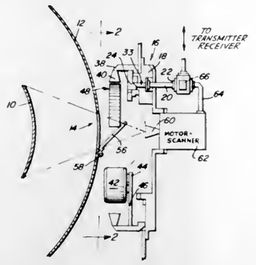
3,798,655
SCHWARZCHILD RADAR ANTENNA UTILIZING A RING SWITCH FOR GENERATING A SECTOR SCAN

James M. Meek, Silver Spring; Clarence F. Ravilious, Rockville, and Whilden G. Heinard, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 26, 1973, Ser. No. 335,876
Int. Cl. H01g *3/14, 19/10, 19/18*
U.S. Cl. 343—754 10 Claims

A Schwarzschild Antenna has main and subreflectors. A ring switch disposed behind the aperture in the main reflector generates a unidirectional sector scan beam that is collimated and transmitted to the far field, via the reflectors. The ring switch is comprised of two ring-shaped waveguide halves one

of which rotates with respect to the other. Feed horns are mounted to one of the rings and are directed radially inwardly. Microwave energy from a transmitter is communicated to the horns, via the ring switch. Microwave energy emanating from the horns is directed by a lens to a rotatable mirror reflector

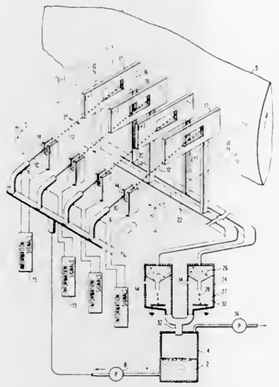


that in turn reflects the resultant sector scan energy to the main and subreflectors of the antenna. The mirror reflector can be rapidly repositioned to allow the direct communication of a separately generated conical scan to the main and subreflectors of the antenna.

3,798,656
INK RETURN SYSTEM FOR A MULTIJET INK JET PRINTER

Paul Lowy, Peekskill; Stanley Arthur Manning, Yorktown Heights, and Karl Friedrich Stroms, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 28, 1972, Ser. No. 275,990
Int. Cl. G01d *15/18*
U.S. Cl. 346—1 10 Claims

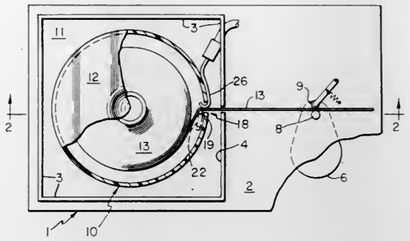


A multi-jet, ink jet printer having deflection plates at a positive or negative potential with respect to ground which includes catch chambers for returning unused ink to an ink reservoir. Non-information bearing ink droplets are passed uncharged to a catch chamber and from there through a return conduit system to the ink reservoir. To help direct the ink droplets to the catch chambers, the catch chambers are mechanically biased toward the trajectory of the uncharged droplets by placing them at a slight angle with respect to the trajectory. To prevent short-circuiting of the deflection plates to ground potential, the return conduit system includes denebulization chambers which convert the returning ink stream into large drops thus developing a high resistance path between the deflection plates and the reservoir ink at ground potential.

3,798,657
ELECTRICAL GRAPHIC MOISTURE RETAINING RECORDING CASSETTE

John M. Alden, Needham, Mass., assignor to Alden Research Foundation, Westboro, Mass.

Filed July 10, 1972, Ser. No. 270,235
Int. Cl. G01d *15/06, 15/28*
U.S. Cl. 346—74 E 12 Claims

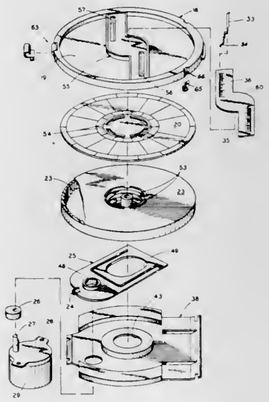


A multi-channel electrolytic recorder using a disposable cassette comprises a flat base with an upstanding socket receiving a cassette. The cassette fits in the socket and has integral circular cover and sidewall portions around a compartment for a roll of moist recording paper. A wire electrode extends from underneath the lower sheet, where is makes contact with a terminal on the base, upwardly adjacent an exit for the paper formed by a slit in the sidewall. A printed series of parallel conductive lines on a flexible insulating sheet presses the paper against the wire electrode with which the sheet cooperates to mark the paper with electrical signals applied to the conductive lines. The printed sheet also closes the exit slit to retain the moisture in the paper.

3,798,658
RECORDING DEVICE

Barney W. Jeffers, 831 Marywood Ave., Aurora, Ill.

Filed May 10, 1973, Ser. No. 359,085
Int. Cl. G01d *9/12*
U.S. Cl. 346—131 7 Claims



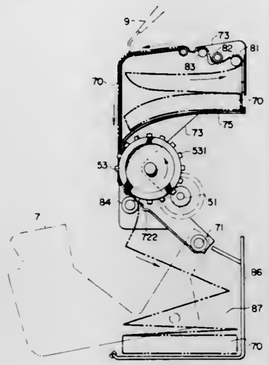
A recording device for making a permanent record of a manually entered variables versus time includes a single toothed lever driven by an electric motor in an orbital path for intermittent engagement with an internal ring gear on a chart carrying platen. Manually movable marking means for entering the variables are carried by a transparent cover hingedly mounted over the chart.

3,798,659

CHART DRIVE MECHANISM FOR RECORDERS

Takefumi Hasebe; Arata Takizawa, and Setsuc Sato, all of Tokyo, Japan, assignors to Yokohama Electric Works, Ltd., Tokyo, Japan

Filed Mar. 31, 1972, Ser. No. 240,000
Claims priority, application Japan, Apr. 5, 1971, 46/20930
Int. Cl. G01d *15/24*
U.S. Cl. 346—136 6 Claims



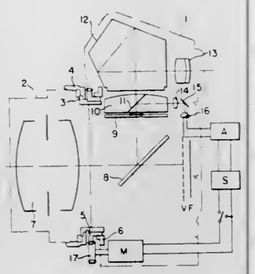
A chart drive mechanism for recorders using folded recording paper. The blank recording paper is stored folded in a supply compartment above the sprocket drive and is fed down through the sprocket drive to a storage compartment. The gearing for the drive is of unitary construction, readily changeable as required.

3,798,660

AUTOMATIC FOCUSING DEVICE FOR CAMERAS

Goro Hasegawa, Tokyo; Yukio Iura, Yokosuka, and Masayoshi Yamamichi, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1972, Ser. No. 294,519
Claims priority, application Japan, Oct. 11, 1971, 46-79982; Nov. 4, 1971, 46-87848
Int. Cl. G03b *13/20*
U.S. Cl. 95—44 C 7 Claims



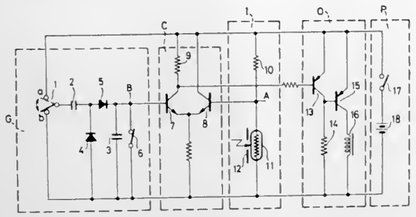
This specification discloses an automatic focusing device for cameras in which a mirror member is provided between a photographic optical system and a range finding optical system and the photographic optical system is moved by a servomotor while the mirror member is being moved up from its range finding position to its picture-taking position. Thereafter, the servomotor holds the optical system in the picture-taking position to accomplish picture-taking.

3,798,661

AUTOMATIC DIAPHRAGM CONTROL DEVICE FOR A CAMERA

Tetsuya Taguchi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1972, Ser. No. 284,604
Claims priority, application Japan, Aug. 26, 1971, 46-65426
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CD 9 Claims



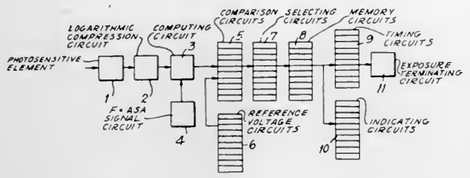
In the device disclosed, a mechanism while it is changing the aperture value of a diaphragm from a starting value, also opens and closes switching means a number of times equal to the extent to which the diaphragm is being changed. Suitable circuit means accumulate signals corresponding to the number of times the switching means is closed. A comparator compares the resulting stored value of the accumulated signals with a reference voltage that corresponds to photographic information such as the output of a light measuring photoresistor. When the accumulated stored value reaches the measured reference voltage, stopping means stop the aperture reducing operation.

3,798,662

DIGITAL EXPOSURE TIME DETERMINING SYSTEM FOR CAMERAS

Shinichi Suzuki, Fukuoka, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. No. 259,214, June 2, 1972. This application Aug. 28, 1972, Ser. No. 284,351
Claims priority, application Japan, Sept. 7, 1971, 46-81201
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 7 Claims



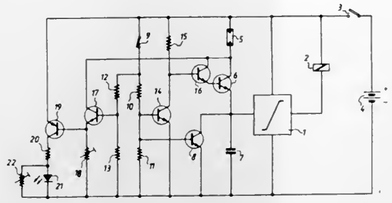
An electrical computer circuit for determining exposure time according to a digital system. A series of timing circuits are provided for respectively providing different exposure times according to which of the timing circuits is selected for operation. A particular one of the timing circuits is selected for operation as a result of comparing by suitable comparing circuits an electrical quantity corresponding to exposure time with a plurality of reference electrical quantities, a series of selecting circuits being provided to select from that one of the comparing circuits whose reference electrical quantity is closest to the electrical quantity corresponding to exposure time a signal to be transmitted to a corresponding timing circuit.

3,798,663

PHOTOGRAPHIC CAMERA WITH ARRANGEMENT FOR DETERMINING SCENE LIGHT SUFFICIENCY AND FOR CONTROLLING EXPOSURE TIMING

Eduard Wagensonner, Aschheim; Kurt Borowski, Munich, and Walter Furst, Deisenhofen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 19, 1973, Ser. No. 371,568
Claims priority, application Germany, June 23, 1972, 2230865
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CE 10 Claims



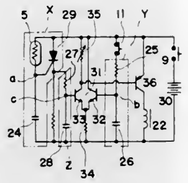
The camera is provided with a first circuit for determining scene light sufficiency, and with a second circuit for controlling exposure timing. Both circuits share and make use of the same photoelectric component. Electronic switches are provided for alternatively connecting the photoelectric component to the first circuit, to determine the sufficiency of scene light, or else for connecting the photoelectric component to the second circuit, to perform an exposure timing operation. A mechanical switch is connected to the electronic switches and is operative for causing the electronic switches to connecting the photoelectric component into one or the other of the two circuits. The photoelectric componet may consist of one or more photoelectric elements.

3,798,664

ELECTRICAL SHUTTER

Motonobu Matsuda, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 42,725, June 2, 1970, abandoned. This application Oct. 6, 1972, Ser. No. 295,586
Claims priority, application Japan, June 10, 1969, 44-45547
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CT 6 Claims



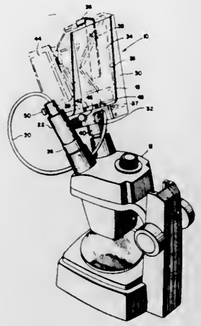
A shutter control device has two delay circuits and a timing circuit including a photoconductive element for determining a delay period as a function of the intensity of the scene light. The timing circuit and one of the delay circuits are actuated simultaneously with the operation of the shutter release and the other delay circuit is operated when the first actuated delay circuit attains a given potential. The shutter closing is initiated when the potentials of the two delay circuits are equal.

3,798,665

APPARATUS FOR ADAPTING A REFLEX CAMERA TO USE WITH A BINOCULAR MICROSCOPE

Vaito K. Eloranta, Needham, and Vivian K. Walworth, Concord, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 25, 1972, Ser. No. 247,407
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 9 Claims



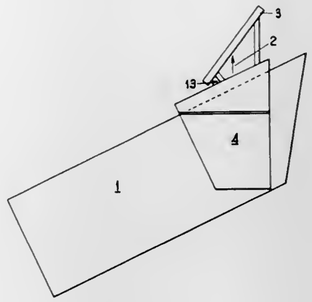
An apparatus for attaching an automatic reflex camera, with a photoelectric exposure control, to a binocular microscope is disclosed. The apparatus includes a tray with a clamp to hold it on one eyepiece of the binocular microscope and a slide clip to retain the camera in the tray. A tube, connected to the tray by a fiber optic light pipe, fits over the other eyepiece and monitors the available light for the photoelectric exposure control.

3,798,666

RECORDING SYSTEMS

Fritz Peter Heller, Bromley, and Brian Frederick Smith, Rainham, both of England, assignors to Elliott Brothers (London) Limited, Chelmsford, England

Filed July 21, 1972, Ser. No. 273,975
Int. Cl. G03b *29/00*
U.S. Cl. 95—12.5 5 Claims



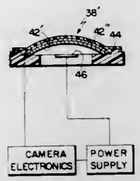
A recording system for a HUD comprises a prism optical system for combining light from the symbol generator and from the scene as viewed by an observer light so that the combined image emitted from the system has the correct orientation, and a camera for mounting on the side of the HUD

3,798,667

TEMPERATURE RESPONSIVE SWITCH FOR USE IN A SELF-DEVELOPING CAMERA

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 5, 1973, Ser. No. 338,322
Int. Cl. G03b *19/00*
U.S. Cl. 95—11 R **12 Claims**



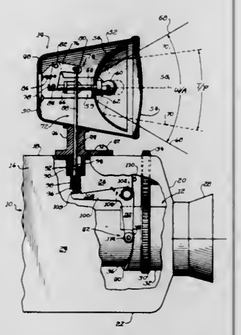
Photographic apparatus, e.g., a camera, for exposing a photosensitive element located in position for exposure within the camera. The camera is provided with temperature responsive structure for preventing the initiation of an exposure cycle when the ambient temperature is outside a predetermined range. In a preferred embodiment, the camera includes a motor connectable to a source of energy, e.g., a battery, for operating various sub-systems of the camera, e.g., a shutter, and the aforementioned temperature responsive structure is a bimetallic structure which functions to connect the motor to the source of energy when the ambient temperature is within the predetermined range and to disconnect the motor from the source of energy when the ambient temperature is outside the predetermined range. In an alternative embodiment, the temperature responsive structure takes the form of a resilient bimetallic member which defines one contact of a normally open switch located in an exposure control circuit. During normal operation, the resilient member is manually flexed to close the switch and initiate an exposure cycle. As the ambient temperature changes to a value outside of the predetermined range, the curvature of the bimetallic member increases to a point whereat the member can no longer be manually flexed into a position wherein the switch will be closed.

3,798,668

CAMERA LIGHT

Rudolf Hartmann, Skokie, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 5, 1972, Ser. No. 295,381
Int. Cl. G03b *17/56*
U.S. Cl. 354—149 **9 Claims**



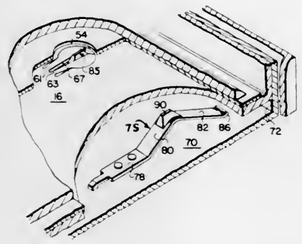
A light for a camera having an adjustable focal length or "zoom" lens. The lens carries a cam surface upon which a cam follower rides. The follower is coupled to a link assembly which supports a light source in the form of a lamp positioned adjacent a reflector. As the focal length of the lens is varied, the follower rides upon the cam transmitting movement to the link assembly. The link assembly in turn shifts the position of the lamp with respect to the reflector. In this manner, the beam width of the camera light is automatically varied to correspond with the field of view of the "zoom" lens.

3,798,669

PHOTOGRAPHIC APPARATUS AND PROCESS

Albert J. Bachelder, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 5, 1972, Ser. No. 286,109
Int. Cl. G03b *17/50*
U.S. Cl. 354—174 **12 Claims**



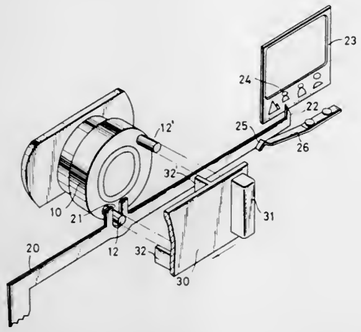
A cassette capable of retaining a plurality of photographic film units in stacked relationship, the cassette comprising access ports through which the terminals of a battery contained in the cassette are capable of contacting integral electrical contacts in the camera. The access ports include battery terminal masks which prevent the accidental completion of an electrical circuit through the battery terminals. The camera is capable of employing the cassette and electrical contacts in the camera are adapted to engage the terminal-masks and contact the battery terminals through the access ports.

3,798,670

CAMERA FOCUSING MECHANISM

Harumi Tanaka, Kobe City, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sept. 21, 1972, Ser. No. 290,924
Claims priority, application Japan, Oct. 20, 1971, 46-9684[U]; June 3, 1972, 47-65824[U]
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 R **11 Claims**



A camera includes an objective lens which is focussable by a rotatable focus ring and a lens cover which is slideably or swingably supported by the camera for movement between open and closed positions. A lost motion connection couples the cover to the focus ring to urge the focus ring to a predetermine intermediate position with the closing of the cover and

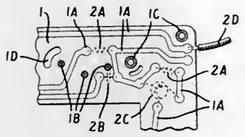
predetermined the coupling ring upon the opening of the cover to permit the manual rotation of the focus ring.

3,798,671

CAMERA SHUTTER MECHANISM COMBINED WITH CONTROL CIRCUIT

Hiroaki Ishida, Chiba, Japan, assignor to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1973, Ser. No. 348,309
Claims priority, application Japan, Apr. 6, 1972, 47-039880
Int. Cl. G03b *9/58*
U.S. Cl. 354—226 **5 Claims**



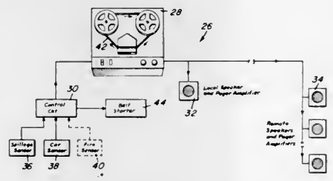
The operating mechanism of a camera shutter is combined with an electrical circuit for controlling the operation of the shutter in the manner that a circuit board serves as one of the supporting plates for mounting movable parts of the operating mechanism. The circuit board comprises a plate of insulating material laminated with a metal layer, portions of which are selectively etched away to leave patterned portions comprising the circuit. Portions of the metal layer are also left to strengthen and protect the plate in areas where it is engaged by moving parts of the mechanism.

3,798,672

MULTIPLE CONDITION SENSING AND AUDIO WARNING SYSTEM

Joseph Gregg, Jr., Johnstown, Pa., assignor to Jab Company, Inc., Ebensburg, Pa.

Filed June 13, 1972, Ser. No. 262,227
Int. Cl. G08b *19/00*
U.S. Cl. 360—12 **4 Claims**



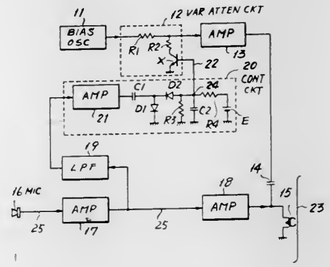
An audio alarm system for monitoring mining operations, or the like, comprising a multi-track magnetic tape playing apparatus with a playback head selectively movable to any one of a plurality of track positions, an audio system connected to the output of the tape playing apparatus including speakers at selected locations, a plurality of condition sensors each providing a signal representative of a condition being sensed. A control circuit responsive to the condition signals initiates operation of the tape playing apparatus and positions the tape head relative to the proper track on a pre-recorded magnetic tape, whereby the audio message played corresponds to the sensed condition. Automatic shut down of a conveyor or other piece of mining equipment is effected at the same time.

3,798,673

AC BIAS CONTROL RECORDING SYSTEM AND APPARATUS IN A MAGNETIC RECORDING APPARATUS

Kazuo Koinuma, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama City, Japan

Filed Dec. 7, 1971, Ser. No. 205,530
Claims priority, application Japan, Dec. 19, 1970, 45-114832
Int. Cl. G11b *5.02, 5/44*
U.S. Cl. 360—66 **4 Claims**



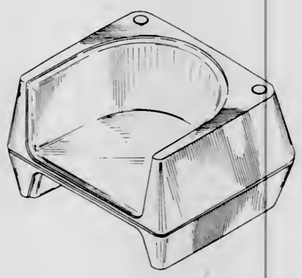
An AC bias control recording system and apparatus are adapted for use in a magnetic recording apparatus in which an input signal is recorded with an AC bias signal superposed thereon. According to the system and apparatus, the value of the current of the AC bias signal is controlled so that it is normally maintained relatively small and becomes relatively large only when the input signal to be recorded includes a low frequency signal component of a high level. The system and apparatus generally comise means for generating the AC bias signal, means for obtaining a control signal from the low frequency signal component in the input signal to be recorded, means for controlling the AC bias signal current by the control signal, and means for superposing the AC bias signal thus controlled upon the input recording signal and recording the same on a magnetic medium.

DESIGNS

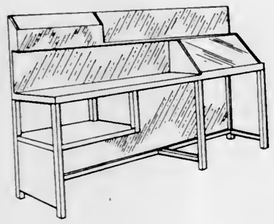
MARCH 19, 1974

230,783
BELT
Jean Walton Lang, Swanton, Vt. 05448
Filed June 5, 1972, Ser. No. 260,070
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—385

230,784
INVERTIBLE BOOSTER CHAIR FOR A CHILD
Raymond A. Lo Turco, Columbus, Ind., assignor to Hamilton Cosco, Inc., Columbus, Ind.
Filed Sept. 21, 1972, Ser. No. 291,003
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—3

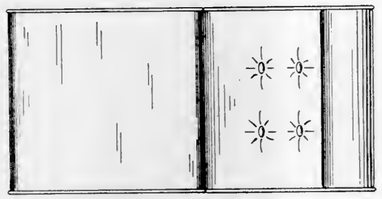


230,785
COMBINED LIGHT TABLE AND WORK BENCH OR THE LIKE
Eugene W. Hawkins and Douglas E. Johnson, Arlington, Tex.
Filed May 3, 1972, Ser. No. 250,108
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—4



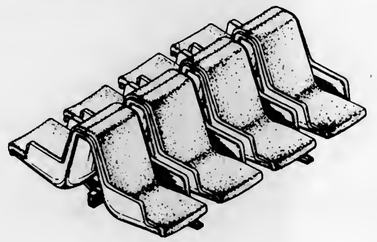
230,786
TRANSIT SEAT
Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Mar. 27, 1972, Ser. No. 238,744
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

230,787
CHAIR
Charles F. Smith, 4194 Millersville Road, Indianapolis, Ind. 46205
Filed Mar. 6, 1972, Ser. No. 232,354
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—47

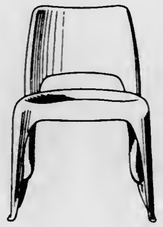


230,788
CHAIR
Warren D. Petersen, St. Charles, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed July 25, 1972, Ser. No. 274,876
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

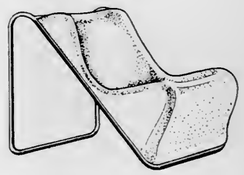
230,789
MULTIPLE SEATING UNIT
Eliot Noyes, New Canaan, and Ernest M. Bevilacqua, Wilton, Conn., assignors to Eliot Noyes & Associates, New Canaan, Conn.
Filed Dec. 2, 1971, Ser. No. 204,402
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—59



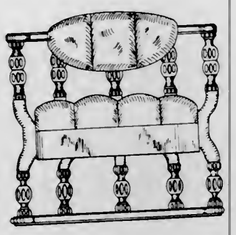
230,790
CHAIR
Karl Luebke, Rheda-Westfalen, Germany, assignor to Luebke KG, Rheda-Westfalen, Germany
Filed Aug. 31, 1972, Ser. No. 285,523
Claims priority, application Germany Mar. 1, 1972
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—65



230,791
ARMCHAIR
Alberto Rosselli, Milan, Italy, assignor to Proposals S.R.L. (Varese), Italy
Filed June 8, 1972, Ser. No. 261,130
Claims priority, application Italy Mar. 15, 1972
Term of patent 3½ years
Int. Cl. D6—*01*
U.S. Cl. D6—67



230,792
CHAIR
Howard I. Niederman, 3757 S. Ashland Ave., Chicago, Ill. 60609
Filed Jan. 3, 1972, Ser. No. 215,276
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

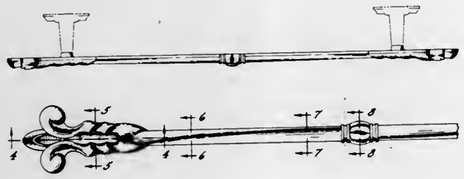


230,793
CHAIR
Edward P. Meyer, Glen Ellyn, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed July 25, 1972, Ser. No. 274,877
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70

230,794
GRAB BAR
Jacques Firdmann, Venon, France, assignor to Etablissements Allibert Monestier-de-Clermont, Isere, France
Filed Mar. 23, 1972, Ser. No. 237,611
Claims priority, application France Sept. 24, 1971
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—86

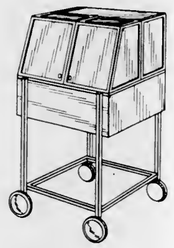
230,795
TOILET TISSUE DISPENSING HOLDER
Carolyn A. Birks, 4313 East-West Highway, Bethesda, Md. 20014
Filed Nov. 24, 1972, Ser. No. 309,189
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97

230,796
TOWEL BAR
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,326
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—99



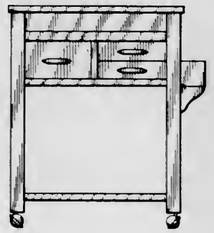
230,797
SUSPENDED WALL SHELVING
Jeffrey K. Slaboden, Flemington, N.J., assignor to Oden Leather Design, Inc.
Filed Sept. 1, 1972, Ser. No. 285,559
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—134

230,798
COMBINED MOBILE BAR AND STORAGE UNIT
Carter Clifford Hoffmann, Lake Forest, and Toivo W. Luoma, Waukegan, Ill., assignors to Carter-Hoffmann Corp.
Filed May 30, 1972, Ser. No. 258,213
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144

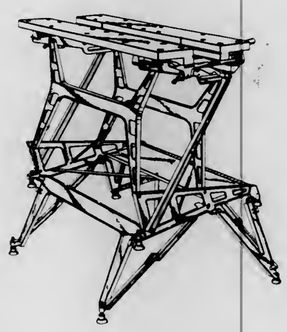


230,799
KITCHEN CABINET
Raymond Loewy, New York, N.Y.
(% C.E.I., 39 Avenue d'Iena, Paris 16e, France)
Original design application May 15, 1970, Ser. No. 23,005, now Patent No. 223,840. Divided and this application Sept. 27, 1971, Ser. No. 153,475
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—150

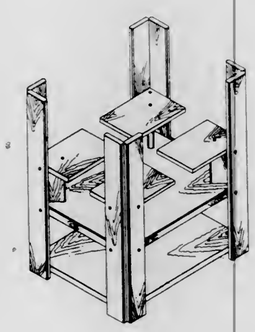
230,800
COMBINED MOBILE STAND AND TRAY UNIT FOR A HAIR STYLIST
Audrey J. Peterson, 29646 Grandifloras Road, Saugus, Calif. 91350
Filed Aug. 16, 1971, Ser. No. 172,378
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—166



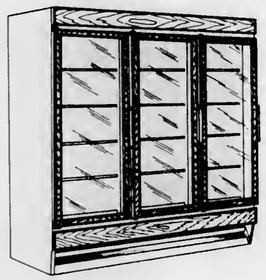
230,801
WORKBENCH
Ronald Price Hickman, Waltham Abbey, England, assignor to Hickman Designs Limited, Waltham Abbey, England
Filed June 30, 1972, Ser. No. 268,012
Claims priority, application Great Britain Dec. 31, 1971
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179



230,802
NEWSPAPER HOLDING AND BUNDLING RACK
Masaharu Morita, 3548 Grand View Blvd., Los Angeles, Calif. 90066
Filed Apr. 28, 1972, Ser. No. 248,787
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—184

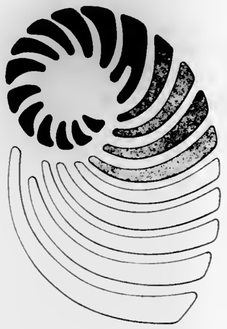


230,803
REFRIGERATED UPRIGHT DISPLAY CASE
Donald A. Musgrave and James M. Bell, Conway, Ark., assignors to UMC Industries, Inc., New York, N.Y.
Filed July 28, 1972, Ser. No. 276,138
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—187

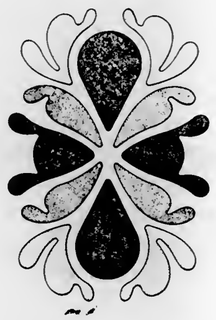


230,804
CRESCENT PILLOW
Josephine C. Lijewski, 2214 N. 21st Place, Phoenix, Ariz. 85006
Filed Nov. 24, 1972, Ser. No. 309,111
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

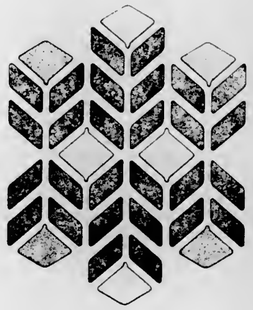
230,805
SET OF BATH TREADS
John R. Howard, Lombard, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of abandoned design application Ser. No. 173,733, Aug. 20, 1971. This application Feb. 7, 1972, Ser. No. 224,380
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



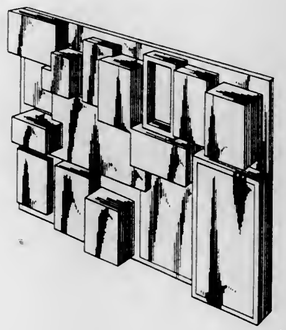
230,806
SET OF BATH TREADS
John B. Penson, De Kalb, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of abandoned design application Ser. No. 173,734, Aug. 20, 1972. This application Feb. 7, 1972, Ser. No. 224,381
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



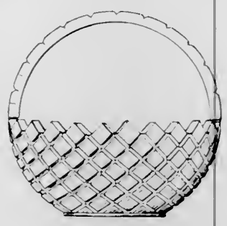
230,807
SET OF BATH TREADS
John B. Penson, De Kalb, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation-in-part of abandoned design application Ser. No. 173,735, Aug. 20, 1971. This application Feb. 7, 1972, Ser. No. 224,382
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



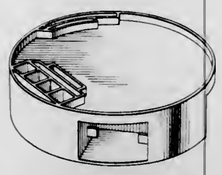
230,808
DISPLAY BOARD FOR PHOTOGRAPHS OR THE LIKE
Thomas G. Edwards, 855 3rd St., Santa Monica, Calif. 90403
Filed Sept. 21, 1972, Ser. No. 290,783
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



230,809
DISH FOR FRUIT COCKTAIL
Kenneth S. Scholl, 3774 Cork Place, South San Francisco, Calif. 94080
Filed July 14, 1972, Ser. No. 271,780
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—20

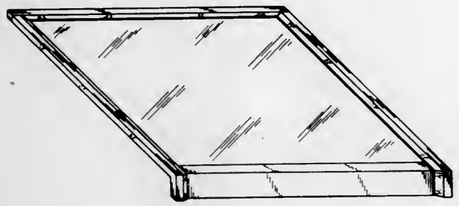


230,810
SERVICE TRAY
James J. Ryan, Jr., % George Wm. Lias, 16 E. Broad St., Columbus, Ohio 43215
Filed Nov. 27, 1972, Ser. No. 309,937
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—27

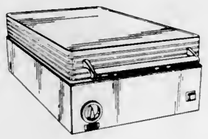


230,811
STEAM COOKING POT
Donald Gordon Cheyne, 47A 12th St., Parktown North, Johannesburg, Transvaal, Republic of South Africa
Filed Jan. 24, 1972, Ser. No. 220,539
Claims priority, application Republic of South Africa July 22, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85

230,812
COMBINED STOVE TOP COOKING SURFACE AND FRAME THEREFOR
Robert A. Bruce, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Aug. 2, 1971, Ser. No. 168,528
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121

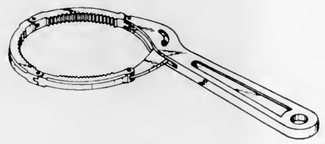


230,813
APPLIANCE FOR HEATING AND COOKING FOODS
William M. Bardeau, Islington, Ontario, Canada, assignor to Bardeau Limited, Islington, Ontario, Canada
Filed Nov. 12, 1971, Ser. No. 198,498
Claims priority, application Great Britain July 28, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—121



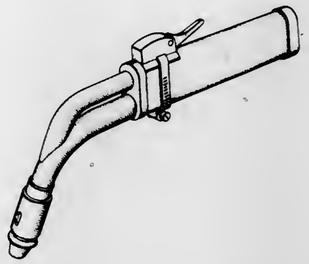
230,814
NET FABRIC SCOURING PAD
Julie Ann Everts, 2972½ W. Pico Blvd., Los Angeles, Calif. 90006
Filed Sept. 10, 1971, Ser. No. 179,602
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—178

230,815
WRENCH
Koumei Ono, 19-33-315, 5-chome, Narimasu, Tokyo, Japan
Filed Sept. 15, 1972, Ser. No. 289,441
Claims priority, application Japan Apr. 13, 1972
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—22



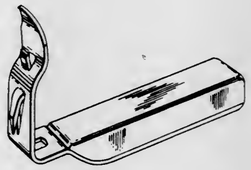
230,816
DESOLDERING IMPLEMENT OR THE LIKE
William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402
Filed Jan. 25, 1972, Ser. No. 220,722
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

230,817
WELDING GUN
Donald L. Howell, West Milton, and Leo E. Wildenthaler, Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio
Filed July 7, 1972, Ser. No. 269,719
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

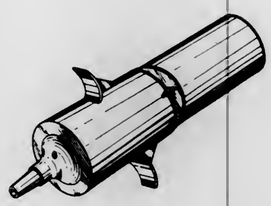


230,818
WELDING GUN NOZZLE
Donald L. Howell, West Milton, and Leo E. Wildenthaler, Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio
Filed July 7, 1972, Ser. No. 269,720
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—30

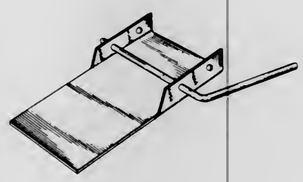
230,819
COMBINED CAN TAP AND BOTTLE OPENER
Herbert D. Lane, 23 E. 14th, San Angelo, Tex. 76901
Filed Aug. 23, 1972, Ser. No. 283,239
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—40



230,820
AIR BLOWING-VACUUMING IMPLEMENT OR THE LIKE
William S. Fortune, 14250 Dearborn, Panorama City, Calif. 90601
Filed Mar. 15, 1972, Ser. No. 235,103
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—51

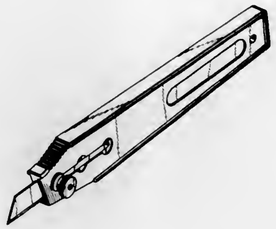


230,821
DEVICE FOR WINDING OR COILING EXPANSION ANCHORS FROM SHEET METAL BLANKS
Arthur C. Wagner, Lebanon, Pa., assignor to Ace-In-The-Hole, Inc., Lebanon, Pa.
Filed Apr. 21, 1972, Ser. No. 246,516
Term of patent 14 years
Int. Cl. D8—*59*
U.S. Cl. D8—59



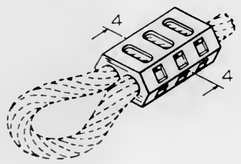
230,822
INSTRUMENT HOLDER
Wolfgang F. Laskowski, 1440 Bay St., Alameda, Calif. 94501
Filed Feb. 11, 1971, Ser. No. 114,751
Term of patent 7 years
Int. Cl. D8—*05*
U.S. Cl. D8—72

230,823
RETRACTABLE KNIFE
Daniel Gluck, Woodmere, N.Y., assignor to Columbia Broadcasting System, Inc.
Filed Oct. 10, 1972, Ser. No. 296,427
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

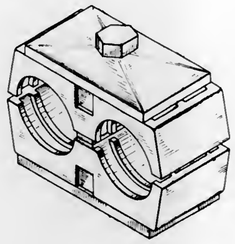


230,824
LETTER OPENER
William L. Goffe, 301 Burnette Road, Webster, N.Y. 14580
Filed Dec. 7, 1972, Ser. No. 312,826
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D8—102

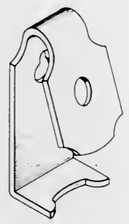
230,825
CLAMP FOR A LOOPED CABLE END
Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.
Filed Aug. 14, 1972, Ser. No. 280,329
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—110



230,826
CLAMP
Arnold Menshen, Beauler-Weg 52, Neuenrade, Westphalia, Germany
Filed July 26, 1972, Ser. No. 275,334
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—230



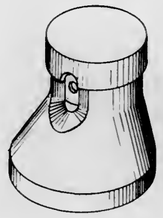
230,827
SUPPORTING CLIP FOR FLOWER POTS OR THE LIKE
Joyce E. Brown, Playa Del Rey, Calif., assignor to C.I.I., Inc., Whittier, Calif.
Filed Dec. 29, 1972, Ser. No. 319,628
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—257



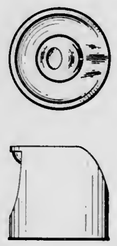
230,828
BOTTLE
Simon Jeruchim, Pomona, N.Y., assignor to Helena Rubinstein, Inc., New York, N.Y.
Filed Apr. 24, 1972, Ser. No. 247,232
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168

230,829
PACKAGING TRAY
Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc., Indianapolis, Ind.
Filed Dec. 20, 1971, Ser. No. 210,292
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

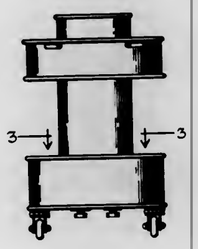
230,830
DISPENSING CLOSURE FOR AN AEROSOL PACKAGE OR THE LIKE
Livingston C. Douglas, Leonia, N.J. (% Colgate-Palmolive Co., 300 Park Ave., New York, N.Y. 10022)
Filed Jan. 5, 1973, Ser. No. 321,173
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—258



230,831
COMBINED OVERCAP AND BUTTON ACTUATOR FOR A PRESSURIZED CONTAINER
Herbert R. Carpenter, Kenilworth, Ill., assignor to Seaquist Valve Company, Division of Pittway Corp., Cary, Ill.
Filed Jan. 11, 1973, Ser. No. 322,889
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—258



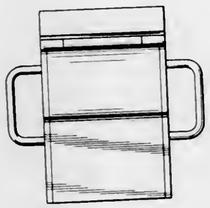
230,832
UTILITY CART FOR HOUSE CLEANING SOLVENTS AND APPLICATORS
Kenneth L. Wells, 5316 Harney Ave., St. Louis, Mo. 63120
Filed Aug. 12, 1971, Ser. No. 171,409
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29



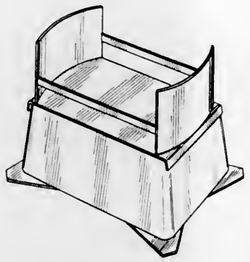
230,833
CART
Dennis Visscher, Muskegon, Mich., assignor to Beatrice Foods Co., Chicago, Ill.
Filed Oct. 2, 1972, Ser. No. 294,377
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—29

230,834
COLLAPSIBLE CLEANING CART
Arne Nils Christian Sonnergaard, Lidingo, Sweden, assignor to AB Automatic, Stockholm, Sweden
Filed Feb. 8, 1972, Ser. No. 224,644
Claims priority, application France Dec. 3, 1971
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—30

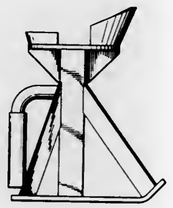
230,835
RAMP FOR VEHICLES
Robert W. Lemley, 11714 Lone Shadow Trail, San Antonio, Tex. 78233
Filed Oct. 5, 1972, Ser. No. 295,001
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—53



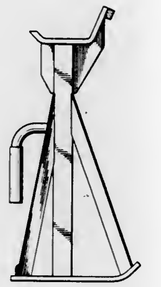
230,836
JACK STAND
Ralph Gerald Powers, Golden Valley, Minn., assignor to Royal Industries, Inc., Osseo, Minn.
Filed Sept. 28, 1972, Ser. No. 292,909
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55



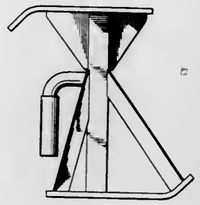
230,837
FRONT-END STAND FOR VEHICLES
Robert W. Lemley, 11714 Lone Shadow Trail, San Antonio, Tex. 78233
Filed Oct. 5, 1972, Ser. No. 294,998
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55



230,838
VEHICLE STAND
Robert W. Lemley, 11714 Lone Shadow Trail, San Antonio, Tex. 78233
Filed Oct. 5, 1972, Ser. No. 294,999
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55

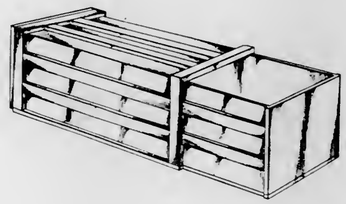


230,839
STAND FOR MOBILE HOMES
Robert W. Lemley, 11714 Lone Shadow Trail, San Antonio, Tex. 78233
Filed Oct. 5, 1972, Ser. No. 295,000
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55

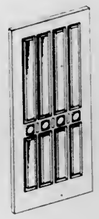


230,840
RECREATIONAL WATER VEHICLE
Louis W. Schmitz, 518 19th Ave., Gilbertville, Iowa 50634, and Norman E. Hinkel, 3516 Rosehill Terrace, Waterloo, Iowa 50701
Filed Mar. 14, 1972, Ser. No. 234,692
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D12—62

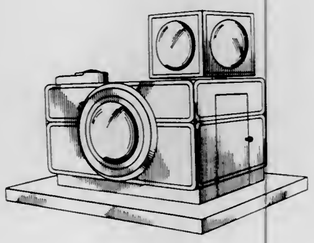
230,841
TRANSPORTABLE REFUSE CONTAINER
Samuel Vincen Bowles, 12039 Branford St., Sun Valley, Calif. 91352
Original design application Dec. 9, 1971, Ser. No. 206,592. Divided and this application Mar. 19, 1973, Ser. No. 342,471
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—98



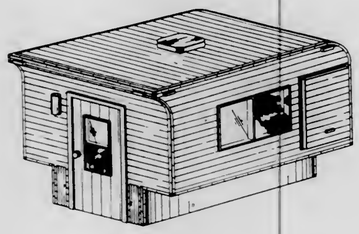
230,842
ORNAMENTAL DOOR
Ronald J. Mathies, Kirkland, Wash., assignor to Simpson Timber Company, Seattle, Wash.
Filed July 12, 1971, Ser. No. 161,389
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M



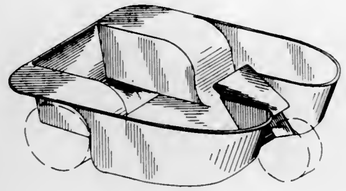
230,843
BUILDING
Ted L. Thimens, 1428 E. Riverside, Decatur, Ill. 62521
Filed Jan. 13, 1972, Ser. No. 217,716
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



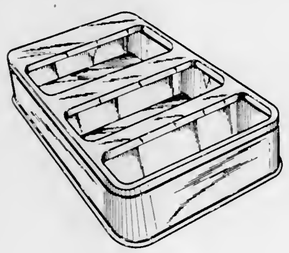
230,844
CAMPER CAB
Charles Alden Sykes, Box 402, Rte. 1, Nyssa, Oreg. 97913
Filed July 21, 1972, Ser. No. 273,883
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3 F



230,845
RUNABOUT VEHICLE BODY
Richard T. Priestley, Los Angeles, Calif., assignor to Motion Industries, Inc., Culver City, Calif.
Filed Aug. 17, 1972, Ser. No. 281,304
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3 R



230,846
WALL BLOCK
Paul C. Friederich, 8 Rue de la Piscine, 67 Bitschwiller, France, and Etienne J. Cramazou, 6 Rue de l'Argonne, 67 Strasbourg, France
Filed Aug. 25, 1972, Ser. No. 283,799
Claims priority, application France Mar. 17, 1972
Term of patent 3½ years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R

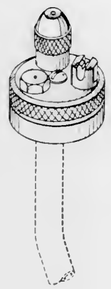


230,847
SHEATH FOR A KNIFE
Frank G. Beddick, Franklinville, N.Y., assignor to Queen Cutlery Company, Titusville, Pa.
Filed Feb. 7, 1972, Ser. No. 224,375
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—13

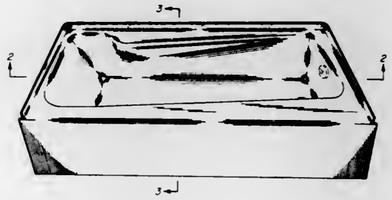
230,848
FISH LURE
Ewell J. Harris, Rte. 3, Box 135A, Adrian, Mich. 49221
Filed June 21, 1972, Ser. No. 264,790
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

230,849
FAUCET FILTER OR THE LIKE
Hisatomo Takebayasi, Yokohama, Japan, assignor to Kurita Water Industries Ltd., Osaka, Japan
Filed Aug. 11, 1971, Ser. No. 171,033
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

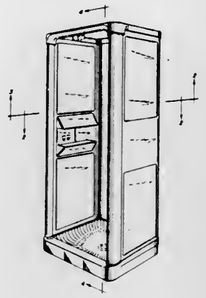
230,850
THREE-WAY TURRET NOZZLE
August H. Pinke, Hastings, Minn., assignor to H. D. Hudson Manufacturing Company, Chicago, Ill.
Filed July 3, 1972, Ser. No. 268,471
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



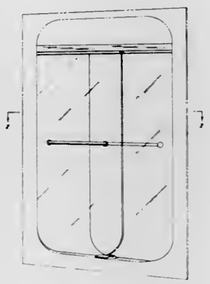
230,851
BATHTUB
James Edwards Chisholm, Safety Harbor, Fla., assignor to Formica Corporation, Cincinnati, Ohio
Filed Sept. 15, 1972, Ser. No. 289,704
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



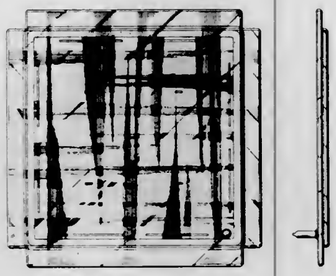
230,852
SHOWER STALL
Morison Stuart Cousins, 74 Victor St., Plainview, N.Y. 11803, and Michael Alan Cousins, 8 Jayne Ave., Huntington, N.Y. 11743
Filed Apr. 21, 1972, Ser. No. 246,507
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



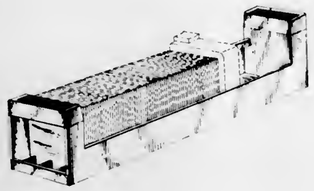
230,853
SLIDING DOOR UNIT FOR SHOWER STALLS OR THE LIKE
Michael Lax, New York, N.Y., assignor to Formica Corporation, Cincinnati, Ohio
Filed Mar. 9, 1971, Ser. No. 122,398
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



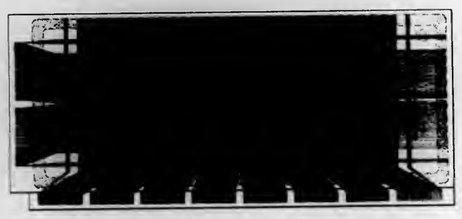
230,854
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur, Temperance, Mich., and Charles W. Salisbury, Rising Sun, and John C. Baker, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed July 1, 1971, Ser. No. 159,082
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

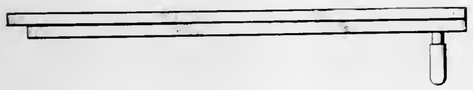


230,855
TRAY FOR ACCOMMODATING DATA PROCESSING CARDS
David M. Wright, 177 Spring St., Shrewsbury, Mass. 01545, and Carl J. Dean, R.F.D. 1, Southbridge, Mass. 01550
Filed Oct. 20, 1971, Ser. No. 191,155
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



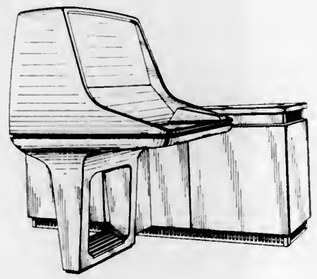
230,856
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur, Temperance, Mich., and Harold J. Hoehn, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed June 7, 1972, Ser. No. 260,688
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C





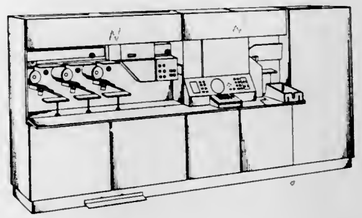
230,857
DESK CALCULATOR
George J. Lampel, Los Angeles, Calif., assignor to Citizen America Corporation, Beverly Hills, Calif.
Filed Nov. 2, 1972, Ser. No. 303,211
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

230,858
INSTRUMENTATION CONSOLE
Roger Howard Ramsey, Akron, Ohio, assignor to North Electric Company, Galion, Ohio
Filed Nov. 8, 1972, Ser. No. 304,603
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

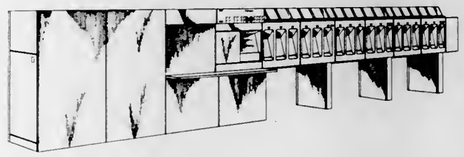


230,859
ELECTRONIC CALCULATOR
Teisuke Kurosu, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 30, 1972, Ser. No. 310,927
Claims priority, application Japan June 9, 1972
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

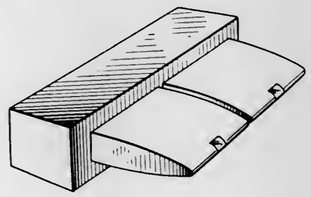
230,860
DOCUMENT READER OR THE LIKE
R. David Keillor and Patrick J. Traglia, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 317,962
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



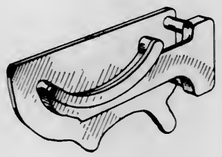
230,861
DOCUMENT SORTER
Clifford I. Shelkofsky, Endwell, and Edward R. Wiener, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 318,061
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

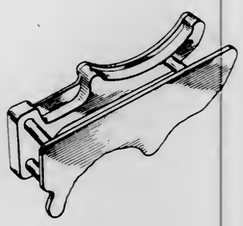


230,862
LIGHT SWITCH
Stephen Kindel, 221 E. 78th St., New York, N.Y. 10024
Filed Jan. 4, 1973, Ser. No. 321,029
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 R

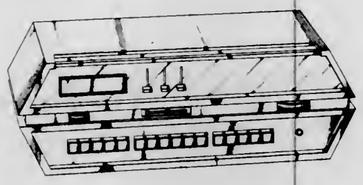


230,863
HOLDER FOR A TELEPHONE RECEIVER
Robert E. Strang, 67751 Oak Road, North Liberty, Ind.
Filed Mar. 8, 1972, Ser. No. 232,992
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

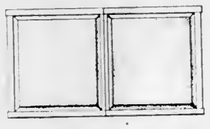




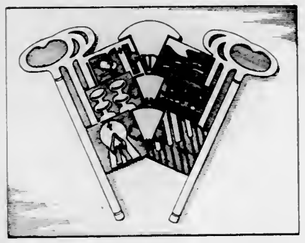
230,864
AUDIO REPRODUCTION UNIT
George E. Lyall, Melrose, Mass., assignor to Automatic Radio Mfg. Co., Inc.
Filed Sept. 5, 1972, Ser. No. 286,273
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B



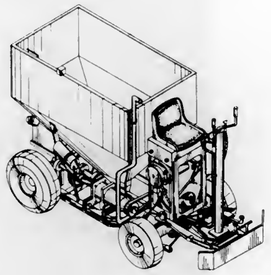
230,865
ENCLOSURE FOR HIGH FIDELITY LOUDSPEAKER SYSTEM
Michael L. Petroff, Los Angeles, Calif., assignor to Equasound Corporation, Los Angeles, Calif.
Filed Mar. 12, 1973, Ser. No. 340,284
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



230,866
PLAQUE
Darrell M. Johnson, 121 E. Hill St., Thomson, Ga. 30824
Filed Jan. 9, 1973, Ser. No. 322,256
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23 A

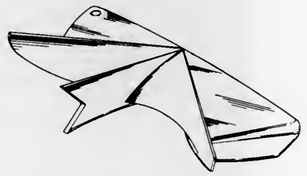


230,867
AUTOMATIC ANIMAL FEEDER OR SIMILAR ARTICLE
David C. Elliot, Rte. 1, Box 24, Star, Idaho 83669
Filed Jan. 5, 1972, Ser. No. 215,714
Term of patent 14 years
Int. Cl. D30—*03;* D15—*03*
U.S. Cl. D30—15

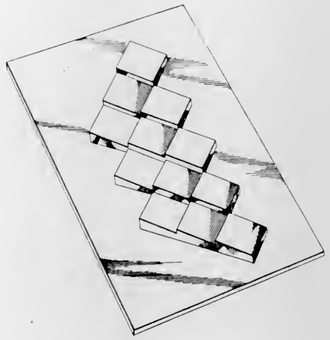


230,868
LITTER RETRIEVER
Peter A. Dorzan, 1 Muir Place, Vauxhall, N.J. 07088
Filed May 20, 1971, Ser. No. 145,593
Term of patent 14 years
Int. Cl. D30—*99;* D8—*05*
U.S. Cl. D30—99

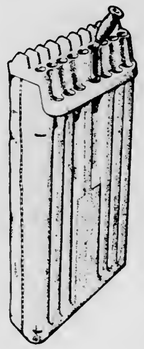
230,869
GOLF CLUB HEAD
Lloyd C. Winter, 1430 Cherrydale Drive, San Jose, Calif. 95125
Filed Dec. 17, 1971, Ser. No. 209,510
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



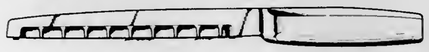
230,870
GAME BOARD OR SIMILAR ARTICLE
John Kenneth Keim, 1251 St. Michael St., Allentown, Pa.
Filed Apr. 13, 1972, Ser. No. 243,924
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



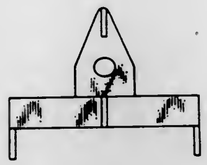
230,871
GOLF BAG
John Michael Worthington, 4 Fox Close, Seisdon, Wolverhampton, England
Filed May 15, 1972, Ser. No. 253,703
Claims priority, application Great Britain Mar. 25, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GB



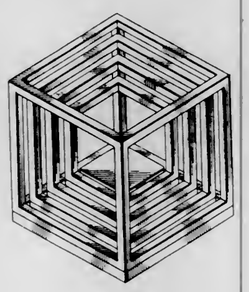
230,872
CUTTING AND ABRADING BLADE HOLDER
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Mar. 10, 1972, Ser. No. 233,849
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—94



230,873
GOLF PUTTER HEAD
Edward L. Cicero, 52—62 66th St., Maspeth, N.Y. 11378
Filed July 31, 1972, Ser. No. 276,652
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

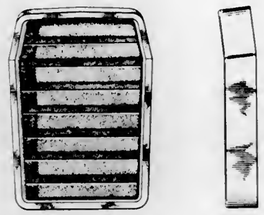


230,874
CONCENTRIC CUBIC PUZZLE
William H. Baynes, Los Angeles, Calif. (4122 Greenbush Ave., Sherman Oaks, Calif. 91403)
Filed Apr. 7, 1972, Ser. No. 242,285
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M

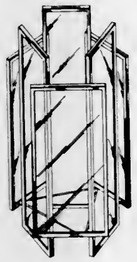


230,875
FLOWER POT
Alvis D. Wilkinson, Box 25118, Oklahoma City, Okla. 73125
Filed May 4, 1972, Ser. No. 250,467
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

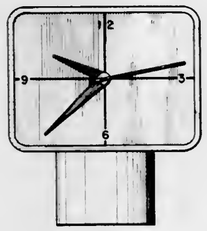
230,876
GRILLE FOR A TRACTOR
Leo J. Lorenz, Farmington, and Wilford E. Bean, Southfield, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 21, 1972, Ser. No. 282,188
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5



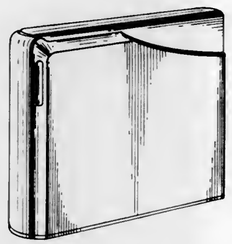
230,877
CANDLE HOLDER
John L. Alberti, 14024 Hesby St., Sherman Oaks, Calif. 91403
Filed Dec. 29, 1972, Ser. No. 319,624
Term of patent 14 years
Int. Cl. D26—*01, 05*
U.S. Cl. D48—2



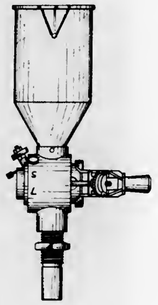
230,878
CLOCK OR SIMILAR ARTICLE
Mark Wallach, 220 E. 63rd St., New York, N.Y. 10021
Filed Feb. 8, 1972, Ser. No. 224,647
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



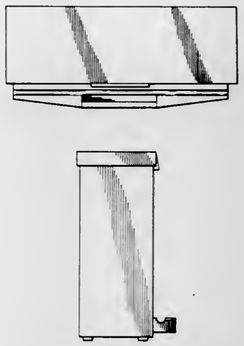
230,879
GAS LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed Feb. 16, 1972, Ser. No. 227,003
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R



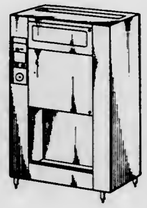
230,880
VOLUMETRIC DISPENSER
Edward Alan Koyen, Parsippany, N.J., assignor to Ohaus Scale Corporation
Filed Feb. 14, 1972, Ser. No. 226,365
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—2 R



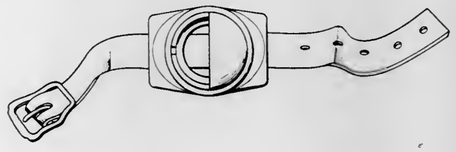
230,881
TOOTHPICK DISPENSER
Francis John Jones, 11035 W. 26th Ave., Lakewood, Colo. 80215
Filed June 16, 1972, Ser. No. 263,679
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D52—2 B



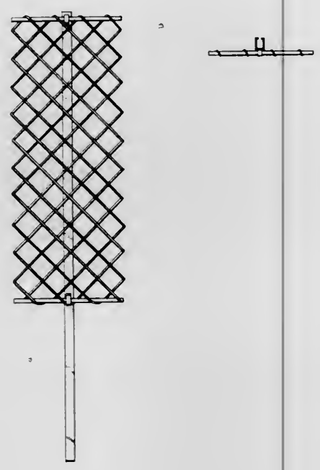
230,882
ICE CUBE VENDING MACHINE
Marion H. Winsett, 1500 Woodhead, Apt. 3, Houston, Tex. 77019
Original design application Jan. 23, 1970, Ser. No. 21,060, now Patent No. 222,704. Divided and this application Dec. 7, 1971, Ser. No. 205,781
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R



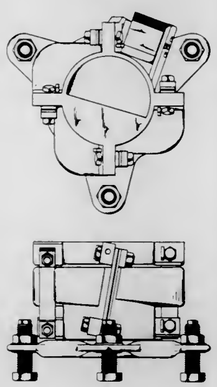
230,883
COMPASS HOLDER FOR SCUBA DIVERS
Owsley H. Brigham, 7510 Morningside Drive, Indianapolis, Ind. 46240
Filed June 17, 1971, Ser. No. 154,259
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6 B



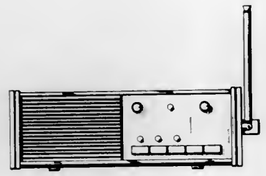
230,884
PLANT SUPPORT
Morris E. Johnson, Batavia, and Joseph Princ, Glen Ellyn, Ill., assignors to Nichols Homeshield Inc., Elmhurst, Ill.
Filed Jan. 27, 1972, Ser. No. 221,482
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D54—2 T



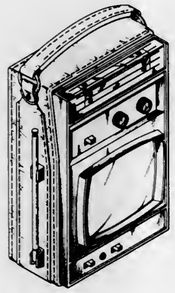
230,885
VIBRATORY PARTS FEEDER
Harold R. Hacker, 522 Woodview Drive, Noblesville, Ind. 46060
Filed June 29, 1972, Ser. No. 267,491
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 D



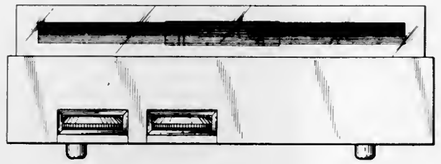
230,886
RADIO RECEIVER
Guy Poisson, Prairie Village, Kans., assignor to Torotel, Inc., Grandview, Mo.
Filed Jan. 17, 1972, Ser. No. 218,633
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



230,887
PORTABLE RADIO
David H. Fink, Dix Hills, N.Y., assignor to Windsor Industries, Inc., Plainview, N.Y.
Filed May 26, 1972, Ser. No. 257,484
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



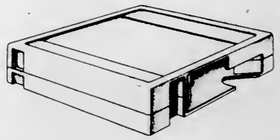
230,888
RADIO
Morris Fink, Great Neck, N.Y., assignor to Windsor Industries, Inc., Plainview, N.Y.
Filed Dec. 4, 1972, Ser. No. 311,476
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



230,889
PEDAL ACTION UNIT FOR PIANOS
Harry C. Kapreilian, 320 Pearl St., Kingston, N.Y. 12401
Filed July 6, 1971, Ser. No. 160,241
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—9

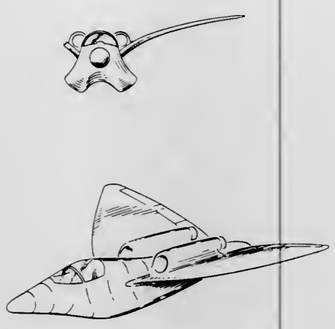
230,890
FILM SPOOL
Masaki Okajima, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 13, 1972, Ser. No. 243,915
Claims priority, application Japan Oct. 20, 1971
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T

230,891
MICROFILM CARTRIDGE
Masaki Muramatsu, Odawara, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Apr. 27, 1972, Ser. No. 248,344
Claims priority, application Japan Nov. 6, 1971
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T

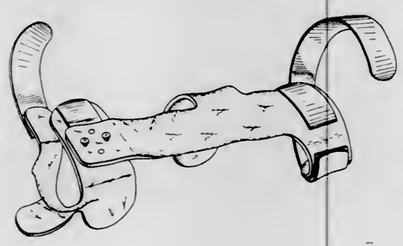


230,892
INSERT UNIT FOR CONVERTING A REFRIGERATOR TO A COMBINED REFRIGERATOR AND FREEZER
Delbert R. Reedy, Los Angeles, Calif., assignor to Kardel Products Corporation, Los Angeles, Calif.
Filed July 1, 1971, Ser. No. 159,096
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D67—3 R

230,893
SUBMERSIBLE AIRCRAFT
Antone Arruda, 12209 S. Eucalyptus Ave., Hawthorne, Calif. 90250
Filed Jan. 17, 1972, Ser. No. 218,637
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1 G

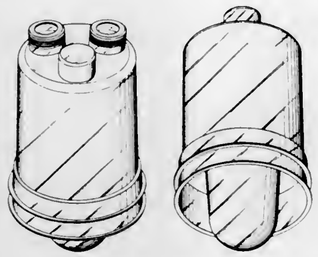


230,894
ARM AND WRIST SUPPORT
Hans R. Lehneis, Merrick, N.Y., assignor to New York University
Filed July 8, 1971, Ser. No. 160,993
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 E

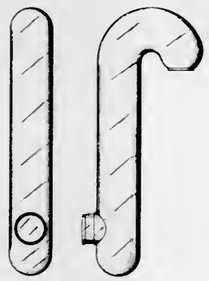


230,895
WRIST DRIVEN ARM SUPPORT
Hans R. Lehneis, Merrick, N.Y., assignor to New York University
Filed July 8, 1971, Ser. No. 160,997
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—1 E

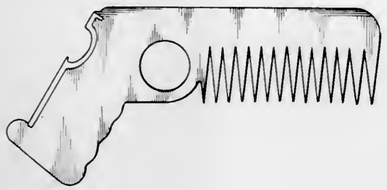
230,896
MEDICAL LIQUID NEBULIZER CONTAINER FOR INHALATION THERAPY
Frank M. Edwards, Pacific Palisades, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Jan. 3, 1972, Ser. No. 215,264
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 N



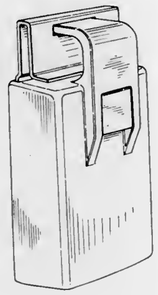
230,897
BLOWER TUBE FOR ULTRASONIC NEBULIZER
Frank M. Edwards, Pacific Palisades, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Jan. 3, 1972, Ser. No. 215,284
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



230,898
COMBINED COMB AND BOTTLE OPENER
Alfred F. Greene, P.O. Box 402, Sanford, Fla. 32771
Filed Nov. 6, 1972, Ser. No. 304,037
Term of patent 14 years
Int. Cl. D28—*03;* D7—*06*
U.S. Cl. D86—8



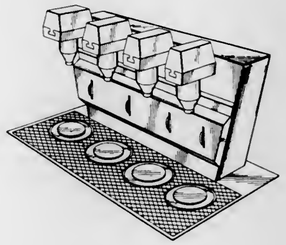
230,899
KEY RECEPTACLE FOR AN AUTOMOTIVE VEHICLE
Leslie Lawrence Cahan, 400 Walmer Road, Park Towers West Penthouse 5, Toronto, Ontario, Canada
Filed July 24, 1972, Ser. No. 274,229
Claims priority, application Canada Feb. 25, 1972
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



230,900
TEXTILE FABRIC
George H. Hughes, Asheville, N.C., assignor to National Distillers Company, Swannanoa, N.C.
Filed Feb. 14, 1973, Ser. No. 332,294
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 B

230,901
TEXTILE FABRIC
George H. Hughes, Asheville, N.C., assignor to National Distillers Company, Swannanoa, N.C.
Filed Feb. 14, 1973, Ser. No. 332,307
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 J

230,902
AUTOMATIC DRINK DISPENSER
Joel D. Fogel, 10764 N. Kendall Drive, Apt. 14, Miami, Fla. 33156
Filed June 15, 1972, Ser. No. 263,237
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D94—3 B



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF MARCH, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Rolles Fabriker: *See*—
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Aartman, John M., to Air Canada. Method of repairing a part having eroded or damaged guide vanes. 3,797,085, Cl. 29-156.80r.

AB Arjon: *See*—
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AB Carl Munters: *See*—
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Abalo, Juan Manuel, to Noel y Compania Limitada Sociedad Anoniam Argentian de Dulces y Conservas. Process for the continuous manufacture of foamed sweets. 3,798,337, Cl. 426-279.000.

Abbey, Harold G. Balanced rotary combustion engine. 3,797,464, Cl. 123-8.330.

Abe, Kunio: *See*—
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Kobayashi, Masayoshi; Ohtani, Yoshio; and Abe, Mitsunobu, 3,797,469.

Abe, Toshihiko, to Director-General of Agency of Industrial Science and Technology. Process for measuring particle size and concentration of slurries according to or stream analysis. 3,797,319, Cl. 73-432.0ps.

Abel, Martin L. Machine for making and injecting lubricant-impregnated wicking material. 3,797,089, Cl. 29-200.00b.

Abercrombie, William Floyd, Jr.: *See*—
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Abramian, Evgeny Aramovich; and Gaponov, Vasily Alexandrovich. High voltage electron tube. 3,798,476, Cl. 313-3.000.

Acker, Ellsworth George; and Glemza, Rimantas, to Grace, W. R., & Company. Method of preparing thickening grade silica composition. 3,798,174, Cl. 252-317.000.

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Thurston, James R.; and Adams, Gary V., 3,797,394.

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Adler, Irwin L., to General Foods Corporation. Percolation process. 3,798,341, Cl. 426-432.000.

Adolphi, Heinrich: *See*—
Beutel, Peter; Koenig, Karl-Heinz; Dietsche, Wolfram; and Adolphi, Heinrich, 3,798,230.

Adomaitis, Domas, to Continental Can Company, Inc. Tamper-proof closure for a pressurized container. 3,797,689, Cl. 215-253.000.

Aerojet-General Corporation: *See*—
Frank, Kurt F.; Kays, David D.; and Kruse, John W., Jr., 3,797,552.
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Agence Nationale de Valorisation de la Recherche: *See*—
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Aidlin, Samuel S.; and Aidlin, Stephen H. Automatic apparatus for orienting and feeding bottles or like articles having necks. 3,797,640, Cl. 198-33.0aa.

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Peterson, Carl G.; and Aijala, Sulo A., 3,797,618.

Aiken, William Ross, to Display Technology Corporation. Display device employing liquid crystal materials. 3,797,914, Cl. 350-160.0lc.

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Akowicz, Erwin A.: *See*—
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Toth-Sarudy, Eva; Horvath, Istvan; Gyimesi, Jozsef; Ott, Istvan; Alfoldi, Laszlo; Berdy, Janos; Koczka, Istvan; Scholtz, Vilma; Szell, Valeria; and Neetomori, Eva Laszio, 3,798,129.

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Esler, Donald F.; and Choby, Edward G., Jr., 3,798,074.
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Allen, Philip, to Beck, Charles, Machine Corporation. Conveyorized sheet cutter. 3,797,345, Cl. 83-175.000.

Allen, Ralph H.: *See*—
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Allied Chemical Corporation: *See—*
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Amberg, Ralph G., to Owens-Illinois, Inc. Method and apparatus for assembling composite containers. 3,797,369, Cl. 93-36.100.
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Ambrose, John; and Shepherd, Edmund J., to Dunlop Holdings Limited. Hose pipes. 3,797,530, Cl. 138-137.000.
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Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, to United States of America, Air Force. Pulsed doppler radar. 3,798,643, Cl. 343-8.000.
Blum, Albert. Alignment means for an immersible pump. 3,797,970, Cl. 417-360.000.
Blunden, Donald J., to Whitehead & Kales Company. Loading and securement system for rail cars. 3,797,410, Cl. 105-368.00r.
Bochman, Raymond A.; Dessauer, Ralph G.; and Jen, Dian P., to International Business Machines Corporation. Method and apparatus for producing large diameter monocrystals. 3,798,007, Cl. 23-301.0sp.
Bocker, Peter. Method and apparatus for demodulation of phase difference modulated data signals. 3,798,561, Cl. 329-104.000.
Bodenseewerk Perkin-Elmer Co., G.m.b.H.: *See—*
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Boisen, Martin H.; Crevar, Steve, Jr.; and Morris, Robert T., to Rohr Industries, Inc. Accumulator type slat conveyor. 3,797,635, Cl. 198-75.000.
Boissier, Jacques Robert; and Ratouis, Roger, to Societe Anonyme dite: Societe Industrielle pour la Fabrication des Antibiotique (S.I.F.A.). 9-Fluoro-11β,21-dihydroxy-16α,17-(2-propenylidenedioxy)-pregna-1, 4-diene-3,20-dione and derivatives thereof. 3,798,216, Cl. 260-239.55d.
Boissin, Jean-Claude: *See—*
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Bollhoff & Co.: *See—*
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Bonami, Ernest; and Clemens, Ogden A., to Swift & Company. Method and apparatus for segmenting extruded product. 3,797,070, Cl. 17-32.000.
Bondarev, Konstantin Timofeevich; Golius, Tamara Efimovna; Minakov, Anatoly Gavrilovich; Minakov, Vladimir Anatolievich; and Strekalov, Anatoly Vastlievich. Method of manufacturing crystalline glass articles. 3,798,014, Cl. 65-33.000.
Bone, Arnold Roberts, to Dennison Manufacturing Company. Apparatus for dispensing fasteners. 3,797,722, Cl. 227-67.000.
Bonet, Claude: *See—*
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Boone, Salomon; and Van der Heiden, Frans, to U.S. Philips Corporation. Package containing electric components. 3,797,655, Cl. 206-325.000.
Boothe, Clyde O., to Farr Company. Automated spot welding method and apparatus. 3,798,405, Cl. 219-56.000.
Borden, Inc.: *See—*
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Newton, Alwin B., 3,797,266.
Borowski, Kurt: *See—*
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Borrello, Giuseppe, to Colgate-Palmolive Company. Extruder output multiplier. 3,797,982, Cl. 425-198.000.
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Bottaccio, Giorgio; Chiusoli, Paolo; Coassolo, Alfredo; and Carletti, Vittorio, to Montecatini Edison S.p.A. Process for preparing citric acid. 3,798,266, Cl. 260-535.00p.
Boudakian, Max M.; and Chiras, Stanley J., to Olin Corporation. Method for the preparation of difluoropyridines. 3,798,228, Cl. 260-290.0hl.
Boudreau, Robert Joseph. Smyth Manufacturing Company, The Seaming tool. 3,797,430, Cl. 113-55.000.
Bourdale, Lucien R. Method of separating particles contained in a laden fluid, and a dynamic separator for performing this method. 3,797,663, Cl. 210-78.000.
Bourdes, Jean-Paul: *See—*
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Bourne, Hector Roland; and Brown, Bruce Cameron. Method for affecting a condition of a boundary layer of gas or vapour at a surface of a body of liquid. 3,797,998, Cl. 21-60.50r.
Boutcher, Andrew Graham; and Busler, Willard Le Roy, to AMP Incorporated. Terminal insertion apparatus. 3,797,090, Cl. 29-203.00b.
Bowdish, Meredith E. Unified smog pump and alternator. 3,797,242, Cl. 60-307.000.
Bowerman, William R. Device for metering toothpaste or the like. 3,797,711, Cl. 222-219.000.
Braas & Co. GmbH: *See—*
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Bracken, Ronald C.; Harper, James G.; Paddock, Arnold D.; and Morrison, Wilson G., to Texas Instruments, Incorporated. Anodic passivating processes for integrated circuits. 3,798,135, Cl. 204-15.000.
Brady, William Jackson. Amphibious vehicle. 3,797,056, Cl. 9-1.00t.
Brafman, Marek; Godeau, Alain; Laverlochere, Jean; and Lecomte, Jean-Luc, to Commissariat a l'Energie Atomique and Entreprise de Recherches et d'Activites Petrolieres elf. Method of remote analysis of the composition of a medium and a device for carrying ot said method. 3,798,455, Cl. 250-256.000.
Braid, Milton, to Mobil Oil Corporation. Lubricant compositions. 3,798,166, Cl. 252-51.50a.
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Brandstatter, Horst, to Brandstatter, Georg. Ringing device for an electrical telephone. 3,798,383, Cl. 179-84.00r.
Brandt, Edison R., to Polaroid Corporation. Photograph album page. 3,797,152, Cl. 40-158.00r.
Brandt, Vernon J. Transporting and dumping apparatus. 3,797,684, Cl. 214-313.000.
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Brane, Earl P. Time variable valve apparatus. 3,797,323, Cl. 74-55.000.
Brane, Earl P.; Brane, Douglas K.; Marsh, Robert E.; and Hammond, Holton H. Low pressure drop water softener valve assembly with dual pistons. 3,797,523, Cl. 137-599.100.
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Braun, Dieter, to Felten & Guilleaume Kabelwerke Aktiengesellschaft. Method and arrangement for making SZ-twisted cables. 3,797,217, Cl. 57i34.0at.
Brechbuhl, Heinrich. Centrifugal fan. 3,797,961, Cl. 415-156.000.
Breeden, Earl W., to Garnette, Marie J. Pet house. 3,797,461, Cl. 119-19.000.
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Bress, Dellason F.; and Petrarca, Carmen A., to Foster Wheeler Corporation. Pollution elimination for fertilizer process. 3,798,021, Cl. 71-28.000.
Brettrager, Norman A. Apparatus for mounting a winch on a trailer. 3,797,681, Cl. 214-85.500.
Brichard, Claude, to Glaverbel S.A. Glass sheet drawing method and apparatus. 3,798,015, Cl. 65-95.000.
Bridger, Floyd R., Jr. Minimum tillage planter. 3,797,418, Cl. 111-73.000.
Bridgestone Tire Co. Ltd.: *See—*
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Bridgestone Tire Company, Limited: *See—*
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Bright, William Townsend. Laminating apparatus. 3,798,107, Cl. 156-500.000.
Brille, Maurice G.; and Baguelin, Yves E., to Societe Anonyme de Vehicules Industriels et d'Equipements Mecaniques Saviem. Cooling systems of supercharged diesel engines. 3,797,562, Cl. 165-39.000.
Brimhall, Ray S., to Walker Bank and Trust Company, administrator with will annexed of the estate of said Brimhall, (deceased). Hydraulic system and mechanical latch therefor. 3,797,882, Cl. 296-28.00c.
Brindley, Robert E., to Union Carbide Corporation. Push button switching module for flashlights. 3,798,440, Cl. 240-10.660.
Brink, Edwin H.; and Houston, Robert K., to FMC Corporation. Capsule assembly method and machine. 3,797,195, Cl. 53-37.000.
Brion, Alison C. Barbecue meat holder. 3,797,379, Cl. 99-421.00h.
Bristol, Edgar H., II, to Foxboro Company, The. Pattern evaluation method and apparatus for adaptive control. 3,798,426, Cl. 235-151.100.
British Columbia Research Council: *See—*
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British Non-Ferrous Metals Research Association, The: *See—*
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Broadhead, John, to Bell Telephone Laboratories, Incorporated. Battery structure incorporating chlorine scavenger. 3,798,069, Cl. 136-26.000.
Brody, Albert C.; and Lipkin, Edward, to Nyvel Corporation. Method and apparatus for electrostatically coating an object. 3,798,048, Cl. 117-17.000.
Bronzini, Bruno. Fabricating article transfer apparatus for machine tools. 3,797,638, Cl. 198-33.oad.
Brooks, Dell Royce, to Telephone Industries, Inc. Connector terminal dial repulser. 3,798,379, Cl. 179-16.00e.
Brooks, Robert A.; and Bebick, Paul J., to Magnetic Analysis Corporation. Pulse eddy current testing apparatus using pulses having a 25% duty cycle with gating at pulse edges. 3,798,539, Cl. 324-40.000.
Brother Kogyo Kabushiki Kaisha: *See—*
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Brown, Sidney F.: *See—*
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Browne, Lawrence T. Soldering method and apparatus for ceramic circuits. 3,797,100, Cl. 29-471.100.
Browning, Iben; and Johnson, Peter R. Recording method and apparatus utilizing light energy to move record forming material onto a record medium. 3,798,365, Cl. 178-6.60a.
Browtzki, Kurt: *See—*
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Brugger, Max; Riniker, Bernhard; and Rittel, Werner, to Ciba-Geigy Corporation. Analogues of human thyrocalcitonin modified with corresponding amino acids of salmon thyrocalcitonin and derivatives thereof. 3,798,203, Cl. 260-112.500.
Brument, Max, to Herve et Fils Papeteries du Sentier (Societe Anonyme). Skirt convertible into a tote bag. 3,797,043, Cl. 2-69.500.
Brunes, Tons Jean. Supporting roller for belt and roller conveyors. 3,797,082, Cl. 29-116.00r.
Brunk, Milton J.: *See—*
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Brunner, Mathias, to Zumbach Electronic Automatic. Device for measuring the position of a conductor in a cable. 3,797,121, Cl. 33-174.00q.
Bruson, Herman A.; and Gould, Henry, to Milchem Incorporated. Detergent builder composition. 3,798,183, Cl. 252-557.000.
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Buckingham, Robert L.; Davis, Jonathan B.; and Herd, Harold H., to International Business Machines Corporation. Optical scanner including an aperture design for non-synchronous detection of bar codes. 3,798,458, Cl. 250-569.000.
Budahn, Burnell E. Cheese mold with hinged side walls. 3,797,980, Cl. 425-84.000.
Buehler, Walter Erwin; and Lunden, Clarence David, to Boeing Company, The. Continuous-wave, multiple beam airplane landing system. 3,798,646, Cl. 343-109.000.
Buhler, Andreas, to Castle Brass Works (Proprietary), Limited. Vacuum breaker. 3,797,515, Cl. 137-218.000.
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Burckhardt, Manfred H.; and Krohn, Hellmut, to Daimler-Benz Aktiengesellschaft. Brake force control system for vehicles. 3,797,893, Cl. 303-21.0be.
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Busker, Leroy H.; and Francik, Carl J., to Beloit Corporation. Wrapped roll press. 3,798,121, Cl. 162-205.000.
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Buttery, Kenneth T.; and Haas, Richard C., to Brown Company. Top-opening carton having a unique end flap arrangement. 3,797,728, Cl. 229-36.000.
Buttner, Rolf: *See—*
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Buzga, Heinrich, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Method and apparatus for separting granules from a liquid. 3,797,661, Cl. 210-73.000.
Buzzi, Gunter; and Lorch, Werner, to Grohe, Hans, KG, Firma. Device for aspirating and admixing additives into a stream. 3,797,747, Cl. 239-311.000.

Buzzi, Ugo, to Albe S.A. Machine for the automatic high-speed, high precision machining of small parts, even those having a complicated form. 3,797,081, Cl. 29-38.00c.
Byers, Robert E.; and Schmitt, John, to Gulf Research & Development Company. Automated filler and lever controller for liquid nitrogen. 3,797,514, Cl. 137-212.000.
BYK-GULDEN Lamberg Chemische Fabrik GmbH: *See—*
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Caldwell, Jack N. Helmet construction. 3,797,040, Cl. 2-3.00p.
Calhan, Richard B., to Creative Inc. Meat feeding machine. 3,797,353, Cl. 83-718.000.
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Cammarata, Vincent N.; Brown, Ronald E.; and Garfinkle, David R., to United States of America, Air Force. Multiple charge incendiary bomblet. 3,797,391, Cl. 102-4.000.
Campagnuolo, Carl J.; and Lee, Henry C., to United States of America, Army. Square wedge fluidic generator for electrical and mechanical outputs. 3,798,475, Cl. 310-15.000.
Campbell, Eric C., to Wescor, Inc. Thermocouple hygrometer and method. 3,797,312, Cl. 73-336.500.
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Candiani, Giampiero, to Societa' Italiana Telecomunicazioni, Siemens S.p.A. Channel monitor for compressed-code PCM transmission system. 3,798,635, Cl. 340-347.0dd.
Canevari, Gerard P., to Esso Research and Engineering Company. Capillary device. 3,797,250, Cl. 61-10.000.
Cannon, Robert W. Arrangement for providing access to a sealed incubator system. 3,797,172, Cl. 49-463.000.
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Carey, John R. Bolt with concealed safety cable. 3,797,868, Cl. 292-57.000.
Cargill, Robert L., to Research Corporation. Intermediate for synthesis of housefly sex attractant. 3,798,273, Cl. 260-593.00r.
Carias, Andre. Braking device for vehicles. 3,797,612, Cl. 188-79.000.
Carleton, William A., to Bendix Corporation, The. Anti-knock flow valve. 3,797,522, Cl. 137-528.000.
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Carter, John L.; and McGowan, Joseph W., to United States of America, Army. Electron beam diode power device. 3,798,563, Cl. 330-44.000.
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Cavatassi, Dominic. Smoke washer apparatus. 3,797,204, Cl. 55-227.000.
Cawley, Leo P. Electrophoresis cell means. 3,798,152, Cl. 204-299.000.
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Cennerelli, Giuseppe. Device for fixing pieces of joinery to concrete panels. 3,797,187, Cl. 52-375.000.
Centre de Recherches Scientifiques et l'Industrie des Fabrications Metalliques, en abrege, C.R.I.F.: *See—*
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Cercone, Daniel. Hair dryer nozzle. 3,797,752, Cl. 239-443.000.
Cerioni, Giuseppe Renzo, to El Cu S.p.A. Butt end stitching machine. 3,797,424, Cl. 112-169.000.
Cerola, Joseph J., to Jenn-Air Corporation. Stove with selectively interchangeable cooking apparatus. 3,797,375, Cl. 99-340.000.
Cessou, Maurice; and Cosyns, Jean. Process for hydrogenating aromatic hydrocarbons to naphthenic hydrocarbons of high purity and catalyst therefor. 3,798,279, Cl. 260-667.000.
Chaffee, James L. Trailer tongue weight scale. 3,797,594, Cl. 117-136.000.
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Charbonneau, Albert J.; Conway, Gerard V.; and Hucko, Henry, to General Electric Company. Fuse bushing with sealing means providing hotstick changeout of fuse. 3,798,583, Cl. 337-202.000.
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Childs, William V., to Phillips Petroleum Company. Method for separating liquids. 3,798,144, Cl. 204-186.000.
Chiola, Vincent; Smith, James S.; and Vanderpool, Clarence D. Refractory metal phosphate and phosphide coatings for refractory metal leads and process for producing metal phosphides. 3,798,058, Cl. 117-201.000.
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Davis, Floyd O.; and Davis, Boyce W. Shaft centering machine. 3,797,959, Cl. 408-135.000.
Davis, Gary A. Dog stanchion for automobiles. 3,797,462, Cl. 119-96.000.
Davis, Herbert W. Variable width front mounted mower. 3,797,209, Cl. 56-13.600.
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De Jonge, Martinus Catrinus. Grid ceiling. 3,797,192, Cl. 52-665.000.
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Dean, Harold L.; and Penna, Vincent Della, Jr., to Dennison Manufacturing Company. Marking system with rotary print drums. 3,797,386, Cl. 101-69.000.
Deardurff, Lawrence R., to Owens-Corning Fiberglas Corporation. Electrical lead. 3,798,589, Cl. 339-223.00s.
Deaton, Charles U. Illuminator grid. 3,798,446, Cl. 240-146.000.
DeBrecht, Robert Eugene; and Napoli, Louis Sebastian, to RCA Corporation. Microwave transmission line and devices using multiple coplanar conductors. 3,798,575, Cl. 333-10.000.
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Depetris, Lorenzo, to Smyth Europea S.p.A. Automatic machine for feeding and sewing signatures in books. 3,797,419, Cl. 112-21.000.
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Bliss, Burit E.; Dervan, James T., III; Griffith, Leroy E.; Pung, Bruce D.; Thorpe, Robert A.; and Vogel, Norman A., 3,798,610.
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Desmond, Richard J.; Fronczek, Edward J.; and McCarthy, John J., to General Electric Company. Machine and process for semiconductor device assembly. 3,797,103, Cl. 29-583.000.
Dessauer, Ralph G.: *See—*
Bochman, Raymond A.; Dessauer, Ralph G.; and Jen, Dian P., 3,798,007.
Detrex Chemical Industries, Inc.: *See—*
Petering, Wilbur H.; Kircher, Charles E., Jr.; and Pinchak, Paul R., 3,798,170.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Heldt, Kurt; and Lappe, Hans, 3,797,993.
Rocktaschel, Gottfried; Thurn, Friedrich; Fleischhauer, Horst; Schwarze, Werner; and Westlinning, Hermann, 3,798,196.
DeWavrechin, Regis, to Compagnie Generale d'Electricite. Laser generator. 3,798,567, Cl. 331-94.500.
Dexter, Halton B. Stranded motorists' sign. 3,797,151, Cl. 40-129.00c.
Di Giacomo, Sebastian F., to Gull Airborne Instruments, Inc. Fuel immersible capacitor for measurement of liquid fuel in a tank. 3,798,515, Cl. 317-246.000.
Di Muriaglio, Cesare Marchetti San Martino, to C.R.T. Italia S.r.l.a. Heating arrangement for dry copying machines. 3,798,414, Cl. 219-216.000.
Diamand, Roger David: *See—*
Reynolds, Patricia May; and Diamand, Roger David, 3,798,450.
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Cooprider, Rex C., 3,797,705.
Diamond Shamrock Corporation: *See—*
Decraene, Denis F., 3,798,063.
Dibrell, James W., to Nospil Limited. Non-spill container closure. 3,797,696, Cl. 220-90.400.
Dickert, Joseph J., Jr.; and Rowe, Carleton N., to Mobil Oil Corporation. Lubricating compositions containing metal phosphonates. 3,798,162, Cl. 252-32.500.
Dickinson, Harry C. Adjustable soft packing seal. 3,797,564, Cl. 165-82.000.
Dickopp, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Method of recording a modulated carrier for radiation reproduction. 3,798,386, Cl. 179-100.40m.
Dickopp, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Record carrier for storing angularly modulated signals. 3,798,388, Cl. 179-100.400.
Dickson, Robert E.; and Barkin, Stanley M., to Colgate-Palmolive Company. Composition for application of soil-release finish. 3,798,169, Cl. 252-89.000.
Didier-Werke AG: *See—*
Kutzer, Hans-Joachim; Weinreich, Wolfgang; Harmsen, Lothar; and Fricke, Gerd D., 3,797,712.
Dierckx, Jozef Aime: *See—*
Janssens, Wilhelmus; Vanheertum, Johannes Josephus; Pollet, Robert Joseph; Sneyers, Hendrik Hubert; and Dierckx, Jozef Aime, 3,798,031.
Diesel Kiki Kabushiki Kaisha: *See—*
Kobayashi, Masayoshi; Ohtani, Yoshio; and Abe, Mitsunobu, 3,797,469.
Dietch, Leonard, to Zenith Radio Corporation. Instant play television receiver with constant voltage transformer. 3,798,369, Cl. 178-7.50r.
Dietsche, Wolfram: *See—*
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Dill, Hans G. Rotating ring display. 3,798,640, Cl. 340-378.00r.
Dill, Walter R.; Chatterji, Jiten; and Knox, John A., to Halliburton Company. Additives for temporarily plugging portions of subterranean formations and methods of using the same. 3,797,575, Cl. 166-282.000.
Dillon, Janus J., to Food Equipment, Inc. Fowl agitating and wetting system. 3,797,068, Cl. 17-11.000.
Dimitriadis, Andre C., to Intertech, Inc. Electronic locking system. 3,797,936, Cl. 356-71.000.
Dinse, Wilhelm. Shield-gas welding gun. 3,798,410, Cl. 219-130.000.
Dipaola, Vincent J.; and Allen, Ralph H., to United States of America, Army. Apparatus for destruction of documents with free gaseous oxygen in a safe or container. 3,797,412, Cl. 109-29.000.
Director-General of Agency of Industrial Science and Technology: *See—*
Abe, Toshihiko, 3,797,319.
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Dixon, Thomas E.: *See—*
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Dobry, Reuven; and Cassamassima, Salvatore, to Beech-Nut, Inc. Infusion package. 3,797,642, Cl. 206-.500.
Dobson, Christopher David. Motor drives for vacuum deposition apparatus. 3,797,452, Cl. 118-49.000.
Dobson, Patrick Francis; and Wyman, David Alfred, to Plessey Handel und Investments A.G. Measurement of pressure ratio. 3,798,432, Cl. 235-151.340.
Doeller, Charles H., III: *See—*
McComas, Arthur D.; Ransom, James R.; Kessler, James A.; Doeller, Charles H., III; and Mall, Aaron, 3,798,650.
Dogariu, Maria; Alupei, Georgeta; Verdes, Maria; Friedman, Gaby; Grumeza, Ecaterina; Cobzariu, Tudor; and Ionescu, Ligia, to Fabrica de Antibiotice Iasi. Medium for the culture of the escherichia colt strain. 3,798,127, Cl. 195-65.000.
Doherty, Orval Austin: *See—*
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Salukvadze, Viktor Samsonovich; Koshman, Igor Filippovich; and Doktorov, Leonid Borisovich, 3,797,060.
Dominion Auto Accessories Limited: *See—*
Brudy, Peter E., 3,798,444.
Donnelly, James H., to Epoxon Corporation. Inorganic cement compositions containing epoxy resin and pozzolan. 3,798,191, Cl. 260-13.000.
Donohoe, John William: *See—*
Foret, Pierre G.; and Donohoe, John William, 3,798,422.
Donohue, James P.: *See—*
Gilberg, Robert C.; Donohue, James P.; and Patel, Ramesh S., 3,798,421.
Doran, Barbara Jean. Hygienic cleaning device for the anal area of the human body. 3,797,481, Cl. 128-65.000.
Dornier System GmbH: *See—*
Huf, Franz, 3,797,974.
Dorren, Louis, to Matsushita Electric Corporation of America, mesne. Four channel FM decoder utilizing a one-of-four decoder. 3,798,377, Cl. 179-15.0bt.
D'Ottavio, Eugene D.: *See—*
Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., 3,798,096.
Douglass, Walter; and Morgatroyd, Paul John. Calculators. 3,797,133, Cl. 35-31.00r.
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Soderquist, Frederick J.; and Martz, Lyle E., 3,798,178.
Von Gunten, Leo J., 3,798,110.
Watson, Richard E., 3,798,195.
Downey, Rogers B., to Polaroid Corporation. Compact motion picture film handling cassette and camera. 3,797,778, Cl. 242-199.000.
Downing, Benjamin A.; Johnson, Earl B.; and McClain, Richard E., to Caterpillar Tractor Company. Collapsible container and assembly method therefor. 3,797,727, Cl. 229-23.00a.
Dowty Hydraulic Units Limited: *See—*
Waters, John Henry, 3,797,244.
Doyle, Carl L.: *See—*
Powell, Johnnie L.; and Doyle, Carl L., 3,797,624.
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Gavin, John H., 3,797,091.
Gorum, Larry Austin, 3,798,317.
Jackson, Julius, 3,798,045.
King, Charles Morgan; Seidel, William Carl; and Tolman, Chadwick Alma, 3,798,256.
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Dubois, Jean-Claude: *See—*
Cassand, Jean; Dubois, Jean-Claude; and Cholet, Jacques, 3,798,474.
Duboisson, Sidney E.; and Verret, Allen J. Shim take-up ring for pile connection. 3,797,258, Cl. 61-53.500.
Dudley & Conley Scale Co., Inc.: *See—*
Conley, Fred Miller, 3,797,593.
Duffy, Albert W.; and Ippolito, Frank. Linkage for foot operated bass drum pedal. 3,797,356, Cl. 84-422.000.
Dumbauld, Richard, to Berkeley & Company, Inc. Semi-automatic bail structure for open face reel. 3,797,774, Cl. 242-84.20g.
Dumitru, Earl T.: *See—*
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Dunham, Thomas E.: *See—*
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Dunlop Company Limited, The: *See—*
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Dunlop Holdings Limited: *See—*
Ambrose, John; and Shepherd, Edmund J., 3,797,530.
Dunson, Marcus H. Emergency floatation apparatus for watercraft. 3,797,435, Cl. 114-68.000.
Duprey, Richard H.: *See—*
Benoit, Roland A.; and Duprey, Richard H., 3,797,050.
Dye, Cloyde G.: *See—*
Paridon, Leo J.; Dye, Cloyde G.; and Yarsa, Frank J., 3,798,018.
Dyke, Elbert S. Brake fluid lever monitoring apparatus. 3,798,595, Cl. 340-59.000.
Dykes, Dewey B., to Conserv Resources Inc. Safety closure. 3,797,704, Cl. 222-41.000.
Dynamit Noble AG: *See—*
Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, 3,797,853.
Eades, George S.: *See—*
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Earl, Roscoe T.; and Waldt, Leonard M., to Baxter Laboratories, Inc. Meat tenderization method. 3,798,334, Cl. 426-58.000.
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Eastman Kodak Company: *See—*
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Evan, George E., 3,798,518.
MacDonald, Stuart G., 3,797,636.
McColgin, William C.; and Webster, Frank G., 3,798,566.
Ebeling, Joachim, to Suddeutsche Kalkstickstoff-Werke AG. Polyvinylidene fluoride coating for metals. 3,798,052, Cl. 117-75.000.
Eberhardt, Edward H., to International Telephone and Telegraph Corporation. Log photodiode. 3,798,451, Cl. 250-211.00r.
Ebert, Wayne A.: *See—*
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Eckel Industries, Inc.: *See—*
Kochis, August James, 3,797,165.
Eckels, Robert E. Reversible sensitization of liquid explosives. 3,797,392, Cl. 102-23.000.
Ecodyne Corporation, mesne: *See—*
Miller, Cole R., 3,797,660.
Edson, William A., to Stanford Research Institute. Short pulse generator. 3,798,461, Cl. 307-106.000.
Edstrom, Gene H.; Lutter, Edward P.; and Robinson, Francis L., to International Business Machines Corporation. Controlling peripheral subsystems. 3,798,613, Cl. 340-172.500.
Edwards, Allen, Inc.: *See—*
Webb, Brian C., 3,797,260.
Edwards, Donald W.: *See—*
Runge, Wallace F.; and Edwards, Donald W., 3,798,092.
Edwards, John A.: *See—*
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Edwards, John D. Cab or van vehicle air deflector. 3,797,879, Cl. 296-1.00s.
Edwards, John W., to Hammond Corporation. Balancing means for a rotating speaker system. 3,797,606, Cl. 181-27.00a.
Eeghem, Jan Van: *See—*
DeFranco, Charles; and Eeghem, Jan Van, 3,798,027.
Efimov, Leonid Alexandrovich: *See—*
Vasilkovsky, Vitaly Pankratievich; Grebnev, Nikolai Feodosovich; Efimov, Leonid Alexandrovich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andreevich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andrevich; Pylaikin, Petr Alexeevich; Rozanov, Boris Vasilievich; Sinitsky, Vladimir Mikhailovich; and Khirdzhiev, Sergei Grigorievich, 3,797,298.
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Baktai, Gyorgy; Saly, Sandor; Orlik, Benedek; and Neugebauer, Jeno, 3,798,008.
Eheim, Franz, to Bosch, Robert, G.m.b.H. Fuel injection apparatus for automotive vehicles using gas turbine power plants. 3,797,235, Cl. 60-39.28r.
Ehrenberg, Hermann, to Fouquet-Werk Frauz & Planck. Connecting arrangement. 3,797,950, Cl. 403-370.000.
Eichenlaub, John E. Fuel fired space heater. 3,797,474, Cl. 126-85.00r.
Eichhorn, Georg: *See—*
Richter, Lothar; and Eichhorn, Georg, 3,798,038.
Eichstaedt, Edward C. Post anchor. 3,797,182, Cl. 52-156.000.
Eigenbrod, Lester K., to Union Carbide Corporation. Cryogenic fluid supply system. 3,797,262, Cl. 62-50.000.
Einarson, Norman S., to Solder Removal Company. Dual in line package handling tool. 3,797,092, Cl. 29-203.00h.
Eisenmann, Josef; and Helgemeir, Heinrich. Tool for ballast tamping machine. 3,797,397, Cl. 104-12.000.
Eklund, Kurt I.: *See—*
Sebilleau, Roger V.; and Eklund, Kurt I., 3,797,671.
Eko Denshi Kabushiki Kaisha: *See—*
Tokizaki, Teru, 3,798,389.
Ekstein, Chaim Henry, to Remington Aluminum Window Corporation. Frame construction. 3,797,194, Cl. 52-758.00h.
Ekstrand, Roy A. Automatic tint control circuit. 3,798,352, Cl. 178-5.4he.
El Cu S.p.A.: *See—*
Cerioni, Giuseppe Renzo, 3,797,424.
Elechogasdynamics, Inc.: *See—*
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Elfarr, Johnnie A., 50% interest to George, William, Jr. Apparatus for flowing liquid from a well. 3,797,968, Cl. 417-138.000.
Elliott Brothers (London) Limited: *See—*
Heller, Fritz Peter; and Smith, Brian Frederick, 3,798,666.

Elliott, Phillip Mitchell. Selective positioning means for curtain assembly. 3,797,553, Cl. 160-267.000.
Ellis, Benjamin Clement, Jr.; Scholly, Christian; McGonigal, Charles; and Snyder, John Howard, said Ellis assor. to Bell Telephone Laboratories, Incorporated and said McGonigal, said Scholly and said Snyder assor. to Western Electric Company, Incorporated.Devices for making electrical connections. 3,798,587, Cl. 339-97.00p.
Elographics, Incorporated: *See—*
Hurst, George S., 3,798,370.
Eloranta, Vaito K.; and Walworth, Vivian K., to Polaroid Corporation. Apparatus for adapting a reflex camera to use with a binocular microscope. 3,798,665, Cl. 354-79.000.
Elphiac: *See—*
Binard, Pierre; Defosse, Georges; and Jawuerie, Jean Marie, 3,798,489.
Elshuber, Karl, to Texas Instruments, Incorporated. Analog voltage switch. 3,798,468, Cl. 307-242.000.
Emerson Electric Co.: *See—*
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Emerson Labeltape Corporation: *See—*
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Emhart Corporation: *See—*
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Nelson, John; and Schultz, Robert J., 3,797,641.
Endo, Takamasa; and Sugimura, Shojiro. Sealing apparatus for gas compressor. 3,797,963, Cl. 415-175.000.
Endter, Dale S.; Miller, Edwin E.; and Westacott, Harry L., to Eastman Kodak Company. Vibration isolation arrangement for aperture card photographic copying machine. 3,797,932, Cl. 355-18.000.
Engineered Products: *See—*
Wood, Howard J.; and Greiner, James A., 3,797,762.
Engle, Stewart E.: *See—*
Faessler, Adelmar; and Engle, Stewart E., 3,797,537.
Engle, William J.: *See—*
Augenblick, Harry A.; and Engle, William J., 3,798,642.
English, Christopher John, to Noranda Mines, Limited. Method for continuous casting of metal strips. 3,797,555, Cl. 164-89.000.
English, James William, to Atmos Corporation. Power control device with heat transfer means. 3,798,506, Cl. 317-100.000.
Enloe, Kenneth M.; and Gresham, James T., to Kimberly-Clark Corporation. Disposable tissue with controlled wet break-up. 3,798,120, Cl. 162-112.000.
Enoguchi, Yuji: *See—*
Tanaka, Susumu; Inoue, Masayoshi; Enoguchi, Yuji; Wada, Kenichi; and Fujiwara, Takao, 3,797,930.
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Enright, Thomas F.: *See—*
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Ensley, E. Keith; and Scholz, Henry A. Differential microcalorimeter. 3,798,003, Cl. 23-253.00r.
Entreprise de Recherches et d'Activites Petrolieres elf: *See—*
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Environmental Systems Corporation: *See—*
Shofner, Frederick M., 3,797,937.
Envirotech Corporation: *See—*
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Epoch Company, Ltd.: *See—*
Matsumoto, Peruo, 3,798,639.
Epoxon Corporation: *See—*
Donnelly, James H., 3,798,191.
Epstein, Marvin A., to International Telephone and Telegraph Corporation. Frame synchronization system. 3,798,378, Cl. 179-15.0bs.
Erdman, Leon Paul; and Wanie, Lee Joseph, to Deere & Company. Mower discharge chute deflector and bagging attachment. 3,797,214, Cl. 56-320.200.
Erichsen, Roger H.: *See—*
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Erickson, John M.; and Reich, Bernard, to United States of America, Army. Temperature compensated zener diode for transient suppression. 3,798,510, Cl. 317-234.00r.
Ericson, Richard E., to Bard, C. R., Inc. Cyctoscopy sheet. 3,797,484, Cl. 128-132.00d.
Esashi, Hanjiro; and Kawamata, Katsuyoshi, to Sony Corporation. Tape cassette. 3,797,779, Cl. 242-199.000.
Eschbach, Robert C.: *See—*
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Esler, Donald F.; and Choby, Edward G., Jr., to Allegheny Ludlum Industries, Inc. Surface finishing. 3,798,074, Cl. 148-6.160.
Espey, Kermit Maynard; and Gavin, John Joseph, to Miles Laboratories, Inc. Therapeutic and diagnostic allergenic extract and process for preparing same. 3,798,319, Cl. 424-91.000.
Esso Research and Engineering Company: *See—*
Canevari, Gerard P., 3,797,250.
Cowles, Walter C., 3,797,437.
Jung, Herbert August, 3,798,278.
Muenker, Adolf H.; Beach, Leland K.; and White, Herschel T., 3,798,086.
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Ethyl Corporation: *See—*
Cook, Charles A., 3,797,873.
La Borde, Joseph N., 3,797,185.
Etters, James N., to River, Dan, Inc. Dyeing textile materials with vat and sulfur dyes and reducing agent stabilizers for same. 3,798,172, Cl. 252-188.000.
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Evan, George E., to Eastman Kodak Company. Variable duration braking circuit for a momentary intermittently driven web transporting mechanism. 3,798,518, Cl. 318-6.000.
Evans, Jack R. Foldable cot. 3,797,051, Cl. 5-82.000.
Evans, Lee Stanley, to Courtaulds Limited. Corrosion protection. 3,798,142, Cl. 204-147.000.
Evans, Robert G. Method of reconditioning used steel drums. 3,798,066, Cl. 134-27.000.
Excel Industries, Inc.: *See—*
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Explosives and Chemical Products Limited: *See—*
Askey, Arthur; and Murphy, John Michael, 3,797,254.
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Favre, Robert, 3,797,224.
Faessler, Adelmar; and Engle, Stewart E., to Sybron Corporation. No-can no-fill feeding star wheel. 3,797,537, Cl. 141-142.000.
Faffart, Andre Georges; and Vinot, Claude Paul, to La Telemecanique Electrique. Pneumatic timer. 3,797,616, Cl. 188-298.000.
Fagre, Raymond C.: *See—*
Fagre, Raymond C.; and Kaiser, Elvin E. (said Kaiser assor. to said), 3,797,878.
Fagre, Raymond C.; and Kaiser, Elvin E., said Kaiser assor. to said Fagre, Raymond C. Drop bottom container. 3,797,878, Cl. 294-71.000.
Fairfield, Hugh J., to Du Pont of Canada Limited. Conversion method for textile filaments. 3,797,073, Cl. 19-83.000.
Faraci, Giorgio; and Godi, Giuseppe, to Bemberg S.p.A. Method for the texturization of yarns, and the product thereof. 3,797,220, Cl. 57-140.00r.
Farah Manufacturing Company: *See—*
Lopez, Enrique; Spidll, Robert D.; and Beazley, Audrey Glenn, 3,797,423.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Farmer, Richard L. Garage door opener. 3,797,171, Cl. 49-360.000.
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Favre, Robert, to Fabriques Movado Rue du Parc la Chux de Fonds Canton Neuchatel. Compensation of the thermal frequency drift of a mechanical oscillator for timekeeping. 3,797,224, Cl. 58-23.0tf.
Fawn Engineering Co.: *See—*
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Fawn Engineering Corporation: *See—*
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Fayren, Jose Maria, to Hijos de J. Barreras S.A. Method for the construction of floating units of great dimensions. 3,797,438, Cl. 114-77.00r.
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Feldman, Inez, to Orthopedic Equipment Company, Inc. Pelvic traction belt. 3,797,483, Cl. 128-75.000.
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Glass, Marvin I.; and Morrison, Howard J., to Marvin Glass & Associates. Random dispensation game. 3,797,831, Cl. 273-138.00r.
Glasson, Jean E. Machine for compacting and tying coils. 3,797,381, Cl. 100-12.000.
Glaverbel S.A.: *See—*
Brichard, Claude, 3,798,015.
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Goff, Otis Ward. Motor-driven press and actuating means therefor. 3,797,385, Cl. 100-232.000.
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Goldammer, Georg, to Schubert & Salzer Maschinenfabrik. Fiber-mixing device. 3,797,072, Cl. 19-81.000.
Goldschmied, Sandor F. Audio responsive light display. 3,798,638, Cl. 340-366.00b.
Golius, Tamara Efimovna: *See—*
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Gomboc, Franz. Fire escape window. 3,797,167, Cl. 49-141.000.
Goode, James K., Jr.: *See—*
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Goodsite, James R., to Westvaco Corporation. Shipping container for bathtubs. 3,797,653, Cl. 206-320.000.
Goodyear Tire & Rubber Company, The: *See—*
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Gordon, Bernard M.; and Neumann, Leopold, to Gordon Engineering Company. Series-shunt switching pair, particularly for synchro to digital conversion, DC or AC analog reference multiplying or plural synchro multiplexing. 3,798,636, Cl. 340-347.0ad.
Gordon Engineering Company: *See—*
Gordon, Bernard M.; and Neumann, Leopold, 3,798,636.
Gordon, Merrill K., to Peabody Gordon-Piatt, Inc. Burner control system. 3,797,989, Cl. 431-90.000.
Gorham, Michael L.: *See—*
Torpie, John D.; Bell, Allan J.; Gorham, Michael L.; and Keating, Walter G., 3,798,576.
Gorike, Rudolf, to Akg Akiestische u Kino-Gerate Gesellschaft m.b.H. Headphone construction. 3,798,393, Cl. 179-182.00r.
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Gorum, Larry Austin, to Du Pont de Nemours, E. I., and Company. Non-caking aerosol anti-perspirant composition. 3,798,317, Cl. 424-47.000.
Goto, Jisaku: *See—*
Minato, Shinpei; Goto, Jisaku; Katagiri, Kiyoshi; and Nakatani, Hiromi, 3,798,128.
Goto, Kenji; Nohira, Hidetaka; and Mizuno, Kiyohiko, to Toyota Jidoshiya Kogyo Kabushiki Kaisha. Control valve assembly for a gas passageway. 3,797,803, Cl. 251-61.500.
Gottwald, Winfried, to Siemens Aktiengesellschaft. Circuit for interference free recognition of zero crossings of read signals of magnetic layer memories. 3,798,467, Cl. 307-235.000.
Gould, Henry: *See—*
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Graf, Werner: *See—*
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Grafford, John G.; and Herring, Lloyd D., to Rowe International Inc. Improved semi-automatic component sequencing machine. 3,797,093, Cl. 29-203.00p.

Graham, Elwood M., to Graham, M. H., Corporation. Electrically heated cooking utensil. 3,798,415, Cl. 219-441.000.

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Graham, Martin H., to Comprehensive Health Testing Laboratories, Inc. Spirometer. 3,797,479, Cl. 128-2.080.

Grange, Howard L. Ventilated roof construction. 3,797,180, Cl. 52-95.000.

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Gray, Robert J.; and Navin, William R., to Hodgman Manufacturing Co., Inc. Sprinkler guard. 3,797,746, Cl. 239-288.500.

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Greene, William H. Tool for removing lightbulb bases and cleaning lightbulb sockets. 3,797,055, Cl. 7-1.00g.

Greenwood, Alan, to Goodyear Tire & Rubber Company, The. Segmented tire mold apparatus. 3,797,979, Cl. 425-47.000.

Gref, Hans: *See—*
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Gregg, Joseph, Jr., to Jab Company, Inc. Multiple condition sensing and audio warning system. 3,798,672, Cl. 360-12.000.

Gregorian, Razmic S.; and Hoernle, Hans R., to United Merchants and Manufacturers, Inc. Process for treating fabrics and fabrics obtained therefrom. 3,797,996, Cl. 8-114.500.

Gregorovich, Charles J.; and Adams, Robert W., to Minster Machine Company, The. 192/146.000. 3,797,623, Cl. 10-13-72.

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Griffiths, David Thomas, to Youngflex S.A. Seat frames. 3,797,886, Cl. 297-452.000.

Griggs, David Thurston. Apparatus and method for retardation of recorded speech. 3,798,372, Cl. 179-1.0sa.

Grohe, Hans, KG, Firma: *See—*
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Grosch, Ernst; Gawlick, Heinz; Bendler, Hellmut; and Flach, Karl-Egon, to Dynamit Noble AG. Safety device for vehicles. 3,797,853, Cl. 280-150.0ab.

Gross, Harold, to Berkey-Colortran, Inc. Lamp rotation socket. 3,798,436, Cl. 240-3.000.

Gross, Thomas A. O. Single phase induction motor brake. 3,798,523, Cl. 318-212.000.

Grossman, George W. Ski protection system and parts therefor. 3,797,284, Cl. 70-58.000.

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Grunwald, John J.; D'Ottavio, Eugene D.; Rhodenizer, Harold L.; and Lombardo, Michael S., to MacDermid Incorporated. Process for forming plastic parts having surfaces receptive to adherent coatings. 3,798,096, Cl. 156-151.000.

Gruppo Lepetit S.p.A.: *See—*
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Gruts, Tatyana Vasilievna: *See—*
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Guell, Jose Maria Dalmau. Safety device for positioning of pattern drums in circular knitting machines. 3,797,277, Cl. 66-50.00b.

Guertin, Alfred Thomas; Keeling, Ronald James; and Schiermeier, Walter William, to Formica Corporation. Laminate comprising pigmented malamine resin modified nitrile rubber impregnated base and superimposed film. 3,798,117, Cl. 161-251.000.

Guillot, Edmond P.: *See—*
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Gumm, Peter; Krubig, Karl-Heinz; Lohmann, Jorg; and Zimmermann, Josef, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of a structure of positively connected corrugated and flat sheets of thermoplastic aterial. 3,798,299, Cl. 264-249.000.

Gummelt, Klaus, to Varta Aktiengesellschaft. Battery carrying arrangement. 3,797,876, Cl. 294-63.00b.

Gundlach, Robert W., to Xerox Corporation. Photoelectrosolographic imaging method utilizing powder particles. 3,798,030, Cl. 96-1.0ps.

Gunnewig, Hubert, to Westfalia Separator AG. Method and apparatus for controlling the concentration factor of a discharge. 3,797,736, Cl. 233-20.00r.

Gunther, Alfhart, to Siemens Aktiengesellschaft. Method for aligning mechanical filters. 3,798,077, Cl. 148-13.000.

Guth, Jean-Louis; Pereyron, Albert; and Wey, Raymond, to Azote et Produits Chimiques S.A. Direct synthesis of faujasite zeolites containing sodium and lithium. 3,798,311, Cl. 423-329.000.

Guth, Lauren W., to General Electric Company. Self-latching wast food disposer mounting assembly. 3,797,764, Cl. 241-100.500.

Guth, Lauren W., to General Electric Company. Control arrangement for a washing machine. 3,798,465, Cl. 307-141.000.

Gutierrez, Julian. Foldable table and seating structure. 3,797,884, Cl. 297-159.000.

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Hagan, Edward A. Rotary shell chamber. 3,797,153, Cl. 42-27.000.

Hagen, William F., to Turbo Refrigerating Company. Ice rake control. 3,797,267, Cl. 62-233.000.

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Hagood, Jerry W.; Cason, Charles M., III; and Shelton, Joe, to United States of America, Army. Laser system incorporating a field effect emitter. 3,798,570, Cl. 331-94.500.

Hahn, Philip P., to Georgia-Pacific Corporation. Planting device for tree seedling plugs. 3,797,417, Cl. 111-4.000.

Hainaut, Daniel; Toromanoff, Edmond; and DeMoute, Jean Pierre, to Roussel Uclaf. Insecticidal trienic compounds and process. 3,798,236, Cl. 260-327.0th.

Hall, John N., to Hercules Incorporated. Process for spreading a graphite fiber tow into a ribbon of graphite filaments. 3,798,095, Cl. 156-73.000.

Haller, Hans; and Wendl, Erwin. Concrete reinforcement and method of an apparatus for making same. 3,797,193, Cl. 52-669.000.

Haller, Herbert; and Mennekes, Werner, to Gewerkschaft Eisenhutte Westfalia. Cutter drive motor support on arm pivot. 3,797,888, Cl. 299-76.000.

Haller, Richard. Friction clutches. 3,797,620, Cl. 192-56.00r.

Halliburton Company: *See—*
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Hallmann, Hermann. Magnetically-operated locking and control device. 3,797,288, Cl. 70-276.000.

Halpern, Walter J. Remote indicating adjustable angle instrument. 3,797,315, Cl. 73-363.900.

Haltmeier, Paul, to Fischer, Georg, AG. Filling thread clamping device for a shuttleless weaving machine. 3,797,532, Cl. 139-194.000.

Hama, Tetsuro; and Nishimura, Izuhiko, to Kabushiki Kaisha Suwa Siekosha. Driving arrangement of passive time indication devices. 3,797,225, Cl. 58-50.00r.

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Hamar, James H. Pump support adapter. 3,797,571, Cl. 166-88.000.

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Han, Yuri W., to Lockheed Aircraft Corporation. Carboxylic acid dihydrazide polymers. 3,798,199, Cl. 260-49.000.

Hanakura, Morihiro: *See—*
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Handle, Walter; Handle, Rainer; and Latt, Paul, to Rieter-Werke Konstanz, Dipl.-Ing. Walter Handle K.G., Firma. Apparatus for processing materials. 3,797,763, Cl. 241-82.100.

Hanes, James W. E.; and Larralde, Edward, to Vetco Offshore Industries, Inc. Telescopic hydraulic decelerator. 3,797,366, Cl. 91-404.000.

Hannah, Clifford George; Shuttleworth, Reginald; and McCroft, Alan David, to Rolls-Royce, Limited. Method of joining a part to a matrix material. 3,798,105, Cl. 156-307.000.

Hanson, Thomas F. Rotary wing apparatus. 3,797,964, Cl. 416-134.000.

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Harding, John Patrick; Butler David Sydney; and Lee, Frank James, to Post Office, The. Improvements in or relating to a crimping clip for electrically connecting together electrical conductors. 3,798,347, Cl. 174-84.00c.

Hardy, Leon: *See—*
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Hardy, Pierre: *See—*
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Harkness, Rebekah, to Pirouette Projects, Inc. Ballet slipper. 3,797,137, Cl. 36-2.5ae.

Harman, Edward W.; and Leatherman, Marvin R., to Prestige Furniture Corporation. Seat type article of furniture and method of manufacturing same. 3,797,885, Cl. 297-445.000.

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Harris, Jesse W., to Tampo Manufacturing Company. Ground compacting apparatus. 3,797,954, Cl. 404-117.000.

Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, to Sharps Associates. 5,5-Dimethyl-10-hydroxy-8-(3-methyl-2-octyl)-2-(2-propynyl) -1,2,3,4-tetrahydro-5H-(1) benzopyrano (3,4-D)-pyridine as an anti-hypertensive agent. 3,798,326, Cl. 424-263.00.

Hartl, John J. Pneumatic vehicle sanding apparatus. 3,797,867, Cl. 291-3.000.

Hartmann & Lammle OHG: *See—*
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Hartmann, Rudolf, to Bell & Howell Company. Camera light. 3,798,668, Cl. 354-149.000.

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Hasebe, Takefumi; Takizawa, Arata; and Sato, Setsuo, to Yokogawa Electric Works, Ltd. Chart drive mechanism for recorders. 3,798,659, Cl. 346-136.000.

Hasegawa, Goro; Iura, Yukio; and Yamamichi, Masayoshi, to Canon Kabushiki Kaisha. Automatic focusing device for camera. 3,798,660, Cl. 354-25.000.

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Hattman, Henry H., III. Electromechanical apparatus for cutting coils of polyester foam strip or the like. 3,797,344, Cl. 83-171.000.

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Hattri, Saburo; and Imaki, Naoshi, to Mitsuhishi Chemical Industries, Ltd. Process for producing acyloxydodecatrienes. 3,798,260, Cl. 260-497.00a.

Haus, Jan F. Apparatus for spraying refractory lining. 3,797,745, Cl. 239-227.000.

Hausmann, George F.; and Blackman, Arthur W., to United Aircraft Corporation. Supersonic combustion engine. 3,797,239, Cl. 60-268.000.

Hausser, Karl. Electron double resonance spectrometer with a microwave cavity bridge arrangement. 3,798,532, Cl. 324-.50r.

Hawes, Edward M. Soil tester. 3,797,301, Cl. 73-84.000.

Hawley, Robert Lyle, to Ralston Purina Company. Method for centering solid bodies within a coagulable liquid. 3,798,336, Cl. 426-279.000.

Hay, William J., Jr., to PPG Industries, Inc. Combined stain retardent and separator interleaving material for glass sheets. 3,798,112, Cl. 161-162.000.

Hayashi, Hiroyuki, to Sony Corporation. Video signal reproducing system. 3,798,364, Cl. 178-6.6dc.

Hayashi, Yutaka; and Tarui, Yasuo, to Kogyo Gijutsuin. High frequency insulated data field effect transistor with protective diodes. 3,798,514, Cl. 317-235.00r.

Hayn, Gunther: *See—*
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Hazlewood, Ronald D., to Vacu-Blast Corporation. Shot cleaning machine. 3,797,174, Cl. 51-9.000.

Healy, Robert M.; and Hovey, Ralph J., to Bunker-Ramo Corporation, The. Method for fabricating selectively plated electrical contacts. 3,797,108, Cl. 29-630.00c.

Heard, James L.; Opittek, Eugene W.; and Rands, Larry G., to Hughes Aircraft Company. Target motion compensator. 3,798,425, Cl. 235-150.270.

Heberlein & Co. AG.: *See—*
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Ishiguro, Kiyonori: *See—*
Nakanishi, Toru; Matsui, Junichi; Yonehara, Setsuji; Aoki, Masahiro; Ishiguro, Kiyonori; Satake, Tatsuo; and Azuma, Shingi, 3,797,666.
Ishii, Masao; Sunamori, Takashi; and Kimura, Sadao, to Mitsubishi Rayon Co., Ltd. Process for producing monomer mixture. 3,798,171, Cl. 252-182.000.
Ishikawa, Paul J.; and Glass, Marvin I., to Glass, Marvin, & Associates. Launchers and target having overloud mechanism. 3,797,828, Cl. 273-126.00r.
Isogai, Tokio: *See—*
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Isopad Limited: *See—*
Reik, Michael Kurt; and Johnson, Paul Leonard, 3,798,418.
Isuki, Kazoo, to Ohta Company Limited. Device for holding such articles as a towel. 3,797,790, Cl. 248-221.000.
Itagaki, Sadayoshi: *See—*
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Ito, Hideo: *See—*
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Ivanovich, Anatoly. Volumetric metering apparatus. 3,797,709, Cl. 222-194.000.
Ive, Goodwin Alfred George. Protective systems and apparatus therefor. 3,798,627, Cl. 340-276.000.
Ive, Goodwin Alfred George. Protective systems and apparatus therefor. 3,798,628, Cl. 340-276.000.
Ivessa, Stefan, to Waagner-Biro Aktiengesellschaft. Waste gas flow system for metal-treating apparatus. 3,797,812, Cl. 266-16.000.
Iwai, Ken: *See—*
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Iwanciow, Bernard L.; and Lawrence, William J., to United Aircraft Corporation. Solid hypergolic propellant systems. 3,797,238, Cl. 60-219.000.
Iwasaki Tsushinki Kabushiki Kaisha: *See—*
Kakii, Shunichiro; and Hisabayashi, Satoshi, 3,797,346.
Izawa, Minoru, to Kabushiki Kaisha Seikosha. Electronic time-keeping apparatus. 3,798,428, Cl. 235-168.000.
Izumi, Takahiro: *See—*
Yamamoto, Hisao; Hirohashi, Atsuko; Izumi, Takahiro; and Koshiba, Masao, 3,798,235.
Izumitani, Tetsuro; and Masuda, Isao, to Hoya Glass Works, Ltd. Optical glass having anomalous dispersion porperties. 3,798,041, Cl. 106-47.00q.
J-TEC Associates, Incorporated: *See—*
Joy, Robert D.; and Colton, Russell F., 3,797,309.
Jab Company, Inc.: *See—*
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Jackson, Julius, to Du Pont de Nemours, E. I., and Company. Silica encapsulated lead chromate pigment of the primrose yellow shade. 3,798,045, Cl. 106-298.000.
Jackson, Kenneth R. Apparatus for cleaning engines. 3,797,507, Cl. 134-102.000.
Jackson, Norman G. Mansard roof structure. 3,797,179, Cl. 52-90.000.
Jacobs, Alexander J. Portable pool cleaner. 3,797,508, Cl. 134-167.00r.
Jacobs, Heinz, to Kleinewefers Industrie-Companie GmbH. Metallic recuperator and method of operating same. 3,797,558, Cl. 165-1.000.
Jacobs Manufacturing Company, The: *See—*
McCarthy, Donald J., 3,797,960.
Jacobson, Arthur J.; and Huey, Gilbert J., to United States of America, Navy. Signal processing apparatus including doppler dispersion correction means. 3,798,590, Cl. 340-3.00r.
Jacobson, Charles L.: *See—*
Tambert, John; Zurakowski, Stanley J.; and Jacobson, Charles L., 3,798,598.
Jaffe, Joseph: *See—*
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James, Randall V., to Scott & Fetzer Company, The. Slip clutch. 3,797,621, Cl. 192-56.000.
Jankelson, Bernard, Dr.: *See—*
Porter, James D., 3,797,500.

Janssens, Wilhelmus; Vanheertum, Johannes Josephus; Pollet, Robert Joseph; Sneyers, Hendrik Hubert; and Dierckx, Jozef Aime, to Agfa-Gevaert N.V. Photoconductive 1,2,3,4-tetrahydroquinolines employed in electrophotography. 3,798,031, Cl. 96-1.800.
Jarvis, Harold F., to Shaw Pipe Industries Ltd. Apparatus for conveying pipe longitudinally. 3,797,686, Cl. 214-338.000.
Jawuerie, Jean Marie: *See—*
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Jechart, Ernst. Gas cell atomic frequency standard of compact design. 3,798,565, Cl. 331-94.000.
Jeffers, Barney W. Recording device. 3,798,658, Cl. 346-131.000.
Jefferson Chemical Company, Inc.: *See—*
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Jenike, Andrew W.; and Johanson, Jerry R., to Jenike and Johanson, Inc. Bins for storage and flow of bulk solids. 3,797,707, Cl. 222-193.000.
Jenkins, William A.; and Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Lable printing and applying apparatus. 3,798,106, Cl. 156-384.000.
Jenn-Air Corporation: *See—*
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Jochaud du Plessix, Michel Guy Marie; and Lecouffe, Yves Jacques Felix, to Societe des Accumulateurs Fixes de Traction (Societe Anonyme). Electrochemical D.C. current transformer system. 3,798,527, Cl. 320-66.000.
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Johnston, Reed H., to Little, Arthur D., Inc. Coin discriminator. 3,797,307, Cl. 73-163.000.
Joly, Bertrand, to Souriau & Cie. Method and apparatus for analysis by light absorption spectrometry. 3,797,942, Cl. 356-181.000.
Jommi, Giancarlo; Mauri, Francesco; and Riva, Giovanna, to Ravizza S.A. Resolution of benzodiazepine derivatives. 3,798,212, Cl. 260-239.30d.
Jones & Laughlin Steel Corporation: *See—*
Bahm, John R., 3,798,537.
Jones, Faber B., to Phillips Petroleum Company. Hot melt adhesive formulation. 3,798,118, Cl. 161-245.000.
Jones, Howard S., Jr., to United States of America, Army. Cavity excited conical dielectric radiator. 3,798,653, Cl. 343-708.000.
Jones, James D.: *See—*
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Jones, Wilbur M., Jr. Mounting system for envelope-die holders. 3,797,351, Cl. 83-698.000.
Jonsson, Arvid; and Jonsson, Junas Erland, to AB Arjon. Ice drill with adjustable cutting edges. 3,797,588, Cl. 175-18.000.
Jonsson, Junas Erland: *See—*
Jonsson, Arvid; and Jonsson, Junas Erland, 3,797,588.
Joy, Robert D.; and Colton, Russell F., to J-TEC Associates, Incorporated. Method and apparatus for sensing the relative direction and velocity of movement of a body in a liquid or gas medium. 3,797,309, Cl. 73-194.00b.
Juichi, Morishima, to Fuji Denki Seizo Kabushiki Kaisha. Shaft bearing-and-sealing device. 3,797,898, Cl. 308-187.000.
Jullien, Yves; and Cicile, Jean-Charles, to Societe Pour L'Equipment Des Industries Chimiques. Mass exchange columns. 3,797,811, Cl. 261-114.000.
Juncker, Friedrich; Kranz, Johannes; Streich, Margin; Tanz, Heiner; and Vollrath, Gerd, to Linde Aktiengesellschaft. Single-stage fractionation of natural gas containing nitrogen. 3,797,261, Cl. 62-40.000.
Jung, Ewald, to La Porte Sohne. Round furniture recess lock. 3,797,285, Cl. 70-83.000.
Jung, Friedrich: *See—*
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Kaaz, Albert, to Rheinmetall GmbH. Method of controlling motor-driven devices adapted to be directed onto moving targets and apparatus for applying the method. 3,798,420, Cl. 235-61.50s.
Kabushiki Kaisha Daini Seikosha: *See—*
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Kadotani, Kenzo; Isogai, Tokio; Miyano, Yasushi; and Suzuki, Katsuhito, to Hitachi, Ltd. High-speed rotation drum for use with a centrifugal separator for gaseous mixture. 3,797,737, Cl. 233-27.000.
Kafafian, Haig. Single input controller for a communication system. 3,798,599, Cl. 340-147.00r.
Kagan, Henri; and Dang, Tuan Phat, to Institut Francais du Petrole des Carburants et Lubrifiants. Bidentate coordinates, their manufacture and application. 3,798,241, Cl. 260-340.900.
Kah, Carl L. C., Jr. Fluid distribution system operated by pressure signal. 3,797,740, Cl. 239-11.000.
Kahale, Abed G.: *See—*
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Kahn, David, to AMP Incorporated. Proportional temperature control device. 3,798,413, Cl. 219-210.000.
Kaiser Aluminum & Chemical Corporation: *See—*
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Kaiser, Elvin E.: *See—*
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Kaiser, Klaus, to Seitz-Werke G.m.b.H. Filling pipe-free filling structure with separate conduits for the tension and return gas and for withdrawing excess fluid. 3,797,535, Cl. 141-46.000.
Kakii, Shunichiro; and Hisabayashi, Satoshi, to Iwasaki Tsushinki Kabushiki Kaisha. Apparatus for cutting a roll of copying material according to the length of the original. 3,797,346, Cl. 83-203.000.
Kalikow, Peter. Adhesive applicator. 3,797,454, Cl. 118-247.000.
Kalle Aktiengesellschaft: *See—*
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Kalopissis, Gregoire, to Societe anonyme dite: L'Oreal. Hair coloring compositions containing organic acid anhydride-dye polymers. 3,797,994, Cl. 8-10.100.
Kalvoda, Jaroslav: *See—*
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Kamada, Takeshi, to Ricoh Co., Ltd. Method and apparatus for detecting and representing in binary form digital indication of measuring instrument for recording. 3,798,634, Cl. 340-347.00p.
Kamin, George J.; and Kiger, William T., to GTE Sylvania Incorporated. Rare earth silica refractory ceramic materials and method for producing same. 3,798,040, Cl. 106-39.00r.
Kaminstein, Bernard, to Olivetti, Ing. C., & C., S.p.A. Apparatus for printing by reverse lithography. 3,797,388, Cl. 101-141.000.
Kamiya, Minoru. Internal combustion engine having two pistons rotatable through separate intersecting circular paths. 3,797,237, Cl. 60-39.610.
Kammerer, Archer W., Jr.; and Johnson, Gary R., to Baker Oil Tools, Inc. Under-water anchor apparatus and methods of installation. 3,797,255, Cl. 61-46.000.
Kammerer, Archer W., Jr., to Baker Oil Tools, Inc. Method for insitu anchoring piling. 3,797,259, Cl. 63-53.680.
Kampert, William P., to Aluminum Company of America. Direct current pigmenting of anodized aluminum. 3,798,137, Cl. 204-35.00n.
Kaneko, Yoshio; Matsunaga, Tsutomu; Watabe, Yoji; and Toki, Shigeyuki, to Bridgestone Tire Co. Ltd. Polyether urethane elastomer having an improved cut growth and flex crack resistance and the process for preparation thereof. 3,798,200, Cl. 260-77.5am.

Kano, Ichiro, to Canon Kabushiki Kaisha. High resolving-power duplicating lens of unit magnification. 3,797,916, Cl. 350-214.000.
Karch, Ludwig, to Messerschmitt-Bolkow-Blohm GmbH. Magnetically suspended railway system. 3,797,402, Cl. 104-130.000.
Kardach, Gerald E.; and Treleven, Robert E., to Videosonics, Inc. Panning circuit for surveillance camera. 3,798,368, Cl. 178-7.200.
Kariyone, Kazuo; Harada, Hirokichi; Kurita, Masaru; Ueda, Yutaka; Furuhashi, Takahiro; Nakamura, Hitoshi; and Watanabe, Hirotoshi, to Fujisawa Pharmaceutical Co., Ltd. Process for preparing 1,3,4-thiadiazole-2-thiol compounds. 3,798,229, Cl. 260-302.0sd.
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Kasahara, Yukio; Iguchi, Takashi; Mikoda, Masanari; and Ueno, Isao, to Matsushita Electric Industrial Co., Ltd. Ultrasonic delay line. 3,798,577, Cl. 333-30.00r.
Kaske, Alan D.; Paul, Maynard C.; and Tolman, Charles H., to Sperry Rand Corporation. Quad density solid stack memory. 3,798,623, Cl. 340-174.0ma.
Kassai, Kimitaka: *See—*
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Kato, Takashi, to Kabushiki Kaisha Daini Seikosha. Digital electronic timepiece having a perpetual calendar display device. 3,797,222, Cl. 58-4.00a.
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Keller, Hans, to ITT Industries, Inc. Monolithic integrable flip flop circuit. 3,798,472, Cl. 307-291.000.
Keller, James J. Vacuum holding table for a photographic plate or the like. 3,797,797, Cl. 248-362.000.
Keller, Leonard J., to Keller Corporation, The. Rotor vane motor device. 3,797,975, Cl. 418-137.000.
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Kelly, Ralph; and Ritter, Edmond Jean. Mildness additive. 3,798,182, Cl. 252-546.000.
Kemp, Paul C. Process for preparing high molecular weight sulfonic acids. 3,798,261, Cl. 260-504.00r.
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Kepka, Alfred Anton Franz; and Kepka, Herwig Guenther. Safety ski pole. 3,797,845, Cl. 280-11.37b.
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Kern, Herbert. Apparatus for controlling the exhaust emissions from internal combustion engines. 3,797,241, Cl. 60-305.000.
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Killion, Marvin L.; and Williams, Richard R. Turf perforating tool. 3,797,577, Cl. 172-22.000.
Kilmer, Lauren G.; Lively, McCabe C.; and Reynolds, Alvin E. Photographing apparatus for determining corneal radius. 3,797,921, Cl. 351-7.000.
Kimberly-Clark Corporation: *See—*
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King, Charles Morgan; Seidel, William Carl; and Tolman, Chadwick Alma, to Du Pont de Nemours, E. I., and Company. Hydrocyanation of olefins. 3,798,256, Cl. 260-465.80r.
King, Olin B., to SCI Systems, Inc. Dispensing closure for parenteral fluid container. 3,797,521, Cl. 137-525.700.
King, Raymond John, to National Research Development Corporation. Refractometer with displacement measured polarimetrically. 3,797,940, Cl. 356-134.000.
Kinoshita, Koichi; and Watanabe, Masanori, to Katsuragawa Denki Kabushiki Kaisha. Apparatus for electrophotography. 3,797,928, Cl. 355-3.000.
Kircher, Charles E., Jr.: *See—*
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Kirkpatrick, Max B.; deceased (by Kirkpatrick, Mildred E.; executrix); Harvey, Andrew G.; and Erichsen, Roger H., to Alaska General Credit. Article making machine and method. 3,797,228, Cl. 59-37.000.
Kirkpatrick, Mildred E.: *See—*
Kirkpatrick, Max B.; Harvey, Andrew G.; and Erichsen, Roger H., 3,797,228.
Kisbocskoi, Laszlo; Kubo, Sandor; and Reczey, Gusztav, to Tatabanyai Szenbanyak. Method and apparatus for continuous filtration of liquids with simultaneous regeneration of filter medium. 3,798,159, Cl. 210-33.000.
Kishi, Takao: *See—*
Nozawa, Takamitsu; and Kishi, Takao, 3,797,748.
Kishino, Shigeo; Kudamatsu, Akio; and Shiokawa, Kozo, to Bayer Aktiengesellschaft. Pesticidally active O-ethyl-O-phenyl or naphthyl-S-(2-alkoxyethyl) phosphorothionothiolates. 3,798,292, Cl. 260-950.000.

Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, to Bayer Aktiengesellschaft. O-Alkyl-S-substituted-O-naphthylphosphorothiolates. 3,798,293, Cl. 260-964.000.
Kisovec, Adrian V. Convertiplane. 3,797,783, Cl. 244-7.00a.
Kitai, Kitoshi; Koyama, Mitsuo; Kato, Shogo; Takazawa, Yozuro; and Nagaoka, Shinji, to Seiko Koki Kabushiki Kaisha. Time adjustment apparatus for digital clock. 3,797,227, Cl. 58-85.500.
Kitchen, Elwyn L., Jr.; and Cwycyshyn, Walter, to General Motors Corporation. Vehicle positioning and restraint apparatus. 3,797,656, Cl. 206-335.000.
Kitsuda, Kaname: *See—*
Imagawa, Tameichi; and Kitsuda, Kaname, 3,797,556.
Kitterman, Lawrence Pete; and Rice, Howard Gene. Tray washing system. 3,798,065, Cl. 134-25.00r.
Kittl, Hans: *See—*
Fleck, Fritz; Kittl, Hans; and Schmid, Horst, 3,798,231.
Kjeldsteen, Per, to Danfoss A/S. Planetary washing machine drive with centrifugal clutch. 3,797,331, Cl. 74-752.00e.
Klane, Thomas P. Manually regulated vacuum assembly for hair clipper. 3,797,111, Cl. 30-133.000.
Klass, Donald L.; and Landahl, Carl D., to Northern Natural Gas Company, mesne. Separation of methane and nitrogen mixtures under Non-steadystate conditions. 3,797,200, Cl. 55-16.000.
Kleen Test Products, Inc.: *See—*
Larsh, Ray E.; and Urbansky, Donald I., 3,798,503.
Klein, Harold T., to Robbins Company, The. Sleeve cylinder powered drilling machine. 3,797,587, Cl. 173-152.000.
Klein, Roy W.: *See—*
Yin, Chieh-Kung; Klein, Roy W.; and Johnson, Bernard A., 3,797,595.
Kleinewefers Industrie-Companie GmbH: *See—*
Jacobs, Heinz, 3,797,558.
Klemm, Kurt; and Langenscheid, Erhard, to BYK-GULDEN Lamberg Chemische Fabrik GmbH. Process for preparing 4-hydroxy 5-substituted pyrimidines and products obtained. 3,798,220, Cl. 260-251.00r.
Kline, Luis; and Silberman, Fernando J. Thread-feeding, tension-regulating device for straight knitting machines. 3,797,279, Cl. 66-126.00r.
Klinger, Friedrich, to Schenck, Carl, Maschinenfabrik GmbH, Firma. Torque load applying testing apparatus. 3,797,304, Cl. 73-99.000.
Klockarns, Per: *See—*
Nordgren, Hans Elov; and Klockarns, Per, 3,797,428.
Klutchko, Sylvester: *See—*
Von Strandtmann, Maximilian; Shavel, John Jr.; Klutchko, Sylvester; and Cohen, Marvin, 3,798,219.
Von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin P., 3,798,240.
Kmet, Thomas J.; and Lohoda, Jon A., to Richardson Company, The. Polyoxyalkylene bis-thiourea extreme pressure agents and methods of use. 3,798,164, Cl. 252-47.500.
Knapp, Charles P.; and Eades, George S., to University of Kentucky Research Foundation, The, mesne. Dynamic childbirth simulator for teaching maternity patient care. 3,797,130, Cl. 35-17.000.
Knight, Herbert G., Jr., to Hercules Incorporated. Gelled chromium acetate cross-linked aqueous slurry type salt explosives, and manufacture. 3,798,091, Cl. 149-60.000.
Knisely, George L., Jr. Shuttlecock and launching apparatus including lengthening coupler. 3,797,472, Cl. 124-5.000.
Knowles, William S.; and Sahft, Abdou-Sabet, to Monsanto Company. Process for recovering sulfur dioxide from gases using aqueous salt solution of glutaric acid. 3,798,309, Cl. 423-243.000.
Knox, John A.: *See—*
Dill, Walter R.; Chatterji, Jiten; and Knox, John A., 3,797,575.
Knust, Elisabeth: *See—*
Naschwitz, Walter; and Knust, Elisabeth, 3,798,197.
Kobayashi, Masayoshi; Ohtani, Yoshio; and Abe, Mitsunobu, to Diesel Kiki Kabushiki Kaisha. Distributor-type fuel injection pump for internal combustion engines. 3,797,469, Cl. 123-139.00e.
Kobayashi, Shoichi; Yamaguchi, Ikuo; and Konami, Katuyoshi, to Takenaka Komuten Company, Ltd. Bearing walls and connecting members therefor. 3,797,183, Cl. 52-167.000.
Kobayashi, Waichi: *See—*
Suzukawa, Yuichi; Kobayashi, Waichi; Uehori, Kinzi; Ohtaka, Satoshi; and Yoshida, Kozaburo, 3,798,314.
Kobe Steel, Ltd.: *See—*
Takamura, Akira; Moriguchi, Yasuo; and Sato, Hiroshi, 3,798,151.
Koch, Christian, to Siemens Aktiengesellschaft. Apparatus for obtaining hydrogen. 3,798,005, Cl. 23-288.00r.
Kochanski, Aloysius J.; and Hire, Charles J. Liquid level responsive switch assembly. 3,798,401, Cl. 200-84.00c.
Kochis, August James, to Eckel Industries, Inc. Door in combination with a transom closure flap. 3,797,165, Cl. 49-9.000.
Kocis, Thomas R.: *See—*
Smith, Jessop; and Kocis, Thomas R., 3,797,155.
Kockott, Dieter. Optical apparatus with spectral filters for testing fastness of colors. 3,797,918, Cl. 350-269.000.
Koczka, Istvan: *See—*
Toth-Sarudy, Eva; Horvath, Istvan; Gyimesi, Jozsef; Ott, Istvan; Alfoldi, Laszlo; Berdy, Janos; Koczka, Istvan; Scholtz, Vilma; Szell, Valeria; and Neetomori, Eva Laszio, 3,798,129.
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Koenig, Karl-Heinz: *See—*
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Kogelnik, Herwig Werner; and Susnowski, Patrick, to Bell Telephone Laboratories, Incorporated. Thin film optical couplers employing mode conversion. 3,797,911, Cl. 350-96.0wg.
Koguchi, Yohko: *See—*
Ariyoshi, Yasuo; Koguchi, Yohko; and Sato, Naotake, 3,798,207.
Kogyo Gijutsuin: *See—*
Hayashi, Yutaka; and Tarui, Yasuo, 3,798,514.
Kohashi, Tadao, to Matsushita Electric Industrial Company, Limited. Variable capacitance device. 3,798,508, Cl. 317-235.00r.
Kohl, Karl. Warp knitting machine. 3,797,278, Cl. 66-84.000.
Kohn, Gustave K.: *See—*
Moore, Joseph E.; and Kohn, Gustave K., 3,798,274.
Koinuma, Kazuo, to Victor Company of Japan, Ltd. AC bias control recording system and apparatus in a magnetic recording apparatus. 3,798,673, Cl. 360-66.000.
Kojima, Chiaki: *See—*
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Komiyama, Katsuhiko: *See—*
Inoki, Kazuyoshi; Mastumura, Testuo; and Komiyama, Katsuhiko, 3,797,226.
Kommers, William J.; and Stewart, Clarence E., to Broyhill Co., The. Utility sprayer unit. 3,797,743, Cl. 239-148.000.
Konami, Katuyoshi: *See—*
Kobayashi, Shoichi; Yamaguchi, Ikuo; and Konami, Katuyoshi, 3,797,183.
Konishi, Hiromu: *See—*
Watanabe, Tadakiyo; Konishi, Hiromu; and Chiku, Ken-Ichi, 3,797,872.
Konishi, Yoshihiro; Hoshino, Norio; and Takano, Yosuke, to Nippon Hoso Kyokai. Temperature compensated frequency stabilized composite dielectric resonator. 3,798,578, Cl. 333-83.00t.
Kooistra, Willen: *See—*
Pielkenrood, Jacob; Ambrosius, Willen Lee Bernard; and Kooistra, Willen, 3,797,668.
Kopaska, Arnold F. Apparatus for forming rolls of hay. 3,797,215, Cl. 56-341.000.
Koppers Company, Inc.: *See—*
Tatterson, Benjamin F., 3,798,308.
Kopperschmidt, Gerd; and Lohmann, Heinz-Jurgen, to Siemens Aktiengesellschaft. Timing current supply for a system of two channel circuits. 3,798,558, Cl. 328-163.000.
Kormann, Alfred. Radiator. 3,797,568, Cl. 165-137.000.
Kosche, Horst. Method for the development of latent electrostatic images. 3,798,049, Cl. 117-37.0le.
Koshiba, Masao: *See—*
Yamamoto, Hisao; Hirohashi, Atsuko; Izumi, Takahiro; and Koshiba, Masao, 3,798,235.
Koshman, Igor Filippovich: *See—*
Salukvadze, Viktor Samsonovich; Koshman, Igor Filippovich; and Doktorov, Leonid Borisovich, 3,797,060.
Kostas, James M., to Caterpillar Tractor Company. Pump drive for hydrostatic drive loaders. 3,797,599, Cl. 180-53.00r.
Kostner, Armin; and Lenhart, Richard, to Kalle Aktiengesellschaft. Process for improving the shape of a stick of longitudinally shirred artificial sausage casing. 3,798,302, Cl. 264-310.000.
Koubek, Michael, to Siemens Aktiengesellschaft. Active horizontal convergence circuit with two separately adjustable waveforms. 3,798,496, Cl. 315-13.00c.
Koyama, Mitsuo: *See—*
Kitai, Kitoshi; Koyama, Mitsuo; Kato, Shogo; Takazawa, Yozuro; and Nagaoka, Shinji, 3,797,227.
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Kraftco Corporation: *See—*
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Krauth, Glen W., to Allied Polymer Corporation. Plastic facing element. 3,797,904, Cl. 312-214.000.

Kreighbaum, William Eugene; and Comer, William Timmey, to Mead Johnson & Company. 3(2H)-isoquinolones. 3,798,225, Cl. 260-286.00r.
Kreissl, Ottmar, and Pritsch, Eckhard, to Maschinenfabrik Augsburg Nurnberg and URANIT Uran-Isotopentrennungs-GmbH. Device for shutting off drive motors of rotating machine parts in case of overload and/or destruction of a machine part. 3,798,504, Cl. 317-3.00r.
Kreuzer, Julius E., to Midland-Ross Corporation. Power transmission apparatus, especially cable and cable bus housings. 3,798,346, Cl. 174-15.00c.
Krishna, Surinder: *See—*
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Krohn, Hellmut: *See—*
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Kronc GmbH: *See—*
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Kruse, John W., Jr.: *See—*
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Kruse, Walter M., to Hercules, Incorporated. Tetraalkylchromium compounds. 3,798,250, Cl. 260-438.50r.
Kubo, Moritada: *See—*
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Kubo, Sandor: *See—*
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Kuffner, Karl: *See—*
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Kuipers, Pieter Geert; and Meerdink, Jan Albert, to U.S. Philips Corporation. Device for checking corporal functions. 3,798,604, Cl. 340-150.000.
Kukla, William J.; and Munzel, Howard Everett, to International Business Machines Corporation. Electrophotographic developer having controlled triboelectric characteristics. 3,798,167, Cl. 252-62.100.
Kumar, Romesh: *See—*
Nelson, Paul A.; and Kumar, Romesh, 3,797,299.
Kunze, Dieter, to Varta Aktiengesellschaft. Electrolytic cell and method for making same. 3,798,067, Cl. 136-6.0ln.
Kunze, Dieter, to Varta Aktiengesellschaft. Electrolytic and galvanic cells and method of manufacture thereof. 3,798,068, Cl. 136-6.0ln.
Kurahashi, Masayuki: *See—*
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Kurahashi, Yoshio: *See—*
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Kurblek, John; and Locker, Victor E., to Koehring Company. Machine for harvesting and accumulating trees. 3,797,541, Cl. 144-3.00d.
Kurcha Kagaku Kogyo Kabushiki Kaisha: *See—*
Murayama, Naohiro; and Nakamura, Kenichi, 3,798,473.
Kurcha Kagoku Kogyo Kabushiki Kaisha: *See—*
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Kutzer, Hans-Joachim; Weinreich, Wolfgang; Harmsen, Lothar; and Fricke, Gerd D., to Didier-Werke AG. Outlet developed as compound body on a container holding a liquid melt. 3,797,712, Cl. 222-566.000.
Kuwada, Yutaka: *See—*
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La Borde, Joseph N., to Ethyl Corporation. Liner for covering intersecting surfaces. 3,797,185, Cl. 52-288.000.
La Mers, Herbert, to Jones, R. A., & Company, Inc. Labelling method. 3,798,101, Cl. 156-212.000.
La Pointe, Thomas A., to Aeroquip Corporation. Latch and V band coupler. 3,797,078, Cl. 24-279.000.
La Porte Sohne: *See—*
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La Telemecanique Electrique: *See—*
Faffart, Andre Georges; and Vinot, Claude Paul, 3,797,616.
Laeser, Bernard P.: *See—*
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Laimins, Eric, to BLH Electronics, Inc. On-board aircraft weight transducer with mechanical offset adjustment. 3,797,302, Cl. 73-88.500.
Laing, Nikolaus; and Ludin, Ludwig, to Physikalisch-Technisches Entwicklungsburo-Laing. Heat pump with two fluid circuits. 3,797,270, Cl. 62-333.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Thibault, Jean-Jacques; and Boissin, Jean-Claude, 3,797,264.
Laitram Corporation, The: *See—*
Lapeyre, James M., 3,797,071.
Lammers, Uve H. W. High resolution airborne signal processing system. 3,798,648, Cl. 343-113.0de.
Lampe, Wolfgang; Spicar, Erich; and Persson, Bo-Goran, to Allmanna Svenska Elektriska Aktiebolaget. Means for determining the top oil temperature in transformers. 3,797,314, Cl. 73-350.000.
Lan, Pui-Yee. Seating apparatus for portable containers. 3,797,695, Cl. 220-85.00r.
Land, Edwin H.; and Norris, Philip, to Polaroid Corporation. Binocular rangefinder-viewfinder with fresnel optics. 3,797,915, Cl. 350-211.000.
Land, Edwin H.; and Bachelder, Albert J., to Polaroid Corporation. Illumination and other devices for use with photographic film pack container. 3,798,439, Cl. 240-10.650.
Land, Edwin H., to Poloroid Corporation. Temperature responsive switch for use in a self-developing camera. 3,798,667, Cl. 354-83.000.
Landahl, Carl D.: *See—*
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Landis, Bruce B.: *See—*
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Landwehrkamp, Hans; Schreyer, Franz; and Schiltknecht, Adolf, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Method and apparatus for spinning sliver. 3,797,218, Cl. 57-58.890.
Lane, Bill M., to Waco Scaffold & Shoring Co. Roll out formwork support. 3,797,794, Cl. 248-295.000.
Lane, George W.: *See—*
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Lane, William C.; and Moffatt, Donald E., to Mead Corporation, The. Multiple layer decorated paper, laminates prepared therefrom and process. 3,798,111, Cl. 161-162.000.
Lang, Elliot N.: *See—*
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Langford, Donald C. Skier alarm system. 3,798,631, Cl. 340-179.000.
Langham, J. Michael. Digital frequency multiple. 3,798,564, Cl. 331-1.00a.
Langlume, Francis A., to Etablissements Nativelle S.A.R.L.. Compounds of propanolol and barbituric acids for the treatment of cardiovascular ailments. 3,798,221, Cl. 260-258.000.
Lansdowne, Homer D. Coaster. 3,797,796, Cl. 248-346.100.
Lanusse, Pierre; Hernandez, Rene; and Slodzian, Georges, to Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.). Apparatus for directing an energizing beam on a sample to cause secondary ion emission. 3,798,447, Cl. 250-49.0p.
Lapat, Philip E.; and Hellyer, Walter C., to Newmont Exploration Limited. Recovery of rhenium from molybdenite. 3,798,306, Cl. 423-50.000.
Lapeyre, James M., to Laitram Corporation, The. Shrimp peeling wheel support alignment locking device. 3,797,071, Cl. 17-73.000.
Lappe, Hans: *See—*
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Lara, Julio: *See—*
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Laridon, Urbain Leopold, to Agfa-Gevaert N.V. Process for the production of half-tone and line work multi-colour photographic images. 3,798,034, Cl. 96-15.000.
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Larralde, Edward, to Vetco Offshore Industries, Inc. Floating dredge motion compensator. 3,797,139, Cl. 37-67.000.
Larsh, Ray E.; and Urbansky, Donald I., to Kleen Test Products, Inc. Protective foot cover. 3,798,503, Cl. 317-2.00b.

Larson, Arnold W. G.: *See—*
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Larson, Eugene, to NPI Corporation, mesne. Air curtain. 3,797,373, Cl. 98-36.000.
Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Wiped film devolatilizer construction. 3,797,550, Cl. 159-2.00e.
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Latt, Paul: *See—*
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Laurent, Roger, to Poma 2.000 S.A. Device for hauling vehicles with retractable wheels holding down the traction cable. 3,797,407, Cl. 104-182.000.
Lavemour, Octavio D. Indoor loadable outdoor clothes dryer. 3,797,670, Cl. 211-94.000.
Laverlochere, Jean: *See—*
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Law, Clement R.: *See—*
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Lawing, Burmah S.; and Rankin, Carol Dean, to Speizman Industries, Inc. Packaging apparatus and method. 3,797,713, Cl. 223-37.000.
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Lawson, Glenn H. Self-locking tube protector and deflector block for boiler tubes. 3,797,416, Cl. 110-28.00r.
Le Brasse, Gordon J.; and Stolarski, Boniface, to Federal-Mogul Corporation. Pre-alloyed nickel-free silicon-free minimal oxide low alloy iron powder. 3,798,022, Cl. 75-.5ba.
Le Cardonnel, Gerard Marcel; Sandre, Jacques Victor; and Pontois, Serge, to International Standard Electric Corporation. Control circuits. 3,798,469, Cl. 307-247.00r.
Le Suer, William Monroe, to Lubrizol Corporation, The. Combustion process and fuel compositions. 3,798,012, Cl. 44-51.000.
Lea-Ronal, Inc.: *See—*
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Leary, John S., Jr., to Shell Oil Company. Methods of controlling mycotoxin production using certain dialkyl enol phosphates. 3,798,323, Cl. 424-212.000.
Leatherman, Marvin R.: *See—*
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Leclair, Albert W., to Nashua Corp. Copy sheet containing silver soap and an organic peroxygen oxidizing compound. 3,798,039, Cl. 96-114.100.
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Lieberum, Friedel. Detachable tread devices for automobile tires. 3,797,549, Cl. 152-175.000.
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Lieser, Mathias J., to Stanray Corporation. Pilot valve. 3,797,525, Cl. 137-625.600.
Lilly, Glenford. Intersection traffic director device. 3,798,592, Cl. 340-41.00a.
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Ma, Carlton Y. W.; and Peter, John W., to Cincinnati Milacron Inc. Plastication control system for injection molding machines. 3,797,808, Cl. 259-191.000.
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Malm, Robert N., to General Electric Company. Rounded and halogen lamp with spiral exhaust tube and method of manufacture. 3,798,491, Cl. 313-315.000.
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Manske, Hans E., to Zenith Radio Corporation. Automatic degaussing in a television receiver with constant voltage transformer. 3,798,493, Cl. 315-8.000.
Manske, Hans E., to Zenith Radio Corporation. Solid-state television receiver with magnetically regulated power supply. 3,798,497, Cl. 315-29.000.
Mansson, Sven E., to Magnetic Analysis Corporation. Pulse eddy current testing apparatus with ramp phase shifter. 3,798,538, Cl. 324-40.000.
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McColgin, William C.; and Webster, Frank G., to Eastman Kodak Company. Polymethine dye lasers. 3,798,566, Cl. 331-94.501.
McComas, Arthur D.; Ransom, James R.; Kessler, James A.; Doeller, Charles H., III; and Mall, Aaron, to Bendix Corporation, The. Means for synchronizing clocks in a time ordered communications system. 3,798,650, Cl. 343-225.000.
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McCracken, Alexander Ernest, to Nicol & Andrew Limited. Lighting unit and reflector therefor. 3,798,442, Cl. 240-51.11r.
McCrery, David N., Jr. Livestock trap and sorter. 3,797,463, Cl. 119-155.000.
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McDermott, Derrick, to Thomas Broadbert & Sons Limited. Self-centering crossfolder. 3,797,820, Cl. 270-69.000.
McDow, Ronald N. Drawing instrument. 3,797,119, Cl. 33-27.00m.
McGee, Andrew T. Leverage operated screwdriver. 3,797,546, Cl. 145-61.001.
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McIlwain, Carl E.; and Beaver, Edward A., to University of California. Multichannel digital photometer. 3,798,453, Cl. 250-213.0vt.
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McManimie, Robert J.; and Richard, William R., Jr., to Monsanto Company. Ethylene/propylene block copolymers. 3,798,288, Cl. 260-878.00b.
McMillian, Lonnie S.; and Frohwein, George E., to SCI Systems, Inc. Rate-of-change combustion and combination detection apparatus. 3,798,625, Cl. 340-237.00s.
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Melcher, Domenic. Electronic device for quintupling a binary-coded decimal number. 3,798,434, Cl. 235-159.000.
Melchior, Gerard, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Color selection circuit for visual display unit. 3,798,363, Cl. 178-6.000.
Melin, Martin J.; and Wallace, Rodney L., to Union Carbide Corporation. Plastic bag having elongate apertures angularly disposed. 3,797,732, Cl. 229-53.000.
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Miller, John W. V., to Owens-Illinois, Inc. Electronic conditioning of gas discharge display/memory device. 3,798,501, Cl. 315-169.0tv.
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Murayama, Naohiro; Hosokawa, Toshio; and Shirai, Morio, to Kureha Kagoku Kogyo Kabushiki Kaisha. Method for producing a mixed polymer of vinylidene fluoride polymers. 3,798,287, Cl. 260-878.00r.
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Murdock, Forrest Lee, Sr., to Fishmaster Products, Inc. Means for separating heavier from lighter components of coming led fluid. 3,797,203, Cl. 55-176.000.
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Murphy, John Michael: *See—*
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Murray, Adele. Spry springy sprouting clown. 3,797,166, Cl. 46-119.000.
Mutchler, Paul A., to United States of America, Army. Forced convection oven. 3,797,473, Cl. 126-21.00a.
Muttick, Richard P.: *See—*
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Muzzi, Vincent; and Muzzi, Primo. Tamping apparatus. 3,797,382, Cl. 100-100.000.
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N L Industries, Inc.: *See—*
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Nagahama, Shizuo: *See—*
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Nagao, Yukio; and Fukazawa, Chiaki, to Tokyo Shibaura Electric Company, Ltd. Surface inspecting apparatus. 3,797,943, Cl. 356-200.000.
Nagaoka, Shinji: *See—*
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Nagata, Wataru; Terasawa, Tadao; and Aoki, Tsutomu, to Shionogi & Co., Ltd. Phenanthrene derivatives. 3,798,272, Cl. 260-586.00h.
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Nagy, Ernest J.; Shaver, William R.; and Marsh, Ronald W., to Pullman Incorporated. Trough hatch operating arrangement. 3,797,411, Cl. 105-377.000.
Najmann, Knut: *See—*
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Nakade, Sadao; Kubota, Hirosuke; Oshita, Toshiyuki; and Sakane, Kuniyoshi, to Kabushiki Kaisha Takenaka Komuten. Composition for plugging formations having pores in constructive works. 3,798,186, Cl. 260-2.50a.
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Nakamoto, Megumu: *See—*
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Nakayama, Shozo; Kurahashi, Masayuki; and Hattori, Mitsuhiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Rotary vane-type gas-compressor. 3,797,972, Cl. 418-85.000.
Nambu, Shyuya, to Nissan Motor Company, Limited. Fuel injection internal combustion engine. 3,797,466, Cl. 123-32.0st.
Napier, John M.: *See—*
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Narahara, Hisaaki, to Sony Corporation. Magnetic recording and reproducing system. 3,798,357, Cl. 178-5.4cd.
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Narayan, K. Sankara: *See—*
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Naschwitz, Walter; and Knust, Elisabeth, to Siemens Aktiengesellschaft. Method for the manufacture of latex bonded asbestos cover layers and covers produced. 3,798,197, Cl. 260-41.50a.
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Naske, Christoph, to WHB-Anbausnobel von Poschinger K.G. Furniture or container unit. 3,797,905, Cl. 312-262.000.
Nasser, Benny E., Jr., to Phillips Petroleum Company. Polyolefin production. 3,798,202, Cl. 260-88.20r.
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Nath, Dilip K.; and Wolk, John R., to General Electric Company. Product and process for europium-activated rare earth phosphor. 3,798,173, Cl. 252-301.40f.
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Navin, William R.: *See—*
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Neal, Robert D. Apparatus for cleaning large rings. 3,797,058, Cl. 15-21.00d.
Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek ten behoeve van Nijverheid, Handel en Verkeer: *See—*
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Neil, Peter C., to Standard Oil Company. Material handling system for plastic film. 3,797,761, Cl. 241-34.000.
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Nelson, Paul A.; and Kumar, Romesh, to United States of America, Atomic Energy Commission. Method of measuring the tritium concentration in a high-temperature environment. 3,797,299, Cl. 73-19.000.
Nelson, Rolland W. Preservative and nitrate reducing agent for raw agricultural crops. 3,798,321, Cl. 424-128.000.
Nennen, John Joseph, to Deere & Company. Forage hervester cutterhead. 3,797,766, Cl. 241-282.200.
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Ngo, Peter Dinh-Tuan, to Bell Telephone Laboratories, Incorporated. Planar gas discharge shift register. 3,798,502, Cl. 315-169.0tv.
Nickel, Elmar: *See—*
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Nicol & Andrew Limited: *See—*
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Nicolaus, Frank G.; and Breitenstein, Charles T., to Spiral Step Tool Company. Spiral and radial relief grinding fixtures with coaxial planetary differential drive. 3,797,175, Cl. 51-95.01h.
Nicollet, Michel. Automatic device for subaqueous massage. 3,797,482, Cl. 128-66.000.
Nielsen, Helmer Trost, to Danfoss A/S. Sealing means for valve stem. 3,797,805, Cl. 251-214.000.
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Nilsson, Maths S. I., to Nilssons Industriemballage AG. Method of providing metal mountings or the like on members of wood or similar material. 3,797,096, Cl. 29-429.000.
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Nordgren, Hans Elov; and Klockarns, Per. Method for making corner or edge plates for cases, packing, containers or other receptacles and a plant for carrying through the method. 3,797,428, Cl. 113-1.00r.
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Norman, Peter, to International Standard Electric Corporation. Multilevel PCM system enabling AGC control of a transmitted multilevel signal in any selected frequency portion of said transmitted signal. 3,798,544, Cl. 325-38.00a.
Norman, Sivert; Flystrom, Ernst; and Johansson, Folre, to Allmanna Svenska Elektriska Aktiebolaget. Operating mechanism for tap changer switches. 3,798,395, Cl. 200-17.00r.
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Ono, Minoru, to Hitachi, Ltd. Semiconductor device having a surface parallel to the [100] plane and a channel stopper parallel to the [111] plane. 3,798,513, Cl. 317-235.00r.
Ooya, Junichiro; Takayama, Katsuki; and Kuwana, Kazutaka, to Aisin Seiki Kabushiki Kaisha. Method for detecting mutual higher and lower revolutional speeds of a plurality among rotating members. 3,798,556, Cl. 328-133.000.
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Quirk, John Andrew, to Atkinson's of Clitheroe Limited. Safety guards. 3,797,329, Cl. 74-609.000.
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Reckard, Ronald M.; and Morse, Raymond I., to General Electric Company. Low voltage surge arrester. 3,798,505, Cl. 317-68.000.
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Reed, Marion G.; and Jaffe, Joseph, to Chevron Research Company. Novel catalyst support. 3,798,177, Cl. 252-455.00r.
Reed, Wallace D.; and Stoltz, Richard A., to Westinghouse Electric Corporation. Methods for fabricating ceramic circuit boards with conductive through holes. 3,798,060, Cl. 117-212.000.
Reed, William B.; and Bigsby, Floyd W., to Western Roto Thresh Ltd. Pneumatic classifier for rotary threshing machine. 3,797,502, Cl. 130-27.00r.
Reeves, John Vincent, to Chrysler United Kingdom Limited. Trim strips for vehicle door openings. 3,797,857, Cl. 280-150.00b.
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Reik, Michael Kurt; and Johnson, Paul Leonard, to Isopad Limited. Electric heating mantles. 3,798,418, Cl. 219-535.000.
Reil, Wilhelm, to Altsladter Verpackungs-Vertriebs-GmbH. Container for liquids with an openable pouring spout. 3,797,726, Cl. 229-17.00r.
Reinbold, George W.; and Hammond, Earl G., to Iowa State University Research Foundations, Inc. Manufacture of salted cheese. 3,798,340, Cl. 426-261.000.
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Rick, Edward A.; and Omietanski, George M., to Union Carbide Corporation. Bicyclic olefinic polyoxyalkylene polymers and siloxane-polyoxyalkylene copolymer derivatives thereof. 3,798,253, Cl. 260-448.20b.
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Rockman, Murray L.; and Cecere, Andrew P., to Gamco Holding Corporation. Apparatus and method for separating fabric sections. 3,797,080, Cl. 28-17.000.
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Roddy, John J.; and Swanson, Linwood B., to Cushman Industries, Incorporated. Chuck with jaw-guiding-and-supporting bores. 3,797,837, Cl. 279-114.000.
Rodgers, Ralph. Hinge for luggage and luggage device. 3,797,067, Cl. 16-137.000.
Rodieck, Chester C. Automatic irrigation system. 3,797,253, Cl. 61-12.000.
Rodriguez, Rodolfo, to Miles Laboratories, Inc. Method for controlling tremor symptomatic of parkinsonism utilizing 1-(2-pyridyl) piperazine. 3,798,324, Cl. 424-250.000.
Roesel, Vernon H. Control apparatus for metalworking tools. 3,797,813, Cl. 266-923.00m.
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Ruppe, Robert C.; and Woltzen, Herschel E., to Nixdorff Krien Mfg. Connector hook. 3,797,229, Cl. 59-93.000.
Rymarchyk, Nicholas M., Jr.; Berry, Walter V.; and Berry, William W., to Berry Metal Company. Oxygen lance with multi-orificed nozzle. 3,797,814, Cl. 266-34.001.
Sabatino, Anthony, to Gould Inc. Making electrical connections through a storage battery wall. 3,798,071, Cl. 136-134.00r.
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Sadow, Peter Thomas, Jr.; Bednarski, Thaddeus Eugene; and Beares, Allen George, to Black and Decker Manufacturing Company, The. Combined safety guard and flip-over handle for lawnmowers. 3,797,213, Cl. 56-320.100.
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Saito, Kazunori; Tsubaki, Toshio; Ito, Shoichi; and Eujiyama, Sadaaki, to Hitachi, Ltd. Magnetic recording and reproducing device with speaker cut off when driving system is stopped. 3,798,385, Cl. 179-100.20s.
Saito, Teruo; Ide, Susumu; Yasuda, Tooru; and Enomoto, Shigeru, to Matsushita Electric Industrial Co., Ltd. Automatic shut-off device. 3,798,362, Cl. 178-5.80r.
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Saklikar, Arvind R., to Sherwin-Williams Company, The. Laminated electro photographic unit and process. 3,798,029, Cl. 96-1.00r.
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Salukvadze, Viktor Samsonovich; Koshman, Igor Filippovich; and Doktorov, Leonid Borisovich. Self-propelled machine for cleaning external surfaces of pipelines. 3,797,060, Cl. 15-88.000.
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Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Monzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich. Piezoelactric transducer memory with non-destructive read out. 4,78,619, Cl. 340-173.200.
Samuels, Abe, to Speed-O-Print Business Machines Corporation. Paper shredder. 3,797,765, Cl. 241-236.000.
Sanchez, Anastacio V. Method of and apparatus for repairing deformed yieldable structures. 3,797,295, Cl. 72-308.000.
Sanderson, Guy L., to Smyth Manufacturing Company, The. Book sewing machine having reversing book clamp and transport slide. 3,797,421, Cl. 112-21.000.
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Sarnoff, Stanley J., to Survival Technology, Inc. Hypodermic injection device with shock absorbing spring. 3,797,489, Cl. 128-218.00f.
Sartor, Raymond A. Vehicle curve speed warning device. 3,798,593, Cl. 340-52.00h.
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Sato, Tatsuo, to Shimadzu Seisakusho, Ltd. Automatic base line drift corrector device for use in an integrator for chromatographical analysis. 3,797,300, Cl. 73-23.100.
Sato, Tatsuo, to Shimadzu Seisakusho Ltd. Apparatus for integrating the area of a succeeding peak superimposed on the tail of a preceding peak in the output of a measuring instrument. 3,798,429, Cl. 235-183.000.
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Sawada, Tetsuya. Automatic carton box fabricating apparatus. 3,797,370, Cl. 93-51.0hw.
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Davis, D. Carter; Sawant, Ulhas S.; and Scaffidi, Francis, 3,797,760.
Sawyer, Bobby Gene; and Fickle, J. Clark, to Deere & Company. Crop harvesting machine. 3,797,207, Cl. 56-1.000.
Say, Donald L., to GTE Sylvania Incorporated. Multibeam cathode ray tube having a common beam limiting aperture therein. 3,798,478, Cl. 313-70.00r.
Scaffidi, Francis: *See—*
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Schacht, Peter. Device for displaying carpet samples. 3,797,669, Cl. 211-44.000.
Schaeffler, Georg; and Sakowski, Gerhard, to Industriewerk Schaeffler OHG. Sheet metal cage production. 3,797,083, Cl. 29-148.40c.
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Smith, Judson L. Turntable car wash. 3,797,059, Cl. 15-201.00d.
Smith, Laurence H., to Atlas Pacific Engineering Company. Machine for orienting pears. 3,797,639, Cl. 198-33.0aa.
Smith, Lester L., to H C Products Co. Fabricated plastic panels. 3,797,186, Cl. 52-314.000.
Smith, Leward N., to Marbark Industries, Inc. Sawmill log holder assembly. 3,797,349, Cl. 83-404.100.
Smith, Mary K. H.: *See—*
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Smith, Richard F. Welding electrode having frictional loop engaging portion. 3,798,412, Cl. 219-145.000.
Smith, Richard J., to McGill Manufacturing Company, Inc. Shaft locking device for a bearing assembly. 3,797,901, Cl. 308-236.000.
Smith, Robert E., to Daton Progress Corporatiion. Apparatus for keying and locking elements to their retainers. 3,797,352, Cl. 83-699.000.
Smith, Walter E.: *See—*
Fedor, Robert J.; and Smith, Walter E., 3,797,084.
Smith, Ward Harris. Portable cleaning and sanitizing system. 3,797,744, Cl. 239-172.000.
Smithkline Corporation: *See—*
Parish, Roger C.; and Trei, John E., 3,798,330.
Smitzer, Louis A., to Ovonic Image Systems, Inc. Microfiche reader with indexed fiche magazine. 3,797,925, Cl. 353-27.000.
Smolka, Thomas Gordon; and Schweizer, Gottfried, to Gertsch AG, mesne. Ski binding. 3,797,839, Cl. 280-11.35c.
Smolka, Thomas Gordon; and Schweizer, Gottfried, to Gertsch AG, mesne. Ski binding. 3,797,844, Cl. 280-11.35c.
Smulka, Roman, to Honeywell Inc. Fastening device for fastening a member through a hold in a wall from the inside surface of the wall. 3,797,866, Cl. 285-208.000.
Smyth Europea S.p.A.: *See—*
Depetris, Lorenzo, 3,797,419.
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Snam Progetti S.p.A.: *See—*
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Snyder, John Howard: *See—*
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Societa' Italiana Telecomunicazioni, Siemens S.p.A.: *See—*
Candiani, Giampiero, 3,798,635.
Societa' Italiana Telecomunicazioni S.p.A.: *See—*
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Societe Anonyme de Vehicules Industriels et d'Equipements Mecaniques Saviem: *See—*
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Societe anonyme dite: L'Oreal: *See—*
Kalopissis, Gregoire, 3,797,994.
Societe Anonyme dite: Societe Industrielle pour la Fabrication des Antibiotique (S.I.F.A.): *See—*
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Societe Anonyme: Glaenzer Spicer: *See—*
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Societe d'Assistance Technique pour Produits Nistle S.A.: *See—*
Gasser, Rupert Josef; and Huster, Lienhard Bodo, 3,798,126.
Societe de Fabrication d'Instruments de Mesure S.F.I.A.: *See—*
Preti, Jean, 3,798,641.
Societe de: L''Aerotrain'': *See—*
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Societe des Accumulateurs Fixes de Traction (Societe Anonyme): *See—*
Jochaud du Plessix, Michel Guy Marie; and Lecouffe, Yves Jacques Felix, 3,798,527.
Societe Pernod: *See—*
Hemard, Jean, 3,797,698.
Societe Pour L'Equipment Des Industries Chimiques: *See—*
Jullien, Yves; and Cicile, Jean-Charles, 3,797,811.
Soderquist, Frederick J.; and Martz, Lyle E., to Dow Chemical Company, The. Self-regenerative dehydrogenation catalyst. 3,798,178, Cl. 252-468.000.
Soehrens, John E., to Braum, C. F., & Co. Lifting saddle for vessels. 3,797,877, Cl. 294-67.00b.
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Soleri, Richard A. Shoe with flexible height adjustment sole and assorted heights interchangeable heels. 3,797,136, Cl. 36-42.000.
Soltys, Michael N., to Tektronix Inc. Storage tube with target having conductive surface exposed through random cracks in dielectric coating. 3,798,477, Cl. 313-68.00r.
Sony Corporation: *See—*
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Narahara, Hisaaki; Numakura, Toshihiko; and Watanabe, Yoshimi, 3,798,361.

Soodalter, Arnold. Machine for dispensing shaped and portioned charges of a food product. 3,797,710, Cl. 222-219.000.
Sottle, William: *See—*
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Souriau & Cie: *See—*
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Speizman Industries, Inc.: *See—*
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Spence, John R., to North American Rockwell Corporation. Strobe driver including a memory circuit. 3,798,616, Cl. 340-173.00r.
Spencer, Lloyd. Intermittent irrigation system. 3,797,741, Cl. 239-11.000.
Spencer, Lloyd. Continous tube trickle irrigator. 3,797,754, Cl. 239-542.000.
Sperry Rand Corporation: *See—*
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Kaske, Alan D.; Paul, Maynard C.; and Tolman, Charles H., 3,798,623.
Spicar, Erich: *See—*
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Spiller, Rex S., 3,797,654.
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Spitz, Erich; Leiba, Eugene; and Assouline, Georges, to Thomson-CSF. Image intensifiers. 3,798,452, Cl. 250-213.00r.
Sponaas, Richard M.: *See—*
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Staes, Karel Germanus; and Natens, Luc Yves, to Agfa-Gevaert. Photoelectric exposure control device. 3,797,941, Cl. 356-175.000.
Stahlecker, Fritz, to Stahlecker, Wilhelm, G.m.b.H. Spinning turbine. 3,797,962, Cl. 415-169.000.
Stahlecker, Wilhelm, G.m.b.H.: *See—*
Stahlecker, Fritz, 3,797,962.
Stambera, Adolf, to Hesser, Fr., Maschinenfabrik AG. Weighing apparatus. 3,797,633, Cl. 198-39.000.
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Statler, Lowell E. Blackboard eraser. 3,797,061, Cl. 15-223.000.
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Shim, Kyung S., 3,798,290.
Steel, Thomas: *See—*
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Steiner, Adolf; and Rinnergschwentner, Hans, to Daimler-Benz Aktiengesellschaft. Spring a tilting arrangement for tiltable driver cabs. 3,797,883, Cl. 296-35.00r.
Steinhofer, Robert J.: *See—*
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Steitler, Christian H.; Luedi, Hans R.; and Roze, Albert, to Gratnes Machine Work, Inc. Method of manufacturing cylindrical blanks. 3,797,088, Cl. 29-159.100.
Stembridge, Harold E. Impact cushioning device. 3,797,615, Cl. 188-285.000.
Sterling Drug, Inc.: *See—*
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Stokes, Rembert Ryan, to Bell Telephone Laboratories, Incorporated. Keyboard switch assembly with conductive diaphragm operators and rotary switch operators for adjustably selecting a multidigit number. 3,798,394, Cl. 200-5.00a.
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Stout, Richard W.; and Brunk, Milton J., to Stoutco, Inc. Axled vehicle support frame assembly. 3,797,850, Cl. 280-106.00t.
Stoutco, Inc.: *See—*
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Straitz, John F., III, to Combustion Unlimited, Incorporated. Flare burner. 3,797,991, Cl. 431-202.000.
Straitz, John F., III, to Combustion Unlimited, Incorporated. Crude oil burner. 3,797,992, Cl. 431-285.000.
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Streck, Roland; and Weber, Heinrich, to Chemische Werke Huls Aktiengesellschaft. Catalysts for the ring opening polymerization of cyclic olefins. 3,798,175, Cl. 252-429.00b.
Streeter, Daniel I., to Smyth Manufacturing Company, The. Thread overwrap mechinism. 3,797,420, Cl. 112-21.000.
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Stroms, Karl Friedrich: *See—*
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Strubbe, Gilbert J., to Clayson N.V. Mechanism for the automatic steering of agricultural machines, especially combines. 3,797,208, Cl. 56-10.200.
Struger, Ido J.; and Radtke, Joseph D., to Allen-Bradly Company. Controller programmer. 3,798,612, Cl. 340-172.500.
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Wolf, Gunter; and Willing, Wilfried, 3,797,567.
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Stubblefield, Robert A. Inboard propulsion system for a boat. 3,797,447, Cl. 115-12.00r.
Stubbs, Harry E. Towing guide. 3,797,444, Cl. 114-235.00b.
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Sugiyama, Masatoshi; Nishigaki, Yasuo; and Itagaki, Sadayoshi, to Fuji Photo Film Co., Ltd. Process for the preparation of hydroquinone. 3,798,277, Cl. 260-621.00c.
Sukolics, Ronald D., to American Metal Climax, Inc. Wall construction. 3,797,191, Cl. 52-664.000.
Sullivan, Thomas A.; Singleton, Eben L.; and Johnson, Morris L., to United States of America, Interior. Process for producing aluminum and silicon from aluminum silicon alloys. 3,798,140, Cl. 204-67.000.
Sumi, Shoozo: *See—*
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Sumida, Harry H. Vehicle guidance system. 3,797,602, Cl. 180-79.100.
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Sumiyoshi, Masaharu; Arai, Hiroshi; Wakamatsu, Hisato; and Higo, Nobumasa, to Nippondensco Co. Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha. Centralized warning system for vehicles. 3,798,596, Cl. 340-52.00f.
Sunamori, Takashi: *See—*
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Suzuki, Joji; and Tanaka, Keihachiro, to Nippon Sheet Glass Co., Ltd. Laminated windshield structure. 3,798,113, Cl. 161-164.000.
Suzuki, Katsuhito: *See—*
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Suzuki, Shinichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Digital exposure time determing system for cameras. 3,798,662, Cl. 354-51.000.
Suzuki, Shoji: *See—*
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Suzuki, Takashi: *See—*
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Suzuki, Yasuo, to Kabushiki Kaisha Komatsu Seisakusho. Operational control system for vehicle steering clutches and brakes. 3,797,619, Cl. 192-13.00r.
Swain, Roger S.: *See—*
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Tada, Tetsuya. Sprayer. 3,797,749, Cl. 339-321.000.
Taguchi, Tetsuya, to Canon Kabushiki Kaisha. Automatic diaphragm control device for a camera. 3,798,661, Cl. 354-44.000.
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Takahashi, Nobuaki; Kasuga, Masao; and Ohsaki, Nobuhide, to Victor Company of Japan, Ltd. Expanding circuit in a compression and expansion system. 3,798,562, Cl. 330-28.000.
Takahashi, Toru; Ito, Yoshio; and Kodowaki, Hidejiro, to Canon Kabushiki Kaisha. Electrophotographic copying machine. 3,797,927, Cl. 355-3.000.
Takahashi, Yoshio; Abe, Kunio; and Igata, Toyonori, to Pioneer Electronic Corporation. Record-player for continuous play. 3,797,834, Cl. 274-10.00r.
Takahashi, Yukiharu; and Kubo, Moritada, to Tokyo Shibaura Electric Co., Ltd. High speed stepping motor with mechanical commutator. 3,798,526, Cl. 318-696.000.
Takamatsu, Shigeharu: *See—*
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Takamura, Akira; Moriguchi, Yasuo; and Sato, Hiroshi, to Kobe Steel, Ltd. Deposition plate to be used as a starter blank or cathode for use in metal refining. 3,798,151, Cl. 204-281.000.
Takano, Yosuke: *See—*
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Takaoka, Saburo, to Pioneer Electronic Corporation. FM receiver. 3,798,550, Cl. 325-346.000.
Takayama, Katsuki: *See—*
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Takeda, Inuo; Suzuki, Takashi; and Furukawa, Hikaru, to Takeda Riken Industry Company Limited. Direct current ratio measuring apparatus. 3,798,543, Cl. 324-140.00d.
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Takenaka Komuten Company, Ltd.: *See—*
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Takizawa, Makoto; Miyamoto, Kinzo; Asahi, Matahiko; and Nakamoto, Megumu, to Mitsui Toatsu Chemicals, Incorporated. Expandable polymeric composition. 3,798,188, Cl. 260-2.50r.
Tall, Leonard H.; Catlstedt, Paul A.; and Erickson, Arlen J. Apparatus for bureting sectionalized elongated strips. 3,797,719, Cl. 225-100.000.
Tamagawa, Hitoshi: *See—*
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Tambert, John; Zurakowski, Stanley J.; and Jacobson, Charles L., to Xerox Corporation. Data coupling apparatus for dedicated communication lines. 3,798,598, Cl. 340-147.00r.
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Tamura Electric Works, Ltd.: *See—*
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Tamura, Takaai. Absorption process for gas separation. 3,797,201, Cl. 55-62.000.
Tanaka, Harumi, to Minolta Camera Kabushiki Kaisha. Camera focusing mechanism. 3,798,670, Cl. 354-195.000.
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Tarcici, Adnan. Solar heating device. 3,797,476, Cl. 126-270.000.
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Tate, William H. Apparatus for manufacturing cheese. 3,797,380, Cl. 99-464.000.
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Taylor, Jack William, to Ingersoll Locks, Limited. Cylinder lock. 3,797,290, Cl. 70-366.000.
Taylor, Jack William, to Ingersoll Locks, Limited. Keys. 3,797,292, Cl. 70-409.000.
Taylor, Lynn J.; and Tobias, John W., to Owens-Illinois, Inc. Preparation of degradable polymeric material. 3,797,690, Cl. 220-1.00r.
Taylor, Michael Gordon, to Bell Telephone Laboratories, Incorporated. Adaptive transversal equalizer using a time-multiplexed second-order digital filter. 3,798,560, Cl. 328-167.000.
Taylor, Nathaniel H.: *See—*
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Tenney, William L. Two cycle engine scavenge ports. 3,797,467, Cl. 123-73.0aa.
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Thibault, Jean-Jacques; and Boissin, Jean-Claude, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Low-temperature pumping device. 3,797,264, Cl. 62-55.500.
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Thomas, James Kellett, to American Cyanamid Company. Spinning self-crimping composite fibers. 3,798,296, Cl. 264-171.000.
Thompson, Elliott R., Sr., to Bailey Meter Company. Bellows temperature bulb sensor. 3,797,316, Cl. 73-368.400.
Thompson, John T.; and Gillemot, George W. Molded plastic splice casing with combination cable anchorage and cable shielding grounding facility. 3,798,349, Cl. 174-92.000.
Thompson, John T.; and Gillemot, George W. Combination cable anchorage and grounding accessory. 3,798,585, Cl. 339-14.00r.
Thompson, Richard. Partition assembly. 3,797,184, Cl. 52-239.000.
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Tomizawa, Kazuhiro, to Nittai Lease Company, Ltd. Lower track roller for crawler track. 3,797,895, Cl. 305-27.000.
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Trusov, Sergei Mikhailovich. Hydraulic torque converter. 3,797,243, Cl. 60-361.000.
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Tucker, Council A., to Towlsaver, Inc. Roll supporting apparatus for roll towel dispenser. 3,797,769, Cl. 242-55.530.
Tufano, John J., Sr. Vehicle bumper impact absorbing system. 3,797,874, Cl. 293-86.000.
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Van Koten, Gerard; and Leusink, Andre J., to International Copper Research Association. Aryl copper compounds and the salt complexes thereof. 3,798,248, Cl. 260-429.700.
Van Krimpen, Pieter C. A.; and Wetzler, Victor M. B., to Stamicarbon N.V. Process for preparing a fibre fleece. 3,798,298, Cl. 264-210.00f.
Van Meter, James Adams. Match book holder. 3,797,651, Cl. 206-107.000.
Van Toorn, Cornelis Hendrik. Connector for an element of the coaxial type. 3,798,348, Cl. 174-84.00s.
Van Veldhuizen, John. Monorail system including convertible air cushion vehicle provided with vertically retractable wheeled running gear. 3,797,400, Cl. 104-23.0fs.
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Ver Ploeg, Alonzo. Cutter disc. 3,797,544, Cl. 144-235.000.
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Windle, William. Pigments. 3,797,610, Cl. 186-306.000.
Wingerd, Eldon S. Arithmetic concepts display board. 3,797,134, Cl. 35-34.000.
Winkler, Richard H.: *See—*
Hunt, Robert P.; and Winkler, Richard H., 3,798,366.
Winkler, Rudolf: *See—*
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Wirstein, Arthur N.: *See—*
Wittern, Francis A.; and Wirstein, Arthur N., 3,797,699.
Wissmann, Ing Kurt. Reciprocating conveyors. 3,797,637, Cl. 198-221.000.
Witkowski, Joseph T.; and Robins, Roland K., to ICN Pharmaceuticals, Inc. 1,2,4-Triazole nucleosides. 3,798,209, Cl. 260-211.50r.
Wittekind, Raymond R.; and Shavel, John, Jr., to Warner-Lambert Company. 2-(Furfurylamino)-1-(2-imidazolin-2-yl)-2-imidazoline hydroiodide. 3,798,232, Cl. 260-309.600.
Wittern, Francis A.; and Wirstein, Arthur N., to Fawn Engineering Corporation. Article holding and dispensing device. 3,797,699, Cl. 221-85.000.
Witting, Harald L., to General Electric Company. Lamp apparatus for improving wall darkening characteristics. 3,798,485, Cl. 313-205.000.
Witz, Samuel; and Moyer, Rudolph H., to Aerojet-General Corporation. Method and apparatus for indicating microorganic matter by means of chemiluminescence. 3,797,999, Cl. 23-230.00r.
Witzel, Walter H.; and Doyle, Edward F., to Thermo Electron Corporation. Rankine cycle start up system. 3,797,248, Cl. 60-646.000.
Witzmann, Hans-Klaus; and Kraus, Gabriella, to Henkel & Cie GmbH. Adhesive spreader assembly. 3,797,946, Cl. 401-116.000.
WML, Incorporated: *See—*
Weggeland, John H., 3,797,144.
Woelm, M.: *See—*
Schmidt, Gunther, 3,797,487.
Wolf, Gunter; and Willing, Wilfried, to Strunck, H., & Co., Maschinenfabrik. Continuous sterilizing apparatus. 3,797,567, Cl. 165-120.000.
Wolfe, Wayne F., to United Can Company. Method and apparatus for necking and flanging can bodies. 3,797,429, Cl. 113-1.00g.
Wolff, Edwin K., to NJM, Inc. Offset printing press. 3,797,389, Cl. 101-228.000.
Wolff, Heinz, to Otto, C., Dr., & Comp. G.m.b.H. Gas and liquid contact apparatus. 3,797,810, Cl. 261-111.000.
Wolk, John R.: *See—*
Nath, Dilip K.; and Wolk, John R., 3,798,173.
Woltzen, Herschel E.: *See—*
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Wontrobski, Charles E.: *See—*
Florence, Dennis E.; Winders, Frank R., Jr.; and Wontrobski, Charles E., 3,798,500.
Wood, Howard J.; and Greiner, James A., to Engineered Products. Sewage comminutor. 3,797,762, Cl. 241-36.000.
Wood, Paul R. Reel flange manufacturing machine. 3,797,542, Cl. 144-4.000.
Woods, Terrill Wayne: *See—*
Magruder, Michael Keith; and Woods, Terrill Wayne, 3,797,798.
Woodward, Clifford Stanley: *See—*
Clark, Kenneth William; and Woodward, Clifford Stanley, 3,797,561.
Woolsey, Nils S.; and Van Blair, Wade, to Quadall Company, Inc. Boat anchor. 3,797,443, Cl. 114-206.00r.
Workman, Lester J. Directional coupler having directly connected taps. 3,798,574, Cl. 333-10.000.
Worner, Gunter; and Schrape, Peter, to Daimler-Benz Aktiengesellschaft. Adjusting mechanism for the intermediate plate in two disc clutches. 3,797,622, Cl. 192-111.00a.
Wright, Robert A., Jr., to Allied Chemical Corporation, mesne. Bag deployment. 3,797,855, Cl. 280-150.0ab.
Wright, Robert H., to British Columbia Research Council. Methods and compositions for selectively attracting yellow-jacket wasps. 3,798,318, Cl. 424-84.000.
Wu, Yulin, to Phillips Petroleum Company. Process for the production of bis(2-hydroxyethyl)terephthalate. 3,798,257, Cl. 260-475.00p.
Wuerker, Ralph F.: *See—*
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Wurlitzer Company, The: *See—*
Thomas, Howard M.; Olszowka, Robert F.; and McNerney, Roger J., 3,797,357.
Wycoff, Keith H. Automatic identification system. 3,798,546, Cl. 325-166.000.
Wyman, David Alfred: *See—*
Dobson, Patrick Francis; and Wyman, David Alfred, 3,798,432.
Xerox Corporation: *See—*
Gundlach, Robert W., 3,798,030.
Lawlor, John E.; and Sgombick, John, 3,797,132.
Tambert, John; Zurakowski, Stanley J.; and Jacobson, Charles L., 3,798,598.
Torpie, John D.; Bell, Allan J.; Gorham, Michael L.; and Keating, Walter G., 3,798,576.
Yabuuchi, Yasuo: *See—*
Maruyama, Shiro; Iwai, Ken; Yabuuchi, Yasuo; and Maki, Syoji, 3,797,439.
Yago, John Gerald; Haas, Robert George; and Rheinfrank, George Bruckner. Cold sprue injection molding device with integral sprue chamber and injection nozzle. 3,797,984, Cl. 425-243.000.
Yahalom, Joseph, to Bell Telephone Laboratories, Incorporated. Technique for electroetching thin film metallization. 3,798,141, Cl. 204-129.430.
Yamada, Hiroshi; and Hirose, Hiroshi, to Ricoh Co. Ltd. Circuitous passageway for drying copy sheets. 3,797,127, Cl. 34-123.000.
Yamada, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Front seat back providing protection to occupants of rear seats of a motor vehicle. 3,797,858, Cl. 280-150.00b.
Yamada, Naoya; Nagai, Nobuo; and Tada, Shoji, to Mitsubishi Denki Kabushiki Kaisha. Spark gap device for lightning arrester. 3,798,498, Cl. 315-36.000.
Yamada, Norio; Iguchi, Yoji; Tanaka, Yoshimasa; Oho, Tatsuke; and Ikejima, Yoritaka, to Matsushita Electric Works Ltd. Electric shaver with rockable shaving head. 3,797,109, Cl. 30-431.000.
Yamada, Yasuo: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kudamtsu, Akio; Kurahashi, Yoshio; Sumi, Shoozo; Seki, Morisuke; and Shiokawa, Koozo, 3,798,293.
Yamagiwa, Masanori: *See—*
Tanji, Mikiharu; and Yamagiwa, Masanori, 3,797,596.
Yamaguchi, Ikuo: *See—*
Kobayashi, Shoichi; Yamaguchi, Ikuo; and Konami, Katuyoshi, 3,797,183.
Yamaguchi, Shunzo: *See—*
Inoue, Tokuta; and Yamaguchi, Shunzo, 3,797,240.
Yamamichi, Masayoshi: *See—*
Hasegawa, Goro; Iura, Yukio; and Yamamichi, Masayoshi, 3,798,660.
Yamamoto, Hisao; Hirohashi, Atsuko; Izumi, Takahiro; and Koshiba, Masao, to Sumitomo Chemical Company, Limited. Novel method for producing 1-phenyl-3-indolylacetic acid derivatives. 3,798,235, Cl. 260-326.13r.
Yamamoto, Kazuko. Double-type continuous curve drawing tool. 3,797,118, Cl. 33-27.00c.
Yamano, Togo: *See—*
Meguro, Kanji; Kuwada, Yutaka; Henmi, Teruji; and Yamano, Togo, 3,798,226.
Yamashita, Norio: *See—*
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Yamawaki, Shunro; Makita, Naoki; and Hirose, Kazuhiko, to Tokico Ltd. Fuel supplying apparatus. 3,797,703, Cl. 222-26.000.
Yamaya, Susumu; and Sadahiro, Takeshi, to Toshiba Tungaloy Co., Ltd. Hard sintered composition. 3,798,009, Cl. 29-182.700.
Yamazaki, Shumpei. Method for forming a single-layer nitride film or a multi-layer nitride film on a portion of the whole of the surface of a semiconductor substrate or element. 3,798,061, Cl. 117-213.000.
Yano, Katsuhiko: *See—*
Kawata, Ryuichi; Kawada, Hiroitsu; Ohmura, Tadayoshi; Yano, Katsuhiko; Sugiura, Hiroshi; and Takada, Nobuo, 3,798,054.
Yarsa, Frank J.: *See—*
Paridon, Leo J.; Dye, Cloyde G.; and Yarsa, Frank J., 3,798,018.
Yasuda, Naohiko: *See—*
Uchiyama, Noboru; Yasuda, Naohiko; Yamatani, Tetsuo; Ariyoshi, Yasuo; Toi, Koji; and Sato, Naotake, 3,798,206.
Yasuda, Tooru: *See—*
Saito, Teruo; Ide, Susumu; Yasuda, Tooru; and Enomoto, Shigeru, 3,798,362.
Yates, John Allan: *See—*
Ormesher, Edward Russell; and Yates, John Allan, 3,798,016.
Yeo, Herbert G.: *See—*
Damon, Neil F.; and Yeo, Herbert G., 3,798,507.
Yetter, Harry G. Levels and level determining devices. 3,797,125, Cl. 33-387.000.
Yih, Roy Y.: *See—*
Bayer, Horst O.; Swithenbank, Colin; and Yih, Roy Y., 3,798,276.
Yin, Chieh-Kung; Klein, Roy W.; and Johnson, Bernard A., to Mangood Corporation. System for digital weighing with zeroizing for thermal effects. 3,797,595, Cl. 177-164.000.
Yoder, Royce A.: *See—*
Friend, Aaron D.; Nelson, Gary L.; and Yoder, Royce A., 3,798,520.
Yokogawa Electric Works, Ltd.: *See—*
Hasebe, Takefumi; Takizawa, Arata; and Sato, Setsuo, 3,798,659.
Yonehara, Setsuji: *See—*
Nakanishi, Toru; Matsui, Junichi; Yonehara, Setsuji; Aoki, Masahiro; Ishiguro, Kiyonori; Satake, Tatsuo; and Azuma, Shingi, 3,797,666.
Yoo, Jin Sun, to Atlantic Richfield Company. Olefin oligomerization process. 3,798,285, Cl. 260-683.15d.
Yoshida, Kozaburo: *See—*
Suzukawa, Yuichi; Kobayashi, Waichi; Uehori, Kinzi; Ohtaka, Satoshi; and Yoshida, Kozaburo, 3,798,314.
Yoshikawa, Seiichi. Riveting machine. 3,797,365, Cl. 91-402.000.
Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, to Bridgestone Tire Company, Limited. Rubber blends containing an hydrogenated styrene butadiene random copolymer. 3,798,190, Cl. 260-5.000.
Yoshimura, Takayuki, to Daiwa Can Company Limited. Method of manufacturing the body of a neck-in can and an apparatus used therefor. 3,797,431, Cl. 113-120.0aa.
Yoshino Kogyosho Co., Ltd.: *See—*
Nozawa, Takamitsu; and Kishi, Takao, 3,797,748.
Yost, Edward F., Jr., to Spectral Data Corporation. Isoluminous additive color multispectral display. 3,798,033, Cl. 96-5.000.
Young, Claude Frank; and Offenhauer, Charles Martin, to Union Carbide Corporation. Apparatus for producing sized ferroalloy particles. 3,797,978, Cl. 425-8.000.
Young, John, Jr.; and Maguire, Barry Paul. Incinerator with a plurality of outer walls and a hollow grate. 3,797,415, Cl. 110-8.00c.

Young, S. Albert, 1/3 interest each to Rineman, Harold J. and Rineman, Richard L. Folding motorized vehicle. 3,797,597, Cl. 180-1.00f.
Youngflex S.A.: *See—*
Griffiths, David Thomas, 3,797,886.
Youngstown Steel Door Company, The: *See—*
Fritz, William E., 3,797,891.
Zach, Ella; deceased (Zach, Gunther; legal representative), to Zach, Ludwig, Verpackunger. Two part box. 3,797,730, Cl. 229-43.000.
Zach, Gunther: *See—*
Zach, Ella, 3,797,730.
Zach, Ludwig, Verpackunger: *See—*
Zach, Ella, 3,797,730.
Zachary, Paul Byne, to Emerson Labeltape Corporation. Sewing tape. 3,797,120, Cl. 33-137.00r.
Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Air-laying process for forming a web of textile fibers. 3,797,074, Cl. 156-300.000.
Zaharoni, Isaac. Control system for environmental conditioning units. 3,797,560, Cl. 161-26.000.
Zai Faroni, Alejandro, to Alza Corporation. Bandage for the administration of drug by controlled metering through microporous materials. 3,797,494, Cl. 128-268.000.
Zaidan, Joseph P. Shag rug vacuum head. 3,797,066, Cl. 15-369.000.
Zaika, Jury Pavlovich: *See—*
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Manzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 3,798,619.
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Monzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 4,798,619.
Zakharov, Georgy Pavlovich: *See—*
Vasilkovsky, Vitaly Pankratievich; Grebnev, Nikolai Feodosovich; Efimov, Leonid Alexandrovich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andreevich; Zakharov, Georgy Pavlovich; Kavitsky, Mikhail Ruvimovich; Malkov, Pavel Andrevich; Pylaikin, Petr Alexeevich; Rozanov, Boris Vasilievich; Sinitsky, Vladimir Mikhailovich; and Khirdzhiev, Sergei Grigorievich, 3,797,298.
Zavadsky, Vladimir Alexandrovich: *See—*
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Manzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 3,798,619.
Samofalov, Konstantin Grigorievich; Gruts, Tatyana Vasilievna; Zaika, Jury Pavlovich; Monzhelo, Valery Alexandrovich; Zavadsky, Vladimir Alexandrovich; and Voskrekasenko, Leonid Sergeevich, 4,798,619.
Zax, Grigory Iosifovich: *See—*
Grachev, Leonid Pavlovich; Anikanov, Nikolai Ivanovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; Kheifets, Rafail Efimovich; Goltsman, Samuil Aronovich; Oleinik, Alexandr Ivanovich; and Frumkin, Mikhail Evseevich, 3,797,677.
Zeimer, Harry, to State of Israel, The. Transporter for use in water. 3,797,445, Cl. 115-1.00r.
Zelda Nievelt, mesne: *See—*
Nievelt, Frank J., 3,797,181.
Zeller, Norbert: *See—*
Nitzsche, Siegfried; Bauer, Ignaz; Graf, Werner; and Zeller, Norbert, 3,798,252.
Zeller, Rainer, to Maschinenfabrik Augsburg Nurnberg Aktiengesellschaft. Fuel for a magneto-hydrodynamic generator. 3,798,089, Cl. 149-22.000.
Zenith Radio Corporation: *See—*
Dietch, Leonard, 3,798,369.
Manske, Hans E., 3,798,493.
Manske, Hans E., 3,798,497.
Zepell, Nathan A. Multi-tip writing instrument with swinging door selector. 3,797,945, Cl. 401-33.000.
Zerachia, Avraham; Friedgut, Natan; and Steinman, Gary, to Ames-Yissum, Ltd. Test device. 3,798,004, Cl. 23-253.0tp.
Zichner, Gerhard, to Strabag Bau-A.G. Wearing courses of stone and mastic on pavements. 3,797,951, Cl. 404-19.000.
Ziegler, Carl; and Sprague, James M., to Merck & Co., Inc. Sulfonylbenzenesulfonic acids. 3,798,262, Cl. 260-505.00r.
Ziesche, Kurt: *See—*
Voit, Willi; and Ziesche, Kurt, 3,797,756.
Zilkha, Sammy, to Alphameric Holdings Limited. Keyboard for electronic circuit. 3,797,630, Cl. 197-98.000.
Zimmermann, Josef: *See—*
Gumm, Peter; Krubig, Karl-Heinz; Lohmann, Jorg; and Zimmermann, Josef, 3,798,299.
Zitt, Rolf: *See—*
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Zivanovic, Srbislav V.: *See—*
Blore, William E.; Zivanovic, Srbislav V.; and Charest, Bernard, 3,798,643.
Zock, Hendrik Frits: *See—*
Van Buren, Alex Maarten; Cloosterman, Aloysius Bernardus Maria; Rek, Johannes Henricus Maria; and Zock, Hendrik Frits, 3,798,245.
Zollweg, Robert J.; Blackham, Kenneth K.; and Burnham, Walter J., to Westinghouse Electric Corporation. Discharge lamp which incorporated divalent cerium halide and cesium halide and a high mercury loading. 3,798,487, Cl. 313-229.000.
Zuest, Armin: *See—*
Schindler, Walter; and Zuest, Armin, 3,798,325.
Zumbach Electronic Automatic: *See—*
Brunner, Mathias, 3,797,121.
Zurakowski, Stanley J.: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF MARCH, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Gaffey, Troy M., and K. G. Wernicke, to Textron Inc. In-plane out-or-plane flapping prop-rotor frequency decoupling. Re. 27,941, 3–19–74, Cl. 416—102.
Home Comfort Products Co.: *See*—
Smith, Lester L. Re. 27,943.
Setina, John R. Automobile partition apparatus pivoted on guardplate. Re. 27,942, 3–19–74, Cl. 296—24.
Smith, Lester L., to Home Comfort Products Co. Roof ridge ventilator. Re. 27,943, 3–19–74, Cl. 98—42.
Textron Inc.: *See*—
Gaffey, Troy M., and Wernicke. Re. 27,941.
Wernicke, Kenneth G.: *See*—
Gaffey, Troy M., and Wernicke. Re. 27,941.

LIST OF PLANT PATENTEES

Armstrong Nurseries, Inc.: *See*—
Lammerts, Walter E. 3,525.
Bond, Ralph, W. H. Jessel, Jr., and W. E. Duffett, said Jessel and said Duffett assors. to said Bond. Chrysanthemum plant. 3,523, 3–19–74, Cl. 74.
Butters, Keith D., to Yoder Brothers, Inc. Chrysanthemum plant. 3,526, 3–19–74, Cl. 74.
Driscoll Strawberry Association, Inc.: *See*—
Johnson, Harold A., Jr. 3,529.
Duffett, William E.: *See*—
Bond, Ralph, Jessel, and Duffett. 3,523.
Jessel, Walter H., Jr., and Duffett. 3,521.
Jessel, Walter H., Jr., and Duffett. 3,527.
Frampton's Nurseries Ltd.: *See*—
Machin, Barrie J. 3,528.
Jackson & Perkins Co.: *See*—
Warriner, William A. 3,522.
Jessel, Walter H., Jr.: *See*—
Bond, Ralph, Jessel, and Duffett. 3,523.
Mack, Grace H., Jessel, and Duffett. 3,530.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,521, 3–19–74, Cl. 79.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,527, 3–19–74, Cl. 77.
Johnson, Harold A., Jr., to Driscoll Strawberry Associates, Inc. Strawberry plant. 3,529, 3–19–74, Cl. 49.
Lammerts, Walter E., to Armstrong Nurseries, Inc. Rose plant. 3,525, 3–19–74, Cl. 22.
Machin, Barrie J., to Frampton's Nurseries Ltd. Chrysanthemum plant-Europa. 3,528, 3–19–74, Cl. 78.
Mack, Grace H., W. H. Jessel, Jr., and W. E. Duffett to Grace H. Mack. Chrysanthemum plant. 3,530, 3–19–74, Cl. 74.
Mack, Grace H.: *See*—
Mack, Grace H., Jessel, and Duffett. 3,530.
McGredy, Samuel. Rose plant. 3,524, 3–19–74, Cl. 22.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,522, 3–19–74, Cl. 20.
Yoder Brothers, Inc.: *See*—
Butters, Keith D. 3,526.
Jessel, Walter H., Jr., and Duffett. 3,521.
Jessel, Walter H., Jr., and Duffett. 3,527.

LIST OF DESIGN PATENTEES

AB Automatic: *See*—
Sonnerguard, Arne N. C. 230,834.
Ace-In-The-Hole, Inc.: *See*—
Wagner, Arthur C. 230,821.
Alberti, John L. Candle holder. 230,877, 3–19–74, Cl. D48—2.
American Hospital Supply Corp.: *See*—
Edwards, Frank M. 230,896.
Edwards, Frank M. 230,897.
American Seating Co.: *See*—
Barecki, Chester J. 230,786.
Amerock Corp.: *See*—
Tegner, Raymond U. H. 230,796.
Arruda, Antone. Submersible aircraft. 230,893, 3–19–74, Cl. D71—1.
Automatic Radio Mfg., Co., Inc.: *See*—
Lyall, George E. 230,864.
Baker, John C.: *See*—
Mansur, Fred F., Salibury, and Baker. 230,854.
Bardeau, William M., to Bardeau Ltd. Appliance for heating and cooking foods. 230,813, 3–19–74, Cl. D7—121.
Bardeau Ltd.: *See*—
Bardeau, William M. 230,813.
Barecki, Chester J., to American Seating Co. Transit seat. 230,786, 3–19–74, Cl. D6—26.
Baynes, William H. Concentric cubic puzzle. 230,874, 3–19–74, Cl. D34—15.
Bean, Wilford E.: *See*—
Lorenz, Leo J., and Bean. 230,876.
Beatrice Food Co.: *See*—
Visscher, Dennis. 230,833.
Beddick, Frank G., to Queen Cutlery Co. Sheath for a knife. 230,847, 3–19–74, Cl. D22—13.
Bell, James M.: *See*—
Musgrave, Donald A., and Bell. 230,803.
Bevilacqua, Ernest M.: *See*—
Noyes, Eliot, and Bevilacqua. 230,789.
Birks, Carolyn A. Toilet tissue dispensing holder. 230,795, 3–19–74, Cl. D6—97.
Bowles, Samuel V. Transportable refuse container. 230,841, 3–19–74, Cl. D12—98.
Brigham, Owsley H. Compass holder for scuba divers. 230,883, 3–19–74, Cl. D52—6.
Brown, Joyce E., to C.I.I., Inc. Supporting clip for flower pots or the like. 230,827, 3–19–74, Cl. D8—257.
Bruce, Robert A., to Corning Glass Works. Frame for continuous cooktop surface or the like. 230,812, 3–19–74, Cl. D7—121.
C.I.I., Inc.: *See*—
Brown, Joyce E. 230,827.
Caban, Leslie L. Key receptacle for an automotive vehicle. 230,899, 3–19–74, Cl. D87—1.
Carpenter, Herbert R., to Seaquist Valve Co. Combined overcap and button actuator for a pressurized container. 230,831, 3–19–74, Cl. D9—258.
Carter-Hoffman Corp.: *See*—
Hoffman, Carter C., and Luoma. 230,798.
Cheyne, Donald G. Steam cooking pot. 230,811, 3–19–74, Cl. D7—85.
Chisholm, James E., to Formica Corp. Bathtub. 230,851, 3–19–74, Cl. D23—55.
Cicero, Edward L. Golf putter. 230,873, 3–19–74, Cl. D34—5.
Citizen America Corp.: *See*—
Lampel, George J. 230,857.
Columbia Broadcasting System, Inc.: *See*—
Gluck, Daniel. 230,823.
Cousins, Michael A.: *See*—
Cousins, Morison, and M. A. 230,852.
Cousins, Morison S., and M. A. Cousins. Shower stall. 230,852, 3–19–74, Cl. D23—57.
Covey, Laird F., to The Stanley Works. Cutting and abrading blade holder. 230,872, 3–19–74, Cl. D8—94.
Dean, Carl J.: *See*—
Wright, David M., and Dean. 230,855.
Dorzan, Peter A. Litter retriever. 230,868, 3–19–74, Cl. D30—99.
Douglas, Livingston C. Dispensing closure for an aerosol package or the like. 230,830, 3–19–74, Cl. D9—258.
Edwards, Frank M., to American Hospital Supply Corp. Medical liquid nebulizer container for inhalation therapy. 230,896, 3–19–74, Cl. D83—1.
Edwards, Frank M., to American Hospital Supply Corp. Blower tube for ultrasonic nebulizer. 230,897, 3–19–74, Cl. D83—12.
Edwards, Thomas G. Display board for photographs or the like. 230,808, 3–19–74, Cl. D6—234.
Eliot Noyes & Associates: *See*—
Noyes, Eliot, and Bevilacqua. 230,789.
Elliot, David C. Automatic animal feeder or similar article. 230,867, 3–19–74, Cl. D30—15.
Equasound Corp.: *See*—
Petroff, Michael L. 230,865.
Etablissements Allibert: *See*—
Firdmann, Jacques. 230,794.
Everts, Julie Ann. Net fabric scouring pad. 230,814, 3–19–74, Cl. D7—178.
Fink, David H., to Windsor Industries Inc. Portable radio. 230,887, 3–19–74, Cl. D56—4.
Fink, Morris, to Windsor Industries, Inc. Radio. 230,888, 3–19–74, Cl. D56—4.

Firdmann, Jacques, to Etablissements Allibert. Hand grip for installation above bath tubs. 230,794, 3–19–74, Cl. D6—86.
Fogel, Joel D. Automatic drink dispenser. 230,902, 3–19–74, Cl. D94—3.
Foote, Daniel J., to Master Lock Co. Clamp for a looped cable end. 230,825, 3–19–74, Cl. D8—110.
Formica Corp.: *See*—
Chisholm, James E. 230,851.
Lax, Michael. 230,853.
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36 3,797,373
42 Re.27,943
72 3,797,374

CLASS 99
340 3,797,375
353 3,797,376
407 3,797,377
408 3,797,378
421H 3,797,379
464 3,797,380

CLASS 100
12 3,797,381
100 3,797,382
145 3,797,383
154 3,797,384
232 3,797,385

CLASS 101
69 3,797,386
93C 3,797,387
141 3,797,388
228 3,797,389
333 3,797,390

CLASS 102
4 3,797,391
23 3,797,392
28EB 3,797,393
37.1 3,797,395
37.6 3,797,394
43R 3,797,396

CLASS 104
12 3,797,397
23FS 3,797,398
3,797,399
3,797,400
130 3,797,401
3,797,402
148MS 3,797,403
149 3,797,404
155 3,797,405
172BT 3,797,406
182 3,797,407
246 3,797,408

CLASS 105
148 3,797,409
368R 3,797,410
377 3,797,411

CLASS 106
39R 3,798,040
47Q 3,798,041
59 3,798,042
64 3,798,043
288B 3,798,044
298 3,798,045
306 3,798,046
3,798,047

CLASS 109
29 3,797,412

CLASS 110
8C 3,797,415
8R 3,797,413
3,797,414
28R 3,797,416

CLASS 111
4 3,797,417
73 3,797,418

CLASS 112
21 3,797,419
3,797,420
3,797,421
104 3,797,422
121.11 3,797,423
169 3,797,424
217.1 3,797,425
254 3,797,426
266 3,797,427

CLASS 113
1G 3,797,429
1R 3,797,428
55 3,797,430
120AA 3,797,431

CLASS 114
.5A 3,797,432
16R 3,797,433
66.5H 3,797,434
68 3,797,435
71 3,797,436
74A 3,797,437
77R 3,797,438
3,797,439
125 3,797,440
172 3,797,441
197 3,797,442
206R 3,797,443
235B 3,797,444

CLASS 115
1R 3,797,445
6.1 3,797,446
12R 3,797,447
18E 3,797,448
41HT 3,797,449

CLASS 116
28R 3,797,450
114Q 3,797,451

CLASS 117
17 3,798,048
37LE 3,798,049
47A 3,798,050
75 3,798,051
3,798,052
93.31 3,798,053
100A 3,798,054
107 3,798,055
113 3,798,056
126AB 3,798,057
201 3,798,058
212 3,798,059
3,798,060
3,798,062
213 3,798,061
230 3,798,063

CLASS 118
49 3,797,452
69 3,797,453
247 3,797,454
308 3,797,455
316 3,797,456
630 3,797,457

CLASS 119
2 3,797,458
5 3,797,459
17 3,797,460
19 3,797,461
96 3,797,462
155 3,797,463

CLASS 123
8.33 3,797,464
32EA 3,797,465
32ST 3,797,466
73AA 3,797,467
133 3,797,468
139E 3,797,469
140R 3,797,470
142.5E 3,798,072
148E 3,797,471

CLASS 124
5 3,797,472

CLASS 126
21A 3,797,473
85R 3,797,474
206 3,797,475
270 3,797,476
307A 3,797,477

CLASS 128
1R 3,797,478
2.008 3,797,479
2.08 3,797,480
65 3,797,481
66 3,797,482
75 3,797,483
132D 3,797,484
213 3,797,485
214R 3,797,486
218DA 3,797,491
218F 3,797,488
3,797,489
218M 3,797,490
218R 3,797,487
260 3,797,492
268 3,797,493
287 3,797,494
296 3,797,495
310 3,797,496
325 3,797,497
334R 3,797,498
422 3,797,499
528 3,797,500
3,797,501

CLASS 130
27R 3,797,502
30R 3,797,503

CLASS 131
15B 3,797,504

CLASS 132
76.4 3,797,505
137 3,797,506

CLASS 134
7 3,798,064
25R 3,798,065
27 3,798,066
102 3,797,507
167R 3,797,508
178 3,797,509

CLASS 136
6LN 3,798,067
3,798,068
26 3,798,069
3,798,070
134R 3,798,071
178 3,798,073

CLASS 137
68 3,797,510
71 3,797,511
116.5 3,797,512
132 3,797,513
212 3,797,514
218 3,797,515
340 3,797,516
344 3,797,517
434 3,797,518
512 3,797,519
517 3,797,520
525.7 3,797,521
528 3,797,522
599.1 3,797,523
606 3,797,524
625.6 3,797,525
630.14 3,797,526
832 3,797,527

CLASS 138
46 3,797,528
111 3,797,529
137 3,797,530
147 3,797,531

CLASS 139
194 3,797,532

CLASS 141
1 3,797,533
3 3,797,534
46 3,797,535
134 3,797,536
142 3,797,537
313 3,797,538

CLASS 144
3D 3,797,539
3,797,540
3,797,541
4 3,797,542
145 3,797,543
235 3,797,544

CLASS 145
.33A 3,797,545
61L 3,797,546

CLASS 148
6.16 3,798,074
12 3,798,075
3,798,076
13 3,798,077
26 3,798,078
33.5 3,798,079
187 3,798,080
188 3,798,081
3,798,082
3,798,083
189 3,798,084

CLASS 149
10 3,798,085
19.1 3,798,086
19.2 3,798,087
19.4 3,798,090
20 3,798,088
22 3,798,089
60 3,798,091
89 3,798,092

CLASS 151
7 3,797,547
41.75 3,797,548

CLASS 152
175 3,797,549

CLASS 156
62.2 3,798,093
69 3,798,094
73 3,798,095
151 3,798,096
152 3,798,097
154 3,798,098
158 3,798,099
167 3,798,100
212 3,798,101
214 3,798,102
244 3,798,103
306 3,798,104
307 3,798,105
384 3,798,106
500 3,798,107
510 3,798,108
568 3,798,109
582 3,798,110

CLASS 159
2E 3,797,550
3 3,797,551
17C 3,797,552

CLASS 160
267 3,797,553
354 3,797,554

CLASS 161
89 3,798,111
162 3,798,112
164 3,798,113
191 3,798,114
227 3,798,115
231 3,798,116
245 3,798,118
251 3,798,117

CLASS 162
65 3,798,119
112 3,798,120
205 3,798,121
315 3,798,122

CLASS 164
89 3,797,555
95 3,797,556
282 3,797,557

CLASS 165
1 3,797,558
3,797,559
26 3,797,560
37 3,797,561
39 3,797,562
48 3,797,563
82 3,797,564
111 3,797,565
114 3,797,566
120 3,797,567
131 3,797,568
169 3,797,569

CLASS 166
77 3,797,570
88 3,797,571
127 3,797,572
224S 3,797,573
274 3,797,574
282 3,797,575
299 3,797,576

CLASS 172
22 3,797,577
3,797,578
42 3,797,579
311 3,797,580
372 3,797,581
451 3,797,582

CLASS 173
4 3,797,583
105 3,797,584
131 3,797,585
133 3,797,586
152 3,797,587

CLASS 174
14R 3,798,345
15C 3,798,346
84C 3,798,347
84S 3,798,348
92 3,798,349
102R 3,798,350
140C 3,798,351

CLASS 175
18 3,797,588
94 3,797,589
213 3,797,590
296 3,797,591
325 3,797,592

CLASS 176
67 3,798,123
76 3,798,124
78 3,798,125

CLASS 177
134 3,797,593
136 3,797,594
164 3,797,595
210 3,797,596

CLASS 178
5.4AC 3,798,356
5.4CD 3,798,355
3,798,357
3,798,361
5.4HE 3,798,352
5.4E 3,798,354
5.4 3,798,353
5.6 3,798,358
5.8R 3,798,362
6 3,798,363
6.6DC 3,798,364
6.6A 3,798,365
6.8 3,798,366
7.2 3,798,367
3,798,368
7.5R 3,798,369
18 3,798,370
22 3,798,359
3,798,360
67 3,798,371

CLASS 179
1GQ 3,798,373
1SA 3,798,372
1F 3,798,374
2R 3,798,375
15BS 3,798,378
15BT 3,798,376
3,798,377
16E 3,798,379
18DA 3,798,381
18B 3,798,380
81R 3,798,382
84R 3,798,383
3,798,384
100.2MD 3,798,387
100.2S 3,798,385
100.4M 3,798,386
100.4R 3,798,388
101 3,798,389
107FD 3,798,390
114R 3,798,391
115.5ES 3,798,392
182R 3,798,393

CLASS 180
1F 3,797,597
6.48 3,797,598
53R 3,797,599
64M 3,797,600
78 3,797,601
79.1 3,797,602
82 3,797,603
89R 3,797,604
90 3,797,605

CLASS 181
27A 3,797,606

CLASS 182
82 3,797,607
112 3,797,608

CLASS 184
7R 3,797,609

CLASS 186
306 3,797,610

CLASS 188
71.8 3,797,611
79 3,797,612
79.5GE 3,797,613
134 3,797,614
285 3,797,615
298 3,797,616

CLASS 191
49 3,797,617

CLASS 192
12BA 3,797,618
13R 3,797,619
56R 3,797,620
56 3,797,621
111A 3,797,622
146 3,797,623

CLASS 193
25R 3,797,624
34 3,797,625

CLASS 194
2 3,797,626
41 3,797,627
99 3,797,628

CLASS 195
5 3,798,126
65 3,798,127
68 3,798,128
80R 3,798,129
3,798,130
103.5R 3,798,131

CLASS 197
1R 3,797,629
98 3,797,630
133R 3,797,631

CLASS 198
19 3,797,632
39 3,797,633
43 3,797,634
75 3,797,635
210 3,797,636
221 3,797,637
236 3,797,638
252 3,797,639
271 3,797,640
280 3,797,641

CLASS 200
5A 3,798,394
17R 3,798,395
30A 3,798,396
34 3,798,397
44 3,798,398
61.45R 3,798,399
83R 3,798,400
84C 3,798,401
161 3,798,402

CLASS 203
53 3,798,132
99 3,798,133

CLASS 204
6 3,798,134
15 3,798,135
3,798,136
35N 3,798,137
52R 3,798,138
56R 3,798,139
67 3,798,140
129.43 3,798,141
147 3,798,142
181 3,798,143
186 3,798,144
192 3,798,145
3,798,146
195M 3,798,147
213 3,798,148
225 3,798,149
272 3,798,150
281 3,798,151
299 3,798,152

CLASS 206
.5 3,797,642
.82 3,797,649
1R 3,797,643
41R 3,797,644
46H 3,797,645
47A 3,797,646
51 3,797,647
83.5 3,797,650
107 3,797,651
229 3,797,652
277 3,797,648
320 3,797,653
326 3,797,654
330 3,797,655
335 3,797,656
356 3,797,657
484 3,797,658

CLASS 208
48AA 3,798,153
65 3,798,154
139 3,798,155
216 3,798,156
251 3,798,157

CLASS 209
85 3,797,659
499 3,797,660

CLASS 210
33 3,798,158
3,798,159
53 3,798,160
73 3,797,661
78 3,797,662
3,797,663
83 3,797,664
236 3,797,665
265 3,797,666
304 3,797,667
522 3,797,668

CLASS 211
44 3,797,669
94 3,797,670
176 3,797,671

CLASS 212
8 3,797,672

CLASS 213
3,797,673
57 3,797,674

CLASS 214
1D 3,797,675
1R 3,797,676
8.5D 3,797,677
16.4B 3,797,678
75H 3,797,679
83.3 3,797,680
85.5 3,797,681
152 3,797,682
301 3,797,683
313 3,797,684
334 3,797,685
338 3,797,686
620 3,797,687

CLASS 215
9 3,797,688
253 3,797,689

CLASS 219
10.53 3,798,403
10.55 3,798,404
56 3,798,405
92 3,798,406
3,798,407
121P 3,798,408
130 3,798,409
3,798,410
136 3,798,411
145 3,798,412
210 3,798,413
216 3,798,414
441 3,798,415
505 3,798,416
532 3,798,417
535 3,798,418
541 3,798,419

CLASS 220
1R 3,797,690
1.5 3,797,691
24R 3,797,692
44A 3,797,693
44R 3,797,694
85R 3,797,695
90.4 3,797,696

CLASS 221
13 3,797,697
20 3,797,698
85 3,797,699
145 3,797,700
155 3,797,701

CLASS 222
1 3,797,702
26 3,797,703
41 3,797,704
153 3,797,705
187 3,797,706
193 3,797,707
3,797,708
194 3,797,709
219 3,797,710
3,797,711
566 3,797,712

CLASS 223
37 3,797,713
46 3,797,714

CLASS 224
2B 3,797,715
4D 3,797,716
5H 3,797,717
25A 3,797,718

CLASS 225
100 3,797,719

CLASS 226
33 3,797,720

CLASS 227
9 3,797,721
67 3,797,722
109 3,797,723

CLASS 228
37 3,797,724
41 3,797,725

CLASS 229
17R 3,797,726
23A 3,797,727
36 3,797,728
40 3,797,729
43 3,797,730
52B 3,797,731
53 3,797,732
55 3,797,733
62.5 3,797,734

CLASS 232
16 3,797,735

CLASS 233
20R 3,797,736
27 3,797,737

CLASS 234
77 Re.27,941

CLASS 235
61.11E 3,798,421
61.11R 3,798,422
61.12R 3,798,423
61.5S 3,798,420
150.1 3,798,424
150.27 3,798,425
151.1 3,798,426
151.11 3,798,427
3,798,430
151.12 3,798,431
151.34 3,798,432
155 3,798,433
159 3,798,434
168 3,798,428
183 3,798,429

CLASS 239
1 3,797,738
3 3,797,739
11 3,797,740
3,797,741
57 3,797,742
148 3,797,743
172 3,797,744
227 3,797,745
288.5 3,797,746
311 3,797,747
321 3,797,748
3,797,749
336 3,797,750
426 3,797,751
443 3,797,752
533 3,797,753
542 3,797,754
547 3,797,755
585 3,797,756

CLASS 240
2MA 3,798,435
3 3,798,436
10R 3,798,438
10.6R 3,798,437
10.65 3,798,439
10.66 3,798,440
41.35R 3,798,441
51.11R 3,798,442
103R 3,798,443
106R 3,798,444
106.1 3,798,445
146 3,798,446

CLASS 241
1 3,797,757
29 3,797,758
30 3,797,759
3,797,760
34 3,797,761
36 3,797,762
82.1 3,797,763
100.5 3,797,764
236 3,797,765
282.2 3,797,766

CLASS 242
43 3,797,767
43.1 3,797,768
55.53 3,797,769
56R 3,797,770
56.1 3,797,771
72.1 3,797,772
75.43 3,797,773
84.2G 3,797,774
155M 3,797,775
188 3,797,776
197 3,797,777
199 3,797,778
3,797,779
200 3,797,780

CLASS 244
1SC 3,797,781
3.16 3,797,782
7A 3,797,783
46 3,797,784
53R 3,797,785
103S 3,797,786
114B 3,797,787
153R 3,797,788

CLASS 248
214 3,797,789
221 3,797,790
228 3,797,791
229 3,797,792
295 3,797,793
3,797,794
316R 3,797,795
346.1 3,797,796
362 3,797,797
399 3,797,798
491 3,797,799

CLASS 249
13 3,797,800
197 3,797,801

CLASS 250
49.5P 3,798,447
71.5R 3,797,802
3,798,448
201 3,798,449
209 3,798,450
211R 3,798,451
213VT 3,798,453
213R 3,798,452
231 3,798,454
256 3,798,455
308 3,798,456
532 3,798,457
569 3,798,458
576 3,798,459

CLASS 251
61.5 3,797,803
68 3,797,804
214 3,797,805

CLASS 252
1 3,798,161
32.5 3,798,162
33.4 3,798,163
47.5 3,798,164
51.5A 3,798,166
51.5R 3,798,165
62.1 3,798,167
89 3,798,168
3,798,169
162 3,798,170
182 3,798,171
188 3,798,172
301.4F 3,798,173
317 3,798,174
429B 3,798,175
437 3,798,176
455R 3,798,177
468 3,798,178
527 3,798,180
535 3,798,179
539 3,798,181
546 3,798,182
557 3,798,183

CLASS 254
192 3,797,806

CLASS 259
41 3,797,807
191 3,797,808

CLASS 260
2.5BB 3,798,184
2.5HB 3,798,187
2.5A 3,798,186
2.5M 3,798,185
2.5P 3,798,189
2.5R 3,798,188
5 3,798,190
13 3,798,191
29.2M 3,798,192
29.4UA 3,798,193
29.6E 3,798,194
30.4R 3,798,195
41.5A 3,798,196
42.14 3,798,197
45.85R 3,798,198
49 3,798,199
77.5AM 3,798,200
78TF 3,798,201
88.2R 3,798,202
93.1 3,798,291
112.5 3,798,203
3,798,204
3,798,205
3,798,206
3,798,207
119 3,798,208
211.5R 3,798,209
3,798,210
211.7 3,798,211
239.3D 3,798,212
239.55C 3,798,215
239.55D 3,798,216
3,798,217
239.55R 3,798,213
3,798,214
246R 3,798,218
250A 3,798,219
251R 3,798,220
258 3,798,221
268TR 3,798,223
268C 3,798,222
281 3,798,224
286R 3,798,225
287R 3,798,226
289R 3,798,227
290HL 3,798,228
302SD 3,798,229
307A 3,798,230
307D 3,798,231
309.5 3,798,233
309.6 3,798,232
310A 3,798,234
326.13R 3,798,235
327TH 3,798,236
332.5 3,798,237
340.9 3,798,241
345.2 3,798,240
346.4 3,798,238
348A 3,798,242
369 3,798,243
3,798,244
380 3,798,239
398 3,798,245
403 3,798,246
404.5 3,798,247
429.7 3,798,248
429.9 3,798,249
438.5R 3,798,250
448.2B 3,798,251
3,798,253
448.2E 3,798,252
453R 3,798,254
465F 3,798,255
465.8R 3,798,256
475P 3,798,257
479R 3,798,258
483 3,798,259
497A 3,798,260
504R 3,798,261
505R 3,798,262
516 3,798,263
526N 3,798,264
534M 3,798,265
535P 3,798,266
541 3,798,267
552R 3,798,268
553R 3,798,269
566R 3,798,270
575 3,798,271
586H 3,798,272
593R 3,798,273
609F 3,798,274
609R 3,798,275
612R 3,798,276
621C 3,798,277
638R 3,798,278
667 3,798,279
668F 3,798,280
670 3,798,281
674A 3,798,282
683.15D 3,798,284
3,798,285
683.3 3,798,283
848 3,798,286
878B 3,798,288
878R 3,798,287
895 3,798,289
929 3,798,290
950 3,798,292
964 3,798,293

CLASS 261
91 3,797,809
111 3,797,810
114 3,797,811

CLASS 264
41 3,798,294
99 3,798,295
171 3,798,296
181 3,798,297
210F 3,798,298
249 3,798,299
250 3,798,300
294 3,798,301
310 3,798,302

CLASS 266
16 3,797,812
23M 3,797,813
34L 3,797,814
36P 3,797,815

CLASS 267
65R 3,797,816
71 3,797,817
122 3,797,818

CLASS 269
322 3,797,819

CLASS 270
69 3,797,820
79 3,797,821

CLASS 271
12 3,797,822
64 3,797,823

CLASS 272
57J 3,797,824
74 3,797,825

CLASS 273
1R 3,797,826
35R 3,797,827
126R 3,797,828
128R 3,797,057
130B 3,797,829
131A 3,797,830
138R 3,797,831
161 3,797,832
178R 3,797,833

CLASS 274
10R 3,797,834

CLASS 277
171 3,797,835
200 3,797,836

CLASS 279
114 3,797,837

CLASS 280
11.13K 3,797,838
11.35C 3,797,839
3,797,844
11.35T 3,797,840
3,797,843
11.35 3,797,841
11.37B 3,797,845
24 3,797,846
33.99H 3,797,861
36B 3,797,848
36C 3,797,847
36R 3,797,842
47.37 3,797,849
106T 3,797,850
124A 3,797,852
124R 3,797,851
150AB 3,797,853
3,797,854
3,797,855
3,797,856
150B 3,797,857
3,797,858
179R 3,797,859
3,797,860
422 3,797,862
476R 3,797,863

CLASS 285
140 3,797,864
175 3,797,865
208 3,797,866

CLASS 291
3 3,797,867

CLASS 292
57 3,797,868
128 3,797,870
207 3,797,869
209 3,797,871

CLASS 293
30 3,797,872
63 3,797,873
86 3,797,874

CLASS 294
1R 3,797,875
63B 3,797,876
67B 3,797,877
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212	3,797,993

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D02—	385	230,783		187	230,803		94	230,872	D13—	1M	230,842		13R	230,862		6B	230,883
D06—	3	230,784		201	230,804		99	230,823		R	230,843		14A	230,863	D54—	1T	230,884
	4	230,785		209	230,805		102	230,824	D14—	3F	230,844		B	230,864	D55—	D	230,885
	26	230,786			230,806		110	230,825		R	230,845		G	230,865	D56—	4B	230,886
	47	230,787			230,807		230	230,826	D18—	2	230,846	D29—	23A	230,866			230,887
	56	230,788		234	230,808		257	230,827	D22—	13	230,847	D30—	15	230,867			230,888
	59	230,789	D07—	20	230,809	D09—	168	230,828		29	230,848		99	230,868		9	230,889
	65	230,790		27	230,810		219	230,829	D23—	4	230,849	D34—	5GB	230,871	D61—	1T	230,890
	67	230,791		85	230,811		258	230,830		34	230,850		GH	230,869			230,891
	68	230,792		121	230,812			230,831		55	230,851			230,873	D67—	3R	230,892
	70	230,793			230,813	D12—	29	230,832		57	230,852		SS	230,870	D71—	1G	230,893
	86	230,794		178	230,814			230,833		69	230,853		15M	230,874	D83—	E	230,894
	97	230,795	D08—	22	230,815		30	230,834	D26—	5C	230,854	D35—	3A	230,875			230,895
	99	230,796		30	230,816		53	230,835			230,855	D40—	5	230,876		N	230,896
	134	230,797			230,817		55	230,836			230,856	D42—	7R	230,878		12R	230,897
	144	230,798			230,818			230,837			230,857	D48—	2	230,877	D86—	8	230,898
	150	230,799		40	230,819			230,838			230,858		27R	230,879	D87—	1R	230,899
	166	230,800		51	230,820			230,839			230,859	D52—	2B	230,881	D92—	B	230,900
	179	230,801		59	230,821		62	230,840			230,860		R	230,880		J	230,901
	184	230,802		72	230,822		98	230,841			230,861		3	230,882	D94—	3B	230,902

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P. —	22	3,524	P. —	49	3,529	P. —		3,526	P. —	77	3,527						

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		3,797,098		3,797,321		3,797,847		3,798,609		3,798,611			3,797,052
		3,797,116		3,797,359		3,797,849		3,798,616		3,798,659			3,797,053
		3,797,196		3,797,366		3,797,859		3,798,638	10	: 3,797,074			3,797,070
		3,797,521		3,797,371		3,797,863		3,798,640		3,797,499			3,797,075
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		3,798,087		3,797,433		3,797,877		3,798,644		3,797,860			3,797,095
		3,798,570		3,797,434		3,797,904	8	: 3,797,129		3,798,095			3,797,097
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4	:	3,797,059		3,797,492		3,797,945		3,797,933		3,798,599			3,797,164
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		3,797,057		3,797,590		3,798,191		3,797,421		3,797,350			3,797,355
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		3,797,110		3,797,634		3,798,312		3,797,641		3,797,644			3,797,408
		3,797,113		3,797,635		3,798,316		3,797,718		3,797,740			3,797,435
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Design Patents

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PATENT OFFICE NOTICES

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,268,269, Toney and Owen, STORE FRONT CONSTRUCTION; **3,504,418**, M. Perlman, MEANS FOR AUTOMATICALLY FEEDING AND CONTROLLING A DEVICE FOR APPLYING TOP STOPS TO SLIDER FASTENERS; **3,538,582**, same, GAPPING DEVICE FOR MEANDER SLIDE FASTENERS, **filed** July 6, 1973, D.C., S.D.N.Y., Doc. 73–C–2982, *Carbide Form Grinding Inc. v. General Staple Company, Inc.*

2,765,699, J. La Torre, BLIND BOLT UTILIZING DISTORTABLE COLLAR AND DEFORMABLE LOCKING NUT MEMBER, **filed** July 30, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1774–LTL, *Lockheed Aircraft Corporation v. The National Screw & Mfg. Co.* Filed stipulation for dismissal with prejudice and order, July 2, 1973.

2,798,214, W. G. Rowell, CHECKING TECHNIQUE AND SYSTEM, **filed** Apr. 19, 1973, D.C. Mass. (Boston), Doc. 73–1225–F, *Scully Signal Company v. Vigitron, Inc.*

2,910,845, G. A. Wahlmark, CONSTANT VELOCITY JOINT, **filed** July 27, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1922, *Wahlmark Systems, Inc. v. SAAB-Scania of America, Inc.*

2,985,995, Bunting, Jr. and Nelson, COMPACT INTERLACED YARN; **3,110,151**, same, PROCESS FOR PRODUCING COMPACT INTERLACED YARN, **filed** July 31, 1970, D.C. Del. (Wilmington), Doc. 3954, *FMC Corporation, Inc. v. E. I. du Pont de Nemours, Inc.* Stipulation of dismissal of action including counterclaim with prejudice, Jan. 24, 1973.

3,098,520, Greenstadt and Ziers, DRAPERY APPARATUS, **filed** Mar. 2, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–454,CC, *Lightron Corp. v. Fabcraft Inc.* Filed stipulation for consent judgment permanently enjoining defendants from further infringement, Mar. 27, 1973.

3,110,151. (See 2,985,995.)

3,166,757, S. Downs, Jr., OFFSET DRIVING TOOL, **filed** Apr. 24, 1973, D.C. Conn. (Hartford), Doc. H–32, *Crain Cutter Company, Inc. v. Carpet Work Shop, Inc.* Stipulation for dismissal without prejudice, July 10, 1973.

3,183,529, G. Beuchat, SWIMMER'S FOOT-FIN WITH THRUST-ACCELERATING DEVICE; **3,603,306**, R. J. Bonin, Jr., SNORKEL, **filed** July 3, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1261–LTL, *U.S. Divers Company v. Under Sea Industries.*

3,197,204, Holkesvick, Hudnall and Adams, EXERCISING DEVICE, **filed** July 18, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1638–DWW, *Diversified Products Corp. et al. v. Exer-Genie, Inc. and Edgar E. Holkesvick.*

3,200,149, Blackwood, Rennhard, Beereboom and Stephens, Jr., L-6-DEOXY-TETRACYCLINE DERIVATIVES AND PROCESS, **filed** Jan. 10, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–58–R, *Pfizer Inc. v. International Rectifier Corporation et al.* Ordered that Civil Action No. 73–58–R be and is transferred to the District of Minnesota for coordinated or consolidated pretrial proceedings with the actions pending there, pursuant to 28 U.S.C. § 1407, Mar. 22, 1973.

3,218,205, R. A. Ruehrwein, USE OF HYDROGEN HALIDE AND HYDROGEN IN SEPARATE STREAMS AS CARRIER GASES IN VAPOR DEPOSITION OF III-V COMPOUNDS, **filed** Aug. 8, 1973, D.C., N.D. Calif. (San Francisco), Doc. C–73–1370 SW, *Monsanto Company v. Strata Physics, Inc. et al.*

3,230,649, A. B. Karn, CONTINUOUS, CUT-BACK PRESSURE-SENSITIVE LABEL STOCK AND LABELS, **filed** July 9, 1973, D.C., S.D.N.Y., Doc. 73–C–3000, *Andrew B. Karn v. Pressure Sensitives, Inc. et ano.*

3,261,330, P. Arant, INTERLOCKED WATER AND FUEL SYSTEM FOR STEAM CLEANERS AND THE LIKE, **filed** June 10, 1971, D.C., W.D. Pa. (Pittsburgh), Doc. 71–546, *Homestead Industries Inc. v. Clayton Mfg. Co.* Case settled and dismissed by order of Court, July 23, 1973.

3,262,787, E. D. Ellis, PROCESS OF PREPARING PACKAGED COOKED FOODS, **filed** July 23, 1973, D.C. Tex. (El Paso), Doc. EP–73–CA–182, *Eugene D. Ellis v. Char-Tex Corporation.*

3,285,621, S. Turner, Jr., WHEELED VEHICLE SUSPENSION, **filed** Feb. 22, 1973, D.C., E.D. Ky (Lexington), Doc. 2487, *TWM Manufacturing Company v. Dura Corporation.*

3,306,805, Klein, Haley and Sides, APPARATUS FOR MAKING PRINTED CORRUGATED PAPER BOARD, **filed** June 23, 1970, D.C.N.J. (Newark), Doc. 826–70, *Novelart Manufacturing Co. v. Carlin Container Corp. and Continental Packing Corp.* Judgment dismissing counterclaim for unfair competition, patent invalid, June 29, 1973.

3,314,377, C. A. Dehne, CONSTRUCTION FOR TRANSFERRING A CONVEYOR CARRIER BETWEEN POWER LINES, **filed** Aug. 8, 1973, D.C., E.D. Mich. (Detroit), Doc. 4–70172, *Jervis B. Webb Company v. Anchor Conveyors, Div. of Standard Alliance Industries, Inc.*

3,325,573, Boon and Hager, MANUFACTURE OF FOAM MATERIAL; **3,476,845**, Buff, French and Pollock, MANUFACTURE OF EXPANDED CELLULAR PRODUCTS, **filed** July 12, 1973, D.C. Md. (Baltimore), Doc. 73–708–N, *Reeves Brothers, Inc. v. Tenneco Chemicals, Inc.*

3,353,770, W. Sondheim, UNIVERSAL PUMP BOX APPARATUS, **filed** May 2, 1972, D.C., N.D. Ga. (Atlanta), Doc. C.A. 16541, *Permco Corporation v. Watkins Service Co., Inc. and Watkins-Briant Co.* Consent decree, ordered, plaintiff owner of patent, defendants permanently enjoined from infringing any or all claims of patent, plaintiff hereby dismisses complaint against defendants, July 14, 1972.

3,385,322, K. A. Brandenberg, "AND" VALVE FOR FLUID LOGIC CIRCUITS; **3,389,720**, same, "NOT" VALVE FOR FLUID LOGIC CIRCUITS; **3,403,693**, same, "OR" VALVE FOR FLUID LOGIC CIRCUITS; **3,419,032**, same, DIFFERENTIATOR VALVE FOR FLUID LOGIC CIRCUITS, **filed** July 3, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1732, *The ARO Corporation v. Flick Reedy Corp.*

3,389,720. (See 3,385,322.)

3,393,372, Vickery and Fisher, CARBON DIOXIDE LASER SYSTEMS FOR THE EMISSION OF COHERENT RADIATION, **filed** July 10, 1973, D.C. Ariz. (Phoenix), Doc. C–73–421 Phx WEC, *Semi-Elements, Inc., Joseph V. Fisher and Laverne B. Fisher v. Motorola, Inc.*

3,403,693. (See 3,385,322.)

3,409,000, Brader and Tanasse, SYSTEM FOR HEATING LARGE VOLUMES OF AIR, **filed** July 24, 1973, D.C., E.D. Wash. (Spokane), Doc. 2676–SD, *Redi-Fire Heating, Inc. v. Orchard Rite, Inc. et al.* Consent decree, action was dismissed with prejudice, July 20, 1973.

3,419,032. (See 3,385,322.)

3,421,290, Cheney and Rorie, INDOOR SMOKE REMOVAL SYSTEM, **filed** Mar. 9, 1973, D.C., S.D. Ohio (Cincinnati), Doc. 8750, *Enviro Air, Inc. v. Durwood G. Rorie, Jr. and William A. Cheney.*

3,434,869, J. B. Davidson, FOLEY CATHETER WITH SILICONE RUBBER COATING, **filed** May 11, 1973, D.C., E.D. Mich. (Bay City), Doc. 3281, *Dow Corning Corporation v. Schrader's Hospital Supply, Inc. and C. R. Bard, Inc.*

3,458,169, Eastwood, Brindle and Kolb, HOT TOP FOR BIG-END-UP INGOT MOLDS AND METHOD OF ASSEMBLING SAME, **filed** Dec. 8, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3125, *Foseco International Limited v. Ogelbay Norton Co.*

3,476,845. (See 3,325,573.)

3,504,418. (See 2,268,269.)

3,516,461, E. W. Thrasher, SAW GUIDE APPARATUS, **filed** Feb. 20, 1973, D.C. Oreg. (Portland), Doc. C–73–132, *Masonite Corporation v. Seneca Sawmill Company and Aaron U. Jones.*

3,519,879, F. T. Ogawa, FLASH APPARATUS WITH AUTOMATIC LIGHT TERMINATION HAVING GATING AND ANTICIPATION MEANS, **filed** Jan. 24, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c215, *Honeywell, Inc. v. Matsushita Electric Ind. Co.*

3,538,582. (See 2,268,269.)

3,542,663, S. Alewitz, ANODE FITTING, **filed** Mar. 9, 1972, D.C., S.D. Ohio (Cincinnati), Doc. 8337, *Perfection Corporation v. Magnode Products, Inc.* Consent judgment, ordered, plaintiff owner of patent, plaintiff's cause of action dismissed, defendant shall be precluded from contesting the validity of patent, defendant permanently enjoined against infringement of any claim of patent, Aug. 10, 1973.

3,586,624, G. P. Larson, WASTE DISPOSAL METHOD AND SYSTEM, **filed** July 30, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–1726, *Commonwealth of Pennsylvania and Western Berks Refuse Authority v. Warner Company.*

3,586,794, E. Michaelis, EARPHONE HAVING SOUND DETOUR PATH, **filed** July 24, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1880, *Sennheiser Electronic Corp. v. Allied Radio Shack etc.*

3,588,917, A. J. Antonious, GOLF GLOVE, **filed** Apr. 6, 1973, D.C. Md. (Baltimore), Doc. 73–321–H, *Spalding, Div. of Questor Corporation v. Anthony J. Antonious and Ajac Glove Corporation.*

3,593,930, R. D. Lautzenheiser, SHREDDER, **filed** June 30, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1625, *The Red Cross Manufacturing Corp. v. Toro Sales Co.* Decision, summary judgment in favor of the defendant entered, Aug. 2, 1973.

3,603,306. (See 3,183,529.)

3,610,889, R. N. Goldman, IDENTIFICATION-CARD CONTROL SYSTEM, **filed** Mar. 6, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–480–WMB, *Telecredit, Inc. v. Burroughs Corporation.*

3,658,480, Kane and Weatherby, COAGULATION TIMING APPARATUS, AND METHOD, **filed** Aug. 2, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–1756, *Bio/Data Corporation v. Alphamedics Manufacturing Corp. and Warner-Lambert Company.*

3,658,589, R. E. Shaddock, CATCH BASIN AND SEWER PIPE CLEANER, **filed** May 2, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1143, *Myers-Sherman Company v. Bruce Municipal Equipment Inc.*

3,660,591, Schultz, Heidacher, Sharer, Adams and Damico, HOSPITAL IN-PATIENT SERVICE CORE MODULE; **D. 226,353**, Schultz, Sharer, Heichacher, and Damico, HOSPITAL IN-PATIENT SERVICE CORE MODULE, **filed** July 26, 1973, D.C., W.D. Wis. (Madison), Doc. 73–0235, *Hill-Rom Company, Inc. v. Joerns Furniture Company.*

3,662,124, Hassler and Wittkowski, DIRECTIONAL MICROPHONE FOR HEARING AID; **Re. 27,487**, O. Hassler, DIRECTIONAL HEARING AID, **filed** July 27, 1973. D.C. Ariz. (Phoenix), Doc. C–73–466 Phx CAM, *Textron, Inc. and Willco-Horgerate Medizinische Apparatebau, GmbH v. Royal Industries, Inc.*

3,666,159, R. L. Watson, CLAMPING MEANS FOR PIPES AND FITTINGS, **filed** July 24, 1973, D.C., E.D. Mich. (Flint), Doc. 74–40005, *Robert L. Watson v. Dearman Manufacturing Products, Inc. and Timothy C. Dearman.*

3,706,254, V. Morin, GUTTER SERVICING TOOL, **filed** Feb. 9, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–288–DWW, *Astro Music, Inc. v. Richard Eastham and Betty Jean Eastham, doing business as Veda Enterprises.*

3,710,324, Cohen, Janson, McFarland, Jr., and Young, Jr., DATA PROCESSING SYSTEM, **filed** July 30, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1753–HP, *Lockheed Electronics Co. Inc. v. Digital Equipment Corp.*

Re. 27,487. (See 3,662,124.)

D. 226,353. (See 3,660,591.)

D. 227,632, E. S. Gilbert, UPHOLSTERED SEAT, **filed** July 23, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1867, *Evalin S. Gilbert v. Fitchmun Company.*

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Re. 27,444	3,728,297	3,746,656	3,761,293
Re. 27,579	3,728,541	3,746,679	3,761,372
Re. 27,762	3,728,966	3,747,074	3,761,386
3,493,333	3,729,395	3,747,411	3,761,418
3,528,518	3,732,531	3,747,606	3,761,461
3,562,246	3,733,698	3,747,624	3,761,528
3,592,170	3,733,717	3,747,977	3,761,637
3,616,842	3,733,850	3,748,120	3,761,857
3,625,441	3,736,749	3,749,776	3,762,147
3,629,343	3,737,919	3,751,326	3,762,606
3,631,903	3,738,090	3,751,460	3,763,187
3,657,095	3,738,310	3,752,094	3,763,239
3,660,546	3,738,341	3,753,476	3,763,357
3,662,506	3,738,558	3,753,968	3,763,370
3,665,596	3,738,752	3,753,997	3,764,111
3,668,199	3,738,776	3,754,210	3,764,370
3,679,722	3,738,817	3,754,836	3,764,424
3,682,136	3,739,149	3,754,884	3,764,490
3,683,053	3,739,264	3,754,968	3,765,328
3,688,112	3,739,309	3,755,169	3,765,477
3,688,634	3,739,350	3,755,375	3,765,918
3,689,393	3,739,927	3,755,725	3,766,036
3,691,141	3,740,355	3,756,530	3,766,054
3,692,606	3,741,680	3,756,959	3,766,126
3,700,714	3,741,865	3,757,119	3,766,152
3,704,486	3,741,888	3,757,255	3,766,216
3,706,650	3,742,634	3,757,683	3,766,251
3,706,919	3,742,962	3,757,768	3,766,303
3,708,147	3,743,007	3,758,010	3,766,313
3,712,893	3,743,069	3,758,309	3,766,330
3,714,243	3,743,116	3,758,483	3,766,467
3,715,344	3,743,415	3,758,764	3,766,541
3,716,053	3,743,424	3,758,785	3,766,592
3,717,227	3,743,482	3,758,870	3,766,693
3,717,974	3,743,561	3,759,237	3,766,946
3,718,520	3,743,597	3,759,280	3,767,036
3,719,237	3,743,613	3,759,310	3,767,258
3,719,433	3,743,812	3,759,483	3,767,497
3,719,682	3,743,855	3,759,705	3,767,596
3,720,562	3,743,874	3,759,771	3,767,612
3,720,644	3,743,879	3,759,775	3,767,754
3,721,440	3,743,937	3,759,919	3,767,906
3,724,131	3,745,175	3,760,049	3,767,963
3,724,179	3,745,862	3,760,090	3,769,250
3,726,913	3,746,239	3,760,110	3,770,434
3,728,120	3,746,394	3,760,471	
3,728,141	3,746,400	3,760,989	
3,728,186	3,746,508	3,761,089	

Disclaimer

3,709,630.—*Fritz G. Pohl* and *Arnold Keller*, Kiel-Dietrichsdorf, Germany. PNEUMATIC MOTOR FOR MEDICAL INSTRUMENTS. Patent dated Jan. 9, 1973. Disclaimer filed Feb. 25, 1974, by the assignee, *Howmet International, Inc.*

Hereby enters this disclaimer to claims 1 and 3 of said patent.

Patents Available for Licensing or Sale

3,237,885. SPACE CRAFT. Jack L. Mohar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,474,799. TOOTH SPACE CLEANER USING DENTAL FLOSS LINKS ON HOLDER. Vita P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,702,689. APPARATUS FOR GRIPPING AND PULLING AN ELONGATED FLEXIBLE ELEMENT. Alfred Zeller, Switzerland. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2-5 Kasumigaseki, 3-chome, Chiyado-ku, Tokyo 100, Japan.

3,755,995. AIR FILTERING SCREEN. Malcolm Stickel, 205 E. Walnut St., Sedalia, Mo., 65301.

3,754,669. ARRANGEMENT FOR CONTINUOUSLY TRANSFERRING LOAD UNITS. Salzgitter Aktiengesellschaft, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,779,343. UNITS FOR CONNECTING TOGETHER SUCCESSIVE LADDER SECTIONS. Callion Littlejohn, 5118 S. Dorchester Ave., Chicago, Ill., 60615.

The following 4 patents are being offered by: John D. Pope, 818 Olive St., St. Louis, Mo., 63101.

3,373,649. SPLIT FASTENER WITH LOCKING WEDGE.

3,481,492. RAIL CAR CENTER SILL AND COUPLER STRUCTURE.

3,357,294. FASTENING DEVICES.

3,357,665. PIPE CLAMPS.

The following 5 patents are being offered by: Henry von den Benken, 2212 Centre St., West Roxbury, Mass., 02132.

3,027,876. FLUID MOTOR WITH SEQUENCE VALVE.

3,146,678. FLUID ACTUATED MOTOR WITH FLUID FLOW CONTROL.

3,352,322. AIR OPERATED TIMER.

3,596,302. MACHINE FOR SHAPING & WIPING UPPERS OVER A LAST.

3,641,688. SHOE MOLDED BY INDUCTION HEATING.

FMC Corporation is prepared to grant licenses under the following five patents.

Inquiries respecting licenses should be directed to: FMC Corporation, Patent & Licensing Department, Marcus Hook, Pa., 19061.

3,527,859. MANUFACTURE OF SCORED FILMS.

3,607,567. APPARATUS FOR NONWOVEN FILMS.

3,608,056. STEM RETICULATION OF FOAMED PLASTIC SHEETING.

3,632,716. MANUFACTURE OF WEBS HAVING SELECTED ORIENTED PORTIONS.

3,664,787. APPARATUS FOR MAKING SCORED FILM.

General Motors Corporation is prepared to grant non-exclusive licenses under the following 10 patents upon reasonable terms.

Application for licenses may be addressed to the Director, Patent Section, General Motors Bldg., 3044 West Grand Blvd., Detroit, Mich., 48202.

3,585,525. A VARIABLE FREQUENCY SIGNAL GENERATOR.

3,588,269. VARIABLE VANE CASCADES.

3,592,061. GAS TURBINE AIRFOIL HAVING INTEGRAL THERMOCOUPLE.

3,592,389. FLAP LINKAGE.

3,596,518. TEMPERATURE MEASUREMENT.

3,602,535. SHAFT COUPLING.

3,583,154. THROTTLE DRIVE RATIO CONTROL FOR A POWER TRANSMISSION.

3,590,577. TRANSMISSION CREEP CONTROL VALVE.

3,592,304. FLUID DELIVERY CONTROL SYSTEM.

3,596,535. TRANSMISSION.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 43 patents.

Inquiries respecting licenses should be addressed to RCA Corporation, Staff Vice President Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

D. 229,942. CONTROL UNIT FOR AN ANTENNA ROTATOR.

3,782,253. COLOR TELEVISION PICTURE TUBE SCREENING METHOD.

3,783,188. FADE-TO-BLACK VIDEO SIGNAL PROCESSING APPARATUS.

3,783,196. HIGH-DENSITY CAPACITIVE INFORMATION RECORDS AND PLAYBACK APPARATUS THEREFOR.

3,783,304. CONSTANT PULSE WIDTH GENERATOR.

3,783,324. PHOTOSENSITIVE CHARGE STORAGE ELECTRODE HAVING A SELECTIVELY CONDUCTING PROTECTIVE LAYER OF MATCHING VALENCE BAND ON ITS SURFACE.

3,783,326. MAGNETICALLY-FOCUSSED CATHODE-RAY TUBE COMPRISING A TILTED AND SKEWED OFF-AXIS ELECTRON GUN.

3,783,327. FILAMENTARY CATHODE MOUNT AND MOUNTING METHOD.

3,783,335. INSTANT-ON CIRCUIT FOR A TELEVISION RECEIVER OFFERING INDEPENDENT FILAMENT VOLTAGE CONTROL.

3,783,348. ENCAPSULATED SEMICONDUCTOR DEVICE ASSEMBLY.

3,783,353. ELECTROLUMINESCENT SEMICONDUCTOR DEVICE CAPABLE OF EMITTING LIGHT OF THREE DIFFERENT WAVELENGTHS.

3,783,394. FREQUENCY COMPARATOR SYSTEM.

3,784,844. CONSTANT CURRENT CIRCUIT.

3,784,857. TELEVISION DEFLECTION CIRCUIT WITH LOW POWER REQUIREMENT.

3,784,870. PROTECTION CIRCUIT.

3,784,903. LEAKAGE DETECTOR FOR DETERMINING POSSIBLE SHOCK HAZARDS TO HUMANS.

3,784,918. STORAGE CIRCUITS.

3,784,925. BROADBAND APPARATUS USING HIGH EFFICIENCY AVALANCHE DIODES OPERATIVE IN THE ANOMALOUS MODE.

3,784,929. THERMALLY - CONTROLLED CRYSTALLINE LASERS.

3,785,712. PLAYING BACK REDUNDANT HOLOGRAMS BY SCANNING.

3,785,862. METHOD FOR DEPOSITING REFRACTORY METALS.

3,785,884. METHOD FOR DEPOSITING A SEMICONDUCTOR MATERIAL ON THE SUBSTRATE FROM THE LIQUID PHASE.

3,786,177. APPARATUS FOR AUTOMATIC COLOR BALANCING OF TELEVISION CAMERA SIGNALS.

3,786,185. CATHODE-RAY TUBE-YOKE PLATFORM-YOKE COMBINATION AND METHOD OF ASSEMBLING THE COMBINATION.

3,786,300. DYNAMIC CONVERGENCE CIRCUITS.

3,786,364. SEMICONDUCTOR AMPLIFIER PROTECTION.

3,787,629. APPARATUS FOR DISTINGUISHING BETWEEN VARIOUS FM BROADCAST MULTIPLEX TRANSMISSIONS.

3,787,715. CONTROL CIRCUIT EMPLOYING DIGITAL TECHNIQUES FOR LOADS SUCH AS BALANCE WHEEL MOTORS.

3,787,722. PRINTING APPARATUS.

3,787,757. CIRCUIT FOR SUPPLYING REGULATED POWER UPON DEMAND.

3,787,773. SWITCHABLE ANTENNA CIRCUIT FOR TELEVISION PROVIDING FOR RECEPTION OF UHF AND VHF SIGNALS UTILIZING A SINGLE BUILT-IN MONOPOLE ANTENNA OR TWO EXTERNAL ANTENNAS.

3,787,780. ELECTRON TUBE HAVING INTERNAL GLASS MEMBER COATED WITH CRYSTALLINE CERAMIC MATERIAL.

3,787,887. OPTICAL RECORDER WITH INTENSITY CONTROL.

3,788,226. ELECTRONIC FIRING CIRCUIT.

3,788,846. METHOD FOR PRINTING NEGATIVE TOLERANCE MATRIX SCREEN STRUCTURE FOR A CATHODE-RAY TUBE.

3,788,847. METHODS OF MANUFACTURE OF COLOR PICTURE TUBES.

3,788,848. METHODS OF MANUFACTURE OF COLOR PICTURE TUBES.

3,788,892. METHOD OF PRODUCING A WINDOW DEVICE.

3,789,156. HIGH DENSITY ISOLATED MULTI-CHANNEL MAGNETIC CIRCUIT TRANSDUCER.

3,789,240. BUCKET BRIGADE SCANNING OF SENSOR ARRAY.

3,789,246. INSULATED DUAL GATE FIELD-EFFECT TRANSISTOR SIGNAL TRANSLATOR HAVING MEANS FOR REDUCING ITS SENSITIVITLY TO SUPPLY VOLTAGE VARIATION.

3,789,258. ELECTRON BEAM AND DEFLECTION YOKE ALIGNMENT FOR PRODUCING CONVERGENCE OF PLURAL IN-LINE BEAMS.

3,789,260. HIGH VOLTAGE PROTECTION CIRCUIT.

General Electric Company is prepared to grant non-exclusive licenses under the following 17 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent should be addressed to: Division Patent Counsel, Switchgear Equipment Business Division, General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,783,431. ELECTRIC CONNECTOR WITH RELATIVELY-MOVABLE TERMINALS FOR OUTDOOR, ICING ENVIRONMENT.

Applications for license under the following patent should be addressed to: Patent Counsel, General Electric Company, Box 237 G.P.O., Detroit, Mich., 48232.

3,790,197. MAGNETIC LATCH.

Applications for license under the following 5 patents may be addressed to: Patent Counsel, Gas Turbine Products Div., General Electric Co., 1 River Road, Bldg., No. 500, 2nd Floor, Schenectady, N.Y., 12305.

3,729,928. TORQUE CONTROL SYSTEM FOR A GAS TURBINE.

3,738,104. GAS TURBINE FUEL FLOW METERING CONTROL SYSTEM.

3,749,048. SIGNAL DIVIDER FOR SPEED CONTROL OF DIRECT REVERSING GAS TURBINE.

3,757,565. NON-CONTACT VIBRATION VELOCITY APPRATUS.

3,762,498. GAS TURBINE EXHAUST SILENCER.

Applications for license under the following 9 patents may be addressed to: Patent Counsel, STG PRODS Division, General Electric Company, 1 River Road, Building No. 43, Schenectady, N.Y., 12305.

3,710,854. CONDENSER.

3,731,127. GENERATOR END TOOTH FLUX SHIELD.

3,740,588. TIME RATIO SWITCHING CONTROL SYSTEM.

3,745,466. AN ELECTROSTATIC SHIELD ALLOWING SUBSTANTIALLY COMPLETE ELECTROMAGNETIC PROPAGATION FROM A TRANSMITTER.

3,749,379. SYSTEM FOR THERMAL EXHAUST.

3,760,603. LIQUID COOLING SYSTEM FOR A ROTATING MEMBER.

3,763,700. HYDRAULIC THRUST INDICATOR FOR ROTATABLE SHAFT.

3,769,046. HOT TOPPING.

3,769,226. ORGANOSTANNOIC ACID AND CARBOXYLIC ACID ANHYDRIDE REACTION PRODUCT EPOXY CURING AGENT.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MARCH 2, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-30-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-17-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-15-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-02-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-04-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	7-25-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	9-28-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	4-03-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	9-25-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-15-73
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	4-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	4-23-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-05-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-18-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-08-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-11-73

Expiration of patents: The patents within the range of numbers indicated below expire during March 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,783,468 to 2,786,999, inclusive
Plant Patents ..... Numbers 1,575 to 1,585, inclusive

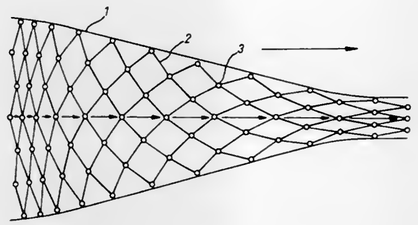
REISSUES

MARCH 26, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,944
MOVING SIDEWALK

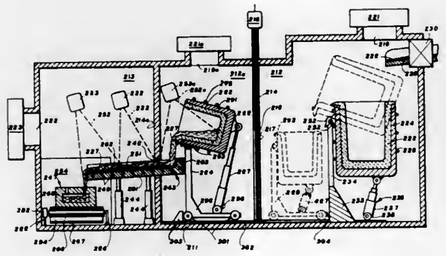
Robert U. Ayres, 2905 Davenport St. NW., Washington, D.C. 20008, and Richard P. McKenna, 5409 Huntington Parkway, Bethesda, Md. 20014
Original No. 3,465,689, dated Sept. 9, 1969, Ser. No. 609,864, Jan. 17, 1967. Application for reissue Apr. 26, 1971, Ser. No. 137,267
Int. Cl. A63g *1/00*
U.S. Cl. 104—25 **14 Claims**



This invention relates to moving sidewalks and entry and particularly to such sidewalks, as are equipped with whereby a mesh belt is constructed to vary in width as it moves so that the speed of the belt at one locus may be substantially more than walking speed, while being of the order of magnitude of walking speed at a second locus.

27,945
APPARATUS FOR PROCESSING MOLTEN METAL IN A VACUUM

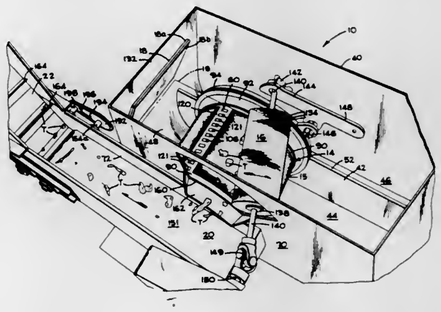
Charles d'A. Hunt, Moraga, Calif., and Reese R. de Haven, Jr., Media, Pa., assignors to Airco, Inc., New York, N.Y.
Original No. 3,658,119, dated Apr. 25, 1972, Ser. No. 824,030, May 7, 1969. Application for reissue Oct. 18, 1972, Ser. No. 298,462
Int. Cl. B22d *11/10, 27/02, 27/16*
U.S. Cl. 164—250 **11 Claims**



A method and apparatus are described for producing a solidified metal product. Molten metal is heated in a refractory crucible within a vacuum enclosure. The contents of the crucible are poured across a cooled transfer structure while being simultaneously heated with an electron beam. The metal leaving the transfer structure is then solidified to form the metal product.

27,946
SELECTIVE COMMINUTION

Richard N. Crandall, 6832 Crista Palma Drive, Huntington Beach, Calif. 92647, and Carl H. Nordell, Crystal Bay, Nev.; said Nordell assignor to said Crandall
Original No. 3,570,671, dated Mar. 16, 1971, Ser. No. 757,877, Sept. 6, 1968. Application for reissue Jan. 12, 1972, Ser. No. 217,398
Int. Cl. B01d *35/28*
U.S. Cl. 210—174 **16 Claims**



A drum screen is inserted into a raw sewage line. Rake fingers help elevate solid materials picked up by the screen from the influent and are cam retracted to leave them on the periphery of the screen. A hinged presser plate holds soft, organic material against the screen to be comminuted and carried away with the effluent and into the disposal system. A scavenger roller made up of flexible discs rotates against the screen for cleaning off pieces of paper, etc., that remain on the surface of the screen, for disposal as trash.

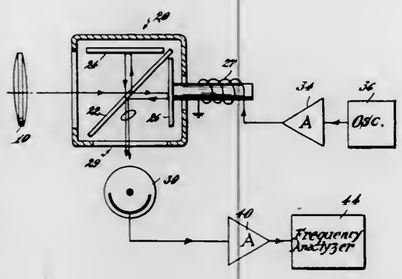
27,947
INTERFERENCE TECHNIQUE AND APPARATUS FOR SPECTRUM ANALYSIS

Lawrence N. Mertz, Lexington, Mass., by Block Engineering, Inc., Cambridge, Mass., assignee
Original No. 3,286,582, dated Nov. 22, 1966, Ser. No. 120,600, June 29, 1961. Application for reissue Aug. 16, 1971, Ser. No. 172,330
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 S **19 Claims**

4. Spectrum analysis apparatus comprising:
an optical interferometer including a reciprocable mirror and having a light exit path;
means for reciprocating said mirror with an excursion exceeding the longest wavelength of the light in said exit path and with a substantially constant velocity over [an appreciable] *a major* portion of each reciprocating cycle;

photoelectric pick-up means located in the light exit path of said interferometer for generating a signal proportional to the output in said exit path; and

electronic frequency analyzer means coupled to and supplied with said signal, for measuring the amplitudes of the various component frequencies making up the output signal from said photoelectric pick-up means;



whereby the distribution of the amplitude of the signal among its various frequency components indicates the distribution of the optical energy of the given light source among the various corresponding wavelengths.

27,948

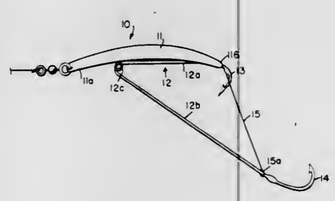
FISH-CATCHING APPARATUS WITH SNAP-ACTUATABLE HOOKS

Dean V. Babst, 31 Linden Road, Ho-Ho-Kus, N.J. 07423

Original No. 3,579,897, dated May 25, 1971, Ser. No. 817,524, Apr. 18, 1969. Application for reissue Nov. 22, 1971, Ser. No. 201,029

Int. Cl. A01k *83/00*

U.S. Cl. 43—35 **5 Claims**



Fish-catching apparatus including a spring mechanism having a pair of spring legs with fish hooks extending toward each other from each of the legs. The spring mechanism biases the legs toward each other and a trigger is fixed relative to one leg and releasably fixable relative to the other leg for holding the legs and hooks apart from each other against the bias of the spring. When a fish bites at the apparatus the fish will strike the trigger moving the trigger from between the spring legs to allow the legs and hooks to move toward each other so the fish biting at the apparatus will be caught on at least one of the hooks.

27,949

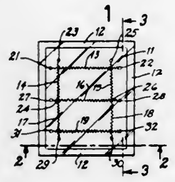
METHOD OF MAKING A LIGHT BULB WITH A PLURALITY OF INDEPENDENTLY CONNECTED FILAMENTS FOR INDICATING GRAPHIC SYMBOLS

Philip C. Demarest, Pine Brook, N.J., and Karl Karlson, Fishkill, N.Y., assignors to Refac Technology Development Corporation

Original No. 3,529,335, dated Sept. 22, 1970, Ser. No. 745,145, July 16, 1968, which is a division of application Ser. No. 548,193, May 6, 1966, now Patent No. 3,408,523. Application for reissue Sept. 8, 1972, Ser. No. 287,415

Int. Cl. H01j *9/36*

U.S. Cl. 29—25.16 **3 Claims**



A method of manufacturing a filamentary light having a plurality of filaments, each supported at each end by a metal support post and arranged within an enclosure comprising a rear wall and faceplate, the method comprising sealing pairs of the posts to individual glass beads and, subsequently, sealing the beads in space locations in the rear wall with the post extending therethrough.

27,950

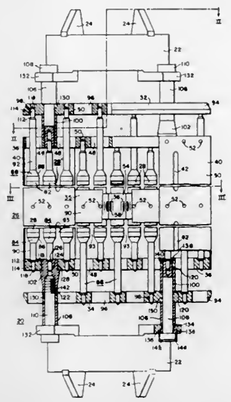
FUEL ARRANGEMENT FOR A NUCLEAR REACTOR

Erling Frisch, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original No. 3,379,618, dated Apr. 23, 1968, Ser. No. 513,655, Dec. 3, 1965, which is a continuation of application Ser. No. 326,070, Nov. 26, 1963, which is a continuation-in-part of application Ser. No. 19,851, Apr. 4, 1960, both now abandoned. Application for reissue June 15, 1971, Ser. No. 153,204

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 **44 Claims**



A fuel assembly support structure for permitting individual longitudinal expansion of a bundle of long fuel elements, yet maintaining accurate lateral spacing. The support structure includes one or more grids forming openings through which the fuel elements extend and has springs extending into the openings to engage the fuel elements to position them laterally, yet permit each fuel element to expand lengthwise. The support structure includes a long structural device to which the grid is secured for stabilizing the position of the grid relative to the movable fuel elements. A novel end plate configuration for a fuel assembly is also included.

27,951

DEVICE FOR CONVERTING A PHYSICAL PATTERN INTO AN ELECTRIC SIGNAL AS A FUNCTION OF TIME UTILIZING AN ANALOG SHIFT REGISTER

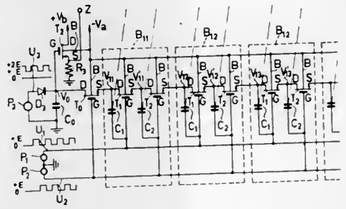
Kees Teer and Frederik Leonard Johan Sangster, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Original No. 3,621,283, dated Nov. 16, 1971, Ser. No. 816,954, Apr. 17, 1969. Application for reissue Jan. 5, 1973, Ser. No. 321,352

Claims priority, application Netherlands, Apr. 23, 1968, 6805706

Int. Cl. G06g *7/12;* **H01l** *11/14*

U.S. Cl. 307—229 **12 Claims**



A device for converting energy patterns in the form of *light,* pressure, heat or magnetic images into an electrical signal as a function of time where the necessity for a scanning beam or a crossed bar readout system is eliminated by cascading elements which function as both storage and energy sensitive devices and by providing circuitry for shifting [the] charges [of the energy sensitive storage] *stored in the* elements in a single direction along the cascaded array.

27,952

VISUAL CONTROL SYSTEM

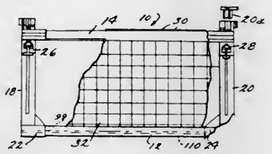
William F. Pollacco, Capitol Heights, Md., assignor to David A. Boote, Alexandria, and Harvey R. Lampshire, Arlington, Va., Robert A. Diemer, Prince Georges County, Md., Bernard A. Schriever, Washington, D.C., and Walter Bogley, Mount Rainier, Md., fractional part interest to each

Original No. 3,475,843, dated Nov. 4, 1969, Ser. No. 623,656, Mar. 16, 1967. Application for reissue Oct. 22, 1971, Ser. No. 191,787

Int. Cl. G09f *1/12, 7/08*

U.S. Cl. 40—63 R **23 Claims**

A modular device including backing tracks, frame members and diverse face pieces wherein individual columnar backing tracks track array bordering frame members and face pieces can be added to and removed from the device as needed depending upon the amount and character of the information to be displayed. The rear faces of the face pieces are provided with rearwardly projecting undercut rails by which they are slidingly, removably received on the backing tracks. The rails



extend between opposite edges of respective face pieces in order to prevent buckling and ensure flushness and squareness of the face pieces with respect to one another. The foregoing abstract is not intended to be a digest of the principles or scope of the invention disclosed in this document.

27,953

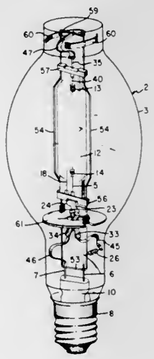
HIGH PRESSURE VAPOR DISCHARGE LAMP WITH CESIUM IODIDE

Warren C. Gungle, Danvers, Frederic Koury, Lexington, and John F. Waymouth, Marblehead, Mass., assignors to Sylvania Electric Products Inc.

Original No. 3,514,659, dated May 26, 1970, Ser. No. 651,010, July 3, 1967. Application for reissue Jan. 26, 1972, Ser. No. 221,108

Int. Cl. H01j *61/18*

U.S. Cl. 313—184 **4 Claims**



The addition of cesium atoms as the halide to a discharge device containing a fill of mercury, halogen and light emitting metal(s) will control the reignition voltage of such devices.

PLANT PATENTS

GRANTED MARCH 26, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,531
AZALEA PLANT
Howard Kerrigan, 24249 2nd St., Hayward, Calif. 94541
Filed Oct. 18, 1971, Ser. No. 190,238
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—55 **1 Claim**

1. A new and distinct variety of azalea plant of the Belgian-Indica type substantially as herein shown and described primarily characterized by: a combination of unusually long lasting double ruffled blooms borne profusely on a vigorous, compact plant with a blooming season much later than other double florist type azaleas.

3,532
CARNATION PLANT
Alexandre Barberet, La Londe, France, assignor to Laboratoire de Physiologie Vegetale de la Londe, Societe Civile, La Londe, France
Filed Dec. 11, 1972, Ser. No. 313,746
Claims priority, application Italy, Dec. 23, 1971, 32,848/71
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—73 **1 Claim**

A new variety of carnation plant originated as a seedling hybrid of two unnamed and unpatented varieties of Dianthus Caryophyllus, the new variety being distinguished by its good wintertime flower production, and the stable color of its blooms.

3,533
CARNATION PLANT
Alexandre Barberet, La Londe, France, assignor to Laboratoire de Physiologie Vegetale de La Londe, Societe Civile, La Londa, France
Filed Dec. 11, 1972, Ser. No. 313,747
Claims priority, application Italy, Dec. 23, 1971, 32,849/71
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—70 **1 Claim**

A new variety of carnation plant originating as a seedling hybrid of two selected varieties and characterized by its improved habits of growth and productivity, as compared with Orchid Beauty (unpatented), and the more red-purple color of its blooms.

3,534
CARNATION PLANT
Alexandre Barberet, La Londe, France, assignor to Laboratoire de Physiologie Vegetale de La Londe, Societe Civile, La Londe, France
Filed Dec. 11, 1972, Ser. No. 313,748
Claims priority, application Italy, Dec. 23, 1971, 32,847/71
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—71 **1 Claim**

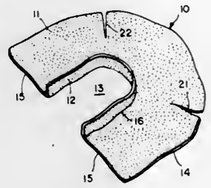
A new variety of carnation plant originated as a sport of the variety Barlo and distinguished by its continuous and profuse production of relatively large and very light ping colored flowers, the new plant having a vigorous and erect growth habit and the blooms having a favorable lasting quality both on the plant and as cut flowers.

PATENTS

GRANTED MARCH 26, 1974

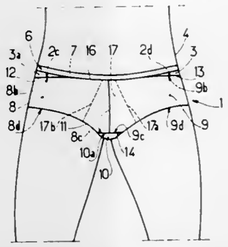
GENERAL AND MECHANICAL

3,798,674
NECK AND SHOULDER DRAPE
Leopold S. Daniel, 542 S. Cuyler, Oak Park, Ill.
Filed May 1, 1973, Ser. No. 356,149
Int. Cl. A41b *13/04*
U.S. Cl. 2—50 **8 Claims**



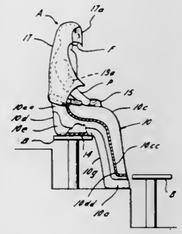
A drape for protecting the neck and shoulders during hair styling, cutting, shampooing, and the like includes a generally U-shaped flat bib portion and a U-shaped collar portion which extends upwardly from the bib portion. The bib portion includes curved outer and inner peripheries, the inner periphery providing a neck opening. A pair of slits extend inwardly from the outer periphery toward the center of the neck opening, and a collar portion is attached to the periphery of the neck opening. The slits form an included angle of less than 180° so that when the drape is placed over the shoulders and around the neck of the wearer and the ends of the bib and the collar are drawn into overlapping relationship, the slits extend toward each other and overlie the shoulders. The slits thereby prevent gathering or bunching of the drape, and the overlapped collar and bib provide complete protection to the neck and adjacent portions of the chest and back. A waterproof cape can be placed over the bib and secured around the neck if desired, and the collar portion completely protects the neck from the cape.

3,798,675
BRIEFS
Charles H. Belpaume, 13 Bouc-Bel-Air (Bouches-du-Rhone), France
Filed Jan. 14, 1972, Ser. No. 217,870
Claims priority, application France, Aug. 5, 1971, 71.29297
Int. Cl. A41d *7/00*
U.S. Cl. 2—67 **4 Claims**



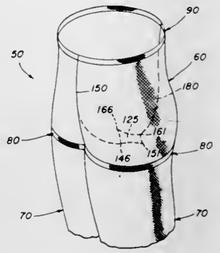
Briefs or bathing trunks are constructed to have an improved fit on the wearer by being made of four panels of which two are of complementary shape and provide the front and part of the sides of the briefs, the third panel provides a crotch panel, and the fourth panel of generally Y-shape provides most of the seat of the briefs and also the entire waistband. Curved seams connect the fourth panel to the other three panels and the use of upright seams at the sides of the briefs is avoided entirely.

3,798,676
PROTECTIVE GARMENT
Larry W. Shanks, 5016 Glen Haven, and Tillman D. O'Brien, Jr., 5201 Busch Rd., both of Baytown, Tex.
Filed Apr. 17, 1972, Ser. No. 244,784
Int. Cl. A41d *13/00*
U.S. Cl. 2—69.5 **4 Claims**



An article for protecting a person against harsh weather conditions including a flexible tubular body having one end open and one end closed, a drawstring mounted at the open end and a zipper means extending longitudinally and transversely of the tubular body for opening the tubular body so that a person can easily fit the tubular body about the legs and lower torso.

3,798,677
METHOD OF SEAMING PANTY HOSE
Daniel D. Brown, Springdale, and Dorsie Mae Bowen, Fayetteville, both of Ark., assignors to Bear Brand Hosiery Co., Chicago, Ill.
Filed Aug. 31, 1972, Ser. No. 285,483
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 R **3 Claims**

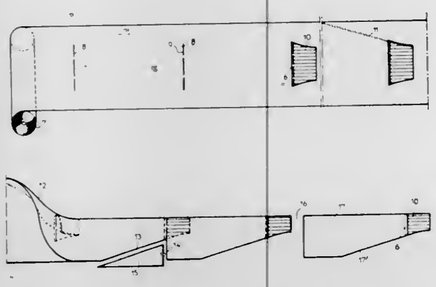


A method of forming a combination panty hose garment from tubular blank members having leg and elongated upper portions terminating in an open end. The tubular blank members are placed together and aligned in side-by-side relationship and simultaneously slit and seamed from an aligned point in the upper edges to a predetermined point therefrom to provide a seam with predetermined length and free edges. A crotch piece is sewn by simultaneously slitting one of the tubular blank members from the predetermined point and seaming a first edge of the crotch piece to the one tubular blank member and by simultaneously slitting the other tubular blank member from the predetermined point and seaming a second edge of the crotch piece to the other tubular blank member and thereafter aligning the free edges and seaming them together from the crotch piece. The crotch piece may be diamond shaped.

3,798,678
METHOD OF ASSEMBLING EXTENSIBLE ELEMENTS IN PARTICULAR THROUGH A CONTINUOUS PROCESS ON GARMENT PORTIONS AND ARTICLES OBTAINED THEREBY

Claude Raymond Pierron, and Robert Zuccaro, both of Epinal, France, assignors to Les Applications Industrielles Vosgiennes Sapivog, Uxegney, France

Filed Dec. 7, 1971, Ser. No. 205,652
Claims priority, application France, Dec. 11, 1970, 70.44821; Dec. 3, 1971, 71.43468
Int. Cl. A41d
U.S. Cl. 2—243 R **14 Claims**

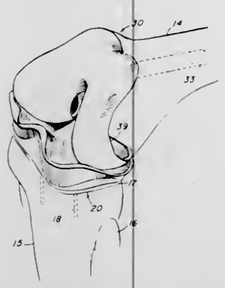


The method of the invention enables to render stretchable a part of a garment, without wrinkling at rest. The method consists in shaping a garment portion; cutting out an extensible element to the desired shape; applying said element without any stretching onto said garment portion; and affixing said element without any stretching onto said garment portion along at least one portion of the periphery of said element.

3,798,679
JOINT PROSTHESES

Frederick C. Ewald, 916 Greenwood Avenue, Winnetka, Ill.

Filed July 9, 1971, Ser. No. 161,086
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **10 Claims**



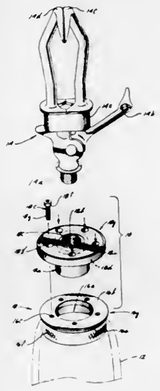
Joint prostheses are disclosed which include a substantially smooth male portion (e.g. a femoral cap or a trochlea) and a mated female portion (e.g. a tibial plateau or an olecrenon). Prosthesis forms may be prepared by forming initially the male portion, pressing the male portion into molding material to initiate the formation of the female portion, and passing the portions through flexion in contact to form flexion surfaces on the female portion. The components of the present prostheses are suitable as several joint prostheses, such as knee, elbow, ankle, shoulder, finger and toe joints, including a first component of an inert metal alloy and a second component of molded plastic having at least one flexion surface and upwardly extending guiding-bearing surfaces surrounding same. Prosthesis forms may be prepared similarly, including the formation of a flexion surface by passing the joint through flexion. A knee prosthesis is described including a substantially smooth femoral cap in combination with a mated tibial plateau. The tibial plateau is formed to include means to lock the femoral cap and tibial plateau in extension and means to constantly change the instantaneous centers of rotation during flexion. The tibial plateau surfaces are such that there is maximal surface contact at extension between the tibial plateau and the femoral cap, and during flexion there is substantial surface contact.

An elbow prosthesis is described including a substantially smooth humeral cap in combination with a mated ulnar component. The ulnar component is formed to include mating surfaces corresponding to the olecrenon and coronoid processes, as well as the radial head if desired. During flexion of the elbow joint, there is substantial surface contact between the humeral cap and the surface of the ulnar component.

3,798,680
UNIVERSAL WRIST SYSTEM

Wesley C. Prout, St. Anne, Ill., assignor to Parke, Davis & Company, Detroit, Mich.

Filed Apr. 5, 1972, Ser. No. 241,221
Int. Cl. A61f *1/06*
U.S. Cl. 3—12.4 **12 Claims**

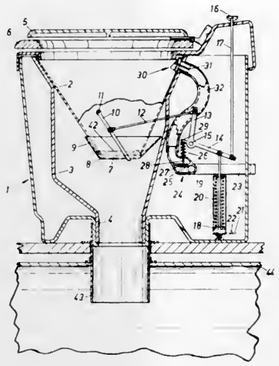


A universal wrist system in which terminals with different types of shafts and different types of mountings may be used. A wrist forearm connector member is adapted to be molded into a prosthetic forearm. The wrist forearm connector member has a passage therethrough and a substantially flat ring-shaped mounting surface positioned at one end of the passage and extending around the opening into the passage. At least one opening is provided into the surface of the forearm connector member. A removable terminal mounting unit has a boss, an elongated receptable extending into the boss, an opening for receiving the shaft of a terminal device and a connector to secure the shaft of the terminal device in the receptacle. A ring-shaped surface surrounds the boss and is adapted for mounting in abuttment with the wrist forearm connector face with the boss extending into the passage of the wrist forearm connector member. At least one opening is provided in the surface of the removable terminal mounting unit. A locking member is removably extendable between the openings of both of the surfaces for rigidly securing the surfaces of the wrist forearm connector and the terminal mounting unit together.

3,798,681
DEVICE IN WATER CLOSETS

Ole Bjerke Johansen, Asmundtrop 147 S-430, 61 Harryda, Sweden

Filed Jan. 10, 1972, Ser. No. 216,705
Int. Cl. E03d *11/10*
U.S. Cl. 4—85 **2 Claims**

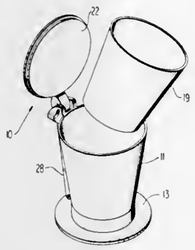


A water closet comprising a closet bowl having a drain mouth at its lower end which mouth may be closed by a valve disc operatively connected to the flushing mechanism of the toilet such that the disc uncovers the mouth during flushing, and a supply line feeding flushing liquid to a spray nozzle disposed internally of said closet bowl. Said nozzle is provided with two sets of sprinkling systems, one for directing water jets against the centre of the uncovered drain mouth, and another one for directing liquid jets in a helical path along the internal surface of the closet bowl.

3,798,682
PORTABLE HAND-OPERATED CUSPIDOR

James H. Harreld, Rt. 2, Kallspell, Mont.

Filed June 7, 1972, Ser. No. 260,661
Int. Cl. A61j *19/00*
U.S. Cl. 4—271 **5 Claims**

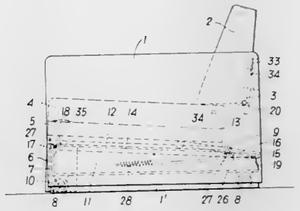


A portable hand-operated cuspidor having an easily openable hinged lid which it tightly closed in place by means of a spring and cam lever arrangement. Replaceable cups confirming to the general shape of the cuspidor may be used for more easily maintaining the cuspidor in a sanitary condition.

3,798,683
SEATING-AND SLEEPING FURNITURE

Alfred Alembik, Andergasse 58, Vienna 17, Austria

Filed Oct. 1, 1971, Ser. No. 185,539
Claims priority, application Austria, Nov. 19, 1970, 710438/70
Int. Cl. A47c *17/14*
U.S. Cl. 5—13 **12 Claims**



A seating- and sleeping-furniture piece, which comprises a framework and a cushion swingably mounted on the framework. The cushion is adapted to form in a seating furniture a backrest in its backward upwardly swung position, and to form in a sleeping furniture a wedge cushion in its downwardly swung position. Two cushions are disposed on a carriage capable of rolling-in into and rolling-out from the framework. The cushions are disposed on top of each other in the seating furniture and during their rolling out and undergrip in the seating position the cushion swung upwardly as a backrest and rolling out so far in the one bed position under the cushion swung upwardly as a backrest, that the forward bottom edge of the backrest and the rear edge of the seating- and the laying-cushion are disposed vertically on top of each other, and in the double bed position, the two seating- and laying-cushions are disposed one behind the other, and capable of being laid down in the double bed position following the cushion swung forward downwardly as a wedge cushion with the formation of a double laying face. The carriage comprises two telescope-like parts displaceable relative to each other. The inside disposed of the parts defines a bedding chamber, which has an engagement face for the upper of the seating cushions in its use as laying cushion, as well as have an engagement face for the wedge cushion, and is supported on the floor. The outside disposed part is supported on the floor on the front and at the rear by means of rollers on the inside disposed part, and forms an engagement face for the lower seating- and laying-cushion. A cover receives a wire insert to form an upper closure for the bedding chamber, and is swingably mounted in a frame. The frame is swingably mounted on the inner part of the carriage and is equipped with slide pins. The framework includes obliquely rearwardly disposed grooves which secure the slide pins. Roller means are formed on the outer part of the carriage, and side parts of the frame are formed as sliding faces for the roller.

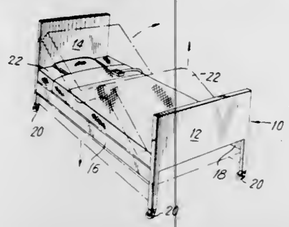
3,798,684
FLUIDIC SWITCHING SYSTEM

Roland A. Benoit, Danielson; John H. Curran, Norwich, and Richard L. Bennice, Danielson, all of Conn., assignors to Interroyal Corporation, New York, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,483
Int. Cl. A61g *7/10, 7/00*
U.S. Cl. 5—66 **8 Claims**

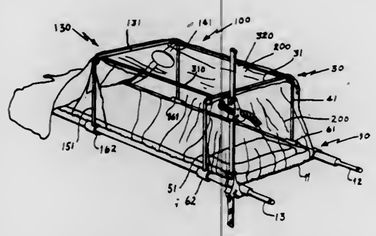
A non-electrical fluidic control system is provided for actuating means for adjusting the position of a hospital bed. The fluidic control cystem includes a hand-held pendant having a plurality of plungers which communicate with respective cylinders to force air pressure through respective air tubes or

conduits. A bellows, connected to the distal end of the tubes, cooperates with a snap-action switch for energizing a respective motor means for adjusting the position of the bed. Addi-



tionally, an assembly retriever means is provided for supporting and maintaining an air tube sleeve off the floor lever as an improved safety feature.

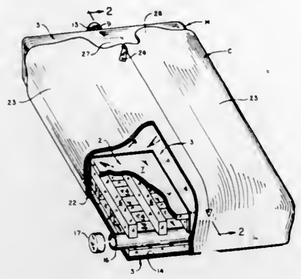
3,798,685
COVER SUPPORT ASSEMBLY
Maureen A. Hunt, 4919 Pecan, Apt. 241, San Antonio, Tex., and Martin J. Criel, 104 Chaney St., San Antonio, Tex.
Filed July 13, 1972, Ser. No. 271,335
Int. Cl. A47c *21/00*; **A47b** *83/04*
U.S. Cl. 5—319 **12 Claims**



An apparatus for suspending and supporting a cover over a medical stretcher. The apparatus comprises an assembly which includes: a horizontal cross member which has two ends; a first vertical leg which has two ends, with one end pivotally, and releasably, connected to one end of the horizontal bar, and with the other end of the first vertical leg releasably engaged to one of the two parallel poles of the stretcher; a second vertical leg which has two ends, with one end pivotally, and releasably, connected to the other end of the horizontal bar, and with the other end of the second vertical leg releasably engaged to the other of the two parallel poles of the stretcher. The assembly, when used with the stretcher, forms an inverted "U" in a transverse position over the stretcher, and thereby suspends and supports a cover over the stretcher and the patient thereon. A plurality of these assemblies, when used with suitable spaces, such as connecting rods, may be used to form an integrated unit of the desired length to support and suspend a cover in the shape of an inhalation therapy-type canopy over a stretcher and over a patient.

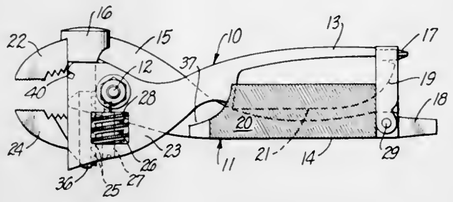
3,798,686
SELF INFLATABLE AIR MATTRESS, AND SLEEPING BAG
Conrad J. Gaiser, Zephyr Cove, Nev., assignor to Gaiser Enterprises, Inc., Zephyr Cove, Nev.
Filed June 9, 1971, Ser. No. 151,184
Int. Cl. A47g *9/00*; **A47c** *23/00*
U.S. Cl. 5—343 **11 Claims**

A self inflatable air mattress provided with a core of flexible and resilient cellular material of the open cell type, and an air tight flexible jacket enclosing the core. A tube communicating with the interior of the jacket allows flow of air into and from the core cells; and a closure for the tube maintains the cells



filled to form a resilient air cushion. A cover attached to the jacket provides a sleeping bag. Because of the nature of the material, the entire construction can be readily wound into a compact roll.

3,798,687
MULTIPLE HAND TOOL
Peter S. Stevens, 708 Strand, Manhattan Beach, Calif.
Filed June 26, 1972, Ser. No. 266,267
Int. Cl. B26b *7/22*
U.S. Cl. 7—5.1 **4 Claims**



A compact multiple hand tool which includes substantially every hand tool found in a complete tool box. A pair of elongated members are pivotally connected adjacent their upper ends, which are provided with jaws usable as pliers and as an adjustable wrench. One upper end also carries a hammer head. The lower ends provide a knife, file, rule and two types of screwdrivers. A hacksaw blade is pivotally mounted on one member and connectable to the other. A projection carried by a movable jaw on one member makes locking engagement with the other member to hold the members in open right angular position.

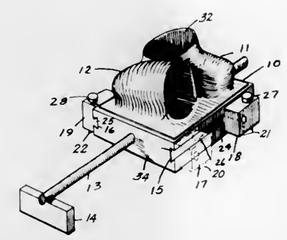
3,798,688
DOUBLE EDGE BLADE SCALPEL
William G. Wasson, 3515 Darlington Ave, N.W., Canton, Ohio
Filed Dec. 9, 1971, Ser. No. 206,320
Int. Cl. B26b *11/00, 9/02*
U.S. Cl. 7—14.1 R **7 Claims**

A surgical scalpel construction having a handle and a blade mounted at one end thereof. The blade has two cutting edges, one on each side edge of the blade. The outer or unattached end of the blade is pointless to prevent stabbing or cutting of the surgeon or assistant during transfer of the scalpel between them while an operation is in progress. The pointless end of the blade may be formed with a concave tip portion, or with a

rounded tip portion, or with a V-notch having sharp side edges for cutting sutures. The blade is permanently or disposably at-

tached to the scalpel handle. The handle is provided with a flanged end adjacent to the blade to protect the surgeon's fingers.

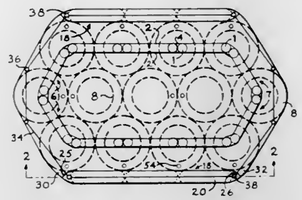
3,798,689
FINGER CARVING TOOL
Andrew G. Kasemer, 999 Lumber Rd., Meadville, Pa.
Filed Feb. 24, 1972, Ser. No. 228,807
Int. Cl. B25f *1/02*; **B24d** *15/00*
U.S. Cl. 7—14.1 R **11 Claims**



A tool especially suited for use by a person having limited muscular control. The tool has a tool supporting frame and interchangeable tool supports. A variety of tools can be attached. These tools include a single cutting tool, gangs of cutting tools. The finger and thumb receiving members are curved to conform to the curvature of the finger and thumb of the user.

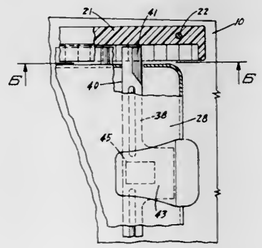
3,798,690
LIGHT-WEIGHT, INFLATED-STRUCTURE BOAT
Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.
Continuation-in-part of Ser. No. 23,789, March 30, 1970, Pat. No. 3,670,349, and a continuation-in-part of Ser. No. 531,564, March 3, 1966, Pat. No. 3,503,825. This application Feb. 11, 1972, Ser. No. 225,387
Int. Cl. B63b *3/00*
U.S. Cl. 9—6 **27 Claims**

A vehicle, preferably a raft or other boat (e.g., a life raft, outboard-motor boat, cabin-cruiser vessel or flying boat) having a light-weight, very buoyant frame that comprises strongly inflated, doughnut-shaped tubes arranged flatwise within boat skin means and foam plastic between the skins and tubes. The tubes have walls that are thin and light in weight, optionally non-extensible (preferably stiffly resilient) or expansible (preferably resilient) optionally of material non-permeable to gas (e.g., aluminum, dense plastic, very thin iron, very thin steel (preferably resilient), or glass). The preferably resilient skin means may comprise: molded, optionally fiber-reinforced plastic; or pieces of thin sheeting (of very thin iron such as common-can material, very thin resilient steel or resilient phosphor bronze; pieces of plastic sheeting; marine plywood; fabric - textile or metallic netting or other, more closely woven fabric (cloth), these pieces of sheeting, plywood or fabric being joined together (thus inclosing at least most of the tubes) by epoxy, silicone sealant or other bonding material and/or by rivets, bolts or thread. Stucco comprising cement



and aggregate (filler) optionally may be applied in situ, the cement being optionally Portland-and-lime cement but preferably comprising plastic-when-applied rubber (e.g., pliobond) or epoxy or silicone sealant. In the central spaces of the doughnut-shaped tubes there is preferably located a tube-and-skin-bracing element (optionally a core of substantially rigid or stiffly resilient foam plastic), or a plate-glass or plexiglass window. The tubes are preferably connected at their contacting peripheries by material that is preferably resilient (optionally bonding material which for example may be silicone sealant, other plastic-when-applied rubber, or epoxy).

3,798,691
WATER SKI FOOT BINDING
Dalles C. Notermann; Walter F. Notermann, and Ray M. Notermann, all of Victoria, Minn., assignors to Lake Region Products Inc., Victoria, Minn.
Filed Sept. 13, 1972, Ser. No. 288,488
Int. Cl. A63c *9/00*
U.S. Cl. 9—310 AA **7 Claims**



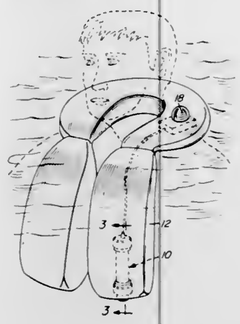
A water ski foot binding having a stationary foresection to engage the forefoot of the water skier, and an aft section having a heel engaging portion longitudinally movable on the water ski adapted to accommodate the heel and rear portion of varying sizes of feet. The aft section includes a heel engaging assembly having side flanges movably mounted in channels provided in parallel stationary guide rails. A first portion of a locking mechanism constituted as a linear ratchet assembly is disposed on the guide rails, while the second movable actuating portion is associated with the heel assembly. Pressure caused by the presence of a foot in the binding enhances the locking capability of the locking mechanism.

3,798,692

POWER SUPPLY AND PRESSURE SWITCH ASSEMBLY

Harvey L. Madeley, Houston, Tex., assignor to Eugene H. Madeley and A. C. Frost, Jr., both of Houston, Tex., part interest to each

Filed Dec. 21, 1972, Ser. No. 317,215
Int. Cl. B63c *9/20*
U.S. Cl. 9—313 **3 Claims**



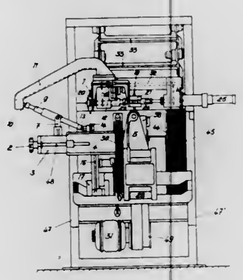
A combination power supply and pressure switch assembly for use with lifeboats or other flotation devices for automatically energizing a circuit when the flotation device is deployed into the water. The assembly includes a corrosion proof, water-tight main housing for batteries, or the like, and a pressure responsive switch housing removably fastened to the bottom of the main housing for convenient maintenance or replacement of the batteries or switch in the event such is required.

3,798,693

MACHINE FOR WORKING SHOE SOLE CONTOURS

Mario Bruggi, 114 C.so Turin, Vigevano, Italy

Filed Apr. 16, 1973, Ser. No. 351,507
Claims priority, application Italy, Apr. 15, 1972, 23177/72
Int. Cl. A43d *7/00*
U.S. Cl. 12—87 **8 Claims**



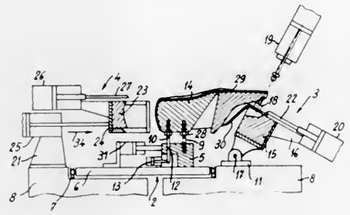
Machine, adapted for working the sole contours of shoes of any size or number whatever, including a copying roller, disposed at the end of a rod, journalled hingedly to an arm, whilst over said rod slides a sleeve, connected to a movable carriage, sustained by a support, fixedly secured to the tool holding arm, the sleeve displacing on the rod via a worm gear, acting on the carriage, displacing it axially relative to its support, whilst the support arm of said rod is connected to an oscillating arm, sustained by specially provided levers, journalled into one upper cross beam of the machine, the same oscillating arm being balanced by a pair of big springs and may describe a linkage motion, delivered thereto by the particular rotation of an oblong box, driven by a roller, pressing on a portion of its inner wall, said roller being keyed on a helical gear, which is controlled by a worm gear, driven in turn by a self-braking motor via a belt, two presser means being connected to the aforesaid oscillating arm, which fasten the sole to be worked and the basic template, which imparts suitable displacements to the copying roller.

3,798,694

APPARATUS FOR FITTING SHOE UPPERS

Terence Albert Holt, and Jean-Gabriel Barre, both of Lyon, France, assignors to Centre Technique Du Cuir, Rohe, France

Filed Mar. 27, 1972, Ser. No. 238,565
Claims priority, application France, Apr. 6, 1971, 71.13208
Int. Cl. A43d *21/00*
U.S. Cl. 12—8.5 **7 Claims**



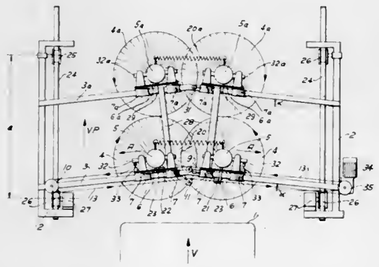
In order to reduce the possibility of producing cracks and other damages when lasting shoe uppers, the fore and back parts of the last are used as a mold core for shaping the upper, in combination with die means having concavities conforming to the desired shoe pattern. The last is of the type comprising two sections hingedly interconnected substantially intermediate its ends and near its bottom. The disclosed apparatus comprises a central portion for mounting the upper upside down, a front unit for shaping and tuning the front part of the upper, and a back unit for shaping the heel part of the upper.

3,798,695

WASHING DEVICE FOR THROUGH-PASSING MOTOR VEHICLES

Gebhard Weigele, Bussardweg 3, 8900 Augsburg, and Johann Sulzberger, Mozartstrasse, 8901 Steppach, both of Germany

Filed July 12, 1972, Ser. No. 271,122
Claims priority, application Germany, May 17, 1972, 2223994
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **8 Claims**



Washing device for motor vehicles. A bridge structure under which the motor vehicle passes during washing is provided by at least two crossbeams supported for moving together a limited distance in the direction of vehicle travel

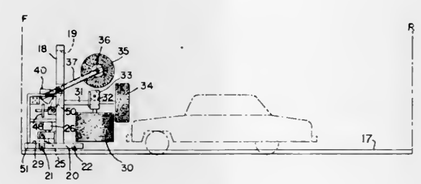
during the washing operation. Both crossbeams define a shallow inverted V-shape with the apex pointing in the direction of vehicle travel. A pair of first carriers are provided on the first crossbeam, each supporting a rotatable washing brush and each movable simultaneously and operatively toward and away from the center of the crossbeam. Driving means are provided for moving said brushes under positive driving simultaneously away from the center of the crossbeam and releasing same at points adjacent the ends of the crossbeam for resilient urging toward and eventual return to points adjacent the center of the crossbeam. A pair of second carriers is mounted for similar movement on the second crossbeam and each thereof also carries a rotatable washing brush. Means are provided on each of the said first carriers for moving the second carriers positively from points adjacent the center of the second crossbeam to the respective ends thereof and for then releasing same to return under resilient urging toward and eventually to points adjacent the center of the second crossbeam. Thus, the brush that will wash the front of a car as same moves from the center of the crossbeam to the ends thereof, will wash the sides of the car while being resiliently urged toward the centers of the crossbeam and will then wash the rear end of the car as same return under said resilient urging toward the center of the crossbeam. The inverted V-shape of the crossbeams provide an advancing movement of the brushes by which they follow the movement of the car while washing the rear end thereof but without requiring advancing movement of the crossbeams. Hence, it is only necessary for the crossbeams to move forwardly during the washing of the forward end of the vehicle and same can return to their initial position during washing of the sides of the vehicle and can remain at a standstill during washing of the rear end of the vehicle.

3,798,696

ROLLOVER CAR WASHER

John F. Cirino, Box 191, Churchville, Pa.

Filed Aug. 23, 1972, Ser. No. 283,064
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **11 Claims**



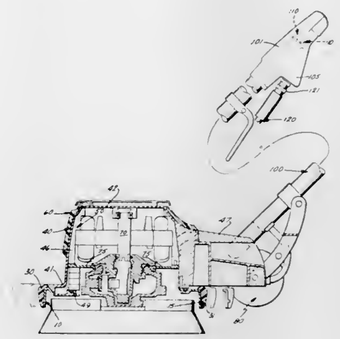
A rollover car washer is disclosed incorporating a top brush, side brushes and preferably also window brushes. The top brush is provided with pivoted arms for upward and downward swinging motion of the top brush and the arms are pivotally mounted upon the frame of the washer about a horizontal axis located at an elevation below the top of the highest vehicles to be accommodated in the washing station. The range of swinging motion of the top brush is extended throughout a vertical distance providing not only for scrubbing of the highest surfaces of the car being washed, but also for scrubbing of the lowest end surfaces thereof. The side brushes are mounted upon the washer frame and rotate upon generally upright substantially fixed axes.

3,798,697

FLOOR POLISHER

Dale E. Lowder, North Muskegon, and Wilfred C. Nise, Spring Lake, both of Mich., assignors to Clarke-Gravely Corporation, Muskegon, Mich.

Filed May 19, 1972, Ser. No. 255,003
Int. Cl. A47l *11/162, 11/40*
U.S. Cl. 15—49 R **18 Claims**



A floor polishing machine having a brush housing and a motor housing with wheels and a handle secured thereto, in which a bumper enshrouds the brush housing, a plastic tire is mounted on each wheel and projects outwardly therefrom and a bumper enshrouds the motor housing. Portions of the plastic tire are in horizontal alignment with both the brush housing bumper and the motor housing bumper. The motor housing seats in a well on the brush housing with the mating surfaces being inclined at approximately 40° to 50°. A generally annular tongue projects from the motor housing and engages a mating groove in the brush housing bumper to thereby trap a portion of the brush housing bumper between the two housings. Different sized motors can be mounted in the motor housing on different steps of a number of stepped motor mounting ribs projecting inwardly from the sides of the motor housing. The handle includes a pair of grips projecting from a switch housing with the top surfaces of the handle being generally continuous with the top surfaces of the switch housing and defining a generally arcuate surface against which an operator can push his body. There is a separate switch lever on each handle grip for controlling a separate switch within the handle grip for controlling a separate switch within the switch housing, each of which switches independently controls the motor. If desired, one of the switches can be wired to an accessory through a knockout wiring hole in the switch housing. Finally, the switch housing includes a nose projecting therefrom to protect the connection of the electrical cord to the machine.

3,798,698

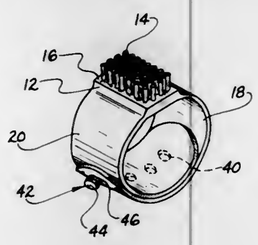
DISPOSABLE TOOTH CLEANER

Carroll C. Conklin, Jr., 722 S. Prospect St., Marion, Ohio

Filed May 24, 1972, Ser. No. 256,392
Int. Cl. A46b *1/00*
U.S. Cl. 15—167 R **1 Claim**

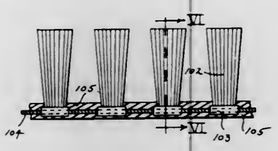
A disposable tooth cleaner of the type that includes integrally formed fastening means for attaching the device to a user's finger in the form of two oppositely extending strip portions one of which is provided with hole means and the other

of which is provided with integrally molded protrusion means, said protrusion means being adapted to snap into locked en-



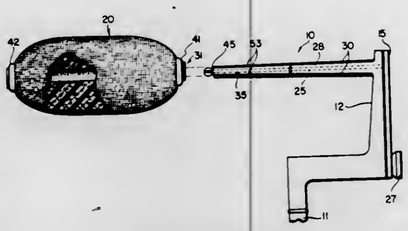
gagement with said hole means at various positions of adjustment when the strip portions are wrapped around the user's finger.

3,798,699
SYNTHETIC TUFTED CONSTRUCTIONS
John C. Lewis, Jr., Middlebury, Vt., assignor to Tucel Industries, Inc., Middlebury, Vt.
Division of Ser. No. 20,624, March 18, 1970, Pat. No. 3,633,974. This application June 17, 1971, Ser. No. 154,055
Int. Cl. A46b *1/00*
U.S. Cl. 15—179 **8 Claims**



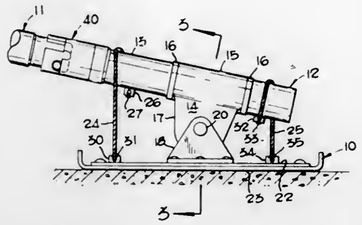
Tufted brush construction comprising pretrimmed synthetic filament tufts fused at one end and attached to adjacent tufts by a connector means. The base of each tuft and the connector means are embedded into a foam composition to support the tufted mat construction.

3,798,700
MOLDED MOP HEAD
Samuel J. Popell, Chicago, Ill., assignor to Popell Brothers, Inc., Chicago, Ill.
Filed Aug. 28, 1972, Ser. No. 284,353
Int. Cl. A47l *13/142, 13/16*
U.S. Cl. 15—228 **12 Claims**



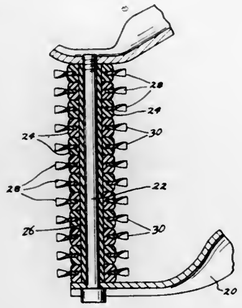
A replaceable wringer mop head with a substantially square cross section is formed from a single piece of cellular sponge, preferably with a reinforcing mesh closely adjacent the exterior. A pair of mounting spools are located at opposed ends of the replaceable mop head, and tied securely to each end of the cellular sponge by means of a clamping ring. Both of the spools are provided with means for longitudinally engaging a corresponding fin on a wringer type mop holder which, in one position, is fixed. In the other two alternative positions, approximately 90° of freedom is afforded the mop head with regard to the shaft of the wringer mop. Upon reciprocating the mop, at each stroke reversal, alternate adjacent mop head faces engage the surface being mopped. The wringer mop is of the character in which the far end can be rotated by rotating one of the spools, and the opposite spool secured to the end that the mop head may be wrung dry of water by such rotation.

3,798,701
CONCRETE FINISHING FLOAT
Waverly G. Irwin, 118 Morningside Dr., Jefferson City, Mo., and Otto H. Taube, Jefferson City, Mo., assignors to said Waverly G. Irwin, by said Otto H. Taube
Filed Nov. 29, 1972, Ser. No. 310,416
Int. Cl. E01c *19/44*
U.S. Cl. 15—235.8 **4 Claims**



This bull float includes an elongate handle detachably connected to a concrete finishing float. The coupling between the handle and the float includes a plug and socket connection provided with a detent sleeve which holds related pin and slot parts in engagement. The coupling also provides a tilt control including a shaft connected to the end of the handle and relatively rotatable therewith. The shaft is axially rotatable about its own axis and is pivotally connected to the float. A pair of cables reversely wound on the shaft and secured to spaced points on the float changes the angle of tilt as the handle is rotated.

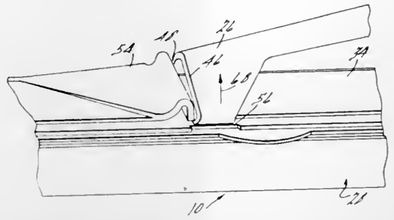
3,798,702
MECHANICAL ACTION PAINT REMOVER
Lynn D. Plauda, Minneapolis, Minn., assignor to Eugene R. Wood, Inver Grove Heights, Minn.
Filed June 23, 1972, Ser. No. 265,536
Int. Cl. B44d *3/16*
U.S. Cl. 15—236 R **3 Claims**



A hand tool for removing dried paint scales from a substantially flat surface includes a slingshot-like frame with an elon-

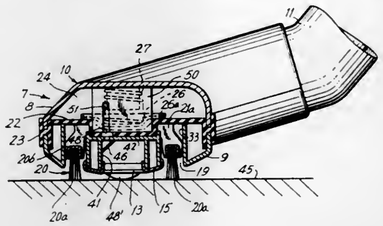
gated handle. One of the legs of the frame is shorter than the other and a shaft is mounted between the ends of the legs to have a longitudinal axis in the plane of, but at an acute angle to, the longitudinal axis of the handle. A plurality of washers, each having a plurality of skewed feet extending radially outwardly therefrom, are mounted for rotatable movement about the axis of the shaft. With the tool held to bring all of the washers firmly in contact with a surface to be treated, forward or backward movement of the tool over the surface in alignment with the axis of the handle will tend to cause the washers to rotate and this imparts a scrubbing action and movement to the feet in contact with the surface simultaneously both in line with, and transversely of, the direction of such tool movement.

3,798,703
WINDSHIELD WIPER ASSEMBLY
J. Hans Van Den Berg, and Alex Herman A. M. Van Fekelen, both of Hasselt, Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium
Filed May 4, 1972, Ser. No. 250,339
Int. Cl. B60s *1/04*
U.S. Cl. 15—250.42 **14 Claims**



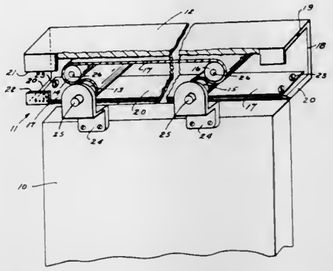
A windshield wiper assembly adapted for operative association with a wiper superstructure including a claw-like attachment link for operatively supporting the assembly; the assembly including an elongated wiper blade and a flexor element extending longitudinally of the blade and fixedly secured thereto, the attachment link normally being engaged with the flexor element at a first longitudinal position thereon and being movable longitudinally of the flexor element to a second position which permits disassembly of the blade assembly from the connecting link, and means including a resilient deformable element normally resisting longitudinal movement of said connecting link relative to said blade assembly.

3,798,704
SELF-ACTING COMBINATION RUG AND FLOOR VACUUM CLEANER NOZZLE
Lars Gunnar Kilstrom, Taby, and Bo Gunnar Mattsson, Upplands Vasby, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 23, 1972, Ser. No. 228,509
Claims priority, application Sweden, Feb. 26, 1971, 2465/71
Int. Cl. A47l *5/00*
U.S. Cl. 15—319 **6 Claims**



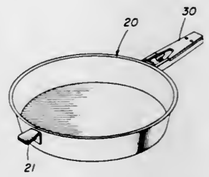
A combination rug and floor vacuum cleaner nozzle has a passageway providing a path of flow for air from a suction inlet to an outlet, the suction inlet being defined by an apertured flat surface part which serves as a working member for cleaning rugs. A brush, which serves as another working member for cleaning floors, is mounted on the nozzle at the vicinity of the suction inlet for movement between upper and lower positions respectively above and below the suction inlet.

3,798,705
SUPPORT MEANS PROVIDING TRANSLATIONAL MOVEMENT
Ralph R. Julian, 7300 Wilmington Pk., Dayton, Ohio, and Larry L. Collins, 724 Swigort Dr., Fairborn, Ohio
Filed July 10, 1972, Ser. No. 270,271
Int. Cl. A47h *1/04*
U.S. Cl. 16—94 R **7 Claims**



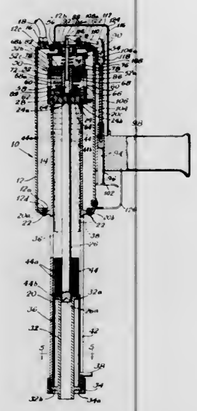
Support means providing translational movement for doors and the like comprises a support member having parallel walls spaced apart from each other a distance less than the combined diameters of one of two spaced apart pairs of roller members. A flexible band under tension is interposed between and partially encompasses adjacent roller members of each pair of roller members, and end portions of the band are connected to one of the walls with both pairs of roller members being disposed between such end connections. Such configuration permits rolling motion of the roller members in a direction parallel to the walls which support, guide and otherwise restrain the roller members.

3,798,706
DETACHABLE HANDLE
Jerome T. Wolfson; Henry Lilienheim, both of Glencoe, Ill., and John Gear, Huntington, N.Y., assignors to Business Builders International, Inc., Chicago, Ill.
Filed Oct. 18, 1972, Ser. No. 298,789
Int. Cl. A47b *95/02*
U.S. Cl. 16—114 A **8 Claims**



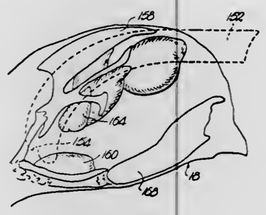
The detachable handle comprises an elongated body including a receptacle adjacent to one end thereof for removably receiving a projection which is affixed to a utensil. A cover for the receptacle is first opened to accommodate entry of the projection thereinto, whereafter the cover is closed to capture the projection in the receptacle and thereby detachably lock the handle onto the utensil.

3,798,707
STUNNING TOOL
Donald J. Willems, 3100 S. Olsander St., Sioux City, Iowa, and Henry A. Spitzley, 564 W. St., Portland, Mich.
Filed July 26, 1972, Ser. No. 275,299
Int. Cl. A22c *11/00*
U.S. Cl. 17—1 B **22 Claims**



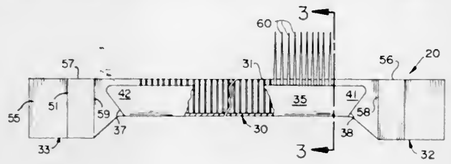
An improved, highly mobile, easily manipulated impact tool adapted for immobilizing livestock, especially cattle and hogs, comprising a pressure chamber, a pressurized air-actuated piston, valve means for normally preventing air under pressure in the chamber from actuating the piston, and finger controlled trigger means for momentarily opening the valve means for actuating the piston. The trigger means is self-resetting upon release by the finger of an operator. The stunning means is carried by the piston. In one of its forms, the tool has a manually movable sleeve for resetting the piston. In another of its forms, the piston is automatically reset by means of a compression spring. The tool can be gripped comfortably and firmly by an operator, and can be easily maneuvered and aimed to enable an operator to attain optimum accuracy and maximum effectiveness.

3,798,708
POULTRY EVISCERATING MACHINE
Donald J. Scheier, Kansas City, Mo., assignor to Gordon Johnson Company, Kansas City, Mo.
Division of Ser. No. 88,948, Nov. 12, 1970, Pat. No. 3,653,093, which is a continuation-in-part of Ser. No. 700,907, Jan. 26, 1968, Pat. No. 3,555,593. This application Feb. 22, 1972, Ser. No. 228,046
Int. Cl. A22c *25/18*
U.S. Cl. 17—52 **3 Claims**



In the automatic evisceration of poultry the viscera is displaced from the body cavity of the bird through an access opening cut at the vent. In one form of the invention, a spoon-like removal tool applies pressure on the viscera away from the breast and drags the viscera along the backbone. In a second form, a removal tool in the nature of a loop captures the viscera and pulls it from the cavity. The entire operation takes place while the birds are advanced continuously by an overhead conveyor from which they are suspended by their legs. A series of bird-receiving carriages travel around a loop in time relation to the conveyor, and each carriage is provided with an individual removal tool which enters the cavity on an arc that conforms to the configuration of the breast. At the completion of the operation, a latch is released to remove spring pressure from the tool, causing the latter to swing clear and permitting the eviscerated bird to continue along the conveyor line for successive processing operations.

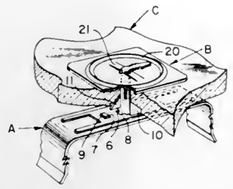
3,798,709
FALLER BAR
Frederick H. Mohr, 1011 W. Rankin Ave., and Donald R. Hoover, Rt. No. 3, both of Gastonia, N.C.
Filed Oct. 28, 1971, Ser. No. 193,342
Int. Cl. D01g *5/14*
U.S. Cl. 19—129 R **7 Claims**



A faller bar unitarily formed from a single metal-strip blank by stamping and bending operations and selectively heat treated so as to possess greater hardness and wear resistance in those portions adapted for engagement with components of a gilling machine. A pair of longitudinally-extending parallel slits are provided intermediate opposite ends of the metal blank. A pin-receiving groove having an open top and open ends is formed by bending the blank at right angles along the slits. The pin-receiving groove includes a front wall and a rear wall. The rear wall has integrally formed guide portions at its opposite ends. Both rear wall and guide portions have a substantially uniform thickness, established by the material thickness of the metal blank and preselected for strength and durability to provide mating engagement between the guide portions and components of the gilling machine. The front wall has a reduced thickness relative to the back wall and establishes in combination therewith an overall predetermined thickness of the faller bar. Tab-like extension projecting integrally from each end of the front wall are manipulated to strengthen the finished bar. Removable reinforceing means can be used with the tab-like extensions to obtain a greater degree of strengthening. A plurality of longitudinally-spaced and vertically-extending notches may be formed in the confronting surfaces of the front and rear walls to provide pin-receiving slots.

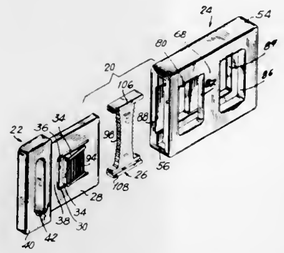
3,798,710
SHEET METAL PANEL FASTENER
George A. Tinnerman, 3600 Stewart Ave., Miami, Fla.
Filed Feb. 9, 1973, Ser. No. 330,959
Int. Cl. E04b *1/40;* **A44b** *21/00;* **F16b** *17/00*
U.S. Cl. 24—73 B **4 Claims**

A sheet metal fastener for securing panels, especially of insulation material, to a supporting structure is formed in two parts, one part having a clip to secure to the supporting structure and a prong to penetrate the panel and pass through the second part, the other part being substantially washer-like with a pair of tongues slotted to receive the prong. The prong has teeth to engage the ends of the slot in the tongues, preventing withdrawal of the tongues through the washer-like part, and is bent over the second part to secure the two parts to the panel. The tongues are formed by slitting the sheet



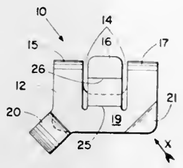
material of the second part and the material adjacent the slits may be upset to prevent the tongues being forced through the space in the washer-like part.

3,798,711
SEPARABLE FASTENER
Sydne Cousins, 345 W. 58th St., New York, N.Y.
Filed June 26, 1972, Ser. No. 266,494
Int. Cl. A44b *11/25*
U.S. Cl. 24—77 R **13 Claims**



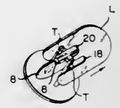
Separable fastener molded of glass-filled nylon, or the like, capable of supporting high loads, which latches firmly and easily and which when latched, is characterized by a minimum of protuberances and firm, complete restraint against relative movement.

3,798,712
EYEGLASS CLIP FOR HEADSETS
David Raynes Bonis, Putnam, Ontario, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Ontario, Canada
Filed Apr. 9, 1973, Ser. No. 349,220
Int. Cl. A44b *21/00*
U.S. Cl. 24—81 PH **3 Claims**



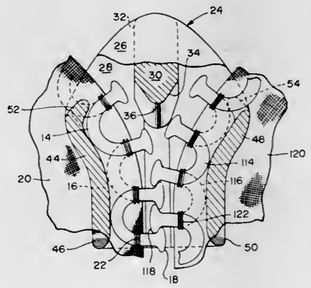
A clip for holding a telephone headset, the clip fitting over a leg of the eyeglasses worn by the user. The clip has a plurality of legs, of spring material, giving different spring combinations. The legs are arranged to provide differing gaps so that a wide variation of thicknesses of eyeglass legs can be accommodated.

3,798,713
CUFF LINK LOCK
Eugene A. Lakos, 201 E. 66th St., New York, N.Y.
Filed June 29, 1972, Ser. No. 267,501
Int. Cl. A44b *11/18*
U.S. Cl. 24—90.5 **8 Claims**



A lock for preventing the loss of a cuff link comprising: a sheet-like body having portions thereof which are flexible and including a U-shaped portion having a base and a pair of generally parallel legs extending from the base, a coplanar tongue extending from the base and having a portion thereof disposed between the legs, the tongue having a neck portion adjacent to the base and a lock portion extending from the neck portion, the legs bounding the lock portion on either side and in close proximity thereto so as to provide a pair of slits, the width of the neck portion being smaller than the width of the lock portion thereby providing a pair of apertures bounded by the legs, the base and the neck.

3,798,714
FLANGE-LOCK SLIDER
Gilbert A. Mueller, St. Catharines, Ontario, Canada, assignor to Textron, Inc., Providence, R.I.
Filed May 18, 1972, Ser. No. 254,360
Int. Cl. A44b *19/30*
U.S. Cl. 24—205.14 **1 Claim**

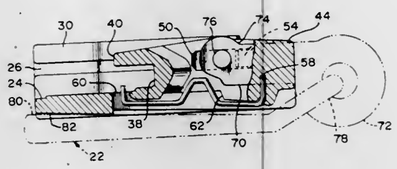


A ladder-type filamentary slide fastener has a flange-lock slider in which a single locking projection extends into the slider channel from only one of the two flanges on each side thereof whereby the slider exhibits improved locking characteristics, increased smoothness in slider operation and reduced fastener binding and wear.

3,798,715
SLIDER ASSEMBLY FOR SLIDE FASTENER
George B. Moertel, Conneautville, Pa., assignor to Textron, Inc., Providence, R.I.
Filed Mar. 20, 1973, Ser. No. 343,079
Int. Cl. A44b *19/30*
U.S. Cl. 24—205.14 K **13 Claims**

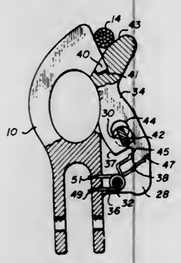
A slider assembly for a slide fastener is disclosed with a slider body with a locking spring for preventing accidental opening movement and with an elongate link for releasing the locking spring. A pull tab pivotally connected with the link is

movable between a locked position and an operative position wherein the link is moved to abut the locking spring and move a locking end thereof to an unlocked condition. The slider as-



sembly is particularly useful with slide fasteners of the concealed type in that the slider assembly is substantially hidden from view in locked position.

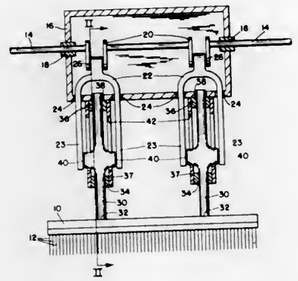
3,798,716
SNAP FASTENING DEVICE
Enrique J. Klein, 947 Alice Ln., Menlo Park, Calif.
Filed Apr. 26, 1972, Ser. No. 247,736
Int. Cl. A44b *3/02*
U.S. Cl. 24—233 **5 Claims**



A snap fastening device having particular utility for use on sailboats to attach the luff of the jib to the forestay and including a fastener body fixedly attached to the sail at one end with an open hook at the other end and a closure member in the form of a movable jaw which swivels open around a shaft fixed to the fastener body to allow the insertion and removal of the stay. The jaw is automatically locked in the closed position by a stud protruding from the fastener body and a flattened section of shaft that seats in a notch of the jaw. The jaw is forced to return to the closed and locked position by a set of springs attached to the fastener body.

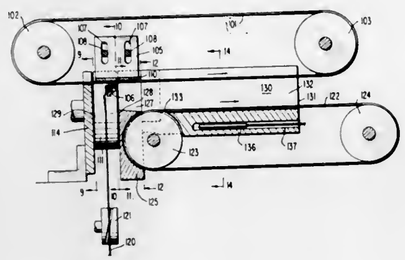
3,798,717
NEEDLE LOOM DRIVES
Raymond E. Brochetti, Westfield, Mass., assignor to James Hunter Machine Company, Inc., North Adams, Mass.
Filed Oct. 30, 1972, Ser. No. 302,173
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 R **2 Claims**

A drive for a needling machine including a crank shaft for reciprocating a needle board and linkages for connecting the crank shaft to said needle board. One of the linkages is fixed to the needle board and guided for movement in a rectilinear path, while the other of said linkages is connected to the crank shaft for movement therewith at one of its ends and the other



of its ends is pivotally connected to the linkage fixed to said needle board at a point intermediate spaced bearing means which guides it in a rectilinear path.

3,798,718
APPARATUS FOR STUFFER-CRIMPING YARN
Alexander L. Trifunovic, Wycliffe, Del., assignor to Joseph Bancroft & Sons Co., Wilmington, Del.
Continuation-in-part of Ser. No. 40,486, May 26, 1970, abandoned. This application May 21, 1971, Ser. No. 145,869
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **12 Claims**

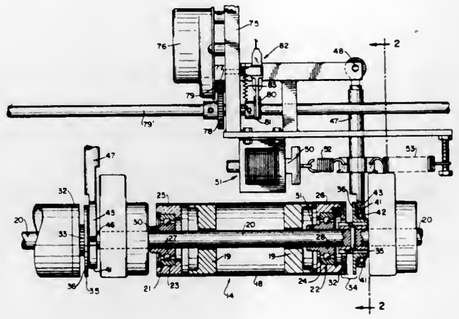


Apparatus for crimping yarn in which a pair of feed rolls feeds the yarn against a conveyor belt which passes between the rolls adjacent the bite and advances parallel to the axes of the rolls. The belt carries the crimped yarn from the crimping zone at the bite over a heated surface where the crimp is set. Alternative embodiments add a second conveyor belt or a pair of helical screw members in opposed cooperating relationship with the first conveyor belt to carry the crimped yarn from the crimping zone.

3,798,719
DRIVE MECHANISM FOR YARN WINDER
Victor H. Schrader, 10 E. 40th St., New York, N.Y.
Continuation of Ser. No. 620,476, March 3, 1967, abandoned. This application Apr. 20, 1970, Ser. No. 30,202
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.7 **15 Claims**

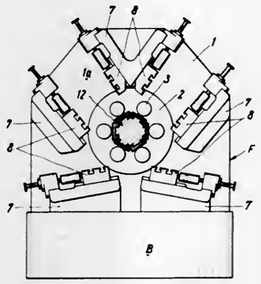
A stuffer crimper having a tube forming a crimping chamber and carrying a core of crimped yarn. A sensing device in the form of a strip or of one or more wires resting on the top of the core of yarn in the tube and extending outwardly through slots in the tube and joined to an external ring which

rises and falls with the core. A winder in the form of a drum journalled on a constantly rotating shaft and driven thereby



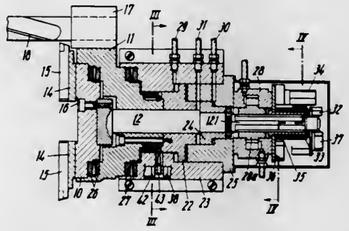
through a clutch which is actuated by said feeler in a sense to maintain the core at a substantially constant level in the tube.

3,798,720
MULTIPLE-SPINDLE MACHINE TOOL
Alfred Ledergerber, Bielefeld, and Rudolf Crachy, Babenhausen, both of Germany, assignors to Werkzeugmaschinenfabrik Gildemeister & Comp. AG, Bielefeld, Germany
Filed Jan. 19, 1972, Ser. No. 219,071
Claims priority, application Germany, Jan. 21, 1971, 2102732
Int. Cl. B23b *3/32*; **B23p** *23/02*
U.S. Cl. 29—38 B **21 Claims**



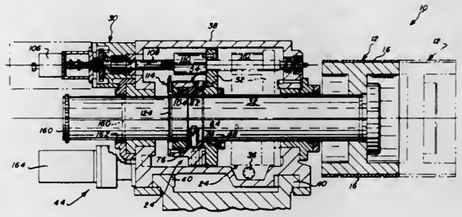
A multiple-spindle automatic machine tool wherein the frame supports a discrete cross slide and a discrete main tool slide for each rotary work spindle. The cross slides and the main tool slides are respectively movable radially and axially of the workpieces at the respective working stations by discrete hydraulic drives whose reciprocable piston rods or feed screws are separably coupled with the corresponding slides by split nuts having two sets of threads of similar inclination but different leads and respectively meshing with external threads of the piston rods or feed screws and the respective slides to allow for accurate adjustment of slides in response to rotation of the nuts.

3,798,721
INDEXIBLE TOOL TURRET ASSEMBLY
Erhard Schalles, Obbedissen, Germany, assignor to Werkzeugmaschinenfabrik Gildemeister & Comp. Aktiengesellschaft, Bielefeld, Germany
Filed June 9, 1972, Ser. No. 263,364
Claims priority, application Germany, June 9, 1971, 2128642
Int. Cl. B23b *3/16, 29/00*
U.S. Cl. 29—42 **8 Claims**



A tool turret assembly which has a larger-diameter turret with an annulus of axially parallel holders for boring tools and a smaller-diameter turret having an annulus of holders for turning tools. The larger-diameter turret is rotatably and axially movably mounted on an axially movable shaft which is rigid with the smaller-diameter turret and carries the rotor of a hydraulic motor. The larger-diameter turret can be moved axially to be non-rotatably coupled to a stationary housing, and at least one of the turrets is movable axially toward the other turret to thereby connect the larger-diameter turret to the shaft for indexing by the hydraulic motor. Two tool holders of the larger-diameter turret define a recess which allows for the placing of a selected turning tool into a material-removing position relative to a workpiece which is rotated by a work spindle during turning. The shaft and the larger-diameter turret are movable axially by multi-stage pistons. The couplings, connecting the turrets to another and the one turret with the housing, allow the indexing of the turrets in different fixed working positions.

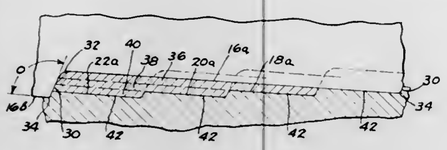
3,798,722
COUPLING ASSEMBLY
Gilbert F. Lutz, Chesterland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Jan. 24, 1973, Ser. No. 326,403
Int. Cl. B23b *29/32*
U.S. Cl. 29—48.5 **5 Claims**



A machine tool constructed in accordance with the present invention includes an improved coupling assembly which is operable between an engaged condition in which the coupling assembly holds a turret against rotation and a disengaged condition in which the turret can be rotated to index tools relative to a workpiece. The coupling assembly includes a first coupling member on which there is an annular array of teeth.

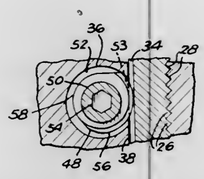
A housing is fixedly connected to the first coupling member and forms a main chamber in which a second coupling member is disposed. This second coupling member is fixedly connected with a turret bar and is movable in the main chamber under the influence of fluid pressure to operate the coupling assembly between engaged and disengaged conditions. When the coupling assembly is to be disengaged, fluid pressure is applied against a surface on the second coupling member to move the second coupling member in the main chamber in a direction away from the first coupling member to disengage the two sets of teeth. When the coupling assemblies are to be reengaged, fluid pressure is applied against another surface on the second coupling member to move the second coupling member toward the first coupling member and move the two sets of teeth into meshing engagement.

3,798,723
CUTTING TOOL
Edmund J. Czopor, Bloomfield Hills; Joseph Newton, Livonia; Ralph W. Cochrane, Birmingham, and Stan T. Mazur, Detroit, all of Mich., assignors to Gorham Tool Company, Detroit, Mich.
Filed July 27, 1972, Ser. No. 275,710
Int. Cl. B26d *1/12*
U.S. Cl. 29—103 A **4 Claims**



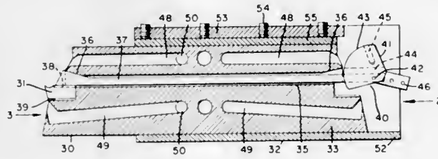
A roughing milling cutter having a plurality of spiral flutes defining the leading edges of the cutting teeth. The cutting teeth are formed as a series of stepped serrations, the circumferentially adjacent stepped serrations defining a helix extending axially around the periphery of the cutter. The helix angle of the serrations is substantially greater than the helix angle of the flutes and each serration defines an axially inclined surface terminating in a shoulder and having both radial and axial clearance.

3,798,724
LOCKING ARRANGEMENT FOR CUTTING BLADE INSERTS
Edmund J. Czopor, Bloomfield Hills, Mich., assignor to Gorham Tool Company, Detroit, Mich.
Filed July 28, 1972, Ser. No. 276,074
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 R **6 Claims**



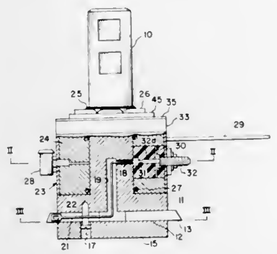
An arrangement for locking a cutter blade insert on a milling cutter body. A bore in the cutter body adjacent a recess into which a cutting blade is inserted has a portion of its side wall intercepting the recess. A cam lock is mounted for rotation within the bore by journalling the reduced cylindrical end shafts thereof within the bore. The cam lock has a cam intermediate the shaft ends which is disposed within the bore adjacent the intersection of the bore and the recess. When the cam is actuated to a locking position after a blade is inserted into the recess, it wedges the blade in the recess thereby securely locking the same to the cutter body.

3,798,725
CUTTING TOOL
Thomas Alec Hanson, 455, Devonshire Ave., Woodstock, Ontario, Canada
Filed Apr. 20, 1970, Ser. No. 29,779
Claims priority, application Great Britain, Apr. 24, 1969, 20871/69
Int. Cl. B26d *1/00;* **B23b** *29/00*
U.S. Cl. 29—106 R **9 Claims**



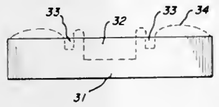
A cutting tool which is particularly useful as a cut-off tool includes a tool holder and a replaceable cutting insert. The tool holder comprises a tool body having a passage for a drawbar which holds the insert in a cutting position on the body. The drawbar and the tool body have co-operating inclined surfaces for urging the drawbar into engagement with the insert on movement of the drawbar along the passage. The drawbar is held in a securing position by securing means.

3,798,726
METERED COOLANT VALVE
George M. Dudley, 69-N. Boxwood St., Hampton, Va.
Filed Jan. 27, 1972, Ser. No. 221,321
Int. Cl. B26d *1/00*
U.S. Cl. 29—106 **8 Claims**



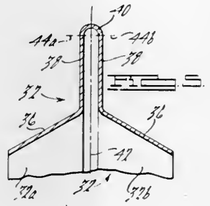
A metering coolant valve is disclosed for directing fluid coolant onto each of a plurality of bits or tools mounted on a rotatable assembly. The plurality of tools are mounted upon a rotatable shaft for successively bringing each bit into contact with the work product to be machined. The fluid coolant is directed from a suitable supply to a distribution assembly fixedly disposed for rotative movement with the shaft. The fluid coolant is selectively distributed to each of the tools by a distribution assembly including a conduit or tube associated with each of the bits and having a first end disposed to direct the coolant onto the bit when it is in operative relationship with the work product and a second end selectively mounted upon the periphery of the shaft. As the shaft rotates with the distribution assembly, each conduit is brought into fluid-exchange relationship with a metering assembly to thereby direct the coolant fluid through the corresponding conduit and onto that bit in operative relationship with the work product. The metering assembly includes a valve opening disposed adjacent the periphery of the shaft and disposable in alignment with one of the conduits as the second end of the conduit is rotated thereby. The valve opening is so dimensioned that the conduits are rotated into a fluid exchange relationship with the conduit opening for a predetermined angle of rotation to thereby control the amount of fluid coolant directed onto each of the bits and also the duration of time that the fluid is directed thereto. Further, a handle is fixedly attached to the metering assembly to ensure that the metering assembly does not rotate with the shaft when in operation and also to adjust selectively the position of the conduits with respect to the valve opening of the metering assembly to prevent further fluid coolant flow when the machine has ceased operation.

3,798,727
METHOD OF MAKING A FLUIDIC DEVICE
Bruce A. Brock, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Continuation-in-part of Ser. No. 158,029, June 29, 1971, abandoned. This application May 18, 1973, Ser. No. 361,704
Int. Cl. B21d *53/00;* **B23p** *15/00*
U.S. Cl. 29—157 R **10 Claims**



A precision impression forming method of making a fluidic device, comprising: forming a blank of a relatively soft metal; placing the blank and a form punch in a die-set, the form punch having a raised pattern of the desired configuration of the fluidic device on its face; placing the die-set in a press capable of exerting a high force; pressing the form into the blank to a predetermined depth; finishing the face of the blank to a predetermined surface finish; fabricating a coverplate for the fluidic device; forming the necessary ports for the fluidic device in the blank or coverplate or both; and, assembling the blank and coverplate in a fluid-tight relation.

3,798,728
METHOD OF MANUFACTURING WHEEL TRIM
Hans R. Beisch, Essex, Ontario, Canada, assignor to Sargent Industries of Michigan, Inc., Ypsilanti, Mich.
Filed Apr. 4, 1972, Ser. No. 240,970
Int. Cl. B21d *53/26;* **B21k** *1/28, 1/42*
U.S. Cl. 29—159 A **38 Claims**

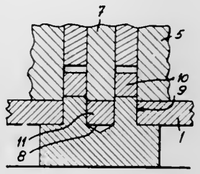


This application discloses an improved method of manufacturing trim rings for automotive wheels from a single strip of sheet material, comprising generally forming a flat strip of material into a hooped configuration, attaching the two ends of the hoop, expanding the hoop around the perimeter thereof intermediate the opposite axial ends thereof, and separating the hoop into a pair of trim rings.

3,798,729
PROCESS FOR THE MANUFACTURE OF A HIGHLY RESILIENT AND PLIANT EXPANDABLE BAND
Shoichi Tanaka, No.24, 3-chome, Kamitakada, Tokyo, Japan
Filed Dec. 10, 1971, Ser. No. 206,746
Claims priority, application Japan, Dec. 26, 1970, 45-119124
Int. Cl. B21f *43/00;* **B23p** *13/00*
U.S. Cl. 29—160.6 **8 Claims**

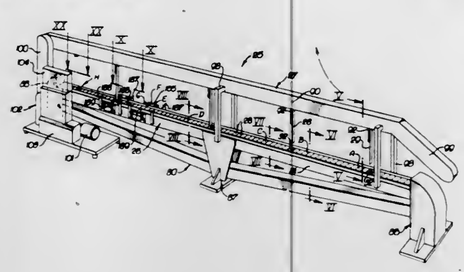
A process for the manufacture of a highly resilient and pliant expandable band, characterized in that an annealed resilient metallic wire is wound repeatedly and continuously into a band-shaped or endless structure composed of a series of closely adjacent coils having the same number of turns, for each coil, so that every other coil is wound from top to bottom or vice versa and the interposed coil between such every other coil is wound from bottom to top or vice versa; the structure thus obtained is then subjected to a compressive force from its periphery; wedge pins are then inserted into any desirable coils and trimmed in their shape; and the overall structure is then subjected to quenching treatment from a high temperature.

3,798,730
PROCESS FOR THE ATTACHMENT OF HOUR SIGNS ON TIME PIECE DIALS
Victor Morf, Pierre Grise 7, La Chaux-de-Fonds, Switzerland (2300)
Continuation-in-part of Ser. No. 882,853, Dec. 8, 1969, abandoned. This application Apr. 17, 1972, Ser. No. 244,593
Claims priority, application Switzerland, Dec. 10, 1968, 18402/68
Int. Cl. B23p *13/00*
U.S. Cl. 29—177 **13 Claims**



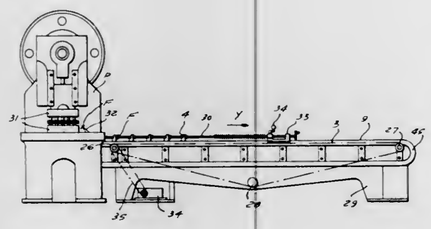
The hour signs for a timepiece are placed on a support with their feet upwards. A dial is placed face down on the feet, the dial being of softer material than the feet, and stamped so that the feet cut-out their own fixing holes. Each foot preferably has a central hole into which a cut-out portion of the dial is forced.

3,798,731
APPARATUS FOR ASSEMBLY OF A RETRACTOR DEVICE INCLUDING A SAFETY BELT
Richard L. Groendyke, Upland, Calif., assignor to American Safety Equipment Corporation, New York, N.Y.
Filed Apr. 3, 1972, Ser. No. 240,581
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 A **18 Claims**



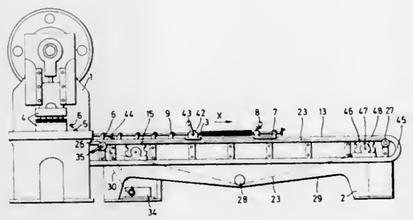
An apparatus for assembly of a retractor device including a safety belt wherein the apparatus includes parallel upper and lower conveyor means for simultaneous advancement of a plurality of holding means for assembly of retractor devices on the lower conveyor while safety belts depending from the upper conveyor are advanced in corresponding relation to respective holding means. The lower conveyor includes a plurality of subassembly stations for partially and loosely assembling retractor parts on a base frame held by the holding means, such parts including reel means, reel locking means, spring means for winding a safety belt on the reel means, and means on the reel means for connecting one end of a safety belt to the reel means. An automatic machine subassembly station is provided for tightening into final assembled relationship the several loosely associated parts of the retractor device, for lubricating certain areas and points on the retractor device, and for tightening spiral spring means while the reel means is kept from rotation by the connection of one end of the belt thereto. Later release of the other end of the safety belt will permit winding of the belt upon the reel means.

3,798,732
APPARATUS FOR APPLYING FINS TO STATIONARILY HELD PIPES WITHOUT SUBJECTING THE FINS TO VIBRATIONS
Heinrich Schulenberg, Bochum, and Guenter Seien, Wanne-Eickel, both of Germany, assignors to Gea Luftkuehlergesellschaft Happel GmbH & Co. KG, Bochum, Germany
Filed Aug. 7, 1972, Ser. No. 278,615
Claims priority, application Germany, Aug. 6, 1971, 2139381
Int. Cl. B23p *15/26*
U.S. Cl. 29—202 R **14 Claims**



An apparatus for applying fins onto pipes held stationarily on one of the ends thereof. The fins are pushed seriatim onto the pipes from the free opposite ends by means of a plurality of spaced substantially parallel plate-shaped entrainment members moved by endless transporting means, the working runs of which move substantially parallel to the pipes from the free toward and beyond the fastened ends of the latter. Each of the entrainment members is tiltable between a working position extending substantially normal to the pipes and a releasing position. Each of the entrainment members is provided with at least one glide shoe which abuts on a respective one of a plurality of support members attached to and closely arranged along part of an endless chain, the working run of which is moved in a direction opposite to that of the transporting means. The support members are arranged and constructed so that the glide shoe on each entrainment member before leaving one support member engages already the next support member so that the glide shoes on the entrainment members and therewith the latter are not subjected to vibrations while they push the fins onto the pipes, whereby the fins are applied to the pipes in vibration free manner.

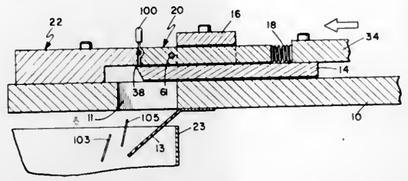
3,798,733
APPARATUS FOR APPLYING FINS TO PIPES WITH MEANS FOR PREVENTING BENDING OF THE FINS DURING APPLICATION
Heinrich Schulenberg, Bochum, Germany, assignor to Gea Luftkuehlergesellschaft Happel GmbH & Co. KG, Bochum, Germany
Filed Aug. 7, 1972, Ser. No. 278,617
Claims priority, application Germany, Aug. 27, 1971, 2142931
Int. Cl. B23p *15/26*
U.S. Cl. 29—202 R **9 Claims**



Apparatus for applying fins from the free end of at least one pipe which is stationarily held at the other end thereof, in which the fins are pushed one by one onto the free end of the pipe and moved along the same by parallel entrainment members connected spaced from each other to a pair of endless substantially parallel sprocket chains, the working runs of which are moved in the direction of the pipe by driven sprocket wheels. The entrainment members are held in working position substantially normal to the pipe axis until they have pushed the respective fin to the desired position on the pipe, whereafter the respective entrainment member is permitted to tilt to a releasing position. To equalize any different elongation occurring in the two sprocket chains and to keep the entrainment members parallel to each other, equalizing sprocket wheels are provided which are connected to each other for synchronous rotation and which engage the working runs of the chains spaced from the driven sprocket wheels.

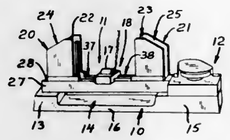
3,798,734
COMPONENT PREFORMING MACHINE
Gerald S. Fedor, 924 Rosette Court, Sunnyvale, Calif.
Filed Apr. 6, 1972, Ser. No. 241,701
Int. Cl. H01r *43/04;* **H05k** *13/04*
U.S. Cl. 29—203 B **7 Claims**

A component preforming machine for forming the leads from electronic components so that they may be inserted in, and space the component from a circuit board. The machine incorporates a pair of dies that are mounted on the base of the machine. A pneumatic cylinder forces one of the dies toward the other to form the leads. The fixed die is supported on the base of the machine in two pin and bushing combinations, and held in place by a single screw. A die configuration is provided for forming the leads of radial lead components so that the leads may be inserted in the board to space the component



from the board and to hold the component upright during processing until the component is firmly secured by soldering. The component leads after forming in this die incorporate oppositely directed semi-circular crimps intermediate the ends of the leads. The crimps eliminate the tendency of the component to rock toward one direction or the other. Each die incorporates a cylindrical protrusion that cooperates with a cylindrical cavity in the opposing die.

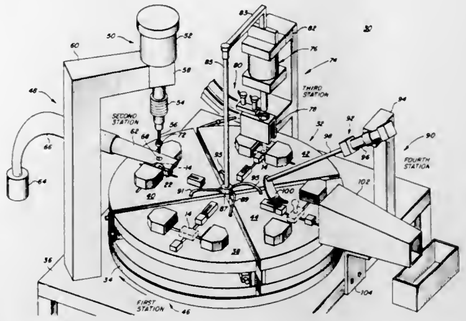
3,798,735
LAMINATION STACKING MACHINES
John M. Macchione, P.O. Box 1386, Haines City, Fla.
Filed June 15, 1972, Ser. No. 262,942
Int. Cl. H05k *13/00;* **B23p** *19/04*
U.S. Cl. 29—203 L **8 Claims**



A lamination stacking machine is adapted to receive interchangeable heads so that the machine will accommodate a number of different size lamination plates using the same base and drive mechanism simply by lifting one head off and replacing it with a head of the desired size. The stroke of the reciprocating drive mechanism may be adjusted to the required stroke for the selected head.

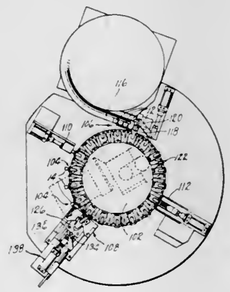
3,798,736
RUBBER STAMP ASSEMBLER
Edward J. Gibbons, Brighton; Herbert J. Morton, Foxboro, and Joseph J. Busheee, Watertown, all of Mass., assignors to Edward J. Gibbons, Brighton, Mass.
Filed Oct. 27, 1971, Ser. No. 193,136
Int. Cl. B23p *19/04;* **B23b** *39/00*
U.S. Cl. 29—208 F **23 Claims**

An automatic assembly machine is disclosed including carrier means for individually receiving first portions of objects to be assembled by the machine and moving those first portions through a number of stations, including a first station at which a first portion is secured to the carrier, a second station at which a first portion is drilled to provide a mounting hole, a third station at which a second portion of the object is fitted



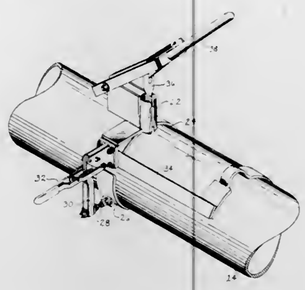
into the hole drilled in a first portion, a fourth station at which the assembled object is removed from the carrier, the carrier means including a plurality of work sites, one corresponding to each of the stations and adapted for positioning a first portion, and drive means for moving the carrier means to sequentially submit each of the work sites to each of the stations.

3,798,737
SEAL ASSEMBLY MACHINE
Sigurd Manfred Moberg, 91 Ridge St. Apt. 101, Orange, N.J.
Filed Aug. 21, 1972, Ser. No. 282,240
Int. Cl. B23p *19/04;* **B23q** *7/10*
U.S. Cl. 29—208 D **7 Claims**



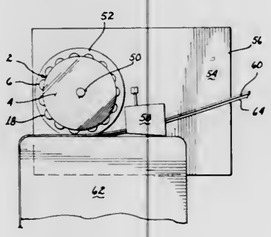
A machine for assembling seals of the type in which a seal body receives a wire shackle in non-removable engagement, in which the shackles have divergent legs of unequal length. The machine receives the shackles with the legs in the unflexed divergent condition, flexes them together and positions them in alignment with apertures in the seal body, and then inserts them into the body a predetermined distance so that one leg is non-removably engaged in one aperture and the other leg is removably positioned in the other aperture.

3,798,738
MUSHROOM VALVE STUFFER
Rufus J. Purtell, Brownfield, Tex., assignor to Tri-Matic, Inc., Brownfield, Tex.
Filed May 30, 1972, Ser. No. 258,021
Int. Cl. B25b *27/24*
U.S. Cl. 29—213 **14 Claims**



Rubber mushroom-shaped, self-draining valves are rammed by a creased ram into holes in irrigation pipe through a slotted funnel.

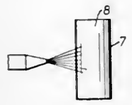
3,798,739
ROTATING HAMMER
Alton L. Fritz, Peoria, Ariz., assignor to Unique Machine Tool Co., Inc., Glendale, Ariz.
Filed May 19, 1972, Ser. No. 254,860
Int. Cl. B23p *19/02*
U.S. Cl. 29—235 **8 Claims**



The invention teaches a novel rotating hammer having an eccentric perimeter which may be a plurality of radially disposed striking points which, in a preferred embodiment, comprise rotably supported cylinders. The device is simpler to manufacture, more durable, substantially quieter in operation and requires less power to operate than prior art devices.

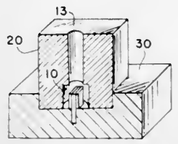
3,798,740
METHOD OF EXTRUDING A POROUS COMPACTED MASS OF METAL POWDER HAVING A SEALED OUTER SURFACE
Frederick Arthur Kirk, Rotherham, England, assignor to Davy-Ashmore Limited, London, England
Filed Oct. 2, 1972, Ser. No. 294,352
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 **12 Claims**

In an extrusion process a mass of metal particles is subjected to pressure, e.g., isostatic pressure in order to compact the powder but to less than fully dense condition. The outer surface of the compact so formed is sealed with a material conveniently glass and the compact is then heated and extruded



under pressure through a die. As alternatives to the use of glass as the sealing material salt, or a fine powder of a ductile metal may be used.

3,798,741
METHOD OF FABRICATING AN OBJECT WITH A THIN WALL HAVING A PRECISELY SHAPED SLIT
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; P. A. Christopher; W. J. Gross; W. H. Henley, and B. D. Swirsky
Filed Mar. 13, 1973, Ser. No. 340,864
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **10 Claims**

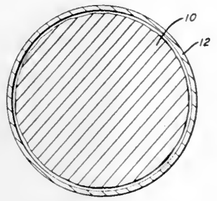


A method of making a structure having a cavity and having a thin wall with a precisely shaped slit. An object having a cavity having two openings, one of which is to be closed by a thin wall with a slit, is placed on the surface of a fixture. The fixture surface has a slot conforming to the size and shape of the slit to be formed in the thin wall, and a shim member is inserted into the slot such that it extends into the slot a distance deeper than the desired thickness of the thin wall and such that it extends above the surface of the fixture and into the cavity of the superposed object. The object and fixture are fixed in position with the slot properly located in the position of the slit to be formed, and the cavity is filled with a molten settable material from its other end. After the molten material has set, the object is separated from the fixture, the shim adhering to the set composition in the cavity of the object. The surface of the object which was adjacent the fixture is then provided with a plated metal layer over the opening to be provided with a thin wall. The plated layer is then machined such that the layer, in the area covering the cavity opening, has the desired thickness of the thin wall being provided. The settable material is then melted out. The shim is then removed by selective etching to produce the desired structure.

3,798,742
METHOD FOR HOT WORKING
Stuart T. Ross, Manlius, and Brian R. Leslie, Camillus, both of N.Y., assignors to Crucible Inc., Pittsburgh, Pa.
Filed Jan. 24, 1973, Ser. No. 326,341
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **7 Claims**

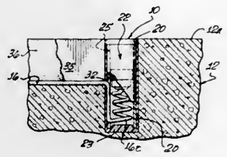
A practice for hot working, as by rolling, ingot castings of cobalt- and nickel-base alloys to avoid cracking thereof; prior to working the casting is surrounded with an envelope of mild

steel to form an assembly that is heated to an elevated temperature and subjected to fluid-pressure compacting to bond



the envelope to the casting; thereafter, the assembly is hot worked to the desired mill product form, and at the completion of hot working the envelope is removed.

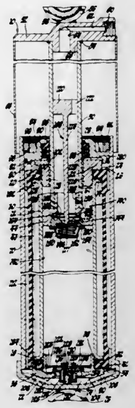
3,798,743
METHOD OF INSTALLING PHOTOELECTRIC CELL IN A DRIVEWAY
Edward A. Griswold, 2071 E. Galbreth Rd., Pasadena, Calif.
Continuation of Ser. No. 883,107, Dec. 8, 1969, abandoned, which is a division of Ser. No. 488,946, Sept. 21, 1965, Pat. No. 3,483,507. This application Mar. 9, 1972, Ser. No. 233,335
Int. Cl. B23p *19/00*
U.S. Cl. 29—428 **6 Claims**



The disclosure concerns a system for sensing the passage of a vehicle or similar object, and a method of system installation, wherein the response of a photocell, installed near the surface of a driveway, is such that the cell output signal changes to the extent required (for alarm actuation) for a substantial change in incident light. This is true under the wide range of ambient light conditions normally encountered whereby the alarm can be made to respond to vehicles and not to casual moving shadows.

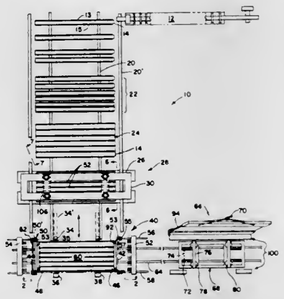
3,798,744
A PROCEDURE FOR CHARGING AN OLEO-PNEUMATIC SHOCK ABSORBER
George O. Smith, Ferndale, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 1, 1972, Ser. No. 249,612
Int. Cl. B23p *11/00*; **F16f** *9/10*
U.S. Cl. 29—436 **3 Claims**

In preferred form a combination air oil shock absorber having an inner liquid-filled cylinder tube surrounded by a flexible bladder and including passageway means between the tube and bladder for directing pressurized gas into a gas space between the tube and bladder. An outer cylinder surrounds the bladder and forms a liquid-filled reservoir therewith. An end cap assembly is secured to the outer cylinder having dual



high pressure seals to close the liquid-filled reservoir and to seal the gas inlet between the tube and bladder.

3,798,745
PRECIPITATOR PLATE PRODUCTION SYSTEM WITH LOW LEVEL BUNDLING AND TRANSPORT
Bartholomew Frank Quintilian, Baltimore, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Dec. 13, 1972, Ser. No. 314,713
Int. Cl. B23q *3/00*
U.S. Cl. 29—464 **12 Claims**



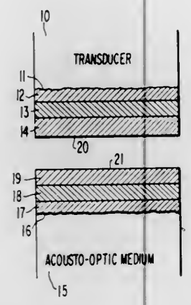
A production, bundling and staging system for precipitator plates of the type assembled as an array of pressure-interlocked modules with a hempiece welded across each end, including: a station equipped for welding-on the hempieces followed by drop-stacking and bundling the completed precipitator plates on a divided transfer table beneath the welding level, a shuttle car having jacks for bundle self-loading and arranged for horizontal bundle-transport from beneath the station without interrupting welding, stacking, and bundling; and a turnover fixture divided to permit the shuttle car to transfer bundles to it and flanged to stabilize bundle edges during bundle turnover and pickup by a crane for edge-down bundle storage in a shipment or other staging area.

3,798,746

PROCESS OF MAKING ACOUSTO-OPTIC DEVICES

Gerard Argant Alphonse, Hightstown, and George Edward Bodeep, Wall Township, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 295,975
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 5 Claims



Acousto-optic devices comprising a transducer bonded to an acousto-optic medium having improved bonds are made by a process whereby the surfaces to be joined are first roughened, a primer metal layer is coated onto the acousto-optic medium, which primer metal is the metal which is chemically bonded to oxygen in the acousto-optic medium, the primer layer is cooled, a layer of a conductive metal and a layer of indium are deposited onto both surfaces to be bonded and the indium layers pressed together in a vacuum.

3,798,747

CONVERSION-ROLLING OF TITANIUM/STEEL BONDED COMPOSITE

Narain S. Lalwaney, Woodbury Heights, N.J., assignor to E.I. duPont de Nemours and Company, Wilmington, Del.

Filed June 6, 1972, Ser. No. 260,245
Int. Cl. B23k *31/02*
U.S. Cl. 29—475 5 Claims

Conversion-rolled titanium/steel bonded composite products having improved mechanical properties desirable for vessel construction are made by heating to 1,400°–1,600°F. a substantially flat metallurgically bonded titanium/steel composite of the character of composites made by explosion bonding, preferably according to the bonding process described in U.S. Pat. No. 3,397,444; commencing rolling of the composite at said temperature and continuing rolling until the thickness is no greater than one-eighth, preferably one-tenth, the prerolling thickness, the composite being roller biaxially, and the time the composite is held at 1,400°–1,600°F. not exceeding 6 hours; and heating the rolled product at 1,200°–1,300°F. for a period of at least about one-half hour.

3,798,748

DIFFUSION WELDING

Kenneth H. Holko, Strongsville, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 289,033, Sept. 14, 1972, Pat. No. 3,758,741. This application Sept. 29, 1972, Ser. No. 293,726
Int. Cl. B23k *31/02*
U.S. Cl. 29—487 8 Claims

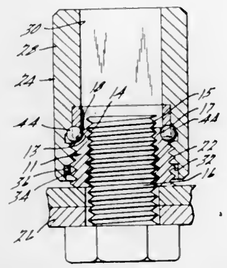
Dispersion-strengthened nickel alloys are sanded on one side and chemically polished. This is followed by a single-step welding process wherein the polished surfaces are forced into intimate contact at 1,400°F for one hour in a vacuum. Diffusion, recrystallization, and grain growth across the original weld interface are obtained during postheating at 2,150°F for two hours in hydrogen.

3,798,749

METHOD AND TOOL FOR EFFECTING A THREAD LOCK

Morris J. Duer, 4157 Mar-Moor Dr., Lansing, Mich.

Filed Oct. 21, 1971, Ser. No. 191,437
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—520 2 Claims



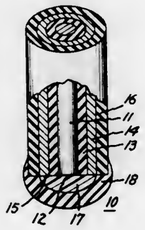
A tool for assembling a lock nut to a complementary male threaded member which tool rotates the lock nut to a seated position relative to the work and moves axially relative to the nut to deform a lock portion of the nut relative to the thread of the complementary threaded member or which may deform both the lock portion and the thread on the complementary threaded member.

3,798,750

SENSOR AND METHOD OF MANUFACTURE

Leonard W. Niedrach, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 69,650, Sept. 4, 1970, Pat. No. 3,714,015. This application July 21, 1972, Ser. No. 273,846
Int. Cl. B01j *17/00*
U.S. Cl. 29—570 3 Claims



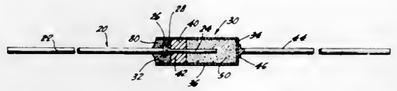
A sensor has an elongated flexible current collector, an electrochemically active region in electrical contact with a portion of the current collector, a second elongated flexible current collector surrounding the first current collector, a second electrochemically active region in electrical contact with a portion of the second current collector, a first layer of electrical insulation disposed between the first and second current collectors, a second layer of electrical insulation disposed over the second current collector, an ion exchange resin electrolyte contacting both electrochemically active regions, and an outer sheath of diffusion barrier material encapsulating at least the electrochemically active regions and the electrolyte. Methods of manufacturing sensors including polarographic oxygen sensors are also described.

3,798,751

METHOD OF MAKING AN ELECTROLYTIC CELL

Haig Goshgarian, Woodland Hills, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed June 3, 1971, Ser. No. 149,476
Int. Cl. B01j *17/00*
U.S. Cl. 29—570 11 Claims



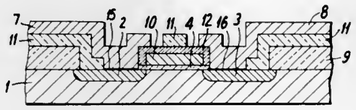
An improved method of making an electrolytic cell including the step of filling with an electrolyte a first electrode having the form of a container. A plug having a hole therethrough is inserted into the first electrode to a particular position. A second electrode having an enlarged portion is inserted through the hole of the plug until the enlarged portion comes into physical contact with the plug. A sealant is disposed within the container to surround the enlarged portion of the second electrode and make a physical bond with the first electrode.

3,798,752

METHOD OF PRODUCING A SILICON GATE INSULATED-GATE FIELD EFFECT TRANSISTOR

Syoji Fujimoto, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Mar. 7, 1972, Ser. No. 232,451
Claims priority, application Japan, Mar. 11, 1971, 46-13230
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 9 Claims



A method is disclosed for fabricating an insulated gate field effect transistor having a silicon gate electrode. The silicon gate electrode is covered with a first insulating layer. That layer as well as the surfaces of the source and drain regions are thereafter covered with a second insulating layer. The second insulating layer is selectively removed to expose a portion of the first insulating layer covering the silicon gate electrode and a part of the surfaces of the source and drain regions. Source and drain electrodes are then respectively applied to the source and drain regions without the possibility of a drain-to-gate or source-to-gate short circuit.

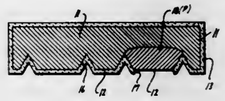
3,798,753

METHOD FOR MAKING BULK RESISTOR AND INTEGRATED CIRCUIT USING THE SAME

Hans R. Camenzind, Santa Clara, and David F. Allison, Los Altos, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 791,660, Jan. 16, 1969. This application Nov. 12, 1971, Ser. No. 198,160
Int. Cl. B01j *17/00*
U.S. Cl. 29—580 2 Claims

Method for making a bulk resistor and integrated circuit using the same in which the bulk resistor is formed in a semiconductor body by the use of dielectric isolation which forms an isolated island and in which contact elements are



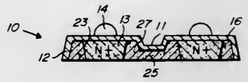
provided at two spaced points to provide a predetermined resistance. The bulk resistor is of a type which can be readily incorporated into an integrated circuit.

3,798,754

SEMICONDUCTOR STRAIN GAGE AND METHOD OF FABRICATING SAME

James B. Price, Phoenix, and Israel A. Lesk, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 15, 1972, Ser. No. 253,081
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 8 Claims



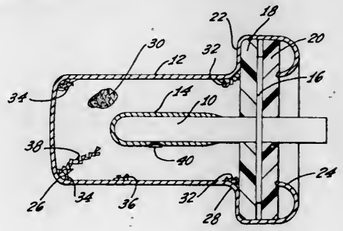
A piezoresistive semiconductor strain gage for transforming mechanical stress into a changed resistance of the semiconductor and therefore a changed electrical current therethrough representative of the amount of stress is described. Also described is a method of fabricating the strain gage that is reliable and results in each produced strain gage having the characteristics of all of the others. The strain gage is comprised of a piezoresistive silicon body having enlarged ends. A KOH etch is made in each end and an epitaxial layer is therein. THEREIN. The epitaxial layer is of the same conductivity type as the piezoresistive silicon but is much more heavily doped to provide low resistance paths to solderable contacts connected to the epitaxially grown material. The combination of enlarged ends and reduced center provides stress amplification, resulting in a greater sensitivity of the strain gage.

3,798,755

ELECTROLYTIC CELL MANUFACTURE

James P. Sandstrom, Marina Del Rey, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Division of Ser. No. 754,277, Aug. 21, 1968, Pat. No. 3,653,998. This application Feb. 3, 1972, Ser. No. 223,091
Int. Cl. B01k *3/00*
U.S. Cl. 29—592 11 Claims



The present invention relates to the manufacture of electrolytic cells. Specifically, the invention relates to the manufacture of electrolytic cells which do not prematurely short

out and which do not provide false readings upon a readout of the information stored in the cell. The electrolytic cells include an inner conductor which is plated with an active material and wherein the active material is plated on the inner conductor using a waterless plating solution and wherein the actual plating occures at a temperature substantially lower than room temperature, for example, 5° ± 5° C. The waterless plating solution can be a solution of silver nitrate in dimethylsulfoxide. The invention also includes the use of an outer cup electrode which receives the inner electrode and wherein the outer cup electrode is treated to remove strain within the cup electrode. The treatment by thermally etching the cup electrode to remove the strain and at the same time eliminate surface contaminations. As a final step to the construction of the electrolytic cell and after the inner electrode is sealed across an open end of the cup electrode the electrolytic cell is subjected to an elevated temperature substantially above room temperature so as to cure the electrolytic cell and create a condition of equilibrium within the electrolytic cell.

3,798,756

METHOD OF CONSTRUCTING RECORDING HEADS

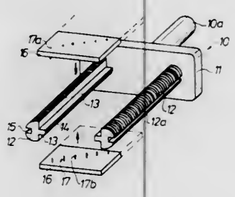
Hans Bauerlen, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed May 25, 1972, Ser. No. 256,976

Claims priority, application Germany, May 26, 1971, 2126043

Int. Cl. G01d *15/16*

U.S. Cl. 29—592 **12 Claims**



The method of constructing recording heads includes the steps of positioning a plurality of contact pins between spaced parallel threaded rods and winding a wire uniformly and under tension around the latter, adjacent turns being placed into successive grooves of the threads. The contact pins are displaced from one another in the direction of the turns, and the parallel turns are each connected to one of the contact pins. The portions of the turns between the rods are embedded in an insulating material. Each rod has a longitudinal groove over which the turns pass and the latter are cut along each groove to produce free ends which are ground and sharpened to provide suitable writing electrodes, and recording heads produced in accordance with this method.

3,798,757

MAGNETIC ALIGNMENT METHOD FOR ELECTRIC MACHINE

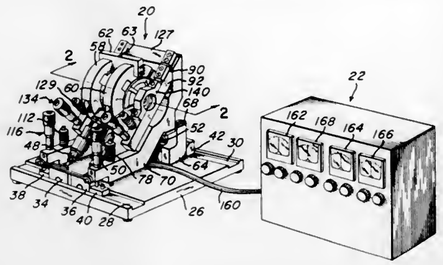
Timothy W. Hennessey, Springfield; Charles A. Lawton, Clark County, and Lester W. Buechler, Dayton, all of Ohio, assignors to Robbins & Meyers, Inc., Springfield, Ohio

Filed July 29, 1971, Ser. No. 167,179

Int. Cl. H02k *15/00*

U.S. Cl. 29—596 **10 Claims**

Apparatus for accurately magnetically centering a movable member within an annular stator of an electric machine, such as an electric motor or generator or solenoid or the like so that the lateral spacing between the movable member and the stator is magnetically equal at all portions thereof. In one embodiment of the invention, as a rotor within a stator is rotated by energization of the stator, force sensor elements sense the forces which occur laterally between the stator and the rotor.



The rotor and the stator are relatively laterally adjusted until the lateral forces between the rotor and the stator are substantially zero. When such lateral forces are substantially zero, the rotor is accurately magnetically positioned with the stator.

3,798,758

METHODS OF MAKING A CORE FOR A MAGNETIC RECORDING AND REPRODUCING HEAD WITH NARROW TRACK WIDTH

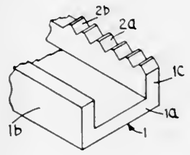
Kenneth Stamers, Woking, and Derek Frank Case, Sunbury-On-Thames, both of England, assignors to International Computers Limited, London, England

Filed Nov. 17, 1971, Ser. No. 199,547

Claims priority, application Great Britain, Jan. 26, 1971, 3223/71

Int. Cl. G11b *5/42*

U.S. Cl. 29—603 **8 Claims**



A method of making a magnetic recording and reproducing component includes, providing in a ferrite member a plurality of grooves defining side-by-side Vee shaped ridges which are reinforced by filling the grooves wwth non-magnetic material. The each ridge apex is then machined to expose a ferrite surface and is bonded to a second ferrite member by means of non-magnetic material so that each face is separated from the second ferrite member by a gap filled with non-magnetic material. A third member is preferably bonded to the second member to produce a second gap aligning with the first gap. Cutting the members between the adjacent ridges to provide a corresponding number of separately operable components.

3,798,759

METHOD OF MAKING ELECTRIC HEATING UNIT

Hermann Gerds, Traunstein, Germany, assignor to Siemens Electrogerate GmbH, Berlin und Munich, Germany

Filed Feb. 15, 1973, Ser. No. 332,622

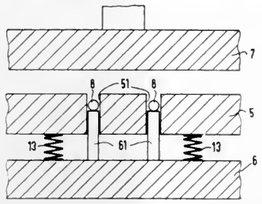
Claims priority, application Germany, Feb. 17, 1972, 2207343

Int. Cl. H05b *3/00*

U.S. Cl. 29—611 **4 Claims**

A heating unit for use in heating plates used for cooking, irons, and the like in which a conventional helical heater coil wire is pressed flat to provide a zig-zag, S shaped conductor

and then embedded in an embedding compound in the heating unit. Pressing of the helical coils to provide the flat zig-zagging



coil permits a more efficient heat transfer, since all of the heating coil will be in a plane parallel to and close to the surface being heated.

3,798,760

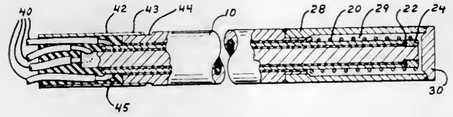
METHOD OF MAKING RESISTANCE WIRE TEMPERATURE SENSOR

John T. M. Carlson, Edina, and Gerald P. Lawson, Blaine, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Division of Ser. No. 186,001, Oct. 4, 1971, Pat. No. 3,761,857. This application May 11, 1973, Ser. No. 359,328

Int. Cl. H01c *7/04*

U.S. Cl. 29—612 **5 Claims**



A resistance temperature sensor adapted to be produced in a semiautomated manner and which is extremely rugged in construction. The basic lead and support element is made in long lengths and then trimmed to stock lengths and the resistance wire is then mounted and enclosed. The exact overall length of the resistance sensor can be altered to a particular customer's requirements by trimming the lead and support assembly without substantially affecting the calibration of the resistance sensor. The sensor is constructed so that it is extremely rugged and insensitive to handling, and at the same time gives high accuracy.

3,798,761

METHOD OF FORMING FLAT END FACES OF WIRE-SHAPED CURRENT CONDUCTORS WHICH ARE PASSED THROUGH A GLASS BOTTOM OF A SEMICONDUCTOR BASE

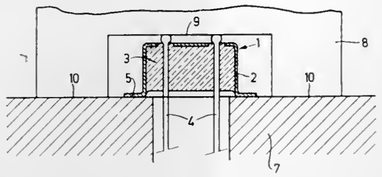
Cornelis De Jong, Emmasingel, Eindhoven, Netherlands

Filed Aug. 8, 1972, Ser. No. 278,735

Claims priority, application Netherlands, Aug. 11, 1971, 7111031

Int. Cl. H05k *13/00*

U.S. Cl. 29—624 **4 Claims**



A method of forming flat end faces of at least a number of wire-shaped current conductors which are passed through a glass bottom of a semiconductor base, in which the conductors are first sealed in the glass bottom after which the assembly is placed with its lower side on a support, the end face of conductor parts projecting from the base on the upper side being upset by means of a pressure member to a desirable length, and a flat end face being formed on the conductor ends with a simultaneous increase of the cross-section.

3,798,762

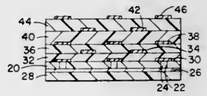
CIRCUIT BOARD PROCESSING

Norman H. Harris, Saugus; John H. Thomas, Huntington Beach; Harlan R. Isaak, Costa Mesa, and John W. Kanz, Miraleste, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1972, Ser. No. 280,314

Int. Cl. H05k *3/30, 3/12, 3/28*

U.S. Cl. 29—626 **8 Claims**



A method of making a multilayer printed circuit board and subsequent mounting of the printed circuit board to a carrier without compromising the electric properties and optimizing the mechanical characteristics of the assembly.

3,798,763

METHOD OF MAKING A ROTARY SWITCH STATOR

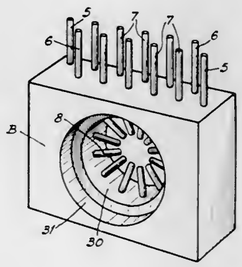
Marcel Henri Deltoer, 22 rue Ravon, Hauts de Seine, France

Filed Feb. 23, 1973, Ser. No. 335,171

Claims priority, application France, Mar. 24, 1972, 72.10428

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 R **4 Claims**

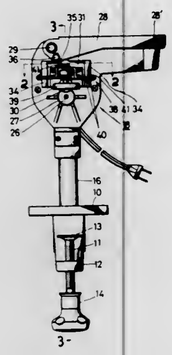


A method of manufacturing a rotary switch stator in which round section wire used for the stator pins is formed into meander loops which are placed in a mold so that certain portions of the meander are held in radial formation and other portions are held in parallel arrangement whilst the intermediate interconnecting portions are within the annular cavity of the mold which is filled with liquid electrically insulating material. After the insulating material has solidified, the excess parts of the wire are cut off to leave a stator having a plurality of equi-spaced radial contact studs and the same number of parallel electrical contact members respectively connected thereto.

3,798,764
ELECTRICALLY POWERED CAN OPENER

Osamu Yamamoto, Nagoya, and Tatsuo Niwa, Kuwana-gun, both of Japan, assignors to Kabushiki Kaisha Aichidenkikosakusho, Aichi-ken, Japan

Filed June 8, 1972, Ser. No. 260,834
Claims priority, application Japan, June 18, 1971, 46-44063; Feb. 16, 1972, 47/16188
Int. Cl. B67b *7/38*
U.S. Cl. 30—4 R 3 Claims

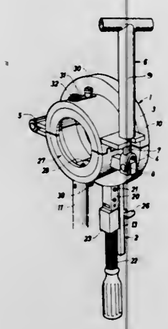


An electrically powered can opener has a lever pivoted on a housing, a linearly movable member carrying a circular cutter and a connecting means pivotally connecting the lever and the movable member. By depressing the lever, the cutter can be made to pierce into a can lid of a can at right angles immediately inside of the end rim of the can. The lever is held automatically at its cutter piercing position by a reaction force of a can opening operation.

3,798,765
DEVICE FOR CUTTING TUBES

Alf Viktor Mattsson, Norra Gubberogatan 19 A, 416 63 Goteborg, Sweden

Filed Jan. 24, 1972, Ser. No. 220,217
Int. Cl. B23d *21/10*
U.S. Cl. 30—96 2 Claims

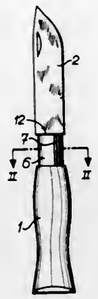


A device for cutting tube shaped work pieces including pivoted clamp halves for surrounding a peripheral portion of the work piece and being clamped therearound without deformation of the work piece and a cutter extending radially of said clamp halves and being slideably mounted on said clamp halves while held in said radial position.

3,798,766
FOLDING POCKET KNIFE

Jacques Opinel, 5, avenue Henri Falcoz, F-73 Saint-Jean-de-Maurienne, France

Filed Aug. 12, 1971, Ser. No. 174,837
Claims priority, application France, Aug. 17, 1970, 7030163
Int. Cl. B26b *1/04*
U.S. Cl. 30—161 8 Claims

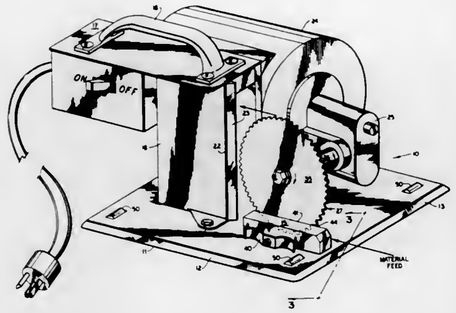


A pocket knife has a split ferrule rotatably mounted on a split ring fixed to the knife handle. When these splits are aligned, the blade can be closed and opened, and the blade held in the open position by turning the ferrule. An inwardly projecting peg on the ferrule cooperates with an aperture in the ring to limit rotation of the ferrule and to axially urge the ferrule to lock the blade in the open position.

3,798,767
APPARATUS FOR CUTTING FLEXIBLE MATERIAL

Brooks Rizer, Dalton, and Haskel Douglas Hayes, Rocky Face, both of Ga., assignors to Textile & Industrial Sales, Inc., Dalton, Ga.

Filed Oct. 24, 1972, Ser. No. 299,797
Int. Cl. B26d *1/20*; B23d *19/02*
U.S. Cl. 30—206 8 Claims

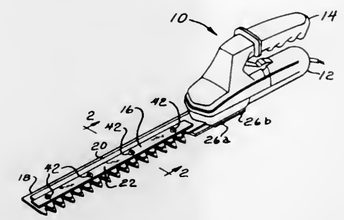


Apparatus for cutting flexible sheet material such as fabric, carpet, and the like. A circular cutting blade is provided with a plurality of projections which extend outwardly from the circumference of the blade. The projections preferably have outer extremities which lack a sharp point or edge of the kind typically associated with the conventional saw blade. A line of intersection of the circumference of the blade with a side of the blade is sharpened to provide a cutting edge, and the blade is mounted adjacent a stationary cutting edge so that the cutting edge of the blade makes shearing contact with the stationary cutting edge. The stationary cutting edge and the cutting blade may be resiliently biased into contact with each other. The shearing interaction between the stationary cutting edge and the rotary cutting blade is obtained with relatively low rotational speed of the cutting blade, and the absence of sharp points or ends on the projections of the cutting blade, removes a source of potential personal injury present with prior-art cutting apparatus.

3,798,768
HEDGE TRIMMER ASSEMBLY

William C. Cowley, and Robert E. Stutzke, both of Louisville, Ky., assignors to Vermont American Corporation, Louisville, Ky.

Filed July 14, 1972, Ser. No. 271,930
Int. Cl. B26b *19/02*
U.S. Cl. 30—223 9 Claims

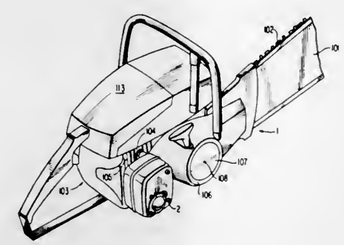


The cutting blade of a hedge trimmer slides between rigidly bolted stationary guard and overlying cover plates in which portions of the stationary guard about its bolt apertures have been pressed into projections which project through slotted apertures of the cutting blade to engage the cover plate, the concave underside of the pressed projections being shaped to resist turning of the nuts on the bolts.

3,798,769
APPARATUS FOR REDUCING THE OPERATING NOISE OF A CHAIN SAW

Jay Richard Bailey, Woodland Hills, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Jan. 25, 1972, Ser. No. 220,632
Int. Cl. B27b *17/02*; F01m *1/02*
U.S. Cl. 30—383 7 Claims

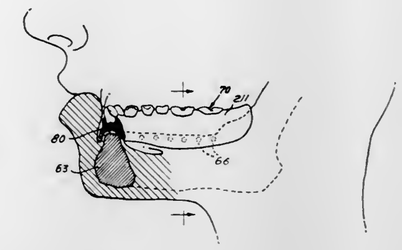


Apparatus for reducing the noise level of an operating chain saw characterized by synergistically interacting exhaust conduit means, surge chamber means, and acoustic filter means, possibly associated with arcuate deflector means or flexible reed, sound attenuating means.

3,798,770
REPELLING MAGNETIC CUTTER TEETH FOR DENTURES

John Pat Mitchell, 3301 Greenville Ave., Dallas, Tex.

Continuation-in-part of Ser. No. 13,548, Feb. 24, 1970, Pat. No. 3,646,676. This application Jan. 3, 1972, Ser. No. 214,928
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 9 Claims

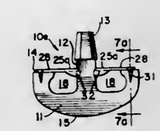


Magnetic teeth for dentures, particularly opposed (upper and lower) posterior teeth, one of which comprises a magnetic member providing a substantially planar surface or cutting table and the other of which comprises a magnetic member providing a linear cutting surface, adjacent or abutting portions of said members being of like magnetic polarity, one disposed in the upper denture in parallel relationship to the other disposed in the lower denture, whereby the upper and lower tooth members repel each other. The substantially planar surface or cutting table of one of the tooth members is engageable by the substantially linear surface or cutting edge of the other tooth member for cutting action. Various shapes of both tooth members, together with coverings therefor, and means for retaining the same in a denture are disclosed. Also, dentures having the magnetic repelling cutter teeth incorporated therein are disclosed.

3,798,771
WIDE BLADE DENTAL IMPLANT

Alfred E. Edelman, 2723 Federal St., Camden, N.J.

Continuation-in-part of Ser. No. 114,766, Feb. 12, 1971, Pat. No. 3,683,501. This application June 25, 1971, Ser. No. 156,611
Int. Cl. A61c *13/00*
U.S. Cl. 32—10 A 4 Claims



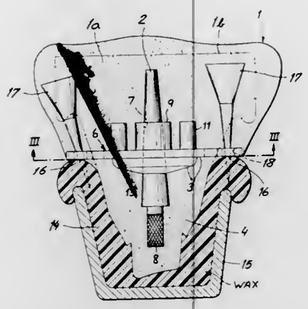
An improved dental implant comprising an implant portion for implanting in a jaw bone, a head portion for supporting a dental attachment, and a neck integrally connecting said head portion with said implant portion, said implant portion being in the form of a comparatively thin blade having a shoulder edge from which said neck projects and an opposite free edge, said shoulder edge being interrupted on at least one side of said neck by an aperture through said blade, and shoulder means interposed between said neck and said aperture for retarding the growth of gum tissue along said neck into said aperture.

3,798,772

CUT-AWAY MODEL FOR DENTAL PROSTHESIS

Peter Eberhard, Georg Beutler-Str. 37, 792 Heidenheim, Germany

Filed Oct. 16, 1972, Ser. No. 298,016
Claims priority, application Germany, Oct. 16, 1971, 2151671
Int. Cl. A61c *13/00*
U.S. Cl. 32—11 6 Claims



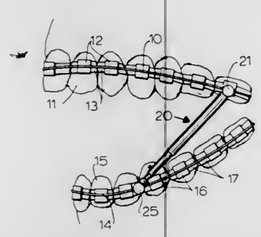
A model for a dental prosthesis is formed as a segment of a casting which is severed from the body of that casting by lateral cuts and by a plate imbedded in the casting. The plate, defining a parting surface between the body of the casting and the segmented model, has a noncircular pedestal which positively orients the model with reference to the body and forms a socket for a dowel serving for the temporary retention of the model on the body.

3,798,773

DEVICE FOR IMPROVING THE ALIGNMENT OF THE UPPER AND LOWER SETS OF TEETH WITH EACH OTHER

Michael E. Northcutt, 12720 Dianne Dr., Los Altos Hills, Calif.

Filed May 8, 1972, Ser. No. 250,957
Int. Cl. A61c *7/00*
U.S. Cl. 32—14 E 9 Claims



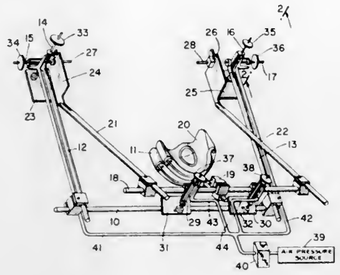
A device and a method for aiding in realignment of teeth where the patient's upper row of teeth lies forward of his lower row of teeth, and the patient has difficulty in achieving an aligned bite. A pair of spring arrangements are provided to assist the patient in moving his upper row of teeth rearwardly and his lower row of teeth forwardly each time he closes his mouth, utilizing the vertical closure force of his masseter muscle converted into horizontal corrective vectors.

3,798,774

MANDIBULAR MOVEMENT RECORDER

Charles E. Stuart, Rancho Los Portales 297 N. Kimball Rd. P.O. Box 1298, Ventura, Calif.

Filed Apr. 2, 1973, Ser. No. 346,926
Int. Cl. A61c *9/00*
U.S. Cl. 32—19 4 Claims



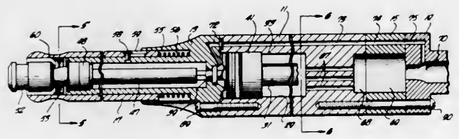
The various styli mounted on a lower U shaped frame for making traces on recording plates mounted on an upper U shaped frame in response to movements of a patient's mandible when the lower and upper frames are secured to the patient's jaws are arranged to be simultaneously retracted from the recording plates by air pressure. Towards this end, an air pressure source feeds a plurality of tubes having exit openings adjacent to the various styli such that an air stream will simultaneously impinge upon surface areas provided on the styli to effect simultaneous retraction. Inadvertent or spurious traces in retracting the styli as has formerly been done by hand are thus avoided.

3,798,775

DENTAL-SURGICAL DRILL

Jerome Weinberg, 4385 Beulah Dr.; Harold Eugene Geise, 4615 Rockland Pl., both of La Canada, Calif., and Thomas Warren Andrews, 2029 N. Grand Oaks Ave., Altadena, Calif.

Filed Sept. 27, 1971, Ser. No. 183,941
Int. Cl. A61c *1/08*
U.S. Cl. 32—26 22 Claims



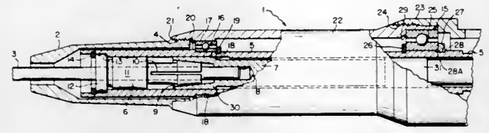
A dental-surgical drill is disclosed in which a cutting tool is rotatably driven by an air motor. The air motor includes a rotor shaft having a shaft seal mounted thereon for preventing a majority of the air from leaking therethrough. The rotor shaft extends into a cavity located between the seal and the cutting tool with a vacuum created therein to draw off the small portion of the air leaking past the shaft seal and prevent the air from flowing to the area adjacent the cutting tool. Passageways are also formed in the instrument to enable water to be sprayed into the frontal area of the instrument for cooling and lubricating purposes. A telescoping sleeve is also provided with interlocking means for enabling the cutting tool at the end of the instrument to be easily interchanged.

3,798,776

DENTAL-TYPE HANDPIECE

Frank Nickolis Lentine, Wayne, and William Henry Boggs, Riverview, both of Mich., assignors to Sybron Corporation, Rochester, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,195
Int. Cl. A61c *1/08*
U.S. Cl. 32—26 2 Claims



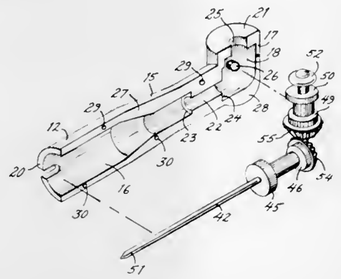
A dental-type handpiece providing for accurate assembly and for easy removal of a tool-clamping collet.

3,798,777

DENTAL HANDPIECE

Gabriel Reiter, 8204 Ventnor Ave., Margate, N.J.

Filed Nov. 3, 1971, Ser. No. 195,269
Int. Cl. A61c *1/10*
U.S. Cl. 32—27 4 Claims



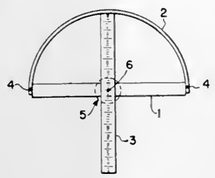
A dental handpiece including a pair of complementary housing sections defining an angulate through passageway, a pair of shafts in angulate relation within the passageway, and gearing on the proximate shaft ends for transmitting rotary motion therebetween.

3,798,778

ORBITAL AND ENTRY TRACKING ACCESSORY FOR GLOBES

Edgar B. Pritchard, Norfolk, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 29, 1971, Ser. No. 202,750
Int. Cl. G01c *21/00*
U.S. Cl. 33—1 SA 4 Claims



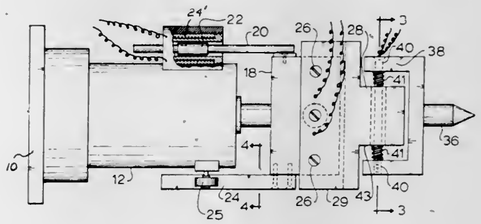
An orbital and entry tracking accessory or attachment is arranged to be mounted on a globe to provide a rapid means of determining range requirements for entry vehicles returning from any orbit to any desired landing site with reasonable accuracy. The device preferably is constructed of clear plastic strip material, and comprises a support ring, a calibrated orbital track member rigidly carried by the support ring, and a calibrated lateral range member pivotally coupled to the support ring at points such that the lateral range member is always oriented normally to the orbital track member. The assembly is mountable on the globe relatively snugly, but freely movably. At least one of the members has a detachable coupling so as to permit placement of the device on a globe. With the device mounted on a globe, and the orbital track member located to simulate a desired orbital track, the lateral range member can be pivotally moved into alignment with a desired landing site on the globe, and the calibrations on the two members permit ready determination of the longitudinal and lateral range requirements from any point of entry along the orbital track.

3,798,779

PROBE INSPECTION SYSTEM

David Gluck, Toronto, Ontario, Canada, assignor to Ferranti-Packard Limited, Toronto, Ontario, Canada

Filed July 5, 1972, Ser. No. 269,167
Int. Cl. G01b *11/14, 5/14*
U.S. Cl. 33—169 C 6 Claims



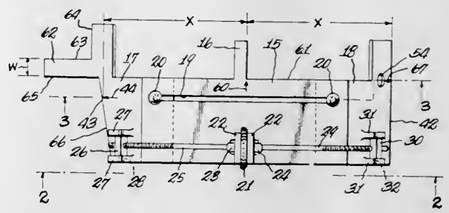
A probe movable along one axis is allowed to adjust to the position of the object detected by measured movement along the other two mutually orthogonal axes.

3,798,780

GAUGES FOR BOWLING BALLS

Earl Force, 3000 Judyth SE, Warren, Ohio, and Michael Williams, 785 Belvedere NE, Warren, Ohio

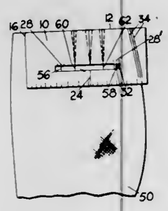
Filed Apr. 26, 1972, Ser. No. 247,518
Int. Cl. G01b *5/00*; B43l *13/22*
U.S. Cl. 33—174 F 10 Claims



Our improved gauges include a gauge for determining the proper hole size in a bowling ball and a gauge for determining the proper span between the holes to be drilled in the bowling ball. The hole size gauge comprises a plurality of compartments of successively increasing sizes, to accommodate fingers of, and determine hole sizes for, bantam, junior and senior bowlers.

The span gauge comprises a device which will fit in the palm of a bowler's hand and includes members which are adjustable to closely fit the span between the thumb and a selected finger of a bowler, whereby the position the hand will occupy on the bowling ball may be visually observed. Once the span gauge is set to the proper span for the bowler, it may be secured to an undrilled bowling ball and the ball marked for hole locations, or the secured span gauge may be used to locate the drill.

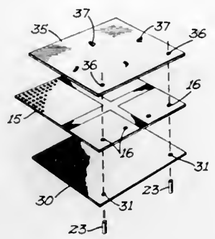
3,798,781
BACK TROUSER POCKET TEMPLATE
Esther J. Wolfe, Rt. 4, Box 297A, Hillsboro, Oreg.
Filed Feb. 9, 1972, Ser. No. 224,907
Int. Cl. A41h *3/01*
U.S. Cl. 33—180 R **6 Claims**



A transparent plate is provided intermediate its longitudinally spaced transverse edges with an elongated transverse welt marking opening having longitudinally spaced transverse edges for guiding a tailor's pencil or the like by which to mark on a back trouser panel the spaced welt edges defining the opening of a back pocket. A plurality of laterally spaced pair of width indicators are associated with the welt marking opening for marking on the trouser panel the desired one of a plurality of widths of pocket openings. A plurality of laterally spaced, longitudinally extending trouser panel edge guide lines are spaced laterally from one end of the welt marking opening and are associated one with each pair of width indicators for establishing the spacing between one end of the pocket opening and the adjacent side edge of the trouser panel. One or more dart guide lines extend from the welt marking opening to one lateral edge of the plate. By inverting the plate the opposite back pocket may be marked on the corresponding trouser panel.

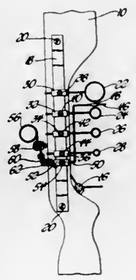
3,798,782
REGISTER MARK PUNCH SYSTEM AND METHOD
Richard C. Lindahl, 4817 W. 85th St., Bloomington, Minn.
Filed Oct. 18, 1971, Ser. No. 190,200
Int. Cl. B41b *1/00*; **G03b** *27/02*
U.S. Cl. 33—184.5 **2 Claims**

A system and method for providing accurate register marks on film used for making printing plates. The system comprises a positive grid and a negative grid each having a plurality of graduated lines and each having a set of registered pin holes, and a punch board including a pair of registered pins adapted to receive the pin holes in the positive and negative grids, and punch means mounted on the board in spaced relation to the pins for punching registered pin holes in film negatives. The method comprises the steps of aligning an image bearing film negative with selected graduated lines of the positive grid, and attaching it to the grid. The positive grid is then mounted through its pin holes on the punch board pins thus putting the film negative in proper alignment with the punches. The film negative is punched and removed from the positive grid, after which it is placed on the pins after being stripped if desired.



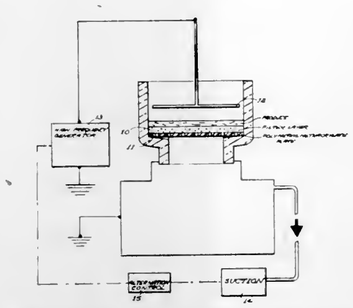
The negative grid is placed over the film negative on the pins and a pre-punched mask is placed over the negative grid. Holes are cut in the mask to expose portions of the graduated lines on the negative grid so that with double printing the graduated lines will appear as register marks in proper alignment on the film to be exposed.

3,798,783
ARCHERY BOWSIGHT
Richard F. Carella, 35572 Strathcona, Mount Clemens, Mich.
Filed Nov. 16, 1972, Ser. No. 307,328
Int. Cl. E41g *1/46*
U.S. Cl. 33—265 **12 Claims**



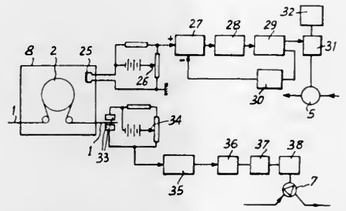
A bowsight is provided for an archery bow including a mounting bracket to mount the bowsight parallel to the length of the bow. Several circular cross-section fixed sights are carried by the mounting bracket to provide an indication of target distance by comparison of the apparent vertical height of the target with the vertical heights of the sights. An L-shaped sight member with a sight marker on its short leg is pivotally carried by the mounting bracket. To sight the bow the archer positions the sight marker relative to the circular cross-section fixed sights to set the range of the target. A finger actuated lever is effective to position the marker in a first embodiment, and a flexible cord connected with the bowstring automatically positions the sight marker in a second embodiment.

3,798,784
PROCESS AND APPARATUS FOR THE TREATMENT OF MOIST MATERIALS
Ferenc Kovats, and Andor Pinter, both of Budapest, Hungary, assignors to Chinoin Gyogyszeres Vegyeszeti Termekek Gyara Rt., Budapest (Ujpest), Hungary
Filed Mar. 31, 1971, Ser. No. 130,034
Claims priority, application Hungary, Mar. 31, 1970, OE 2335
Int. Cl. B01k *5/00*
U.S. Cl. 34—1 **2 Claims**



A process and an apparatus for the treatment of substances containing moisture in which electromagnetic energy is applied to the material alternately with mechanical dehumidification thereof.

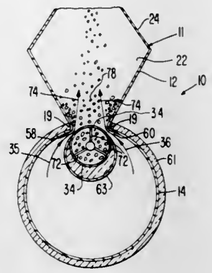
3,798,785
DEVICE FOR DRYING CONTINUOUS WEB MATERIAL
Daniel Jean Marie Chamouton, 127 Boulevard Malesherbes 75, Paris, France
Filed Sept. 13, 1971, Ser. No. 180,001
Claims priority, application France, Sept. 22, 1970, 70.34228
Int. Cl. F26b *21/00*
U.S. Cl. 34—54 **2 Claims**



The improved method according to this invention is characterized essentially in that the water contents of the moist product are rejected in the liquid state by resorting to a thermal cycle which, after having transferred at a predetermined temperature to said moist product the energy necessary for vaporizing the water contained therein, recovers this energy at a considerably lower temperature by condensing the steam thus formed.

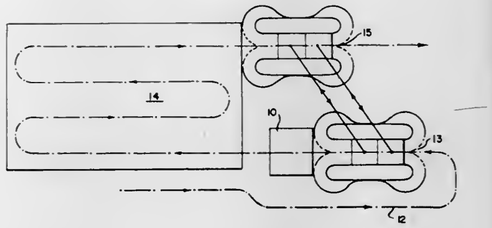
3,798,786
DRYING APPARATUS AND METHOD FOR PARTICLE MATERIALS
David A. Graber, 315 Haight St., Menlo Park, Calif.
Filed Feb. 28, 1973, Ser. No. 336,586
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 R **10 Claims**

Apparatus and a method for drying particle material with the use of hot gases wherein moist particle materials are moved through an open top conveyor tube as the gases move upwardly about the tube from a plenum therebelow and into a region above the tube to form a jet bed above the same for partially supporting the particle materials in a relatively dry condition. As the particle materials approach the downstream



end of the conveyor tube they are projected upwardly and into the jet bed. Some of the relatively dry particle materials in the jet bed gravitate into the conveyor tube and a portion of the gases are deflected by the jet bed into the tube to assist in drying the relatively wet materials therein. The dry, fine particles are drawn out of the region by suction.

3,798,787
METHODS AND APPARATUS FOR RECOVERY OF VOLATILE SOLVENTS
Helge K. Heen, Jamestown, N.Y., assignor to Blackstone Corporation, Jamestown, N.Y.
Filed June 7, 1971, Ser. No. 150,452
Int. Cl. F26b *21/06*
U.S. Cl. 34—75 **7 Claims**

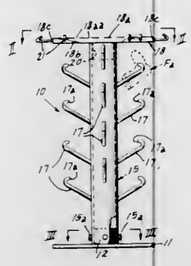


An apparatus is provided for recovering organic solvent vapor which includes an article treating chamber in which the organic solvent is applied, a vapor chamber into which the article passes for drying, a refrigerated fall out chamber receiving gases from the vapor chamber to remove vapor by condensation and returning the gases to the vapor chamber and means circulating the gases used as a carrier.

3,798,788
BOOT AND GLOVE DRYING APPARATUS
Donald J. Kuntz, 361 Sullivan Rd., Aurora, Ill.
Filed June 5, 1972, Ser. No. 259,500
Int. Cl. F26b *25/00*
U.S. Cl. 34—104 **10 Claims**

A boot and glove drying apparatus including an axially extended hollow main member, means supplying drying air, such as moving heated air to the main member and a plurality of

hollow branch members attached to the main member and in direct air communication with the interior of such main mem-



bers so that when boots, etc. are positioned on the branch members air is circulated within the boot to dry the same.

3,798,789

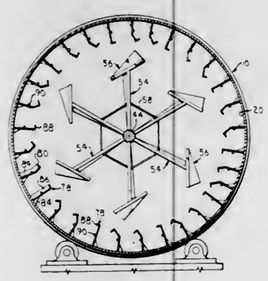
FLIGHTING FOR DEHYDRATOR DRUM AND METHOD

Stanley P. Thompson, PO Box 8073, Topeka, Kans.

Filed Feb. 28, 1973, Ser. No. 336,445

Int. Cl. F26g *11/02*

U.S. Cl. 34—108 **15 Claims**



A method and apparatus for drying a material utilizes a rotatable, elongated drum adapted to be coupled with a furnace and means for achieving pneumatic conveying of a material to be dried. The pneumatic conveying medium is controlled so that at least a portion of the material gravitates from the conveying stream until a portion of the water has been removed. The gravitational portion of the material is picked up at the outer surface of the drum by a plurality of vanes which rotate with the drum. Each vane includes one or more cleats which cause the material to effectively "dribble" from the vanes rather than dropping in clumps as the material reaches a point above the center of the drum. As the material moves from the side of the drum toward the center of the drum it is caught by interference structures disposed axially of the drum in radially spaced relationship with a plurality of the structures being placed longitudinally along the drum. Each structure presents a planar surface portion having opposed side edges. At least one side edge extends at an acute angle relative to a perpendicular bisector of the longitudinal axis of the drum and a sidewall extends upwardly from one side edge to effectively push material gravitating onto the planar surface in a predetermined direction independent of the direction of movement of the conveying medium. This forces the material toward either the inlet or the outlet of the drum and can increase or decrease the retention time of the material in the drum by several fold.

3,798,790

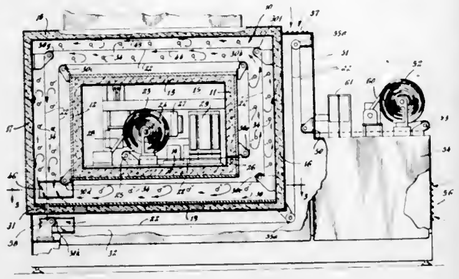
HEAT PROCESSOR FOR PHOTOGRAPHIC FILMS

Walter A. Roman, Norwalk, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 4, 1973, Ser. No. 321,011

Int. Cl. F26b *13/00*

U.S. Cl. 34—155 **4 Claims**



In apparatus for processing photographic ribbon film that has a photosensitive coating on one side which is developed and fixed by heat, the film is moved along a spiral path through a heat chamber which accommodates a long length of film in a relatively small space, and in a manner such that the coated side of the film does not come in contact with any support surface. Heat is applied to the coating in a uniform manner by jets of hot air from nozzles spaced along the path of the film. The jets of hot air impinge on the coated side of the film at an acute angle and the nozzles are spaced so that the hot air sweeping over the coating carries the effluent gases, which are released by the developing photosensitive material, away from the coated surface of the film and into streams of exhaust gases which flow along in back of the nozzles to an exhaust port. The film is drawn from the heat chamber, out and through an adjacent cooling chamber prior to its collection on a take up reel. An exhaust port in the cooling chamber serves to draw cool clean outside air through the cooling chamber to cool the film. The heat chamber and cooling chamber exhaust ports straddle the film exit opening from the heat chamber to the cooling chamber and prevent the air from one chamber from contaminating the other chamber.

3,798,791

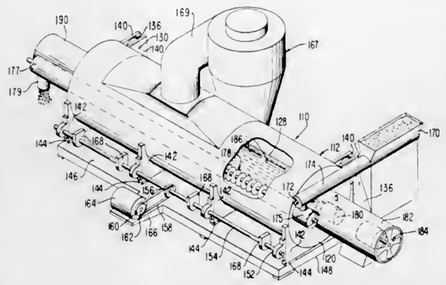
MATERIALS HANDLING APPARATUS AND METHOD

David A. Graber, Menlo Park, Calif., assignor to Major F. Gates, Redwood City, Calif., a part interest

Filed June 15, 1970, Ser. No. 46,357

Int. Cl. F26b *9/00*

U.S. Cl. 34—164 **9 Claims**



Apparatus and method for handling particulate materials by causing the same to move along a generally continuous path by the action of vibratory motion of the body containing the materials. The body is mounted for oscillatory movement

about an axis spaced from the path. The apparatus can be used as a materials dryer for directing hot gases across the path of travel of the materials and through the same to dry the materials as the body vibrates. The apparatus can be used as a materials grinder for placing discrete grinding elements in the body for movement relative to the materials to reduce the latter to a predetermined particle size as a function of the vibration of the body.

3,798,792

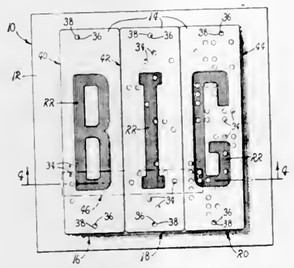
EDUCATIONAL WORD-FORMING METHOD AND DEVICE

Jack K. Askew, 608 W. Mitchell Ave., Clovis, Calif.

Continuation-in-part of Ser. No. 131,888, April 9, 1971, abandoned. This application Nov. 22, 1971, Ser. No. 201,095

Int. Cl. G09b *5/00*

U.S. Cl. 35—9 D **18 Claims**



The method disclosed provides for the various combinations of three letters which will form a word to be represented by utilizing the intersection points of three rectangular grids placed side by side in left to right relationship. In the first grid I assign a number of grid points to a selected first letter equal to the number of two letter combinations which can form three letter words. In the second grid the said grid points represent the possible second letter combinations of the selected first letter in the first grid. In the third or right hand grid, these same grid points represent all third letters which will combine with the two letter combinations to form a word. For instance, grid points in line one, rows 15 through 19, represent B in the first grid, A, E, I, O, and U, respectively, in the second grid, and in the third grid, the line one, row 15 grid point represents D, G, R, T, Y, and N to form BAG, BAR, BAT, BAY and BAN, the line one, row 16 grid point represents D, E, G, and T to form BED, BEE, BEG and BET, and so forth.

3,798,793

TUTORIAL LEARNING APPARATUS

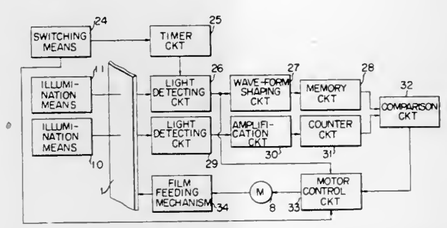
Kenjiro Kachi, Aichi, Japan, assignor to Elmo Company Limited, Nagoya, Aichi Prefecture, Japan

Filed Aug. 22, 1972, Ser. No. 282,692

Claims priority, application Japan, Aug. 28, 1971, 46-77996

Int. Cl. G09b *7/08*

U.S. Cl. 35—9 A **3 Claims**



A tutorial learning apparatus employs a positive or negative web film on which programmed images of a course material(s) are formed and which can be driven by a motor so that a selected one of the programmed images is brought into a projection position thereof. For each image, at least two kinds of marks are recorded on the film respectively, one of which provides a signal to indicate a transit of the corresponding image through the projection position thereof, the other of which provides a signal to indicate one image which is to be projected next, that is, to indicate the number of images to be fed forwardly or backwardly through the projection position. If necessary, each image may be provided with a mark which provides a signal to indicate the direction in which the motor is to be rotated.

When the film is being fed in a given direction, one signal to indicate the transit of each image through the projection position is generated every time an image passes over the projection position. Such image transit indicating signal is applied to a comparison circuit wherein the number of the image transit indicating signals is compared with the number of images to be fed, and which generates an output signal to cause a stoppage of rotation of the motor when the number of the image transit indicating signals reaches the number of images to be fed.

3,798,794

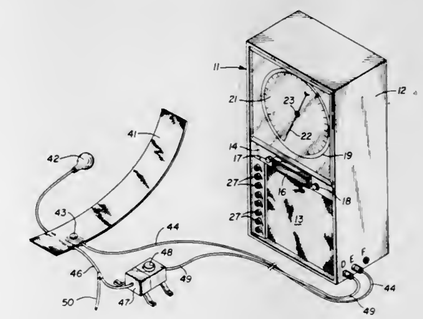
BLOOD PRESSURE TEACHER

Abe Ravin, 45 S. Dahlia St., Denver, Colo.

Filed Nov. 13, 1972, Ser. No. 305,754

Int. Cl. G09b *23/28*

U.S. Cl. 35—17 **23 Claims**



An instrument for teaching techniques and refinements in taking and observing blood pressure readings and sounds. A moving indicator simulates blood pressure readings for visual observation as a speaker or stethophone output provides coordinated sounds and verbal instruction and discussion. A film projector provides visual instruction. A multi-channel tape player provides narration for the speaker as signals from the tape sequentially actuate the projector and move the blood pressure indicator in manner simulating actual observations. Auxiliary components are used to display and broadcast actual patient blood pressure readings and sounds.

3,798,795

WEAPON AIM EVALUATION SYSTEM

Paul F. Michelsen, Kensington, Md., assignor to RMC Research Corporation, Bethesda, Md.

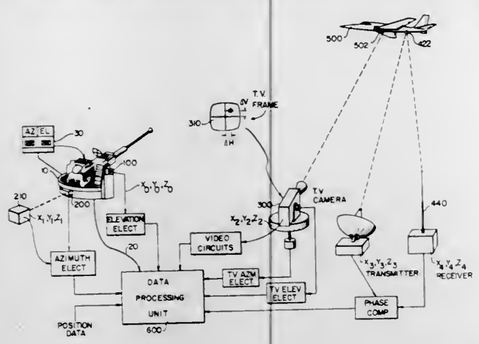
Filed July 3, 1972, Ser. No. 268,632

Int. Cl. F41g *3/26*

U.S. Cl. 35—25 **10 Claims**

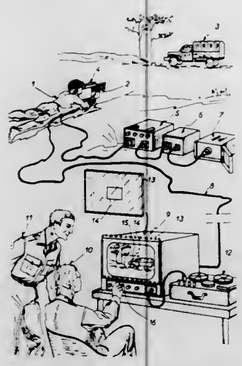
The system for evaluating the accuracy of aim of a missile firing weapon measures the line of aim of the weapon at the time of firing, measures the target flight path with an optical

sensor and a radio ranging apparatus, and with a data processing unit calculates and compares a mean trajectory of



a selected missile with either the actual or predicted target flight path indicating qualitatively and quantitively the error in aim.

3,798,796
METHOD AND EQUIPMENT FOR TRAINING PERSONNEL IN THE OPTICAL TRACKING OF A MOVING TARGET
Emile Stauff, Versailles, and Hubert Collette, Neuilly-sur-Seine, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed July 26, 1972, Ser. No. 275,307
Int. Cl. F41g *3/00*
U.S. Cl. 35—25 **5 Claims**



System for rapidly training operators required to accurately aim an optical instrument at a stationary or moving target.

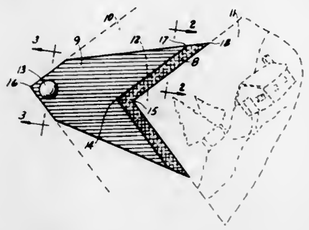
It consists in equipping the optical aiming instrument handled by the trainee with a television camera to which is associated a reticle the optical axis of which is sighted with that of the optical instrument. A device for displaying the images analysed by the camera and reticle is available to an instructor so that this latter may give useful advice to the trainee during his aiming operations.

3,798,797
APPARATUS FOR SYNTHESIS AND ANALYSIS OF LETTER REPRESENTATIONS OF SPEECH SOUNDS
David J. Mandel, 118 Riverside Dr., New York, N.Y.
Filed Jan. 29, 1973, Ser. No. 327,299
Int. Cl. G09b *17/00*
U.S. Cl. 35—35 R **18 Claims**

The apparatus includes at least one first indicia carrying member, such as cards, each having a plurality of projections thereof, each projection carrying at least one letter. At least one second indicia carrying member has a plurality of slots formed therein, each slot having at least one letter in registration therewith. The projections of one member engaged with the slots on the other member and the letters of the engaging

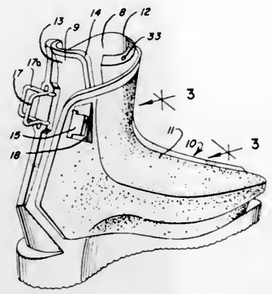
slots and projections become in registration to combine to produce a combination of letters representing a sound. The elements are engageable in different relative positions to produce different representations of sounds. Preferably, the projections carry consonants or consonant blends, and the slots carry groups of letters beginning with a vowel.

3,798,798
FRAME-SELECTION PICTURE FRAME SIMULATOR
Frank Shore, 26 Lantern Rd., Hicksville, N.Y.
Filed Mar. 30, 1973, Ser. No. 346,258
Int. Cl. G09b *25/00*
U.S. Cl. 35—53 **8 Claims**



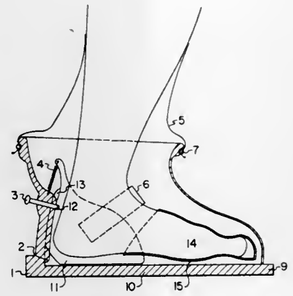
In a preferred embodiment of the invention, two flat disks are mounted with one superimposed on top of the other and with a mount extending through the center of both providing for pivotal rotary motion of the top disk along the upper surface of the lower disk, and additionally there being a top member of typically fork shape at its outer end radially from a mounting inner pivot point at which the forked top member is mounted on the pivot mount also for rotation therearound, and the lower disk being of greater area on its upper face than the upper disk, and there being a series of right-angle indentations along the outer peripheral edge circumscribing each disk such that the upper disk fails to cover the right-angle edge marginally thereby leaving a small border of the lower disk visible from above, and the fork portion of the additional top member framing any of the serially arranged portions having a right-angle indentation selectively, thereby the additional top member serving to in effect blank-out the adjacent colors such that a viewer may more easily discern the true appearance of the combined-borders relative to a picture corner alignable within the right-angle of either the lower or the upper disk, making possible the envisioning of a multitude of different possible prospective picture frames for any particular picture, each portion corresponding to the respective right-angle thereof having an upper face of a different color or texture.

3,798,799
SKI BOOT AND LINER THEREFOR
Alden B. Hanson, and Chris A. Hanson, both of Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed Jan. 7, 1972, Ser. No. 216,080
Int. Cl. A43b *19/00*
U.S. Cl. 36—2.5 AL **16 Claims**



A ski boot includes a semi-rigid outer shell and a liner assembly comprising a substantially flexible inner padding member which forms cavities between the inner padding member and the outer shell of the ski boot. The cavities are filled with a substantially non-compressible fitting material, which is flowable during the fitting process, and thereafter hardened to give firm support and comfort for skiing. In the preferred embodiment the fitting material is of a thermoplastic nature.

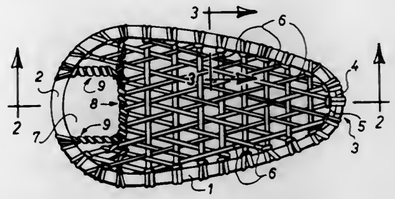
3,798,800
SKI BOOT WITH LATCHABLE GUIDED HEEL HOLDER
Richard K. Rathmell, 12 Pine Tree Rd., Ramsey, N.J.
Filed Dec. 21, 1972, Ser. No. 317,287
Int. Cl. A43b *21/36*
U.S. Cl. 36—2.5 AL **9 Claims**



A ski boot with a heel-holding shell that can be latched or unlatched to slide up and down in a guided path within the boot.

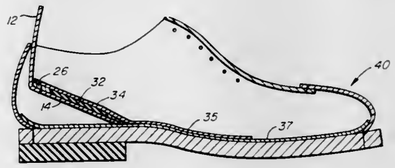
3,798,801
EMERGENCY SNOWSHOES IN PARTICULAR FOR STRANDED SNOWMOBILERS
Antoine Gros-Louis, 14 Des Veterans St., Duron Village, Lorette, Quebec, Canada
Filed Jan. 5, 1973, Ser. No. 321,390
Int. Cl. A43b
U.S. Cl. 36—2.5 AB **2 Claims**

Snowshoes particularly adapted to be taken along by snowmobilers during their journeys into the wilderness and travels through the country and arranged to be used even by a completely untrained user if his vehicle ever becomes stranded and he has to walk away for help. A snowshoe of light weight and little encumbrance having a frame forming an endless planar boundary having rounded fore and aft end sec-



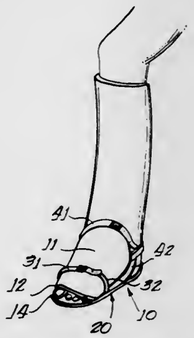
tions and webbing forming a foot pivoting opening immediately adjacent the peripheral fore end section of the frame, wherein the latter is exclusively formed of a flexed bar having opposite ends which are wedged endwise and lapped one over the other whereby the cross section of the bar is preserved along the lapped ends of the latter.

3,798,802
COMBINATION SHOE AND SHOEHORN
Kenneth W. Saunders, 619 Quary St., Quincy, Mass.
Filed Apr. 30, 1973, Ser. No. 355,751
Int. Cl. A43b
U.S. Cl. 36—2.5 Y **8 Claims**



A combined shoe and shoehorn wherein the shoehorn is affixed to the shoe and resilient padding is provided at the heel portion to assure maximum comfort to the wearer.

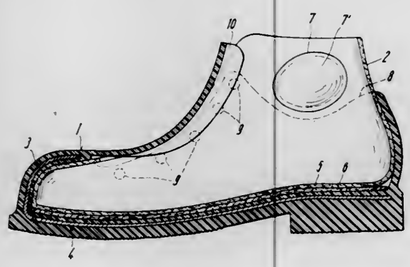
3,798,803
CAST SANDAL
Maxine D. Kennedy, 1555 Williams Blvd., Springfield, Ill.
Filed July 18, 1973, Ser. No. 380,462
Int. Cl. A43b *3/12*
U.S. Cl. 36—11.5 **5 Claims**



A cast sandal adapted for fitting over a conventional foot cast including flexible strap means for securing the sandal to

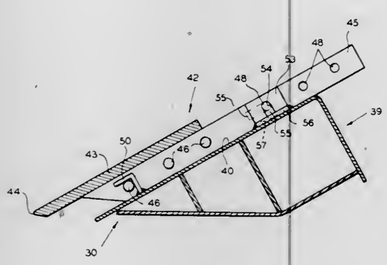
the sole of the cast adjustable fastening structures on some of the strap members for snugly holding the sandal on the cast in a manner providing a walking surface for the cast and also protecting a person's toes when standing and a person's heel when sitting so as to protect such parts against injury while simultaneously protecting the sole of the cast from being worn out. Further, the sole of the sandal is provided with frictionable non-skid material thus virtually eliminating the possiblity of a person with a broken foot or leg from slipping due to the slipping of the cast when engaging the ground in an otherwise normally slippery situation.

3,798,804
SAFETY SHOE
Herbert Funck, Grafelfing-Lochham, Germany, assignor to Dr.-Ing. Funck K.G., Munich, Germany
Filed Jan. 18, 1972, Ser. No. 218,729
Claims priority, application Germany, Jan. 20, 1971, P 21 02 588.7
Int. Cl. A43b *13/22*
U.S. Cl. 36—72 R **19 Claims**



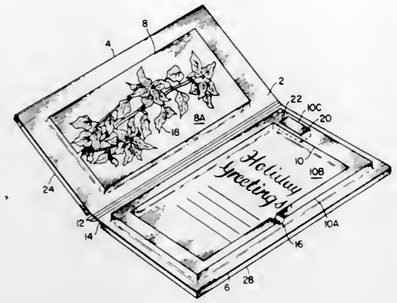
A safety shoe in accordance with the invention includes a steel protective element in or on a tough plastics shell.

3,798,805
ADJUSTABLE SCRAPER BLADE
James E. Hancock, Lubbock, Tex., assignor to Clark Equipment Company, Buchanan, Mich.
Filed Oct. 24, 1972, Ser. No. 299,992
Int. Cl. E02f *9/28*
U.S. Cl. 37—141 R **6 Claims**



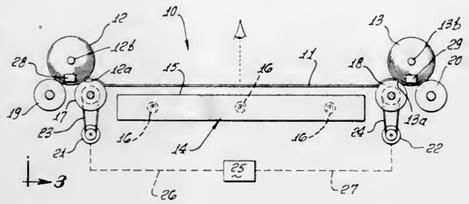
A blade for earth working machines having a blade frame fixed to the machine and longitudinally, inclined, extensible blade sections which may be extended to increase local penetration of the cutting edge depending on soil condition.

3,798,806
MUSICAL GREETING CARD
Donald Sanford, 166 Bell Ave., Lodi, N.J.
Filed May 14, 1973, Ser. No. 359,995
Int. Cl. G09f *27/00*
U.S. Cl. 40—28.1 **10 Claims**



A musical greeting card is formed from a unitary member having a natural hinge for closing and opening the card. A back cover carries a music box or like element and a front cover carries a resiliently mounted decorative member. The card is maintained closed by communication between the front and back covers in interference fit relation. Upon separating the covers to open the card the music box element is actuated and the decorative member is arranged to pop-up, whereupon said member and a suitable greeting on the bottom of the box are exposed to a viewer.

3,798,807
LIGHT TABLE FILM OR SHEET SPOOL PERIPHERAL DRIVE
Wilton A. Stewart, 16624 Linda Ter., Pacific Palisades, Calif.
Filed July 13, 1972, Ser. No. 271,291
Int. Cl. G09f *11/28*
U.S. Cl. 40—31 **4 Claims**



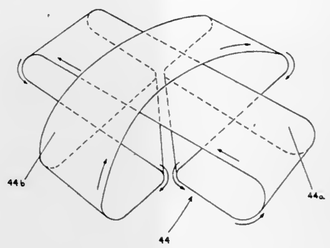
A light table assembly for transporting film between supply and take-up reels, and for illuminating the transported film, comprises:

a. a light table, and
b. mechanism for effecting film transport proximate the table for illumination, such mechanism including certain roller means located to receive weight imposed by at least one of the reels, via the periphery thereof, and to develop film advancing force transmitted to the film in response to rotation of said certain roller means.

3,798,808
ROTATING SIGN STRUCTURE
Norman L. Van Wagenen, 378 Truman Ave., Salt Lake City, Utah, and Ara Norman Lamph, 540 N. 200 East, Bountiful, Utah
Filed May 1, 1972, Ser. No. 249,322
Int. Cl. G09f *11/10*
U.S. Cl. 40—33 **13 Claims**

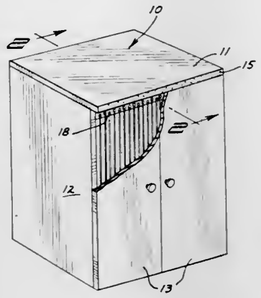
A rotating sign structure comprising a sign supporting structure, a power source mounted adjacent the top of the supporting structure, a rotatable drive sleeve interposed between the power source and the supporting structure, means securing the power source to the sleeve, and a shaft extending from the power source engaging and secured against rotation to the supporting structure. The sleeve is rotated by the motor in respect to the supporting structure. A sign is mounted on the sleeve and projects assymmetrically therefrom. Method and several modifications are disclosed.

3,798,809
DEVICE SIMULTANEOUSLY DISPLAYING PORTIONS OF BOTH SIDES OF AN ENDLESS BELT
Gary Perkins, 474 N. Milwaukee Ave., Chicago, Ill.
Filed Jan. 10, 1973, Ser. No. 322,369
Int. Cl. A63h *11/10*
U.S. Cl. 40—43 **5 Claims**



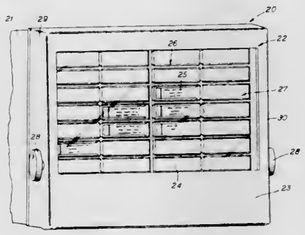
A wheeled toy vehicle or the like is provided, and includes an endless belt having indicia on both sides and roller means and surface guide means about which the belt is trained which are arranged so that the belt moves along a first surface with a first side exposed and along a second overlying surface with the second side exposed. In the illustrative embodiment, the overlying surface is shaped to be suggestive of a bridge, the first side of the belt is printed with water-suggestive indicia and the second side with representations of automobiles so that as the vehicle is pulled, the belt is driven and the impression of automobiles moving over a bridge under which water is flowing is created.

3,798,810
ARTICLE HANGING STORAGE APPARATUS
Claude F. Brisson, and John E. Schuna, both of St. Paul, Minn., assignors to United Binding Company, Inc., St. Paul, Minn.
Continuation-in-part of Ser. No. 831,398, June 6, 1969, abandoned. This application Aug. 27, 1971, Ser. No. 175,608
Int. Cl. G09f *15/00*
U.S. Cl. 40—65 **1 Claim**



An apparatus for the compact storage in hanging position of large flat articles, such as plat maps. Said apparatus comprises extruded plate members of the length of such articles and of a width to have a plurality of longitudinal open bottom grooves therein with said grooves having a keyhole like configuration and being closely spaced together with the upper portions of said grooves being in vertically offset or staggered relation and hangers carrying said articles being slidably disposable in said grooves and having portions to be retained in the upper portions of said grooves, said plate members comprising modular hanger supporting members which may be secured to a supporting surface such as the upper inner surface of a storage cabinet.

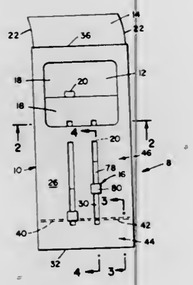
3,798,811
PROGRAM FOR AUTOMATIC PHONOGRAPH
Donald C. Rockola, Chicago, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.
Filed June 13, 1972, Ser. No. 262,224
Int. Cl. G09f *11/02*
U.S. Cl. 40—77.7 **3 Claims**



A wall-mounted holder mounting a multiple section program for use with coin-operated jukeboxes or phonographs wherein a plurality of individual program tabs or cards, each identifying a single musical selection, are mounted in individual holding pockets provided on multi-faceted holders ar-

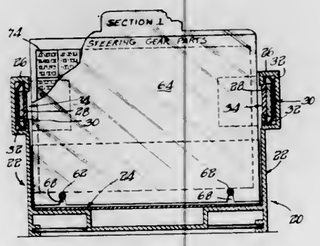
ranged in parallel rows for simultaneous rotational movement between selected index positions. In each index position for the holders, corresponding faces thereof are commonly aligned to expose one section of the total program to the viewer.

3,798,812
APPARATUS FOR DISPLAYING A GRAPHIC MESSAGE
Richard Blatchford Ball, Palo Alto, Calif., assignor to Enrich, Palo Alto, Calif.
Filed May 8, 1972, Ser. No. 251,068
Int. Cl. G09f *1/00*
U.S. Cl. 40—78.03 **12 Claims**



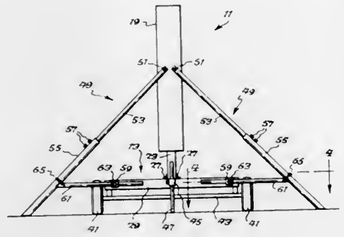
A hand held device for sequentially displaying a plurality of graphic messages imprinted on an elongate web. A cardboard box constructed of a single folded carboard sheet includes a viewing cutout in its top and a backup plate beneath the cutout to thereby define a space through which the web is longitudinally moved. A partition divides the box interior into a web storage compartment and another compartment. The web storage compartment in direct communication with the space. Snap-in web advancing members are reciprocally disposed in elongate slots in the box top and alternatingly engage and disengage advancing apertures in the web.

3,798,813
MAGNETIC TRAY DEVICE
Ernest A. Dahl, Jr., 729 Greenwood Ave., Wilmette, Ill.
Filed June 16, 1972, Ser. No. 263,466
Int. Cl. G09f *7/10*
U.S. Cl. 40—105.5 **5 Claims**



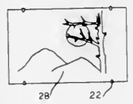
The present invention relates generally to improvements in filing tray structures, and more particularly to a novel tray device adapted for use in a fanning magnetic filing system. One embodiment of the invention as disclosed herein includes a tray structure wherein the bottom and sidewall sections are integral as well as non-magnetic. Endwall sections are interlockingly secured in a novel manner to the front and rear extremities of said sidewalls. An auxiliary index card or data sheet accommodating tray section having opposed upwardly flaring wall portions is located within the tray device. These flaring wall portions limit the extent to which the index cards or sheets may be tilted toward the front and rear of the tray device. The index cards have magnetic portions which cooperate with elongate magnets associated with the upright sidewall sections to effect fanning of the cards or data sheets.

3,798,814
PORTABLE SIGN
Thomas B. Harmon, 75 Main St., North Tonawanda, N.Y.
Filed Sept. 11, 1972, Ser. No. 287,980
Int. Cl. G09f *7/00*
U.S. Cl. 40—129 R **3 Claims**



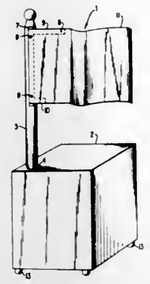
A portable sign, designed for easy transportation by mounting it on a wheel trailer, and comprising a rigid frame provided with adjustable, extensible legs, attached at opposite ends thereof, whereby to brace said sign and maintain it in selected position without removing it from said trailer.

3,798,815
RETAINING DEVICE FOR PICTURE FRAMES
Richard H. Ward, 1374 E. Valley Rd., Santa Barbara, Calif.
Filed Oct. 10, 1972, Ser. No. 296,278
Int. Cl. G09f *1/12*
U.S. Cl. 40—156 **2 Claims**



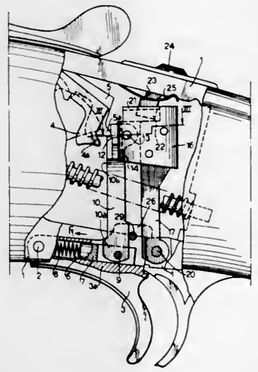
A retaining device for holding a moulding framework, artwork, and a transparent facing material in a picture frame assembly.

3,798,816
FLAG WAVING UNIT
Edward J. Flaherty, 5219 Lake Arrowhead Dr., Waco, Tex.
Filed Feb. 1, 1971, Ser. No. 111,205
Int. Cl. G09f *17/00*
U.S. Cl. 40—218 **2 Claims**



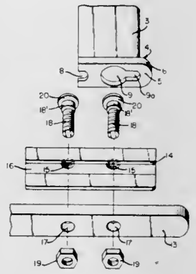
A flag waving unit adapted to support a flag and cause the latter to flutter by blowing a current of air up through a hollow flagstaff having perforations at its upper portion adjacent the flag.

3,798,817
GUN
Ernesto Zanoni, Brescia, Italy, assignor to S.p.A. Luigi Franchi via Caistofimi, Brescia, Italy
Filed July 28, 1972, Ser. No. 275,991
Claims priority, application Italy, Aug. 31, 1971, 69898/71
Int. Cl. F41c *19/00*
U.S. Cl. 42—42 **4 Claims**



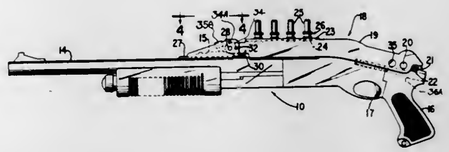
A gun having two barrels and a single trigger with a selector device for determining the order in which the barrels are fired by the single trigger, the said selector device including a balance arrangement designed to avoid the possibility of the second barrel being accidentally fired as the gun recoils from the first shot and the selecting device shifts to engage the release catch for the firing mechanism of the other barrel. The selector arrangement comprises a first elongate element which is pivotally associated with the trigger in such a way that it cannot move radially with respect to the trigger, such radial movement causing engagement with the selected release catch of the gun to effect firing of one of the barrels and being caused when the trigger is pulled, and a second elongate element pivotally mounted at one end on the stock and linked at the other end to the first elongate element in such a way that relative radial movement with respect to said pivots is permitted (thereby allowing movement about said pivots, and deliberate firing movement of said first elongate element by moving said trigger) but relative movement in orthogonal directions with respect to said radial direction are prevented or restricted.

3,798,818
MEANS FOR COUPLING A HAND GUN TO AN AUXILIARY STOCK
Richard J. Casull, 3270 Del Mar Dr., Salt Lake City, Utah
Filed Mar. 23, 1973, Ser. No. 344,201
Int. Cl. F41c *23/00*
U.S. Cl. 42—72 **10 Claims**



An automatic hand gun is attachable to and detachable from an auxiliary stock to convert the gun to a shoulder gun when desired by means of cooperating quick detachable coupling means, one of which is located on the bottom of a cartridge clip and the other of which is located at or on the end of the auxiliary stock.

3,798,819
AUXILIARY GUN STOCK
Robert Lee Hillberg, Cheshire, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.
Filed Mar. 9, 1972, Ser. No. 233,225
Int. Cl. F41c *23/00*
U.S. Cl. 42—72 **8 Claims**

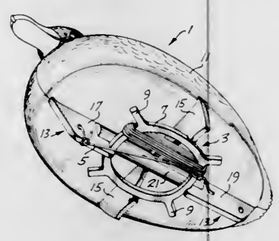


A conventional pump shotgun having a receiver from which the stock has been removed is provided with a pistol grip assembly on the end of the receiver and an elongated arm pivotally mounted on the pistol grip to be pivotable to an extended position. A butt plate is pivotally mounted on the other end of the arm and is pivotable to a position to define a shoulder plate.

3,798,820
DECOY
Harry B. Dye, Seattle, Wash., assignor to Dye-Call, Inc.,, Seattle, Wash.
Filed May 22, 1972, Ser. No. 255,591
Int. Cl. A01m *33/06*
U.S. Cl. 43—3 **27 Claims**

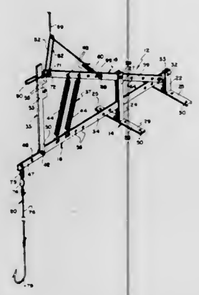
Disclosed is a waterfowl decoy including an elongated, buoyant body, a thin, shallow keel projecting downwardly

from the body and extending along the longitudinal center line thereof, and fin-like, ground-engaging supports projecting downward from the body and extending along the lateral center line thereof generally perpendicular to the keel. The lowermost surfaces of the supports and keel are substantially coplanar and are so spaced apart that the decoy will remain erect when set upon land or ice. The central portions of the keel and the supports are recessed from their respective



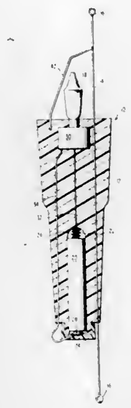
lowermost edges so as to accommodate an annular decoy anchor having anchor line wrapped thereabout. The anchor is held in the recess by a wedging action between cooperating surfaces disposed on the keel and the supports. The recessed central portions of the keel and fins are of sufficient depth so that the anchor and anchor line wrapped thereabout are both held above the lowermost surfaces of the keel and supports, such that the decoy can be employed on land or ice with the anchor stowed on the underside thereof.

3,798,821
LINKAGE TYPE HOOK SETTER APPARATUS
Samuel M. Bybee, Hewins, Kans.
Filed Nov. 7, 1972, Ser. No. 304,327
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **7 Claims**



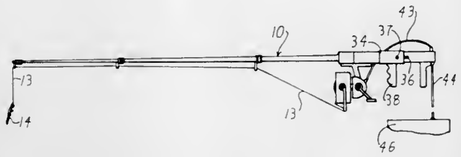
A hook setter apparatus comprising a lateral support assembly connectable to a support surface and an actuator assembly and a vertical support assembly extending therefrom. The actuator assembly, in the form of an elongated member, is pivotally connected at one end to the lateral support assembly and has an L-shaped arm pivotally attached to the other end thereof. The horizontal portion of the arm has a connector line with a hook thereon secured thereto and the vertical portion has a cam thereon. The vertical support assembly, also an elongated member, is pivotally connected at one end to the lateral support assembly and extends at an angle relative to the actuator assembly to an outer end which is engageable with the cam on the actuator arm. A support line is secured to the vertical support assembly through a guide and control member mounted on the end of the vertical support assembly and a spring extends between the actuator and vertical support assemblies. Movement of the connector line downwardly releases the cam from the vertical support assembly and the spring biases the actuator assembly upwardly to set the hook in the fish's mouth.

3,798,822
LIGHTED FISHING FLOAT
Randy M. Lampus, 1501 Rio Hondo Rd., San Benito, Tex.
Filed Sept. 22, 1971, Ser. No. 182,695
Int. Cl. A01k *75/02*
U.S. Cl. 43—17.5 **4 Claims**



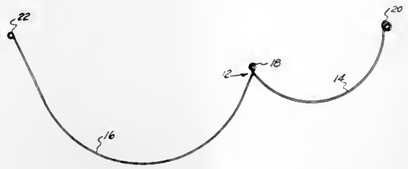
A lighted fishing float having an alternating current-excitable neon lamp for illuminating the float and a battery power source. An oscillator powered by the battery provides alternating current to illuminate the lamp.

3,798,823
FISHING APPARATUS
Robert S. Watters, and Edward E. Watters, both of 2457 Regent Ln., Birmingham, Ala.
Filed June 4, 1973, Ser. No. 366,875
Int. Cl. A01k *87/00, 97/02*
U.S. Cl. 43—23 **7 Claims**



A tubular line is wound on a reel on a fishing rod with one end being free and passing outwardly of the reel. A pump is carried by the rod with the outlet of pump connected to the other end of the tubular line and inlet of pump receiving liquid. A lure connected to the free end of the line moves in water and a discharge opening is provided in the free end of the line discharging liquid outwardly of lure into the water. Scented bait in solution is supplied to the inlet of the pump, thus providing controlled remote baiting of a specific area of the water.

3,798,824
SPRING TROLLING OR CASTING LEADER
John P. Nikota, 876 Riverdale Ave., Windsor, Ontario, Canada
Filed Nov. 1, 1972, Ser. No. 302,812
Int. Cl. A01k *91/00*
U.S. Cl. 43—43.15 **7 Claims**

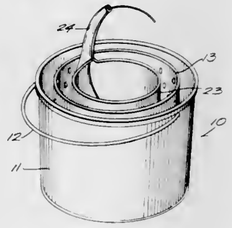


A spring steel wire leader in its relaxed condition is of roughly handwritten or script W-shaped configuration and has forward and rearward downwardly-concave arcuate loops of different arcuate extent or different circumferential lengths joined to one another at an upstanding intermediate junction with spiral line-attachment eyes at the forward and rearward ends and at the intermediate junction. A sinker attached to the forward eye slides along the bottom of the water course, while a fish lure connected to the rearward eye travels at a height above the bottom determined by the length of the rearward section of the leader, and a trolling or casting line connected to the intermediate eye draws this assembly through the water and at the same time partially straightens out the two arcuate loops of the leader. The resilience of the two loops constantly urges the lure upward and thereby prevents it from sinking to the bottom. The spiral forward eye to which the sinker is attached will unwind and straighten out and release the sinker if the latter becomes snagged on the bottom, thereby freeing the leader and the lure.

3,798,825
SELF THREADING CASTING BOBBER
Samuel J. Popeil, Chicago, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.
Filed Dec. 14, 1972, Ser. No. 315,019
Int. Cl. A01k *93/00*
U.S. Cl. 43—44.9 **10 Claims**

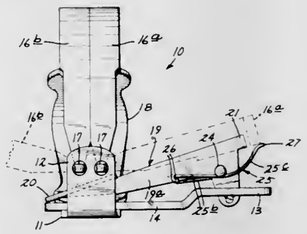
A self threading casting bobber is disclosed for use with a fishing line which has an elongate buoyant body member having an internal, co-extensive line guide threading tube passing through the longitudinal axis of the body and terminating within a counterbored knot end plug at one end. The knot end plug has a line hole proportioned to pass the line, but not a knot tied in the line. After a knot is tied at a preselected position on the line it is then positioned in the line hole of the knot plug and then by pushing the line its end self threads through the guide tube and through the bobber and out its lower end and then secured with a hook, sinker, or leader or other fishing elements as the fisherman may prefer. A sinker end plug may also be employed at the opposite end of the self threading casting bobber in self threading engagement with the line guide tube. Ideally the length of the unit is at least three times its largest transverse dimension, in the preferred embodiment the cross section being circular, with a ridge line in the center defining the approximate flotation level when in use.

3,798,826
COMPOSITE FISHING TACKLE PAIL
Richard E. Ferguson, 2722 N. 48th St., Milwaukee, Wis.
Filed Sept. 5, 1972, Ser. No. 286,419
Int. Cl. A01k *97/00, 97/06*
U.S. Cl. 43—54.5 R **5 Claims**



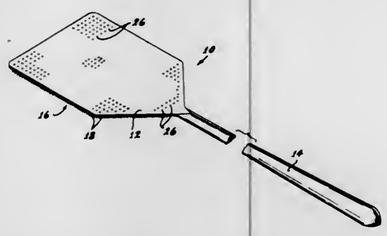
Composite fishing pails including an outer base pail, an intermediate pail having a vertical wall with triple horizontal aperture rows for disposing fish lures and flies inside and outside of said vertical wall, and a central pail for a spool of fishline, the latter being led for unwinding through a combination spout and handle.

3,798,827
SELF-SETTING TRAP
August H. Burckhardt, Balaton, Minn.
Continuation-in-part of Ser. No. 201,789, Nov. 24, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,543
Int. Cl. A01m *23/26*
U.S. Cl. 43—95 **6 Claims**



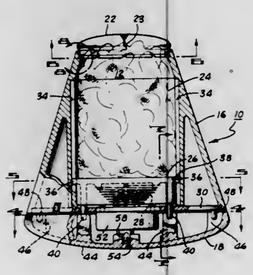
A pair of cooperating jaw elements are pivotally mounted on a base for movements from a set position to a tripped position under the bias of a spring. A treadle arm pivotally mounted on the base for movements between a set position and a tripped position includes a hook portion which engages one of the jaw elements to maintain the position of the jaw elements and a spring arm mounted on the treadle arm is initially engaged by the jaw element during its movements toward the set position to automatically move the treadle arm to its set position to set the trap

3,798,828
INSECT KILLING DEVICE
Wilbert M. Walti, 25151 Sea Vista, Dana Point, Calif., and Reuben F. Speshyock, 30839 Calle Chueca, San Juan, Calif.
Filed Jan. 18, 1972, Ser. No. 218,703
Int. Cl. A01m *3/02*
U.S. Cl. 43—137 **3 Claims**



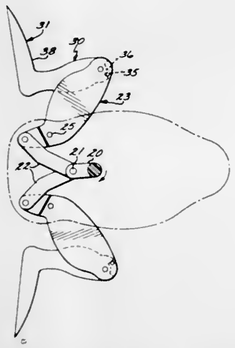
An insect killing device comprising a body having a thin, perforated, flexible base supporting a preferably symmetrical pattern of straight or slightly tapered projections which form the striking surface and having a handle affixed to one end. The projections forming the striking surface have an appropriate cross-section area, shape, length and spacing between projections, all of which combined, enable the striking surface to effectively and cleanly, kill a number of different household insects and hold the insect(s) on or between one or more of the projections. The appropriate pattern of slightly tapered projections also allows the insect(s) to be easily removed by tapping the device against the edge of a wastebasket or other resisting surface.

3,798,829
EDUCATIONAL TOY PARACHUTE
Ray Worley, 10320 Wunderlich Ave., Cupertino, Calif.
Filed July 12, 1973, Ser. No. 378,565
Int. Cl. A63h *33/20*
U.S. Cl. 46—86 R **8 Claims**



An educational toy missile capsule which preferably takes the form of a missile of the Apollo series and has an upper internal compartment which houses a parachute sail on a platform. The platform is slidably mounted in a pair of grooves inside the capsule and is generally locked in its lower position. A helical spring is attached to the platform so that it provides torsion that urges the platform into locking notches when the platform is in its lower position and biases the platform toward its upper, parachute releasing position so that it slides upward in its guiding grooves to force the parachute sail out the top of the missile capsule when it is released from the locking notches while itself being retained in the capsule by a retaining shoulder in the missile body. A timing motor is fixed in the lower internal compartment of the missile body, and the lower portion of the missile is fixed to the rotatable time setting shaft of the timing motor so that it is rotatable relative to the rest of the capsule and determines the time of release of the parachute sail after the timing motor is set in motion. The parachute ejecting platform is provided with a pair of tangs or ears which protrude into the lower compartment, and the lower rotatable part of the missile body is provided with a pair of protruding lugs that extend up into the lower compartment to engage the platform tangs and rotate the platform out of the locked position when the timing motor has run down so that the spring bias forces the platform to its "up" position, thereby forcing the parachute out of the missile body.

3,798,830
SWIMMING FROG HAVING STOPS AND SURFACES CONTROLLING LEG MOVEMENT
Charles K. Grieder, 700 S. Lyon, Santa Ana, Calif.
Filed Sept. 25, 1972, Ser. No. 292,056
Int. Cl. A63h *23/10*
U.S. Cl. 46—92 **4 Claims**

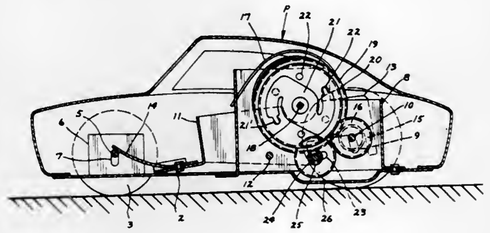


The present invention relates to an animated aquatic animal; and more particularly relates to a frog-like body that moves through the water in a frog-like manner. The frog-like movement is achieved by a motor driven linkage that simulates a "frog kick"; the simulated frog kick being produced by a pair of thigh elements and leg elements that are pivotally mounted with relation to the frog-like body and with relation to each other. Stops limit relative pivoting of the thigh and leg elements. Foot surfaces on the leg elements coact with the liquid medium through which the body is driven to move the thigh and leg elements from one stopped position to the other as the leg elements are driven through their cycle of movement.

3,798,831
WIND-UP TOY VEHICLE WITH DISENGAGEABLE WIND-UP MECHANISM OPERATED BY REAR AXLE ROTATION
Kisaburo Higashi, Mibu-Mach, Japan, assignor to Tonka Corporation, Minneapolis, Minn.
Filed Jan. 26, 1972, Ser. No. 220,833
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 **3 Claims**

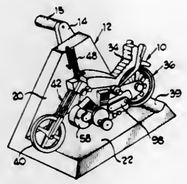
A toy wheeled vehicle having a wind-up spring for propelling the vehicle over a floor surface wherein the wheels have a driving connection with the spring to wind the spring as the vehicle is manually moved in a forward direction over the surface, the driving connection including a slip clutch to break said connection with the spring when the vehicle is moved rearwardly over the surface, and the driving connection only

being operative when downward pressure is applied to the vehicle. The wound spring in turn has a driving connection



with the wheels to propel the vehicle over the surface but said connection is automatically broken when the force of the spring is exhausted.

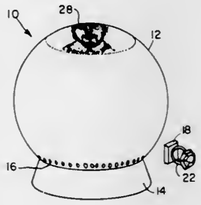
3,798,832
TOY VEHICLE AND ASSOCIATED CONDITIONING MEANS THEREFOR
Rouben T. Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed June 19, 1972, Ser. No. 264,169
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 **10 Claims**



A toy vehicle and associated external winding mechanism characterized by the provision of a crank arm on the winding mechanism connected through coupling devices and intermediate gears to a spring motor on the vehicle which in turn in connected through gears to a driven wheel of the vehicle. The connection between the spring motor and the driven wheel includes an automatic clutching gear which operatively disengages the motor from the driven wheel automatically in response to movement of the crank arm while storing energy in the spring motor, and which operatively engages the motor and driven wheel automatically in response to releasing the energy stored in the motor. The vehicle is in the form of a contemporary motorcycle.

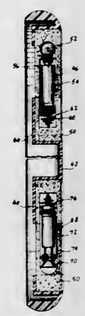
3,798,833
TALKING TOY
Richard A. Campbell, Wellesley Hills, Mass., assignor to Baltimore Brushes, Inc., Boston, Mass.
Filed Feb. 8, 1973, Ser. No. 330,711
Int. Cl. A63h *5/00*
U.S. Cl. 46—227 **6 Claims**

A talking toy with the outward appearance of a crystal ball, contains a battery-operated voice box. The voice box is turned on by a switch including a magnet which is positioned inside and adjacent to the toy's housing. The toy is activated whenever a second magnet is brought close to the internal magnet.



The voice box includes a special multi-track random access recording disk which enables the toy to emit a multiplicity of messages in a random fashion.

3,798,834
FLYING DISC HAVING IMPACT PROTECTED ELECTRIC SIGNALING DEVICE THEREIN
Alfred F. Samuel, 135 W. 14th St., New York, N.Y.
Filed Mar. 21, 1973, Ser. No. 343,558
Int. Cl. A63h *33/26, 27/00*
U.S. Cl. 46—228 **12 Claims**

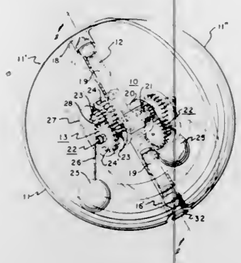


A disc-shaped directional-flight toy having a generally saucer-shaped body and at least one battery-powered audio or visual signaling device with a centrifugally actuated switch oriented to close and to energize said audio or visual signaling device when said disc-shaped directional-flight toy is hurled through the air and caused to rotate while in free flight. The visual device may be a battery-powered light bulb. The audio device may be a battery-powered buzzer or siren or the like. Removably mounted inpact cushioning means are provided which function to secure the signaling device, battery and switch to the body and also provide a cushion between the audio or visual signaling device and centrifugal switch, on the one hand, and the saucer-shaped body, on the other hand, in order to cushion the device and switch against the shock of the impact of said saucer-shaped body striking an obstruction.

3,798,835
MOTOR DRIVEN BALL TOY
Rodger W. McKeehan, 2536 Reclamation, Klamath Fall, Oreg.
Filed May 9, 1973, Ser. No. 358,557
Int. Cl. A63h *29/22*
U.S. Cl. 46—243 M **16 Claims**

The motor driven ball toy comprises a hollow ball casing, a toy drive assembly having an electric motor operable to drive pendulum weights carried distally from the motor armature shaft on pendulum arms disposed parallelly to the plane of

rotation of the motor, and an axis cylinder mounted in the ball casing to support the toy drive assembly centrally in the ball casing. Further embodiments include an inertial switch opera-



ble to change the polarity of the motor in response to a high impact force, drive means to rotate the cylinder axis, and inertial control means for the means driving the cylinder axis.

3,798,836

A HYDROPONIC BED FOR GROWING PLANTS

Louis C. Rubens, Midland, and Donald H. Clarke, Essexville, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 4, 1972, Ser. No. 311,457
Int. Cl. A01g *31/00*
U.S. Cl. 47—1.2 **5 Claims**

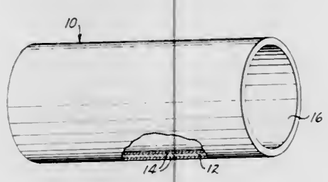
A novel hydroponic bed is disclosed comprising an aqueous nutrient solution and floating thereon a composite foam plant growth medium composed of a water insoluble open celled foamed polyurethane matrix having dispersed therein expanded cellular thermoplastic particles and a small amount of a water swellable, cross-linked hydrophilic polymer.

3,798,837

BIO-ACTIVE SILVICULTURAL CONTAINER

Richard W. Oehmke, Hudson, Wis.; Ronald F. Oestead, Maplewood, and Edward W. Janssen, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Mich.

Filed Feb. 26, 1973, Ser. No. 335,729
Int. Cl. A01g *9/02*
U.S. Cl. 47—37 **9 Claims**



A silvicultural container is provided which is useful for the germination of seeds and nurturing of seedling plants until such time as they are transplanted, container and all, into the field. The container is of such construction and composition that it can be triggered to provide a balanced nutrient source for soil bacteria and the delicate young seedling at the time of transplantation.

3,798,838

METHOD OF IRRIGATION AND FERTILIZATION

Saburo Hashimoto; Yorba Linda, and Burton B. Sandiford, all of Placentia, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 23, 1972, Ser. No. 283,182
Int. Cl. E02d *3/12*
U.S. Cl. 47—58 **7 Claims**

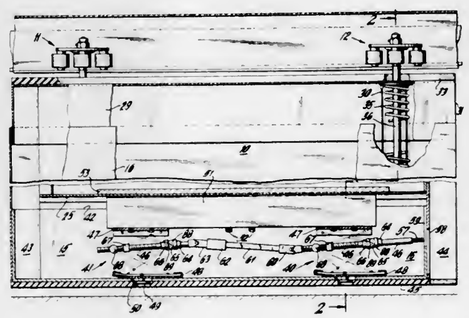
Fertilization and irrigation of highly permeable surface soils in semi-arid regions is described wherein the soils are contacted with an aqueous solution of a water soluble plant nutrient salt and an effective amount of a partially hydrolyzed polyacrylamide to reduce the permeability of the soil without rendering it impermeable to water flow. It has been found that water soluble plant nutrients and the aforementioned partially hydrolyzed polyacrylamide exhibit a synergistic effect to decrease the water permeability of the soils. It has also been found that plants grow better in the treated soil and are more efficient in uptake of nutrients from the soil. These discoveries can be used to conserve water and fertilizer and improve the efficiency of agronomy by contacting the soil with a solution having a concentration of from 0.001 to about 1 weight percent of a polyacrylamide having from 5 to about 80 percent of its amide groups hydrolyzed to carboxylic acid groups and from 0.001 to 5 weight percent of a water soluble, plant nutrient salt.

3,798,839

MOVABLE WALL PANEL

Arne M. Kaufman, Plainview, N.Y., assignor to Industrial Acoustics Company, Inc., Bronx, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,345
Int. Cl. E05d *15/26*
U.S. Cl. 49—127 **6 Claims**



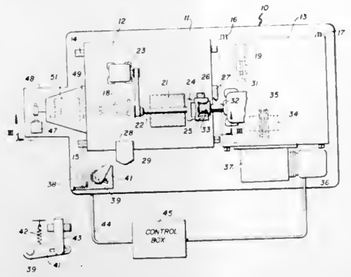
A movable wall panel is provided with an automatic compensating system for ceiling deflections comprising a nestable top panel casing or section spring-mounted within and projecting above an upper body compartment or recess, which top casing in conjunction with an overhead trolley support system and with linked dual jacks which operate to extend a bottom closure panel casing from a lower body compartment enable the panel to maintain a good seal against the ceiling even when the ceiling is subjected to substantial deflections of either a static type or of a temporary dynamic nature. In certain embodiments, the trolley hanger studs are of a fail-safe type having an internal safety cable extending through a bore running the entire length of the stud.

3,798,840

GRINDING MACHINE WITH A CAM-CONTROLLED DRESSING APPARATUS

Edward George Robillard, Cherry Valley, and Herbert Rudolph Uhtenwoltd, Worcester, both of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Apr. 14, 1972, Ser. No. 244,132
Int. Cl. B24b *53/08*
U.S. Cl. 51—5 **6 Claims**



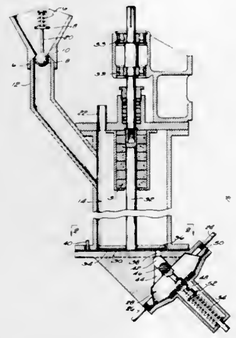
A grinding machine having a dressing apparatus which makes use of a master cam for producing a desired shape on an abrasive wheel.

3,798,841

PRESSURE FEED FOR SAND BLAST ABRASIVE

Arthur H. Eppler, 2518 W. Wisconsin Ave., Milwaukee, Wis.

Filed June 13, 1972, Ser. No. 262,388
Int. Cl. B24c *7/00*
U.S. Cl. 51—12 **10 Claims**



A check valve yields under weight of abrasive in a hopper to deliver abrasive into a pressure chamber from which it is fed by rotating feeder arms into metering orifices in a plate adjustable in the bottom of the chamber. A resilient valve retractable at an angle from the path of the grit permits the grit to issue through a selected metering orifice as needed for delivery into a convection air current en route to a blast gun or guns.

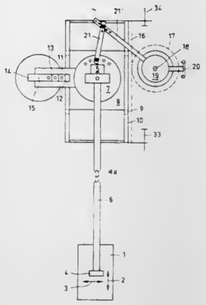
3,798,842

LONG-ARM GRINDING MACHINE

Rolf Seybold, Vorlan der Strasse 23; Egon Evertz, Eichenstrasse 21A, and Siegfried Stadler, Vereinsstrasse 14, all of 565 Solingen, Germany

Filed May 28, 1971, Ser. No. 147,732
Claims priority, application Germany, Dec. 23, 1970, 2063410; Aug. 12, 1970, 2040060
Int. Cl. B24b *7/02*
U.S. Cl. 51—32 **20 Claims**

This invention relates to a long-arm grinding machine having an elongated shaft, one end of which is provided with a grinding head and the other end is provided with a motor. The elongated shaft is adapted to be pivotable by means of a tubular shaft bearing on a machine frame of the grinding surface width. The elongated shaft is also adapted to be slidable in the direction parallel or substantially parallel to the central position of the longitudinal axis of the elongated shaft over the griding surface length. The shaft bearing may be pivoted by means of an eccentric drive and is linked by levers to a



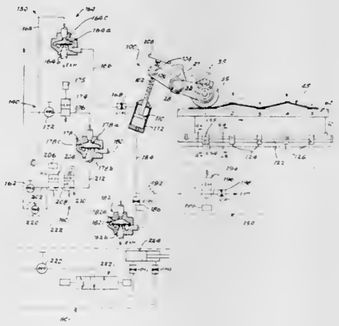
pivotably supported ratchet support which in turn supports a ratchet lever having two oppositely constructed ratchets which can be changed over into a separate stable position at each end of the grinding surface length. The ratchets are adapted to entrain a ratchet wheel in the same of two opposite directions until a traverse has been completed in that direction, the ratchet wheel being also a component of a feed transmission whose immovable element is fixedly joined to the machine frame.

3,798,843

AUTOMATIC BUFF PRESSURE SETTING

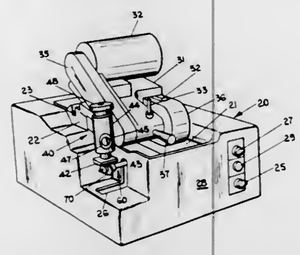
James W. Weatherell, Olean, N.Y., assignor to Clair Mfg. Co., Inc., Olean, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,153The portion of the term of this patent subsequent to May 30, 1989, has been disclaimed.
Int. Cl. B24b *1/00, 49/08*
U.S. Cl. 51—33 R **5 Claims**



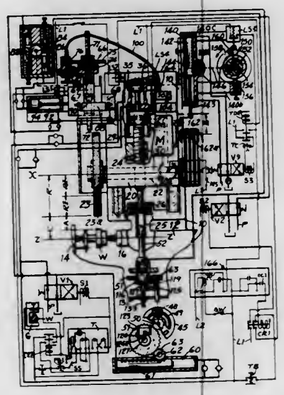
An improved control circuit for use with surface finishing machines having a driven surface finishing roll is adapted to establish and maintain desired working pressure relationships between the finishing roll and a workpiece.

3,798,844
LENS GRINDING APPARATUS
Donald K. Hannaman, Montague, Mich., assignor to Rigel Mfg., Inc., Whitehall, Mich.
Filed Apr. 24, 1972, Ser. No. 246,692
Int. Cl. B24b *9/16;* **B23q** *35/04*
U.S. Cl. 51—101 LG **35 Claims**



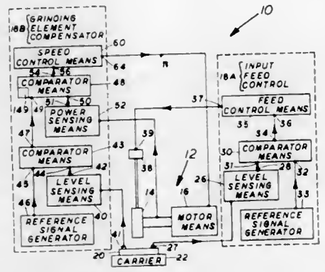
An apparatus for grinding the edges of eyeglass lenses includes a base pivotally and slidably supporting a head assembly which includes rough and fine grinding wheels. The base includes a holder for selectively rotating the lens under the grinding wheels and transport means for automatically raising, shifting and lowering the head assembly from a rough grinding position to a fine grinding position after a predetermined number of revolutions of the lens under the rough grinding wheel. An edge follower assembly accurately positions the fine grinding wheel relative to the lens at a selectable position for beveling the lens in any desired manner. After a predetermined number of revolutions of the lens holder under the fine grinding wheel, the head is automatically raised and shifted to a starting position.

3,798,845
GRINDING WHEEL TRUING CONTROL APPARATUS
Thomas F. Stevens, Shrewsbury, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 24, 1971, Ser. No. 183,359
Int. Cl. B24b *49/18*
U.S. Cl. 51—165.87 **9 Claims**



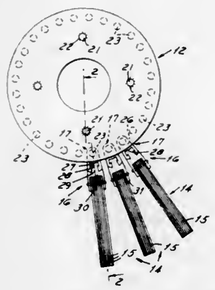
Apparatus and method for automatically increasing and determining the frequency of truing a grinding wheel in a grinding machine having means for compensating for the reduction in radius of the grinding wheel and to advance the grinding wheel to maintain the retracted position of the cutting face of the grinding wheel at a predetermined substantially constant distance from the work support means. Truing control means are provided for counting the workpieces being ground and initiating the truing means, and sensing means responsive to the amount of compensating movement to periodically produce and send an additional count to the counting means whereby the predetermined number of counts for which the counting means has been preset to initiate a truing cycle is reached prior to grinding the preset number of workpieces. Thus the number of workpieces ground by the wheel is periodically decreased in direct proportion to the reduction in the radius of the grinding wheel.

3,798,846
METHOD OF GRINDING
Roderick L. Smith, 2012 Greenfield Ln., Rockford, Ill.
Continuation-in-part of Ser. No. 834,928, May 23, 1969, Pat. No. 3,653,855. This application Mar. 27, 1972, Ser. No. 238,569
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 R **10 Claims**



The invention provides for controlling the after grinding size of a work piece and the production rate while maintaining surface integrity and finish of the work piece substantially uniform. The method includes the step of controlling the surface velocity of a grinding element to maintain the specific grinding energy substantially constant.

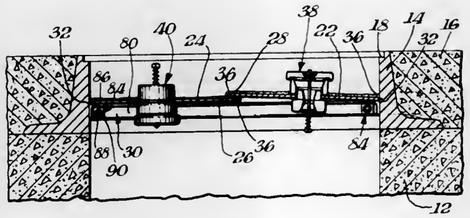
3,798,847
HINGE TYPE FINISHING PACKS WITH REPLACEABLE UNITS FOR CYLINDRICAL HUB STRUCTURES
James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.
Filed May 15, 1972, Ser. No. 253,238
Int. Cl. B24b *9/02*
U.S. Cl. 51—337 **16 Claims**



The rotary flap or finishing wheel or tool has a plurality of radially extending finishing units or packs mounted in a circumferential series on a hub structure. The finishing units or packs are each pivotally mounted on the body structure by a

dual clip-type assembly including an inner axially elongated and rigid pivoting clip member forming the primary component of the pack and an outer axially elongated clamping or clip member supporting or carrying the finishing or fill material and forming the secondary component of the pack. The pivotal mount of the inner clip member is afforded at an inner axially extending keyhole-type opening of the clip or at an axial through-bore, either of which formations at least partially encircles and is adapted to pivot on an axial pin component located adjacent the outer periphery of the hub structure. At a point radially outwardly of its pivot pin bore, as well as of the outer periphery of the hub structure, the inner clip member has an axially slidable, dove-tail or tongue-and-groove type connection to the aforementioned secondary, radially outwardly exposed outer clip or clamping member which, like the inner clip member, extends the entire axial length of the pack. The outer clamping member has a pair of radial arms which receives the fill or finishing material therebetween. In any one of a number of versions of dove-tail, tongue-and-groove, or keyhole type connections between the primary inner clip member and the secondary outer clip member, the latter is slidably assembled on, and removable from, the former to permit a ready installation and replacement of the secondary clip member in relation to the primary clip member and the hub structure.

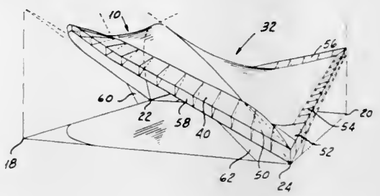
3,798,848
MANHOLE CLOSURE ASSEMBLY WITH SUPPORT RING
Benjamin J. Campagna, 300 Lark Drive, Arbor Park, Newark, Del.
Continuation-in-part of Ser. No. 89,301, Nov. 13, 1970, Pat. No. 3,712,009. This application Jan. 3, 1972, Ser. No. 214,995
Int. Cl. E02d *29/14*
U.S. Cl. 52—20 **3 Claims**



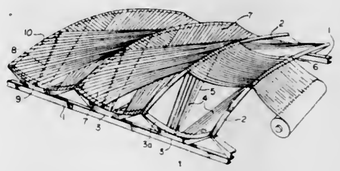
Manhole closure assembly primarily prevents drainage and storm water from emptying into manhole leading to sewerage system. Closure assembly comprises cover plate sealing off manhole opening. First valve member is secured to cover plate for relieving pressure inside manhole when pressure exceeds predetermined amount, and second valve member is secured to cover plate for relieving vacuum inside manhole when vacuum exceeds predetermined amount. Adapter ring is provided for supporting manhole closure assembly when manhole does not include structure for supporting assembly.

3,798,849
HYPERBOLIC PARABOLOID ROOF STRUCTURE
Dutton Biggs, 1339 E. 109th Ter., Kansas City, Mo., and Edward Vernon Konkel, 3800 E. Garden, Littleton, Colo.
Continuation of Ser. No. 58,065, July 24, 1970, abandoned. This application July 3, 1972, Ser. No. 268,599
Int. Cl. E04b *1/32, 7/08*
U.S. Cl. 52—80 **3 Claims**

A roof structure for a hanger or the like in which first and second roof sections having the shapes of parts of respective first and second hyperbolic paraboloids, having common base lines are joined along a line lying on the locus of an arch common to the two paraboloids to form a roof having openings of predetermined height between spaced roof supports. Reinforcing girders around the edges of the roof are formed with triangular cross sections made up of hyperbolic paraboloid surfaces joined by vertical edges.



3,798,850
ROOF STRUCTURE
Arthur John Ensor, 13 Kaymar Dr., Ottawa, Ontario, Canada
Filed Dec. 21, 1972, Ser. No. 317,404
Int. Cl. E04b *1/347*
U.S. Cl. 52—80 **8 Claims**

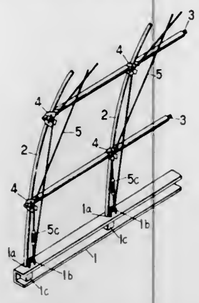


This invention relates to a roof structure spanning a pair of longitudinal joists and comprises a plurality of tranverse arches which span the joists. In between each arch on each joist is a foundation plate and rigid support members are provided spanning the distance between the center of each arch to the foundation plates on either side of the arch. A longitudinal diaphragm runs lengthwise of the structure between the joists, and hangs in measured catenery loops between the arches. A series of diagonal diaphragms overlie the longitudinal diaphragm and combine therewith so as to provide a rigid diaphragm and substantially 100 percent coverage of the spaces between the arches. Insulating material and a weatherproof protective coating are then applied to the structure.

3,798,851
ARCHED STRUCTURE
Motoo Utahara, 1-24-7 Okusawa, Setagaya-ku, Japan
Filed June 27, 1972, Ser. No. 266,588
Int. Cl. E04b *1/32*
U.S. Cl. 52—86 **13 Claims**

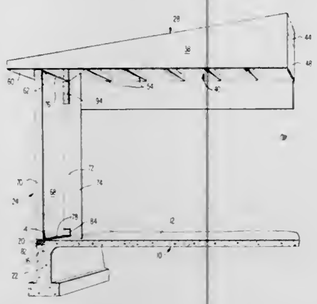
The base of the house comprises a pair of elongated channels extending in spaced parallel relation with the channel webs perpendicular and with the flanges of the channels extending toward each other. Each channel is formed with a plurality of longitudinally spaced holes in the upper flange and has, adjacent each hole, a hook or eye. Arch pipes have their ends inserted in the holes and secured to fixing members disposed in the flanges. Rectilinear members, such a pipes, extend in spaced parallel relation longitudinally of the arch pipes and are fixedly positioned on the arch pipes by coupling members each having a pair of U-shaped slots, the two slots being relatively angularly offset from each other by about 90°. One slot engages an arched pipe and the other slot engages a

rectilinear pipe. Each coupling member also has two pairs of substantially parallel fingers defining one of the two U-shaped slots, and each finger is formed with an elongated slot therein, the slots in the upper and lower fingers of each pair converging toward each other in the direction of the rectilinear



member. These elongated slots receive pins or bolts for securing the connecting members. The connecting members extend between alternate couplings along the arched pipe, and turnbuckles or the like may connect each connecting member to a base channel for tightening the connecting member.

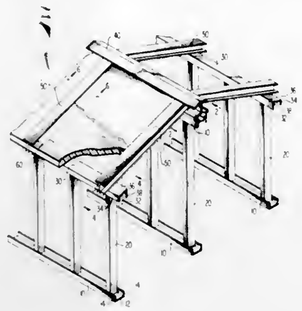
3,798,852
BUILDING FORMED OF PRECUT, FOLDABLE SITE ERECTED PAPER BOARD PANELS
Frank S. Nicoll, Jr., Dolfield Rd., Owings Mills, Md.
Continuation-in-part of Ser. No. 195,139, Nov. 3, 1971, abandoned. This application Dec. 27, 1971, Ser. No. 212,345
Int. Cl. D04b *7/02*
U.S. Cl. 52—90 **8 Claims**



A building is constructed of precut, foldable, site erected waterproof and weather proof fiberglass reinforced, resin treated, paper board panels in the form of triangular roof trusses and rectangular end and side panels fastened in serial abutting fashion. Multi-ply panel portions are provided at load centers without compromising simplicity in design and ease in assembly of the panels to form the building, and rigidity and strength of the finished structure. Novel, high strength fasteners couple overlapping panel wall portions.

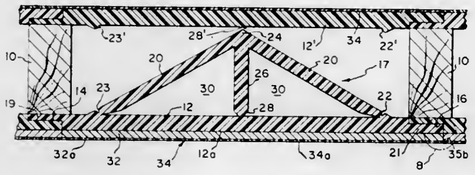
3,798,853
ALUMINUM BUILDING
John Roderick Castle, 12755 74th Ave. North, Seminole, Fla.
Filed Nov. 22, 1972, Ser. No. 308,905
Int. Cl. E04b *7/04*
U.S. Cl. 52—92 **5 Claims**

An all aluminum building having an assembly system using extruded structural members having unique cross-sectional configurations which allow the structural support members to be completely constructed on the building site and which interlock and fit together in such a manner as to form an easily assembled, yet structurally sound building without requiring



the use of special construction techniques. The extruded structural support members are used in conjunction with prefabricated aluminum sheet panels for constructing the roof and side walls of the building.

3,798,854
PREFINISHED WALLBOARD
Servando G. Hinojosa, 2046 Iowa St., and Octavio G. Hinojosa, 2057 Iowa St., both of Saginaw, Mich.
Filed Mar. 23, 1972, Ser. No. 237,345
Int. Cl. E04c *1/36*
U.S. Cl. 52—100 **1 Claim**

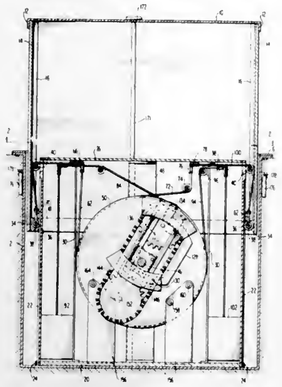


A prefinished wallboard and a method and apparatus for fabricating a prefinished wallboard wherein a layer of settable material is applied to one side of a wall panel and a decorative pattern is formed in relief in the settable material which, when set, is harder than the wall panel. A decorative coating may be applied to the relieved portions of the moldable material, and reinforcing and insulating members may be connected to the opposite side of the panel.

3,798,855
DISPLAY DEVICE
Ronald W. Walker, 312-A W. 13th, Amarillo, Tex.
Filed Sept. 15, 1972, Ser. No. 289,375
Int. Cl. E04h *13/00*
U.S. Cl. 52—103 **16 Claims**

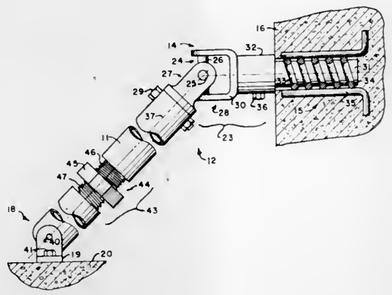
A display device that may function as a tombstone or grave marker. The device includes operating mechanism which is adapted to be located under ground for raising and lowering a marker assembly which may be disposed substantially at ground level to function as a grave marker or raised to an elevated position and thereby function as a tombstone. The operating mechanism for effecting the raising and lowering movement includes a wheel mounted for rotation and connected by flexible devices to the marker assembly and with

counterweights substantially to balance the weight of the marker assembly. Movement in opposite directions is effected



by shifting of counterweights so that upon release of a control, the marker assembly can be raised or lowered to alternate positions.

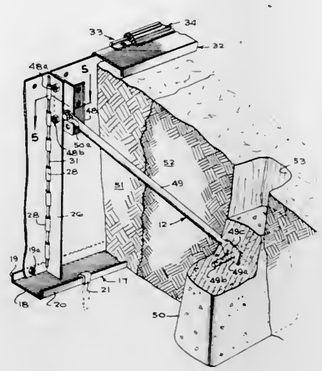
3,798,856
TILT-UP WALL PANEL BRACE ASSEMBLY
Walter Gloskowski, 1233 North Rd., Belmont, Calif.
Filed May 24, 1972, Ser. No. 256,413
Int. Cl. E04h *12/20*
U.S. Cl. 52—127 **4 Claims**



A temporary brace assembly for a tilt-up wall panel during construction is arranged to hold the wall panel in the vertical position after which, through the use of a universal joint at the point of connection of the brace to the wall panel, by rotating the brace about its longitudinal axis, it can be removed and disattached from the panel by a person at the floor level without the necessity of scaffolding or ladders.

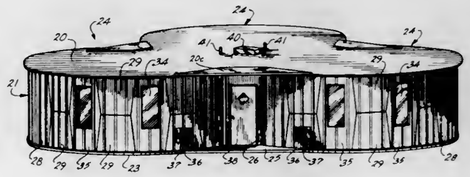
3,798,857
SWIMMING POOL
Salvatore E. Barrera, Berwick, Pa., assignor to Wilkes Pool Corporation, Berwick, Pa.
Filed Feb. 25, 1972, Ser. No. 229,444
Int. Cl. E04h *3/18*
U.S. Cl. 52—169 **17 Claims**

An in ground swimming pool erected in an excavation having a bottom wall and at least one side wall, generally including a plurality of vertically disposed panels hingedly secured together in end-to-end relation about the periphery of the excavation adjacent the side wall thereof, each hinged connection between successive panels consisting of at least one vertical slot disposed in one of the successive panels, a tab having a vertical recess, disposed on the other of the successive panels, received within the slot and cooperating therewith to provide a vertical passageway between the panels, and a pin disposed in the vertical passageway having a length greater than the vertical slot, for interlocking successive panels, means for sup-



porting at least a portion of the vertical panels consisting of at least one elongated rigid member secured at one end to one of the panels, extending laterally through undisturbed soil disposed adjacent the panel, and anchored at the other end thereof, and a liner disposed within the plurality of panels, having the periphery thereof secured to the panels.

3,798,858
DWELLING CONSTRUCTION
Charles R. Turner, Maryville, Mo., assignor to Advance Concrete and Asphalt Co., Maryville, Mo.
Filed Mar. 17, 1972, Ser. No. 235,616
Int. Cl. E04h *1/02*
U.S. Cl. 52—169 **4 Claims**

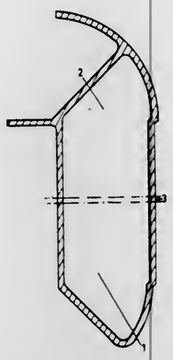


Single or multiple family dwelling construction, being clover-shaped in plan view, wherein the roof, exterior and interior walls, and the foundation are fabricated from reinforced concrete. The foundation includes a footing backed with a resinous insulation and a floor slab overlying a resinous insulation and moisture barrier. The roof is a laminated construction of concrete, urethane foam, and a vinyl or butyl rubber coating. The exterior walls are a laminated construction of concrete, urethane foam, plaster, and a vinyl coating. Preferred floor plans and manufacturing techniques are also disclosed.

3,798,859
RIGHT ANGLED CONNECTION FOR BUILDING ELEMENTS

Dirk W. de Jong, Dubbeldam, Platanenlaan, Netherlands, assignor to Fokker-V.F.W., N.V., Schiphol-Oost, Netherlands

Filed Aug. 9, 1971, Ser. No. 170,126
Claims priority, application Netherlands, Nov. 25, 1970, 7017203
Int. Cl. E04b *1/38, 1/60*
U.S. Cl. 52—259 9 Claims

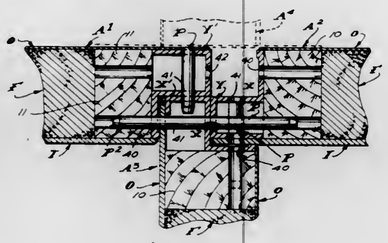


Connection for building elements, arranged at right angles, especially hollow or filled flat building panels, the cover plates of the panels along the edges being provided with joining faces, interconnected by glueing, said joining faces making an angle of 45° with respect to the surfaces of the panels, with complementary interlocking endprofiles along said edges of the cover plates of adjoining panels, each end profile forming part of a panel.

3,798,860
MODULAR BUILDING SECTION

Wylie A. Mason, c/o Inter Modul Building Systems Corp., 354 Dawson Dr., Camarillo, Calif.

Filed Nov. 9, 1972, Ser. No. 304,941
Int. Cl. E04b *1/48*
U.S. Cl. 52—285 6 Claims

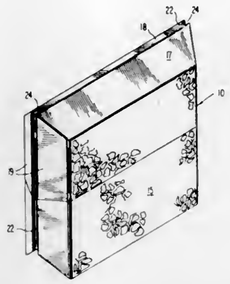


A wall structure comprising a plurality of like, flat, vertical panel-like sections in side by side relationship, said sections having interengaged rebated vertical sides and horizontal top and bottom channeled edges, elongate horizontal header and sole plates engaged in and continuing through said channeled edges and right angularly related pins engaged in and between the interengaged rebated side of adjacent sections on horizontal axes normal and parallel with the vertical plane of the wall structure.

3,798,861
WALL CONSTRUCTION MODULE AND SYSTEM

Alexander C. H. Weiss, 404 Morrison Pl., Apt. C, Springdale, Ariz.

Filed Apr. 10, 1973, Ser. No. 349,803
Int. Cl. E04c *1/10*
U.S. Cl. 52—306 14 Claims

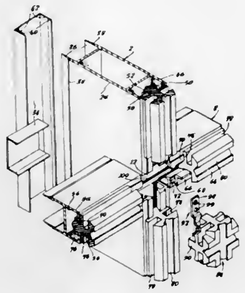


Interior or exterior building partitions are assembled in a factory or, in some cases, on a job site by keying vertical flights of premolded stackable modulus with extruded uprights of any required height. The modules or blocks are injection-molded from translucent colored plastics in the form of two hollow sections which are welded into a closed unit. Each module is contoured for interlocking engagement with a pair of the uprights and for interfitting stabilized engagement with adjacent modules above and below in the partition assembly.

3,798,862
STRUCTURAL ASSEMBLIES

Richard Lewis Stoakes, "Clouds", Northdown Rd., Woldingham, Surrey, England

Filed Oct. 18, 1971, Ser. No. 189,926
Int. Cl. E04f *15/14*; E04h *1/62*
U.S. Cl. 52—397 22 Claims

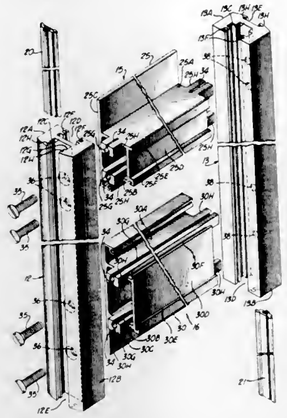


A structural assembly comprises a generally planar framework that carries sealing means projecting to one side of the plane of the framework, infill panels or glazing panes being inserted in the sealing means to form a weathertight face therewith. Some of the frame members, particularly those inside the boundaries of the framework, are interconnected by means allowing limited relative movement between the members. The sealing means include unitary sealing members at the junctions of the frame members, sealing strips being held in compression between opposed unitary members to maintain a seal at the abutting interfaces of the sealing members and the sealing strips.

3,798,863
FRAME CORNER CONSTRUCTION

Harold A. Latson, Niles, Mich., assignor to American Metal Climax, Inc., New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,665
Int. Cl. F16b *7/18*; E04c *2/38*
U.S. Cl. 52—400 4 Claims

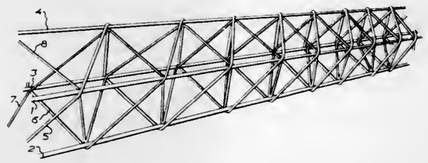


There is provided an improved corner construction for interconnecting construction or frame members of a wall system. The corner construction is particularly useful with, but not limited to, a door structure of the type wherein a frame supports a panel of glass or other suitable material. The frame is formed of vertical frame members each having face portions connected by a transverse web and defining confronting glazing pockets. Spaced upper and lower rail members interconnect the vertical members and are each provided with longitudinally extending screw splines. The ends of the upper and lower rail members are coped to define tenons so that the screw splines fit within the confronting glazing pockets. Fastener means extending through the transverse webs into the screw splines expand the tenons to provide a tight fit with the glazing pockets of the vertical members.

3,798,864
SUPPORTING STRUCTURES AND METHODS OF MAKING THEM

Hans Christer Georgii, Stockholm, Sweden, assignor to Borghild Georgii, Geneva, Switzerland

Filed Oct. 13, 1971, Ser. No. 188,735
Claims priority, application Sweden, Oct. 16, 1970, 13976/70
Int. Cl. E04h *12/10*
U.S. Cl. 52—653 6 Claims

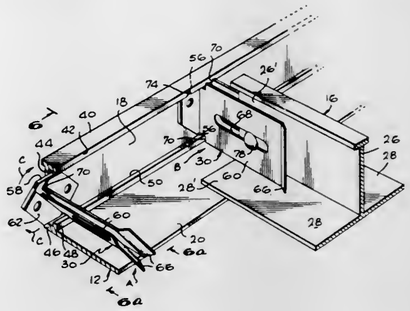


A supporting structure comprises longitudinal rods and transverse straight rods interconnecting the longitudinal rods. The transverse straight rods are constituted by two systems of helically wound wires, and each of the systems comprises at least two wires of the same cross sectional shape. The wires of one system are wound in one direction while the wires of the other system are wound in the opposite direction. The resulting helically wound wires are united with the longitudinal rods at the crossings between the rods and the wires.

3,798,865
GRID SUPPORT STRUCTURE AND CLIP MEANS THEREFOR

Rolando T. Curtis, Los Angeles, Calif., assignor to Integrated Ceilings, Inc., Los Angeles, Calif.

Filed Mar. 17, 1972, Ser. No. 235,688
Int. Cl. E04b *5/52*; E04c *2/42*
U.S. Cl. 52—665 9 Claims

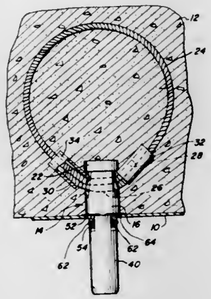


Grid structure adapted to support light diffuser elements below a ceiling structure, comprising longitudinal members and cross members extending between the longitudinal members and defining openings therewith for light diffuser elements, the cross members being connected to the longitudinal members by means of a novel twist-cam clip which is designed to slide along a track mounted on the longitudinal members to a predetermined position, or to be inserted into a track at any point, and the clip then twisted to cam the clip in the track, and by crimping the track adjacent the clip, securing the clip in position for attachment thereto of a cross member.

3,798,866
HANGER INSERT FOR STEEL FLOOR DECK AND THE LIKE

Frank A. Werstein, Long Beach, Ind., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

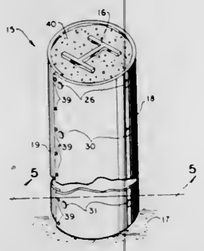
Filed Dec. 30, 1971, Ser. No. 214,274
Int. Cl. E04b *1/41*
U.S. Cl. 52—707 18 Claims



An elongate metal insert has a loop of flexible steel cable at its upper end and a threaded socket in its lower end. Through the use of a thin metal sheath member that is installed in a

suitable hole in a horizontal sheet member of steel or plywood, the insert is positioned with its lower end exposed below the horizontal sheet member and its upper end above the same so that when concrete is poured onto the top of the horizontal sheet member it will cover the loop and permanently anchor the insert in the concrete. Thus, structural members may be secured to the hanger depending from the bottom of the concrete layer, through the sheet member of steel in the case of steel floor deck, or directly from the concrete where the plywood has been stripped therefrom.

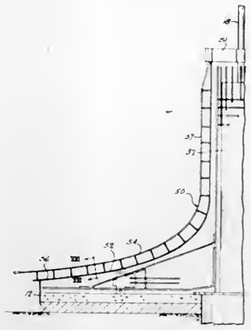
3,798,867
STRUCTURAL METHOD AND APPARATUS
Benjamin F. Starling, 1907 Bahia Mar Dr., Stone Mountain, Ga.
Filed Mar. 2, 1972, Ser. No. 231,262
Int. Cl. E04c *3/34*
U.S. Cl. 52—724 **14 Claims**



Method and apparatus for increasing the strength of a structural member and for repairing and reinforcing installed structural members in situ. The structural member is enclosed with a rigid cover and the space between the cover and the structural member is completely filled wth a suitable epoxy or other material which bonds both to the structural member and to the cover. The bonding material, which is preferably heavier than water, occupies cracks and other damaged regions existing in the structural member and also displaces water from the space between the cover and the structural member, so that installed structural pilings or the like in marine environments can be repaired and reinforced according to the present invention. In another disclosed embodiment of the invention, the space between a structural member and a surrounding spaced-apart enclosure is filled with a suitable substance such as concrete. The concrete or other filler is mechanically anchored both to the enclosure and to the structural member to provide a unitary structural support having greatly increased strength compared to the original structural member.

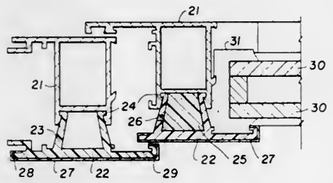
3,798,868
METHOD OF BUILDING CONSTRUCTION
Denis R. Loranger, 19 Parkman Pl., Westmount 6, Quebec, Canada
Filed Apr. 7, 1972, Ser. No. 242,053
Int. Cl. E04g *21/10, 21/20*
U.S. Cl. 52—742 **3 Claims**

A circular (or any other geometric shape) concrete floor slab is first formed with a central circular cavity extending down to a foundation. A reinforced concrete roof structure is constructed on top of the floor slab with the aid of a vertical gin pole projecting up from the cavity and a smoothing and shaping screed that rotates around the pole. The roof structure consists of a radially extending perimeter portion that merges smoothly and monolithically into a centrally located, upwardly extending hollow column portion. When completed, the roof-column structure is raised from the slab and inverted. The monolithic column portion is then inserted into the cavity to rest on the foundation. In an alternative construction the roof structure is not poured monolithically with the column



portion, but is made in otherwise the same manner around a prefabricated column already mounted in the cavity. The roof structure is finally raised upwardly along this column and secured thereto without inversion.

3,798,869
METHOD OF SNAP FITTING CHANNEL MEMBERS AND FOAMING IN PLACE AN INTERLOCK THEREBETWEEN
Ernst Nipp, Georg-Wulf-Strasse 5, 28 Bremen 1, Germany
Filed Feb. 22, 1971, Ser. No. 117,396
Claims priority, application Germany, Mar. 6, 1970, 2010663; July 27, 1970, 2037081
Int. Cl. E04g *21/00;* **E04c** *2/26*
U.S. Cl. 52—743 **2 Claims**

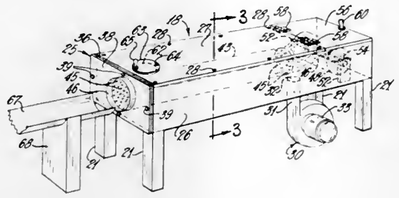


The present method produces a structural unit, for instance a window frame, comprising heat conducting structural members and rigid connecting means therebetween, by clamping a hollow, resilient connecting element between said structural members and then filling the hollow resilient element with a hardenable mass which by its hardening eliminates the resiliency and thus provides said rigid connecting means. The connecting element may be of substantially H-shaped or rectangular cross section with means for engaging the structural members. The resiliency may be the natural resiliency of the material of which the connecting element is made.

3,798,870
METHOD AND APPARATUS FOR APPLYING A JACKET TO AN ELONGATED BODY
Rowland W. Kanner, Columbus, and Clifford D. Smith, Waterville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Apr. 24, 1972, Ser. No. 247,053
Int. Cl. B65b *43/08*
U.S. Cl. 53—30 **17 Claims**

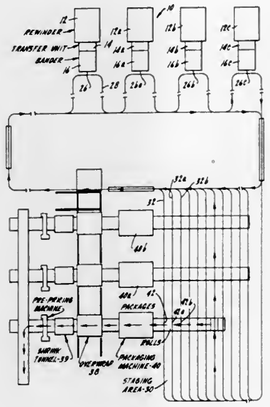
The disclosure embraces a method of and apparatus for withdrawing tubular jacketing or organic film material from a

supply and applying the withdrawn portion onto an elongated body such as a tubular fibrous duct involving expanding the withdrawn portion of the film material by differential pres-



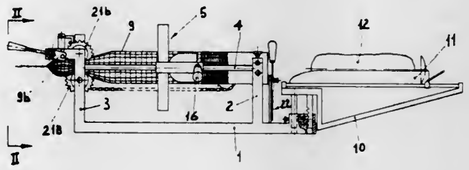
sure, inserting the elongated body in the withdrawn expanded portion, and equalizing the pressures to contract the withdrawn portion to snugly engage and encase the body.

3,798,871
PACKAGING MACHINE
Clyde H. Purdom, Memphis, Tenn.; Kenneth W. Allum, South Haven, Miss., and Harold D. Shackelford, Memphis, Tenn., assignors to Cleo Wrap Corporation, Memphis, Tenn.
Filed Sept. 21, 1972, Ser. No. 290,845
Int. Cl. B65b *57/10, 35/44*
U.S. Cl. 53—59 R **23 Claims**



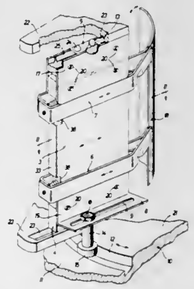
There is disclosed a machine for assembling, end capping, and packaging together in a preselected manner, a plurality of rolls wherein each of the rolls includes a material having a preselected color and/or pattern wound thereon and wherein the axial edge of the outer convolution of material on each of the rolls is oriented in a preselected position within the finished package. In the preferred embodiment of the invention, the disclosed machine is used to assemble and end cap rolls of paper, such as Christmas gift wrap paper. The machine comprises a plurality of feed elements wherein each of the feed elements includes a receptacle for storing a plurality of rolls wherein the material on each of the rolls in any one feed element contains the same color and/or pattern of material wrapped thereon. The feed elements individually feed the rolls contained therein onto a conveyor means. The conveyor means transports these rolls which are now arranged in a preselected color and/or pattern orientation to a grouping means which divides the rolls into a plurality of groups of rolls wherein each of the groups contain a preselected number of rolls having a preselected pattern and/or color distribution. This grouping means then feeds the group of rolls to an orienting means which acts upon the rolls in the group and orients the axial edge of the material wound on each of the rolls such that the axial edge is hidden from view within the package. Lastly, the group of rolls is then transported to a capping station wherein caps are placed over the end portion of the rolls to form a single package of rolls.

3,798,872
DEVICE FOR STUFFING FOODSTUFF INTO TUBULAR NETTINGS
Vittoria Cherio, and Giuseppe Mignone, both of Valle San Mattes, Cisterna d'Asti, Italy
Filed Apr. 17, 1972, Ser. No. 244,432
Claims priority, application Italy, Nov. 27, 1971, 70901/71
Int. Cl. B65b *39/06*
U.S. Cl. 53—197 **16 Claims**



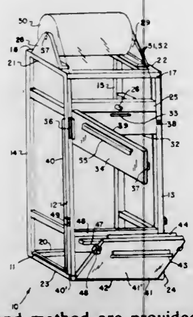
In apparatus for manually stuffing foodstuff into tubular netting and continuously gathering netting about a tubular element, the action of centering, holding on position and aligning of the tubular element is combined with the net-unwinding from spool-feeders in one single improved device which consists of a plurality of rolls located on the tubular element near a constricted section thereof. The tubular element, furthermore, may be contained within a sheath and supported therein by an axial spine with a plurality of spaced annuli. Several modifications of this concept are described and claimed, the concept being applicable to Apparatus of both the reciprocating and continuous net-gathering type.

3,798,873
AUTOMATIC COIN DISPENSING MACHINE
Gerd Rainer Frahm, Berlin, Germany, assignor to NGZ Geldzahlmaschinen-Ges. mbH & Co., Berlin, Germany
Filed July 21, 1972, Ser. No. 273,862
Claims priority, application Germany, Aug. 6, 1971, 21364990; Aug. 23, 1971, 21421896
Int. Cl. B65b *11/04*
U.S. Cl. 53—212 **8 Claims**



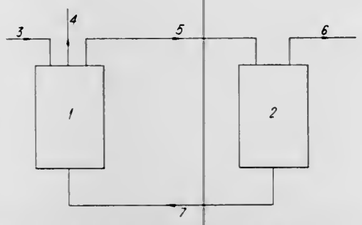
An automatic coin dispensing machine has a coin stacking device incorporating a tubular sleeve which is of quickly-variable diameter to adapt it to different sizes of coin. To this end it is made up of side-by-side overlapping sections which can be contracted together or opened apart by simple mechanical means. A similar system may be applied to a wrapping tube in the machine.

3,798,874
HEAT SEALING MACHINE AND METHOD
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.
Filed Feb. 3, 1972, Ser. No. 223,281
Int. Cl. B65b *5/04*
U.S. Cl. 53—241 **10 Claims**



An apparatus and method are provided for forming containers of flexible plastic film and hermetically sealing articles of clothing and the like therein. In one form, a hanger containing an article of clothing is disposed within a partially formed envelope fed from a roll containing a plurality of tandemly arrayed envelope formations and a further sealing operation is effected to seal both the bottom of the envelope and the upper portion thereof against a hanger which protrudes through an opening therein. The envelope may be formed from a flat tube of flexible thermoplastic material or from two sheets of plastic film which are side sealed and end sealed together after the hanger and article of clothing are disposed therein.

3,798,875
RECOVERY OF HYDROGEN FLUORIDE
George Oswald Morris, Runcorn, England, assignor to Imperial Chemical Industries, Limited, London, England
Filed Feb. 22, 1972, Ser. No. 228,109
Int. Cl. B01d *47/00*
U.S. Cl. 55—22 **16 Claims**

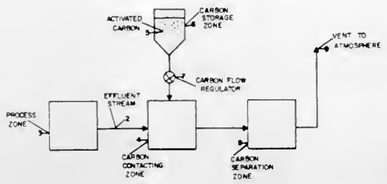


Hydrogen fluoride is recovered from a gaseous mixture containing it by passing the gaseous mixture through a mixture of an alkali-metal fluoride in an inert liquid maintained at a temperature at which the hydrogen fluoride is absorbed and thereafter heating the mixture to a temperature sufficient to liberate hydrogen fluoride.

3,798,876
ABATEMENT OF AIR POLLUTION FROM ORGANIC COMPOUNDS WITH POLYMERIC ADSORBENTS
David C. Kennedy, Malvern, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed Nov. 30, 1971, Ser. No. 203,444
Int. Cl. B01d *53/04*
U.S. Cl. 55—59 **20 Claims**

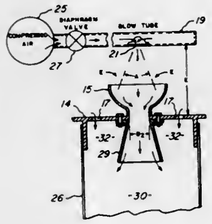
This invention relates to an adsorption-based process for the recovery of gaseous and/or vaporized organic chemicals. More particularly, it relates to a method of limiting air pollution caused by atmospheric discharge of odiferous, toxic, or otherwise objectionable chemicals.

3,798,877
NOVEL ODOR CONTROL METHOD
Norman C. Lamb, Ralston, Nebr., assignor to Stauffer Chemical Company, Westport, Conn.
Continuation-in-part of Ser. No. 119,767, March 1, 1971, abandoned. This application Dec. 21, 1972, Ser. No. 317,452
Int. Cl. B01d *50/00*
U.S. Cl. 55—79 **26 Claims**



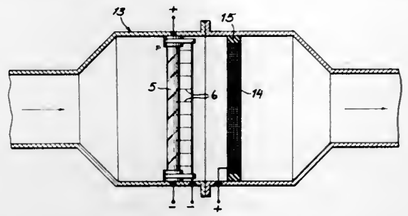
The invention is an odor control system for use in processes for manufacturing and preparing pesticidal and herbicidal compositions, said process involves the passage of the effluent stream or exhaust gases associated with the manufacturing and handling of the compositions through a zone into which finely divided activated carbon is introduced so as to make contact with the exhaust gases and to become entrained therein prior to the venting of the gases into the atmosphere. This system is particularly useful for controlling the odors which accompany the manufacture and preparation of synthetic organic pesticide and herbicide compositions containing sulfur and particularly phosphorothioate, phosphorodithioate and thiolcarbamate compositions.

3,798,878
FILTER CLEANING APPARATUS
Josef Pausch, Wayzata, Minn., assignor to General Resource Corporation, Hopkins, Minn.
Filed Aug. 18, 1972, Ser. No. 281,792
Int. Cl. B01d *46/04*
U.S. Cl. 55—96 **8 Claims**



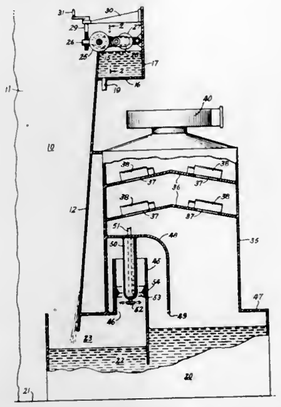
Apparatus for removing accumulations of dust from the exterior surface of a dust filter bag including means for injecting a high energy gas into the bag interior through an orifice and a bowl-shaped element having a restricted throat diameter, where the orifice size and throat diameter are of a preferred size ratio for maximizing the gas pressure.

3,798,879
AIR FILTER WITH ELECTROSTATIC PARTICLE COLLECTION
Gerhard Schmidt-Burbach, Wetzlar; Anton L. Jung, Herborn; Helmut Hubert, Erda; Manfred Lapczyna, Wetzlar; Erhard Ledwon, Guntersdorf; Wilfried Rock, Ganderkesee, and Heinz Strauss, Lohnberg, all of Germany, assignors to Buderus'sche Eisenwerke, Wetzlar, Germany
Filed Nov. 29, 1971, Ser. No. 202,747
Claims priority, application Germany, Nov. 28, 1970, 2058685; May 21, 1971, 2125234
Int. Cl. B03c *3/38*
U.S. Cl. 55—102 **4 Claims**



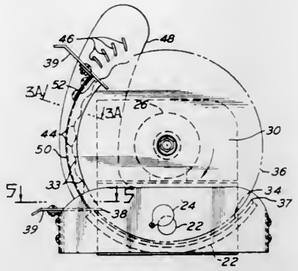
A filter, for purifying air at least in part by electrostatic collection of particulates contained therein, has at least one charged gas-permeable filter surface extending transversely to the gas stream and designed mechanically to retain the particles by interposing a surface in the path of the gas. The electrostatic field is applied in the direction of movement of the gas stream. The particles may be charged by an ionizing device at the upstream side of the apparatus.

3,798,880
AIR CLEANING APPARATUS
Orlan M. Arnold, Norwalk, and Carlo A. Vancini, Stamford, both of Conn., assignors to Peabody Engineering Corporation, New York, N.Y.
Filed May 25, 1972, Ser. No. 256,963
Int. Cl. B01d *47/02, 47/10*
U.S. Cl. 55—223 **13 Claims**



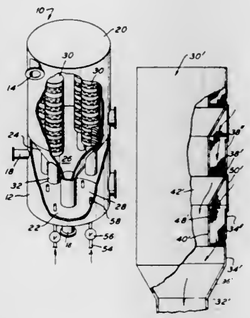
Air cleaning apparatus including a wall over which a film of water is passed into a sump having a water level spaced below the bottom of the wall. The spray laden air passes under or through openings in this wall into a washer for removing particulate material. A screw conveyor scrapes the top of the wall to remove deposits. In one embodiment the air is withdrawn from an opening at a level above the washer and passes downwardly through the washing zone.

3,798,881
LIQUID SPRAYER
Gerald L. Schwarz, Cleveland, and Hugo Schlachet, Cleveland Heights, both of Ohio, assignors to Bessam Manufacturing, Inc., Cleveland, Ohio
Filed July 22, 1971, Ser. No. 165,236
Int. Cl. B01f *7/10*
U.S. Cl. 55—230 **9 Claims**



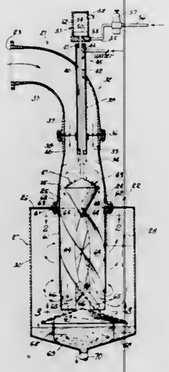
An apparatus for filtering, washing and cooling gases including a chamber having inlet ducting and outlet ducting. Gases conducted through the inlet ducting into the chamber are cleaned and cooled therein and removed through the outlet ducting. Within the chamber is a foraminous wall extending transverse to the direction of gas flow. Some means such as a fan is used to force the gas through the foraminous wall. A pool of water stands in the bottom of the chamber between the inlet ducting and the foraminous wall and a curtain of said water is sprayed from said pool by means of rotating discs and directional control mechanisms, whereby gas entering the chamber passes through the water curtain and is cleaned and cooled.

3,798,882
GRANULAR BED FILTER APPARATUS AND METHOD
Bodo Kalen, Dix-Hills, N.Y., assignor to The Ducon Company, Inc., Minneola, N.Y.
Filed Sept. 28, 1971, Ser. No. 184,395
Int. Cl. B01d *46/30*
U.S. Cl. 55—302 **12 Claims**



A filter apparatus including a hollow filter stack. Each filter stack includes a series of annular filter beds which are of narrow width and receive inert granular filter material such as sand. The filter beds are backwashed by two or more repetitive high pressure jets to form a shock wave while the bed is fluidized.

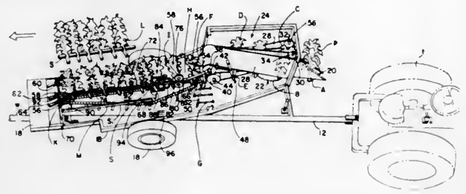
3,798,883
GAS SCRUBBER, ENTRAINMENT SEPARATOR AND COMBINATION THEREOF
John M. Heeney, Chicago, Ill., assignor to Fuller Company, Catasauqua, Pa.
Division of Ser. No. 748,846, July 30, 1968, Pat. No. 3,597,901. This application Aug. 27, 1970, Ser. No. 67,546
Int. Cl. B01d *45/12*
U.S. Cl. 55—456 **6 Claims**



A gas scrubber for removing particles carried in suspension by gas is used with or without a specific entrainment separator. The scrubber has (1) a gas-conducting conduit with a portion having an inner surface that diverges in the direction of gas flow, (2) a diverter that is disposed in this portion of the conduit and that has an opposed diverging surface with a greater degree of divergence, and (3) a pipe that feeds scrubbing liquid to that surface of the diverter for flowing liquid into the downward flow of gas. Preferably, the diverter is supported from above and is resiliently urged upwardly so that the diverter is automatically moved by a change in the rate of gas flow. The scrubber provides an annular flow of gas that is changed to a helical downward flow by the specific entrainment separator, disposed below the diverter and having helically extending elongated plates in a vertical conduit within a chamber. A frustoconical diverter is disposed below the bottom open end of that vertical conduit to change the direction of the gas leaving the vertical conduit. The elongated plates are radially disposed within the vertical conduit and extend in a helical manner about the longitudinal axis of that conduit. Another conduit communicates tangentially with a sidewall opening of the chamber adjacent its top to exhaust the gas from the annulus between the chamber and the vertical conduit. Accumulated liquid is removed from the bottom of the chamber.

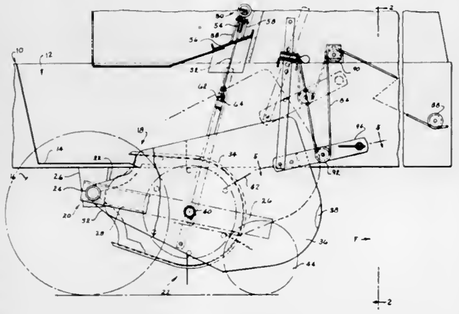
3,798,884
TOBACCO HARVESTER
Carlisle A. Middleton, 38 Dungarrie Rd., Baltimore, Md.
Filed May 31, 1973, Ser. No. 365,564
Int. Cl. A01d *45/16*
U.S. Cl. 56—27.5 **21 Claims**

A tobacco harvester having plant cutting, conveying and spacing mechanisms including a special soft-discharge belt conveyor system, a plant protecting and delivering shuttle, a plant stalk centering system, and a thrust-arm conveyor system feeding stalks of tobacco for impaling on a floating spear positioned by jaws which pivotally alternate in operation, to permit passage of plants from the spear onto tobacco sticks



successively rearwardly aligned with the spear by a tobacco stick positioner as each loaded stick in turn is ejected upwardly by a loaded stick ejector.

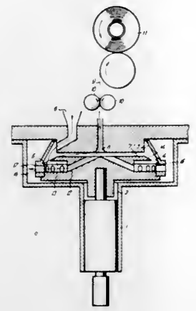
3,798,885
BALER PICKUP COUNTER-BALANCING MECHANISM AND PICKUP ROPE LIFT
Emmett F. Glass, Bird-in-Hand, and Robert G. Young, Akron, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Sept. 1, 1972, Ser. No. 285,951
Int. Cl. A01d *89/00*
U.S. Cl. 56—364 **10 Claims**



A spring and cable assembly to counter-balance the pickup of a baler. A low rate spring of generally long length is mounted transversely to the baler above and parallel to the feeding chamber of the baler, the spring being interconnected with cable means which extend to at least one end of the pickup. Because of the low rate spring which may be employed when disposed in this position a manually operable rope lift may be employed to raise the pickup without requiring undue force.

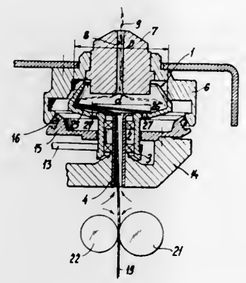
3,798,886
SELF-CLEANING SPINNING ARRANGEMENT FOR USE WITH TEXTILE MACHINES
Jaroslav Rajnoha, Tyniste, nad Orlici; Ladislav Bures, and Bohumir Burget, both of Usti nad Orlici, all of Czechoslovakia, assignors to Elitex, Zavodu Textilnoho Strojirenstvi, Liberec, Czechoslovakia
Filed Dec. 16, 1971, Ser. No. 208,662
Claims priority, application Czechoslovakia, Dec. 16, 1970, 8480-70
Int. Cl. D01h *1/12, 11/00*
U.S. Cl. 57—56 **9 Claims**

A self-cleaning spinning arrangement for use with textile machines, particularly open end spinning machines, includes a rotatable spinning chamber which has a fiber-collecting surface. Supply means supplies carded fibrous material, together with incidental impurities, for deposition onto the collecting surface in the form of a fiber ribbon which is to be converted into yarn. Withdrawal means withdraws fibrous material from



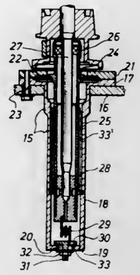
the collecting surface, in form of yarn which travels along a yarn withdrawal path. Pneumatic cleaning means provided in the region of the collecting surface automatically entrains the impurities and continuously removes them from the spinning chamber during operation of the latter.

3,798,887
APPARATUS FOR SPINNING NON-CONTINUOUS FIBERS IN A ROTARY BOWL
Jacques Le Chatelier, Riedisheim, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France
Filed June 20, 1973, Ser. No. 371,871
Claims priority, application France, June 23, 1972, 72.22724
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 **16 Claims**



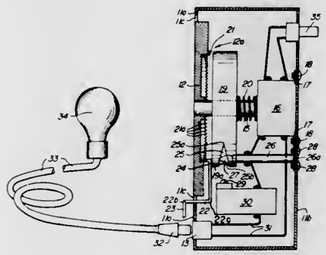
A work component of solid material such as a disc having a shape of revolution and of small height compared with its diameter is placed within a rotary bowl for spinning free fibers and permitted to rotate freely about its axis of revolution by frictional contact with the internal wall of the rotating bowl. The fibers are gathered together more effectively by means of the disc which has the further design function of packing and smoothing the yarn as it is being formed while also incorporating any impurities therein.

3,798,888
SPINNING AND TWISTING SPINDLE
Gerhard Mandl, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed Feb. 1, 1972, Ser. No. 222,593
Claims priority, application Switzerland, Feb. 3, 1971, 1582/71
Int. Cl. D01h *7/12*
U.S. Cl. 57—135 **16 Claims**



The spindle is rotatably mounted within a sleeve by means of a neck bearing and a foot bearing while the sleeve is mounted elastically within a fixed bolster. An elastic radially symmetrical connecting element serves to mount the upper end of the sleeve in the bolster while an elastic radially symmetrical connecting member connects the lower end of the sleeve to the bolster. The lower connecting member may also support the sleeve rigidly in an axial direction relative to the bolster in some embodiments.

3,798,889
ARTIFICIAL SUNRISE
Duane G. Chadwick, 555 E. 3rd North, Logan, Utah
Filed Feb. 9, 1973, Ser. No. 331,101
Int. Cl. G04c *21/16*
U.S. Cl. 58—19 C **4 Claims**



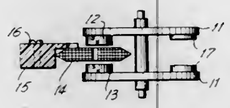
A clock alarm system wherein a lamp arrangement is utilized to announce the arrival of a preset time, the intensity of which light is controlled by appropriate electronic circuitry so as to increase in brilliance with the continued passage of time beyond that preset into the system, thereby simulating a natural sunrise.

3,798,890

COIL CONSTRUCTION FOR ELECTRONIC TIMEPIECES

Hirohisa Kurita, Shimosuwa-machi, and Tomio Ota, Okaya, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,110
Claims priority, application Japan, Dec. 29, 1971, 46-001876
Int. Cl. G04c 3/04
U.S. Cl. 58—28 A 2 Claims



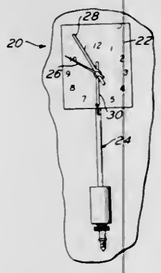
An electronic timepiece provided with a pair of spaced balance wheels mounted on a common shaft and carrying a magnetic circuit including an air gap between said balance wheels is provided with a coil having a streamlined periphery, or with a coil-holding member having said streamlined periphery.

3,798,891

ELECTROMECHANICAL CLOCK

Josef Sovenyhazi, 51-41st St., Irvington, N.J.

Filed May 24, 1972, Ser. No. 256,222
Int. Cl. G04c 3/04; H02k 33/14
U.S. Cl. 58—29 9 Claims



A clock having a new and unique pendulum motor is provided. The motor includes a pendulum and means for maintaining the oscillation of the pendulum which comprises a weighted member. Means are provided for releasably securing the weighted member and means responsive to the oscillation of the pendulum are provided for causing the means for releasably securing the weighted member to release the weighted member at predetermined intervals. The weighted member applies a force to the pendulum each time the weighted member is released. Unique gearing is also provided for driving the hour hand in relation to the movement of the minute hand.

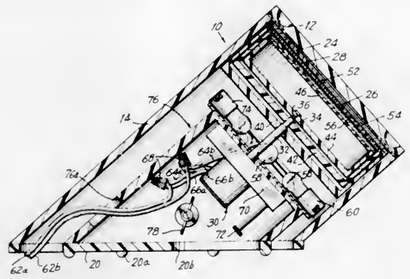
3,798,892

CLOCK MECHANISM

Victor Lukens, 300 E. 51st St., New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,459
Int. Cl. G04b 45/00
U.S. Cl. 58—50 R 10 Claims

A clock mechanism in which the hour, minute and second hands are replaced by rotating differently-colored circles. Three transparent discs, each having a differently-colored circular filter at a circumferential position thereof, are rotated within the mechanism at the respective speeds of hour, minute and second hands. A light source within the mechanism projects light through the discs against the housing. The face of the clock is thus illuminated with "white" light except in three differently-colored circular areas which rotate around the cir-



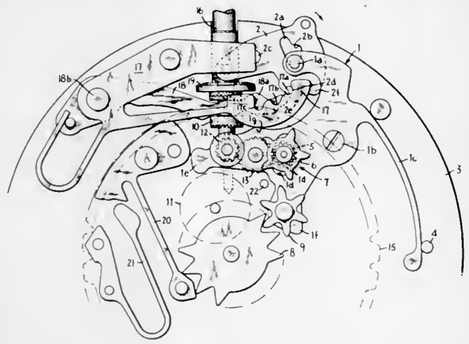
cumference of the clock face. The positions of the three circular areas represent the time of day and as a result of continuously changing overlapping of filters, a dramatically shifting color pattern is expected.

3,798,893

DAY-AND-DATE CHANGING DEVICE FOR A WRISTWATCH

Masahiko Ippoushi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,607
Claims priority, application Japan, Dec. 28, 1971, 47-2747
Int. Cl. G04b 19/24
U.S. Cl. 58—58 6 Claims



A wristwatch has a set of watch hands for indicating the time and a day-and-date display for displaying the day and date. A rotatable winding stem is mounted on the wristwatch for manual axial movement to a first position wherein a day-and-date changing operation may be carried out in response to rotation of the winding stem and a second position wherein a hand-setting operation may be carried out in response to rotation of the winding stem. A rotatable setting wheel is moved into engagement with a day-and-date changing mechanism during axial movement of the winding stem to the first position and is moved into engagement with a hand-setting mechanism in response to axial movement of the winding stem to the second position. A clutch wheel clutches the winding stem to the setting wheel when the winding stem is in the first position whereby rotation of the winding stem effects rotational driving of the day-and-date changing mechanism and the clutch wheel clutches the winding stem to the setting wheel when the winding stem is in the second position whereby rotation of the winding stem effects rotational driving of the hand-setting

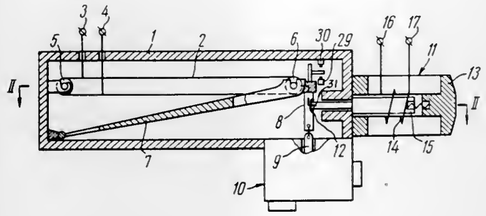
mechanism. A set of levers coact together during axial movement of the winding stem between the first and second positions to engage the setting wheel with the hand-setting mechanism prior to clutching of the winding stem to the setting wheel.

3,798,894

DRIVE, PREFERABLY FOR THE MOVABLE MEMBER OF VALVES

Nikolai Trofimovich Romanenko, Leninsky propekt, 88, korpus 1, kv. 57, and Jury Filippovich Nikitin, ulitsa Arbat, 18/1, kv. 31, both of Moscow, U.S.S.R.

Continuation of Ser. No. 93,958, Dec. 1, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,564
Claims priority, application U.S.S.R., Dec. 1, 1969, 1386183
Int. Cl. F16k 31/02
U.S. Cl. 60—23 2 Claims



A drive for the movable member of valves, in which an actuating element connected to a source of electric current for the purpose of its heating is mounted in a housing on two supports.

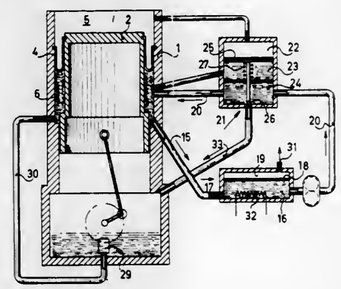
One of the supports is secured to the housing, with the other support being connected to the movable member of the valve, and being capable of displacement with a length variation of the heated actuating element, Mounted in the drive housing is an arrangement for fixing the actuating element in the extended position after its heating, and releasing the element after cooling, to execute the working stroke by the effect of elastic deformation.

3,798,895

ROLLING DIAPHRAGM SEAL SEPARATING GAS AND LIQUID WITH MEANS FOR REMOVING AND RECOVERING GAS DIFFUSED THROUGH SAID SEAL INTO THE LIQUID

Roelf Jan Meijer; Henricus Cornelis Johannes Beukering; Herman Fokker, and Albert August Dros, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 871,189, Oct. 16, 1969, Pat. No. 3,626,811. This application Apr. 21, 1971, Ser. No. 136,261
Int. Cl. F03g 7/06
U.S. Cl. 60—24 5 Claims



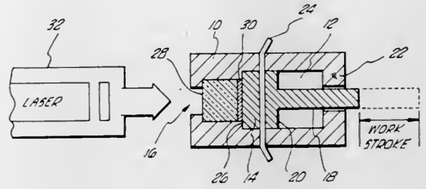
For use in a hot gas engine, compressor, or expansion machine, a partition wall permitting diffusion for removing and recovering gas diffused through a rolling diaphragm seal into a liquid diaphragm-supporting column. The device includes an apparatus for maintaining a pressure differential across the diaphragm seal, a liquid storage chamber, and wire gauzes as a separator in a liquid container.

3,798,896

OPTICALLY ACTUATED TWO POSITION MECHANICAL MOVER

Lien C. Yang, Los Angeles, and Arthur J. Murphy, Sierra Madre, both of Calif., assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 24, 1972, Ser. No. 283,502
Int. Cl. F03g 7/06
U.S. Cl. 60—25 18 Claims



An optically actuated mechanical mover adapted to be moved from an ambient position to an active position, is disclosed. The mechanical mover essentially comprises a piston/cylinder arrangement including a piston that is contained within an internal cylindrical chamber of a housing. The cylindrical chamber is configured to permit the piston to be moved for the length of the chamber as a work stroke. A lock pin extending through the piston, and diametrically opposed walls of the chamber housing, retain the piston in the ambient position at one end of the chamber. An actuator for producing a pressure or shock wave that drives the piston is positioned at the end of the chamber corresponding to the piston ambient position. The actuator includes a transparent window panel having a metallic film coated on an interior surface thereof to be vaporized in response to an incident pulse of laser energy and thereby produce the desired shock wave. A stem extending from a face of the piston and through a corresponding end wall of the chamber, transmits the work force developed by the work stroke of the piston. A plurality of mechanical movers may be concurrently, or successively, actuated by using an optical control system including a beam splitter, rotating prism, or the like, or by using a fiber optic bundle to conduct the laser energy from a single laser to each of several mechanical movers.

3,798,897

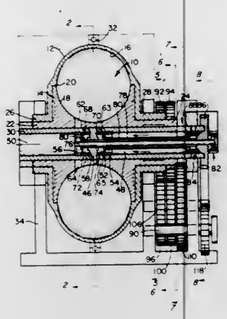
TOROIDAL CHAMBER ROTATING PISTON MACHINE

Ata Nutku, Technical University I.T.U., Gumussuyu, Istanbul, Turkey

Filed Dec. 3, 1970, Ser. No. 94,815
Int. Cl. F01k 19/08; F01c 21/00
U.S. Cl. 60—39.01 8 Claims

Engine (or pump) having a toroidal chamber defined by complementary chamber members, at least one of which is rotatable and each of which carries a piston projecting into the toroidal space and sweeping the surface of the other member. Both chamber members may have pistons which oscillate oppositely or which rotate intermittently in the same direction as "following pistons", the oscillatory or intermittent rotary

movement being converted to continuous rotary movement of an output shaft. Central intake and exhaust passages are em-



ployed and different valve and "valveless" embodiments are disclosed. A closed cycle (reheating) engine is also disclosed.

3,798,898

GAS TURBINE PRIME MOVER

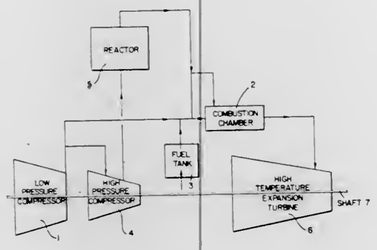
Jean Delahaye, Ville d'Avray, France, assignor to Progil, Paris, France

Filed Oct. 22, 1971, Ser. No. 191,869

Claims priority, application France, Oct. 22, 1970, 70.39153

Int. Cl. F02c *3/00*; **C07d** *1/14*

U.S. Cl. 60—39.02 **11 Claims**



A gas turbine prime mover is comprised of at least one air compressor, a combustion chamber, an oxidation reactor and an expansion turbine. Turbine power is developed by compressing air in said at least one air compressor, injecting a portion of said compressed air directly into the combustion chamber of the expansion turbine wherein combustion is taking place, injecting remaining compressed air into a chemical oxidation reactor wherein an oxidation reaction is taking place, injecting residual gases of the said oxidation reaction into the said combustion chamber, and thence driving a turbine utilizing the products of the said combustion reaction as the working medium for the said turbine.

3,798,899

GAS TURBINE ENGINE

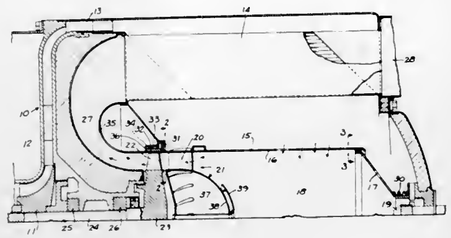
Charles C. Hill, La Jolla, Calif., assignor to Power Technology Corporation, Bloomfield Hills, Mich.

Filed Dec. 29, 1971, Ser. No. 213,346

Int. Cl. F02c *3/06*; **F01d** *11/08*

U.S. Cl. 60—39.02 **8 Claims**

A gas turbine engine including a compressor, a burner and a turbine. The turbine includes a stator, a rotor and a shroud about the periphery of the rotor. Means are provided for supporting the shroud in floating relation to the rotor and for ap-



plying a load thereto to hold the shroud in adjusted relation to the rotor when the rotor achieves a predetermined speed.

3,798,900

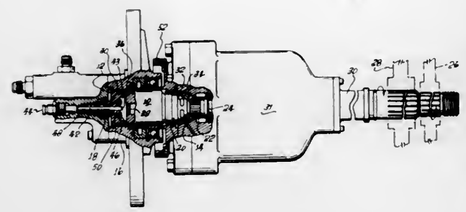
CENTRAL IGNITER FOR ROTATABLE COMBUSTION CHAMBER

Donald J. Petersen, Highland Heights, Ohio, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1972, Ser. No. 308,904

Int. Cl. F02g *3/02*; **F41f** *3/08*

U.S. Cl. 60—39.14 **3 Claims**



In an engine of the type which has a combustion chamber which is rotatable in a stationary external support means and which has fore and aft ends, the combination comprising: an axially oriented elongated igniter which extends through the support means and the fore end of the combustion chamber; a plurality of fuel nozzles mounted in the fore end of the combustion chamber and rotatable therewith; the external support means having an annular main fuel passageway extending along and about the elongated igniter; and the fore end of the combustion chamber having fuel delivery passageways which extend between the main fuel passageway and the fuel nozzles.

3,798,901

MEANS AND METHOD FOR REGULATING FUEL COMBUSTION IN AN EXTERNAL COMBUSTION ENGINE

Carl Sixten Lewenhaupt, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed May 9, 1972, Ser. No. 251,689

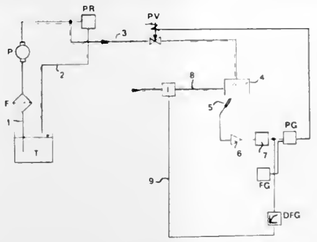
Claims priority, application Great Britain, May 21, 1971, 16259/71

Int. Cl. F02g *3/00*; **F02c** *9/10, 9/14*

U.S. Cl. 60—39.27 **9 Claims**

To regulate fuel for maintaining a continuous combustion of fuel at a known and constant temperature a fuel valve under

constant pressure is opened and closed periodically at known time intervals which can be varied to regulate the mean rate of



fuel supply. A temperature responsive element in the combustion chamber is connected with control means to regulate said intervals.

3,798,902

ARRANGEMENT OF COOLING CHANNELS FOR ROCKET ENGINE COMBUSTION CHAMBERS

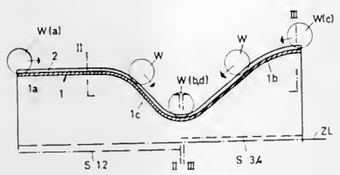
Karl Butter, Munchen, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Continuation-in-part of Ser. No. 225,143, Feb. 10, 1972, abandoned, which is a division of Ser. No. 852,121, Aug. 21, 1969, Pat. No. 3,678,802. This application June 13, 1973, Ser. No. 369,458

Claims priority, application Germany, Aug. 21, 1968, 1751938

Int. Cl. F02k *1/02*

U.S. Cl. 60—260 **1 Claim**



Longitudinally extending coolant channels are formed by means of a cutting tool in a monolithic tubular wall section used as the convergent-divergent thrust nozzle for a rocket engine combustion chamber. The width of the channels at particular locations along their length is established in inverse relationship to the amount of heat to be removed from the combustion chamber at that location. In forming the coolant channels their side wall planes are established and radial planes of the tubular wall section are formed in parallel relationship with the side wall planes. The cutting tool is aligned in the radial planes and then is displaced laterally into the side wall planes for cutting the channels. The number of passes required for the cutting operation depends on the width of the tool and the width of the channel which varies over the length of the combustion chamber.

3,798,903

EXHAUST REACTOR MANIFOLD

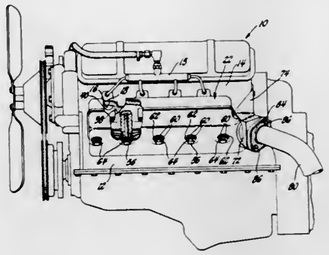
Harry R. Mitchell, Bloomfield Hills; Hal H. Rice, Birmingham, and James R. Abel, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 29, 1972, Ser. No. 319,482

Int. Cl. F01n *3/10*

U.S. Cl. 60—282 **5 Claims**

An exhaust reactor manifold having a housing defining a reaction chamber formed of hardened insulative ceramic, supported and secured to the engine by a plurality of columnar compression members loaded by bolt means, with spring washers to provide for relative expansion. Exposed portions of the ceramic housing are protected by a metal cover spaced from the housing surface by a layer of resilient fibrous insula-



tion which permits relative expansion of the housing and cover and reduces heat loss from the housing. Imposition of folds from other exhaust system components on the manifold is avoided by supporting the exhaust pipe on an engine mounted bracket with an adapter arrangement for making the exhaust connection.

3,798,904

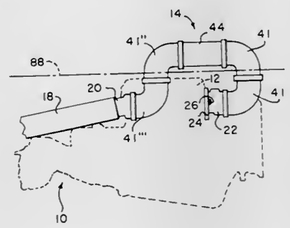
FLEXIBLE MARINE ENGINE EXHAUST

James M. Gleason, Longbranch, N.J., and Robert A. Fitts, Stamford, Conn., assignors to Gould, Inc., Chicago, Ill. and Hekma Advanced Machine Company, Palmer Point, Cos Cob, Conn.

Filed Jan. 29, 1973, Ser. No. 327,544

Int. Cl. F01n *3/04*

U.S. Cl. 60—310 **10 Claims**



A flexible marine exhaust system which comprises a plurality of interchangeable conduit sections. The conduit sections may have different shapes. They may be interconnected in end-to-end relation so that an exhaust system having any desired configuration can be assembled.

3,798,905

POWER ASSISTED BRAKE CONTROL DEVICE

Francis H. Tennis, Oconomowoc, Wis., assignor to Hydraulic Industries, Inc., Hartland, Wis.

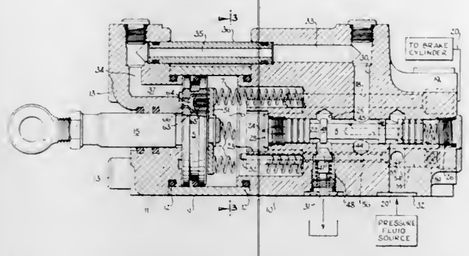
Continuation-in-part of Ser. No. 93,169, Nov. 27, 1970. This application July 31, 1972, Ser. No. 276,851

Int. Cl. F15b *7/08*

U.S. Cl. 60—555 **11 Claims**

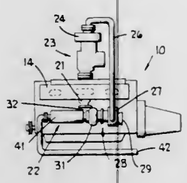
A hydraulic brake controller comprising a piston manually actuatable toward a first end of a master cylinder to expel pressure fluid therefrom to the brake line of a hydraulic brake mechanism and to also displace fluid into a first end of a control cylinder. Fluid thus entering the control cylinder effects hydraulic actuation of a valve plunger therein toward the

second end of the control cylinder, to an open position allowing fluid from a source thereof under pressure to flow to the second end of the master cylinder and augment the force applied manually to the piston therein. The second ends of the



cylinders are at all times communicated with one another; and the piston is at all times hydraulically linked to the brake actuating mechanism through the brake line so that the operator can accurately gauge the braking effort.

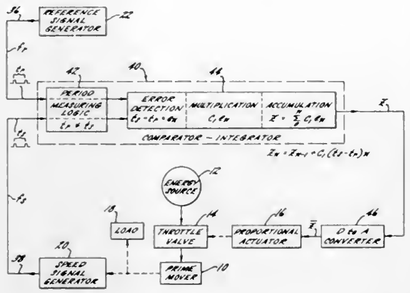
3,798,906
APPARATUS FOR REDUCING POLLUTANTS IN ENGINE EXHAUST GASES
William E. Woollenweber, Indianapolis, Ind., assignor to Wallace-Murray Corporation, New York, N.Y.
Filed May 22, 1972, Ser. No. 255,619
Int. Cl. F02b *37/04*
U.S. Cl. 60—598 **3 Claims**



Disclosed is a method and apparatus for reducing internal combustion engine pollutant emission by combining a multistage, exhaust manifold, thermal reactor with an engine cylinder charging turbocharger having its turbine component interposed between two of the reactor stages. The reactor receives exhaust gases from the engine exhaust manifold and the turbocharger which air-charges the cylinders of the engine is driven by its turbine component through which are expanded heated gases passing between stages of the thermal reactor.

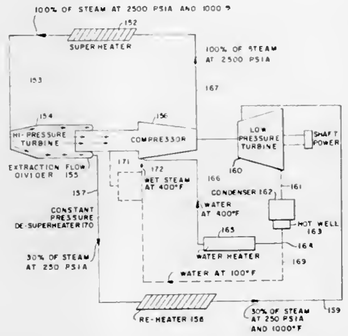
3,798,907
DIGITAL GOVERNOR
William J. Barrett, and Joseph R. Ahlgren, both of Rockford, Ill., assignors to Woodward Governor Company, Rockford, Ill.
Division of Ser. No. 177,285, Sept. 2, 1971. This application Mar. 13, 1972, Ser. No. 233,955
Int. Cl. F01k *13/02*
U.S. Cl. 60—660 **14 Claims**

Electronic governors for controlling the speed of prime movers wherein signals corresponding in frequency to actual speed and desired speed are compared to produce an error signal for controlling a prime mover actuator in accordance with the time integral of the period difference between the compared signals, the rate of integration and overall gain of the governor servo loop being completely independent of the actual speed of the prime mover. Alternative governors are disclosed which include droop and isochronous versions as well as a governor featuring proportional plus integral control.



All embodiments are entirely digital in design and inherently immune to drift due to temperature and power supply variations.

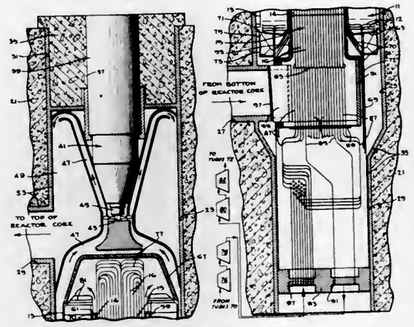
3,798,908
EXTERNAL COMBUSTION POWER PRODUCING SYSTEM
John Gordon Davoud, and Jerry A. Burke, Jr., both of Richmond, Va., assignors to Edwin Cox Associates, Richmond, Va.
Continuation of Ser. No. 58,099, July 24, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,206
Int. Cl. Fo1k *7/00*
U.S. Cl. 60—694 **18 Claims**



An external combustion power producing cycle is provided in which a condensable fluid is heated to the vapor state and the heated vapor is expanded isentropically. After expansion, the expanded fluid is separated into at least two portions without substantially changing the state of the expanded fluid such as temperature, pressure, entropy, enthalpy, or its specific volume. After the expanded fluid has been separated into portions, one of the portions is condensed, and the weight equivalent of the condensed portion is added, in liquid form, to the other portion of the expanded fluid. Thereafter, the mixture, now having substantially lower entropy than the fluid prior to addition of liquid, is compressed to the desired operating pressure.

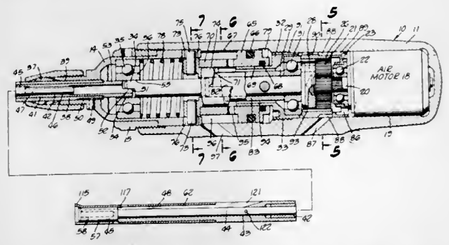
In a variant of the power producing cycle, after the expanded fluid has been separated into portions, one of the portions is allowed to continue expansion, in such a way as to do further useful work, before being condensed as described above.

3,798,909
POWER GENERATING SYSTEM
Eric J. Oakes, San Diego, Calif., assignor to Gulf General Atomic Incorporated, San Diego, Calif.
Filed Apr. 27, 1970, Ser. No. 31,964
Int. Cl. F01k *19/00*
U.S. Cl. 60—73 **7 Claims**



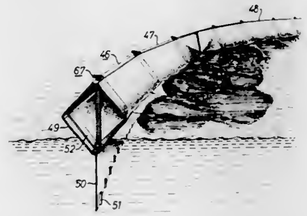
A power generating system incorporating a vapor generator of the so-called uphill boiling type is described having an annular arrangement of heat exchanger tubes and a central duct for passing primary fluid to heat the vapor from a position below the vapor generator to a position above the vapor generator from whence it passes downwardly over the tubes. An additional heat exchange section is located within the central duct and has tubes arranged to extend generally parallel with the direction of flow of the primary fluid throug such duct. The further heat exchange section is operated a reheater or a resuperheater.

3,798,910
AIR POWERED ROTARY WIRE CUTTING AND WRAPPING TOOL
John H. Bent, Fullerton, Calif., assignor to H. F. Wilson Engineering Company, Glen Ellen, Ill.
Filed Oct. 13, 1971, Ser. No. 188,751
Int. Cl. F01b *21/00*
U.S. Cl. 60—718 **9 Claims**



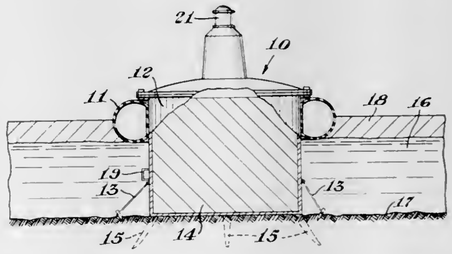
A tool for cutting a wire to length and then wrapping it around a terminal post includes an air motor driving through a planetary gear reduction to rotate a spindle, and a wire contacting bit rotated by the spindle. In order to develop sufficient torque to sever the wire at the bit, there is provided a member constrained to move helically with respect to the spindle housing, and the member is actuated by an air operated piston. A clutch between said member and the spindle disengages upon predetermined axial travel of said member to permit free turning of the spindle by the air motor to accomplish the wire wrapping operation. A spring returns said member to its initial position after the supply of air to the air motor and piston is cut off and the clutch automatically aligns the spindle and bit into initial position for insertion of another wire. One end of the spindle is supported within the bore of the inner race of an anti-friction bearing assembly in the housing. One end of a bit driving shaft is supported in the same bore and adjacent parts of the spindle and shaft are formed to provide a driving connection. The rotary bit is enclosed within a stationary sleeve and the wire is severed at the junction of an axial groove on the periphery of the bit and an axial groove on the stationary sleeve. Discharge of exhaust air from the tool is silenced by an oil collecting filter mounted within the handle of the tool.

3,798,911
FLOATABLE BOOM STRUCTURE
Per Olog Oberg, Sollentuna, Sweden, assignor to Sanera Projecting Aktiebolag, Bromma, Sweden
Filed Mar. 31, 1971, Ser. No. 129,932
Claims priority, application Sweden, Apr. 2, 1970, 4568/70; Aug. 4, 1970, 10704/70; Jan. 27, 1971, 979/71
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **11 Claims**



A floatable boom structure and a method of manufacturing same. The boom structure includes a plurality of elongated sections which can be interconnected to permit formation of a boom structure of selected length. Each boom section includes an elongated bouyant member provided with internal partitions for dividing same into a plurality of isolated bouyant compartments. The bouyant member, and the compartments contained therein, can be filled with air to provide the boom with the desired bouyancy. A weighted curtain is secured to the bouyant member for suspension into the water. The bouyant member can be collapsed to permit compact storage of the boom sections. Resilient expander devices are disposed within the bouyant member for permitting expansion or collapsing of same.

3,798,912
ARTIFICIAL ISLANDS AND METHOD OF CONTROLLING ICE MOVEMENT IN NATURAL OR MAN-MADE BODIES OF WATER
John S. Best, 4121 Oaks Ct., Midland, Mich., and Hubert Stacy Smith, 12 Center Ave., Essexville, Mich.
Filed July 3, 1972, Ser. No. 268,467
Int. Cl. E02b *3/00*
U.S. Cl. 61—1 R **14 Claims**



Mobile, nonpermanent, artificial islands and a method of utilizing the same to control the movement of natural ice for-

mations in or near natural and man-made bodies of water such as lakes, rivers, sounds, straits, bays, shipping channels, harbors and the like. The artificial islands are formed from structures having body cavities which are substantially filled with a liquid composition which freezes to form an ice-like solid at a temperature higher than the freezing temperature of the body of water in which they are positioned, thus rigidizing and firmly securing the structures to the bed of the body of water prior to the formation of natural ice in the body of water. During warm seasons the liquid composition melts allowing the artificial islands to be easily transferred to new positions, thus optimizing control of ice movement in any specific body of water at minimum cost.

3,798,913

DEVICE FOR STABILIZING AND DAMPING THE MOVEMENTS OF FLOATING UNITS AND INCREASING THEIR BUOYANCY

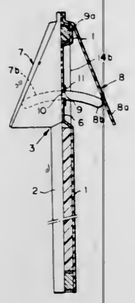
Bernard Jacques Dubois, Rueil-Malmaison, France, assignor to Gamlen Maintre S.A., Paris, France

Filed Nov. 3, 1972, Ser. No. 303,348

Claims priority, application France, Nov. 18, 1971, 71.41322

Int. Cl. E02b *15/04*

U.S. Cl. 61—1 F **11 Claims**



Floating bodies are stabilized by the provision of outboard stabilizers formed by hollow enclosures open at the bottom for trapping air. The enclosures including entrapped air reduce oscillation and increase buoyancy. The stabilizers are movable between an open, stabilizing position and a retracted position for storage. In the preferred embodiment the floating body is in the form of a vertically oriented strip and hinged shutters are provided near the upper edge of the strip. The stabilizing enclosure is defined by the strip and shutter which is normally urged outwardly from the strip. The shutters are readily folded against the strip for easy storage.

3,798,914

PANEL CONNECTORS FOR REINFORCED CONCRETE DIAPHRAGM WALLS

Francis Irwin-Childs, Southwark Bridge House, 61 Southwark St., London, S. E. 1., England

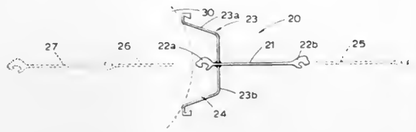
Filed July 24, 1972, Ser. No. 274,789

Claims priority, application Great Britain, July 29, 1971, 35832/71

Int. Cl. E02d *5/20*

U.S. Cl. 61—35 **10 Claims**

The invention relates to methods and apparatus for forming reinforced diaphragm walling. According to the invention the wall is formed in stages by casting separately adjacent concrete panels and an excavated trench. Prior to pouring the concrete to form each panel stage, vertical steel pile elements are located in the trench and are inter-engaged to form a reinforcement supporting tension loading longitudinally of the trench. The piles each have at their vertical edges integral clutch means for inter-engagement with adjacent piles. According to the invention the clutch means of a pile element at one end of each panel stage is masked prior to pouring of the



concrete whereby said pile element may subsequently have its masked clutch means inter-engaged with a pile element of a next succeeding panel stage. The invention further provides a cruciform shaped pile element for use as the end pile in forming each panel stage.

3,798,915

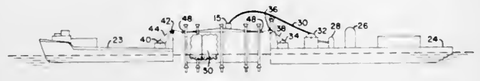
OFFSHORE APPARATUS AND INSTALLATION TECHNIQUE

Joseph A. Burkhardt, Chatsworth, Calif.; John E. Ortloff, Houston, Tex.; William D. Loth, Houston, Tex., and Robert E. Hickox, Kingsville, Tex., assignors to Esso Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 72,291, Sept. 15, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 232,158

Int. Cl. B65b *87/08;* **E02b** *17/00*

U.S. Cl. 61—46.5 **19 Claims**



Method and apparatus are disclosed for imparting stability to a storage vessel or similar structure as it is moved vertically between the surface and floor of a body of water. The method comprises disposing a quantity of a lighter-than-water fluid within the structure in an orientation about its center of gravity such that whenever the structure is situated at or beneath the water surface and is displaced from a vertical orientation, the fluid will generate a righting moment which tends to restore the structure to its original position. The fluid disposed within the structure is constrained against migration and the structure may then, for example, be lowered towards the floor of the body of water. The method is particularly applicable to the underwater installation of storage vessels of the type having at least three separate storage chambers and provided with means for regulating the quantity of fluid in each of the chambers without permitting migration between storage chambers.

3,798,916

ARTICULATED ENERGY ABSORBING MARINE FENDER ASSEMBLY

Leonard J. Schwemmer, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

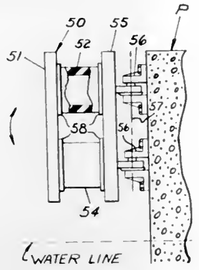
Filed Nov. 15, 1971, Ser. No. 198,889

Int. Cl. E02b *3/22*

U.S. Cl. 61—48 **23 Claims**

A marine structure such as a pier, vessel or the like is protected from a mooring marine vessel by a marine fender assembly. The marine fender assembly preferably includes a fender spaced from and extending horizontally along the structure and resilient mounting means, preferably a plurality of discrete elastomeric buckling columns, spaced along and extending between the fender and structure for absorbing the

impact energy of the mooring marine vessel. To improve the efficiency of the resilient mounting means and reduce force levels during impact, articulating means is disposed between the fender and structure in series with the resilient mounting



means and operatively interconnects the fender and structure for allowing the fender to be articulated without significant deflection of said mounting means relative to the marine structure.

3,798,917

FRACTIONATION OF AIR TO OBTAIN OXYGEN OF ABOUT SEVENTY PERCENT PURITY

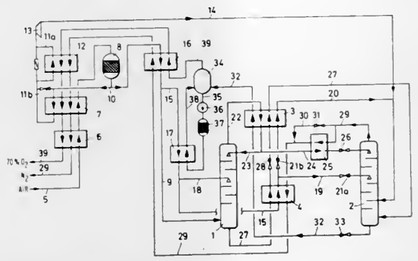
Friedrich Juncker, Bergen-Enkheim, Germany, assignor to Messer Griesheim GmbH, Frankfurt, Germany

Filed Apr. 27, 1971, Ser. No. 137,887

Claims priority, application Germany, May 12, 1970, 2022953

Int. Cl. F25j *3/04, 1/02, 3/02*

U.S. Cl. 62—14 **8 Claims**



Oxygen of approximately 70% purity is obtained by a two-stage rectification process in which air is cooled against the fractionation products, part of the cooled air is liquefied against evaporating oxygen product, thus liquefied air is subcooled, expanded and evaporated against vapor of the first rectification column to provide reflux therefor, and the evaporated air is fed to the second column. Bottom liquid of the first column is also used to produce reflux at the top thereof and then discharged into the second column. A process gas stream is expanded to produce refrigeration.

3,798,918

METHOD AND APPARATUS FOR PURIFYING NATURAL GAS TO BE LIQUEFIED AND STORED

James Bernard Maher, Oak Brook, and Terry Wayne Delahunty, La Grange Park, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Apr. 15, 1971, Ser. No. 134,373

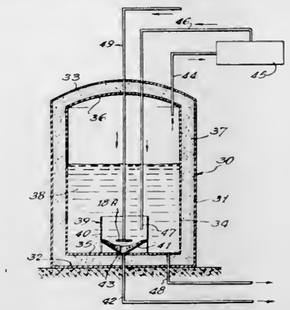
Int. Cl. F25j *3/00, 3/08*

U.S. Cl. 62—40 **2 Claims**

Water, carbon dioxide, hydrogen sulfide or mercaptans present as impurities in admixture with methane vapor are removed by feeding the impure methane vapor into liquefied methane in an enclosed space thereby solidifying such impurities in the liquefied methane and withdrawing from the closed space methane vapor having reduced amounts of such impurities.

Water and carbon dioxide, present as impurities in compressed air, are removed by feeding the impure compressed air into liquefied air in an enclosed space thereby solidifying such impurities in the liquefied air and withdrawing from the closed space compressed air having reduced amounts of such impurities.

Apparatus for purifying and liquefying a gas in admixture with impurities having an insulated storage tank, a purification



tank inside of and communicating internally with the inside of the insulated storage tank, a conduit extending into the purification tank to below a predetermined level of liquefied gas to be held therein for supplying impure gas vapor thereto, a conduit extending from the bottom of the purification tank through the insulated storage tank for removing solids therefrom, a conduit communicating with a vapor space in the storage tank and a refrigeration system, a liquefied gas conduit communicating with the refrigeration system and the storage tank interior, and a conduit communicating with the lower interior of the storage tank for withdrawing liquefied gas therefrom.

3,798,919

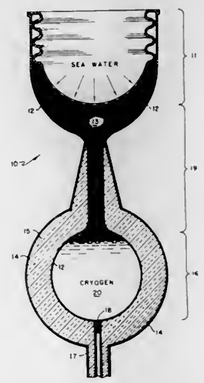
DEEP SUBMERGENCE AMBIENT PRESSURE CRYOGENIC STORAGE APPARATUS

Carlton H. Hershner, Sr., Arnold, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1972, Ser. No. 306,474

Int. Cl. F17c *1/12*

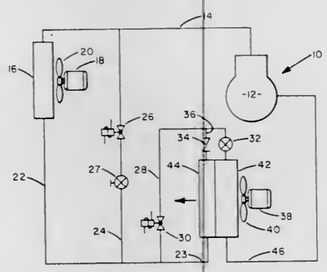
U.S. Cl. 62—45 **11 Claims**



The cryogenic storage vessel comprises a liquid storage volume, a conduit leading from that volume, a large flowable

mass of solid spherical insulators within that conduit and a diaphragm at the end of the conduit opposite the liquid storage volume. The ambient pressure of the seawater surrounding the apparatus is transmitted to the cryogenic liquid by means of displacement of the diaphragm which is in contact with the ambient seawater and the corresponding change in the internal volume of the liquid storage apparatus. The mass of insulating spheres are allowed to flow within the conduit and partially into the liquid storage area upon displacement of the diaphragm. The insulators allow vapor of the liquid within their interstices but maintain a thermal gradient between the liquid and the diaphragm sufficient to protect the diaphragm from the extremely low temperatures of the cryogenic liquid by substantially preventing convection and conduction.

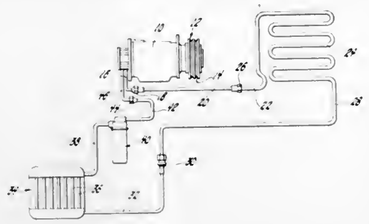
3,798,920
AIR CONDITIONING SYSTEM WITH PROVISION FOR REHEATING
Robert D. Morgan, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 2, 1972, Ser. No. 303,179
Int. Cl. F25b *29/00*
U.S. Cl. 62—173 **2 Claims**



An air conditioning system including a refrigeration unit comprising a compressor, a condenser, thermal expansion means and an evaporator are connected together to form a closed circuit. A reheat coil is provided downstream of the evaporator and upstream of the space being conditioned by the system. When reheat is required, a mixture of vaporous and liquid refrigerant is supplied to the reheat coil to pass in heat transfer relation with the conditioned air being supplied to the space so as to reheat the air subsequent to its having been cooled and dehumidified by passing in heat transfer relation with refrigerant flowing through the evaporator. Dehumidified air is provided at a temperature level that will not cause the space to be overcooled.

3,798,921
AIR CONDITIONING SYSTEM WITH FREEZE THROTTLING VALVE
Carl A. Scherer, Clarence Center, and Hugh James Muirhead, Sanborn, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Mar. 26, 1973, Ser. No. 344,748
Int. Cl. F25b *41/04*
U.S. Cl. 62—217 **5 Claims**

An automobile air conditioning system having a liquid accumulator located between the evaporator and the compressor to receive refrigerant from the evaporator. A temperature responsive actuator is connected to a throttling valve in the accumulator to regulate the flow of refrigerant from the evaporator and to maintain refrigerant temperature in the evaporator above a level corresponding to freezing temperatures on the external surfaces of the evaporator. The actuator contains water or a water based solution placed in good heat transfer with refrigerant in the accumulator. When refrigerant



falls to a predetermined temperature, the water begins to freeze and the resultant expansion moves the throttling valve toward a more closed position.

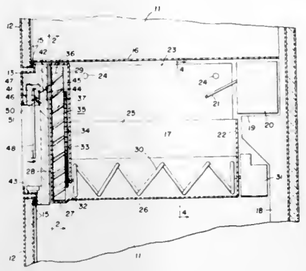
3,798,922
APPARATUS FOR CONDITIONING AIR
Douglas Roy Duke, Dallas, and Weldon V. Dupuis, Mesquite, both of Tex., assignors to Air Guard Incorporated, Garland, Tex.
Filed Apr. 18, 1972, Ser. No. 245,174
Int. Cl. F25d *23/00*
U.S. Cl. 62—264 **7 Claims**

As air passes an electromagnetic radiation generator it is activated by ionization to produce ozone (O_3) thereby removing noxious odors as well as carbon monoxide from the passing air. The electromagnetic radiation generator includes a gaseous filled sealed enclosure having a first electrode therein and a second electrode wound around the outer wall of the sealed enclosure. Both electrodes are connected to a source of cyclically varying voltage. Air to be purified from a source passes through a duct thereby producing an air stream into which the electromagnetic radiation generator is inserted. A mounting for the generator includes substantially parallel members extending into the duct with a cross bracket spaced between the extending members to support the sealed enclosure.

3,798,923
REFRIGERATOR WITH ICE DISPENSING MEANS
John J. Pink, Cedar Rapids, and Melvin H. Boldt, Glenview, both of Ill., assignors to Amana Refrigeration, Inc., Amana, Iowa
Filed July 14, 1972, Ser. No. 271,797
Int. Cl. F25d *23/02*
U.S. Cl. 62—266 **23 Claims**

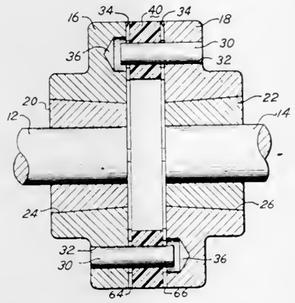
A refrigerator having a freezer compartment is provided with an ice maker and storage receptacle positioned in the freezer compartment. Transport means in the receptacle conveys the ice from the receptacle out through a fixed panel or

mullion at the front of the unit. In two preferred versions of the apparatus the mullion forms part of the closure of the freezer compartment, the remainder of the freezer compartment being closed, either by a pair of doors on each side of the fixed mullion or a single door having an opening therethrough



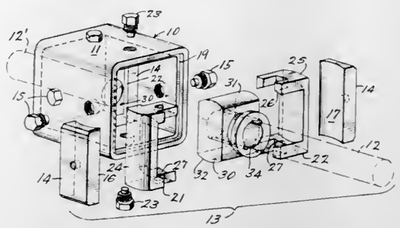
to expose the mullion, so that in both cases the freezer door need not be opened in order to dispense the ice. Improved ice dispensing means employing a lift wheel is also disclosed for use with either version or in connection with a fixed panel mounted entirely within the freezer compartment.

3,798,924
SHAFT COUPLING AND ELEMENT THEREFOR
Holmes A. Downey, Bremen, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.
Filed Oct. 27, 1972, Ser. No. 301,355
Int. Cl. F16d *3/78*
U.S. Cl. 64—13 **14 Claims**



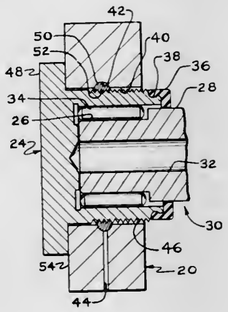
A flexible coupling for connecting two shafts in end to end relation in which there are flanges for each of the shafts, a plurality of spaced pins secured in each of said flanges and projecting alternately toward the other flange, and a flexible element of elastomeric material disposed between the flanges and having holes for receiving and gripping the pins of each of the two flanges in a snug fit. The flexible element, which is preferably constructed of polyurethane, is thinner in the area on the radial sides of each of the holes for the pins than in the area between them to provide good element flexibility and to give optimum performance of the coupling when connecting misaligned shafts. Spacer protrusions are provided on opposite sides of the element for positioning the element between the two flanges.

3,798,925
UNIVERSAL COUPLING
Donald G. Martus, 9812 Palishall Rd., Calgary, Alberta, Canada
Filed June 1, 1972, Ser. No. 258,700
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 SP **1 Claim**



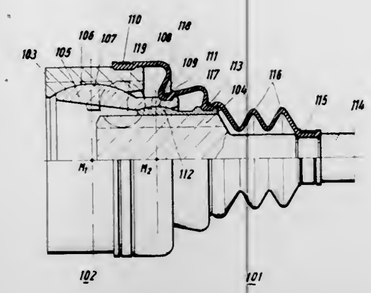
A universal coupling is disclosed which provides articulation or rotary motion in two planes about a single axis of rotation. The coupling includes a housing containing perpendicularly opposed arcuate bearing surfaces and complementary arcuate journal surfaces. A driven shaft is connected to a bore in an innermost journal member. First arcuate bearing-journal surfaces provide a first generally horizontal articulate motion to the shaft. The second arcuate bearing-journal surfaces provide a second, generally vertical articulate motion to the shaft. The coupling provides articulation of the shaft so that a point on the axis of the shaft spaced from the coupling describes a circular path about the axis upon radial displacement of the shaft centerline at such point. More specifically, the coupling provides articulation or rotary motion in two planes about a single axis of revolution.

3,798,926
UNIVERSAL JOINT CONSTRUCTION
Warren W. Weible, Defiance, Ohio, assignor to The Zeller Corporation, Defiance, Ohio
Filed July 21, 1972, Ser. No. 274,087
Int. Cl. F16d *3/26*
U.S. Cl. 64—17 A **23 Claims**



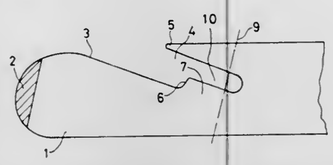
A universal joint construction is provided which includes a replacement bearing cup capable of being assembled with a yoke and trunnion in a predetermined position. The assembly can take place in the field or shop without special machines or equipment. The replacement bearing cup has a threaded outer portion which is engaged by internal threads of a member positioned at least partially in the bore of the yoke arm and engageable with the cup threads. The threaded member is effective to hold a portion of the cup against a locating surface of the yoke in order to place the cup in a predetermined position relative to the yoke and the trunnion.

3,798,927
PROTECTIVE HOUSING FOR CONSTANT VELOCITY UNIVERSAL JOINTS
Sobhy Labib Girguis, Troisdorf, Germany, assignor to Uni-Cardan AG, Postfach, Germany
Filed Jan. 26, 1973, Ser. No. 326,672
Claims priority, application Germany, Feb. 8, 1972, 2205798
Int. Cl. F16d *3/30*
U.S. Cl. 64—32 F **10 Claims**



A constant velocity universal joint has driving and driven elements which are angularly displaceable with respect to each other and a torque is transmitted between these joint elements by a plurality of rolling elements retained in a cage. The cage traverses only one half of the bending angle between the driving and driven elements. A protective housing comprising one or more flexible sleeve elements is fastened to both the driving and driven elements to span and enclose the space therebetween. The protective housing has an intermediate portion or portions thereof also fastened to the cage or to the control element within the cage or both.

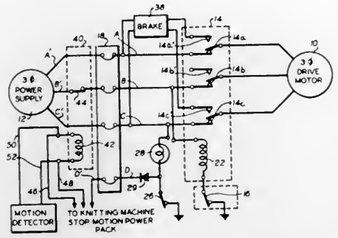
3,798,928
SINKER FOR WARP KNITTING MACHINE
Karl Kohl, 10 Chlorodont Strasse, Obertshausen, Germany
Filed Dec. 12, 1972, Ser. No. 314,298
Claims priority, application Germany, Dec. 16, 1971, 2162544
Int. Cl. D04b *15/06, 15/24, 27/04*
U.S. Cl. 66—109 **4 Claims**



A sinker for use in warp knitting machines. The lower portion of the sinker throat has a protruberence formed therein which functions as a knock-over step. The throat is extended beyond this step by a slot. The old stitches may slide off into this slot after knock-over, to reduce wear and stress on the threads.

3,798,929
CONTROL MEANS FOR FILAMENT STORAGE DEVICES
Arnis Balgalvis, Flushing, N.Y., assignor to Stop-Motion Devices Corporation, Plainview, N.Y.
Filed Nov. 22, 1972, Ser. No. 308,650
Int. Cl. D04b *35/12*
U.S. Cl. 66—125 R **14 Claims**

Control means for a storage feeding device having a storage drum adapted to have yarn wound thereon tangentially, having switch means activated in response to a predetermined quantity of yarn being wound onto the drum, and having winding drive means powered from a three phase power supply. A relay is connected to the switch means and powered by one of the three phases so that the activation of the switch de-energizes the relay. When the relay is de-energized, it disconnects



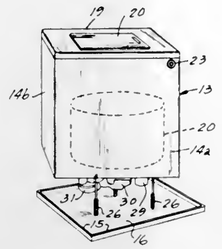
all three phases from the drive means and automatically applies brake means thereto which is powered by the two phases other than the phase which powers the relay. The phase which powers the relay can also be interrupted by an additional relay under the control of the knitting machine power pack or a motion detector.

3,798,930
STRIPING BOX ACTUATING MECHANISM FOR CIRCULAR KNITTING MACHINES
Lester Mishcon, and Harry Agulnek, both of Miami Beach, Fla., assignors to The Singer Company, New York, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,830
Int. Cl. D04b *15/58*
U.S. Cl. 66—138 **4 Claims**

A circular knitting machine for producing striped fabrics is provided with radially movable cam parts to rotate with the cylinder of the machine and engage striping box actuators. The overall length of the cam parts when taken together is greater than the distance between adjacent striping box actuators and such cam parts are radially movable sequentially into an operative position between a pair of adjacent actuators.

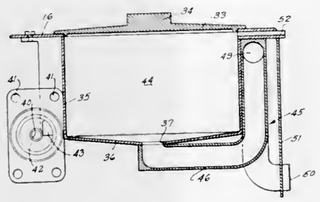
3,798,931
ELEVATED SUPPORT FOR CABINET FOR AUTOMATIC WASHING MACHINES FOR ACCESSIBILITY TO AND SERVICING OF DRIVE MECHANISM FOR MACHINE
James I. Czech, Stevensville, and Roy C. Oakley, Jr., Coloma, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 24, 1972, Ser. No. 309,522
Int. Cl. D06f *39/12*
U.S. Cl. 68—3 R **10 Claims**

Apparatus for supporting the cabinet of an automatic washing machine above the motor, transmission and pump of the machine, for accessibility to these parts for inspection and repair. A base plate for the tub, clothes container and agitator of the machine is supported in vertically spaced relation with respect to the base of the cabinet and forms a support for the motor, transmission and pump for the machine, which depend from the base plate. The base plate has at least one lateral extension for supporting the cabinet when raised above its base and turned relative to said base. In order to do this, the cabinet is released from its base and raised above the base plate for the tub and clothes container and turned relative to its base and



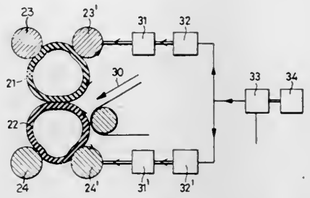
lowered to be supported on the extension. One or two extensions may be provided. A retractable support for the cabinet is pivoted to the base and held in a retracted or extended position by detent recesses and a spring. In the extended position of the retractable support, this support has supporting engagement with the bottom of the cabinet. When the repairs have been completed, the retractable support is released and moved inwardly toward the base plate and the entire casing is lifted above its stationary support and turned into alignment with the base for the cabinet and secured thereto.

3,798,932
SIPHONED VORTEX LIQUID DISPENSER FOR AUTOMATIC WASHERS
Jon D. Tromblee, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed May 8, 1972, Ser. No. 251,428
Int. Cl. D06f *39/02*
U.S. Cl. 68—17 R **10 Claims**



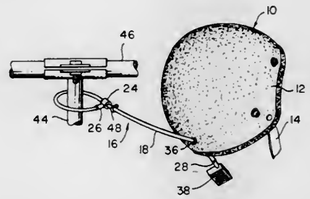
A liquid agent dispenser for introducing liquid solutions into an automatic wshing machine, including a receptacle having a curved side wall and an angular base wall terminating in a discharge opening at the lowermost point thereof, together with means for injecting water tangentially of the curved side wall at a sufficient velocity to cause a vortext o to exist in the receptacle with its axis substantially coinciding with the axis of the discharge opening, in combination with a siphon receiving the discharge from the discharge opening to render the receptacle self cleaning of particulate matter.

3,798,933
WRINGER
Erhard F. Rotter, Dusseldorf, Germany, assignor to Hans F. Arendt, Bleichinsel, Germany
Filed May 3, 1972, Ser. No. 249,784
Int. Cl. D06f *45/00;* **B30b** *3/04*
U.S. Cl. 68—248 **2 Claims**



A wringer for expressing liquids from moist textile materials having rigid supporting cylinders which support an elastic hollow wringing cylinder wherein the wringing cylinder is provided with inserts of low expansibility wherein these inserts rotate in the casing of the wringing cylinder.

3,798,934
HELMET LOCK STRUCTURE
Forrest S. Wright, Warren, and Edward J. Myers, St. Clair Shores, both of Mich.
Continuation of Ser. No. 119,741, March 1, 1971, abandoned. This application Oct. 25, 1972, Ser. No. 300,644
Int. Cl. E05b *73/00*
U.S. Cl. 70—59 **5 Claims**

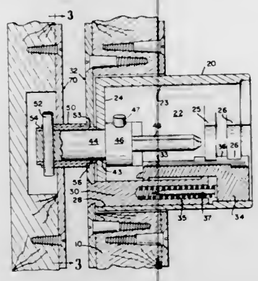


A helmet lock structure is provided for securing a safety helmet to a vehicle such as a motorcycle, snowmobile, or the like. The lock structure includes a flexible metallic cable which loops around a fixed portion of the vehicle and is attached to the helmet by means of a lock mechanism.

3,798,935
ROTATING PUSH LOCK FOR SLIDING DOORS
C. Paul Blekking, Indianapolis, and Max L. Flack, Carmel, both of Ind., assignors to Best Lock Corporation, Indianapolis, Ind.
Filed Feb. 10, 1972, Ser. No. 225,172
Int. Cl. E05b *65/08*
U.S. Cl. 70—100 **7 Claims**

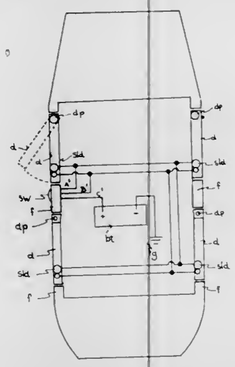
A lock for sliding doors has a bolt carried by a plunger on one door and has a cross head movable into a strike on the passing door. The bolt is rotatable by a key operated core in the plunger, between two orientations. In unlocked, key-retaining orientation, the bolt is movable axially to carry its cross head from a retracted position behind the faceplate of its mounting to a projected position behind a strike on the opposite door, the face plate and strike having shaped openings to pass the cross head in that orientation. In locked, key-releasing orientation, the cross head is out of registry with the

shaped openings and when engaged in the strike, prevents withdrawal of the bolt by forced separation of the doors. A spline groove and flatted sides on the bolt interengage with a shaped opening in the face plate to prevent bolt rotation at in-



termediate axial positions, and prevent bolt movement from end positions except after deliberate key rotation, which increases security and avoids inadvertent movement or disposition of the bolt to mar the passing door.

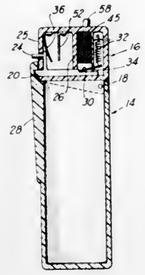
3,798,936
AUXILIARY LOCKING SYSTEM FOR MOTOR VEHICLE
Roy N. Oliver, 148 Ellen Dr., Salem, Va.
Filed Apr. 6, 1972, Ser. No. 241,513
Int. Cl. E05b *65/36*
U.S. Cl. 70—264 **1 Claim**



An electrically operated lock system for vehicle doors and the like wherein a reversible solenoid is provided for each door to furnish a bolting device to retain each door closed in a "dead latch" position, the solenoids being actuated only by means of an externally accessible cylinder lock operating a switch controlling the circuits to the solenoids. The cylinder lock and switch are arranged to operate the solenoids to lock the doors by a rotation of the key plug of the lock in one direction and to unlock the doors by a rotation of the key plug in the opposite direction.

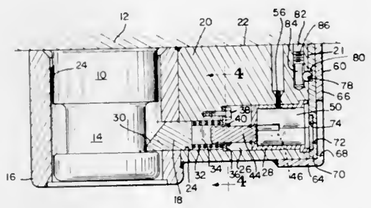
3,798,937
TIME LOCK CASE
Gerald R. Sysk, 1070 Stoneybrook Rd., Forrest Park, Ga.
Filed Mar. 15, 1973, Ser. No. 341,568
Int. Cl. E05b *43/00*
U.S. Cl. 70—269 **11 Claims**

A time lock is disclosed comprising a container and lid and means for locking the lid in a position closing the container for a predetermined period of time. The locking means includes a source of electric current and a solenoid connected across the current source through a manually operable switch and



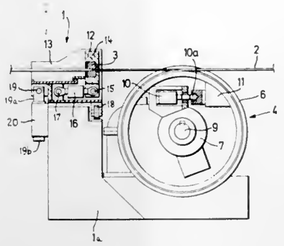
through an electronically controlled switch. Means are further provided for triggering the electronically controlled switch closed upon the elapse of the predetermined period of time.

3,798,938
ARMORED LOCK MECHANISM
R. Gene McCullum, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.
Filed Mar. 2, 1973, Ser. No. 337,755
Int. Cl. E05b *65/12*; **B60r** *25/00*
U.S. Cl. 70—417 **6 Claims**



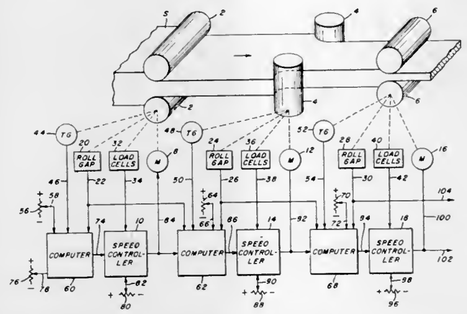
A protective housing is locked onto the fifth-wheel king pin of a tractor-trailer connection to prevent its being engaged by an unauthorized tractor. A housing ring closely encircles the king pin and carries a projecting lock body housing a cylindrical latch bolt spring pressed into engagement with the king pin groove. The latch bolt is rotated to release position by a key-actuated lock cylinder having its key-entrance face presented at the front face of the lock body. An armor shield having a lock-insertion opening is welded in spaced relation to that face to define a slot to receive a guard plate which is inserted across the lock-insertion opening after a lock cylinder and core have been inserted. The guard plate carries a rotatable, key-slotted disk in an opening coaxial with the key plug of the lock, which protects the key plug from drilling and from forceful withdrawal by a pulling tool. The guard plate is removably locked in place by a ball in a hole across the body-plate interface, held therein by a dowel and set screw in a hole which opens to the end face of the lock body and is concealed by the fifth wheel bearing pad on the trailer when the locking device is in place.

3,798,939
METHOD AND MEANS FOR REGULATING THE TENSIONING OF WORKPIECES IN MULTI-PASS COLD-DRAWING APPARATUS
Oswald Mertens, Neuhauser Str. 15, Paderborn, and Helmut Schulz, Querweg 29, Schloss Neuhaus, both of Germany
Filed June 28, 1972, Ser. No. 267,172
Claims priority, application Germany, June 30, 1971, 2132408
Int. Cl. B21c *1/04, 1/12*
U.S. Cl. 72—8 **12 Claims**



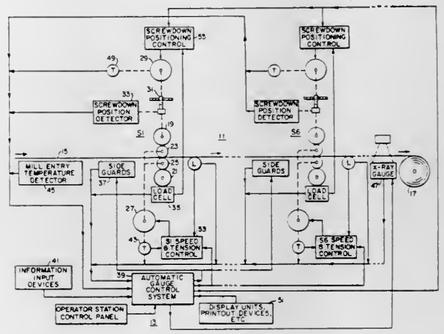
The tensioning of elongated tubular workpieces during transport through a multi-pass cold-drawing apparatus is regulated by changing the speed of discrete electric motors which drive work advancing drums located downstream of successive reducing dies. The speed of the motors is regulated in response to electric signals which are produced by first pressure gauges serving to measure the peripheral forces of the drums and second pressure gauges which measure the retarding forces of the preceding reducing dies. The evaluating circuit employs discrete first and second amplifiers which are respectively connected with the first and second pressure gauges, differential amplifiers each of which receives signals from a first and a second amplifier, rated value selecting devices which furnish preselected signals of constant intensity, and signal comparing circuits which compare the preselected signals with signals furnished by the corresponding differential amplifiers and produce motor-adjusting signals.

3,798,940
ROLLING MILL CONTROL SYSTEM
Harold G. Frostick, North Strabane Township, Washington County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.
Filed Feb. 2, 1973, Ser. No. 329,247
Int. Cl. B21b *37/00*
U.S. Cl. 72—8 **10 Claims**



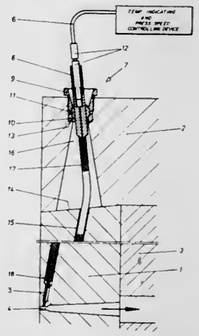
A control system for the length of workpiece between stands in a multi-stand rolling mill combines a thickness signal, a width signal and a speed signal for each stand to provide a signal representing the rate of material volume going through the stand. This signal is then compared with the desired rate for each stand and the roll speed for that stand corrected accordingly. Adjustments are made for slippage and workpiece grow-back.

3,798,941
ROLLING MILL GAUGE CONTROL METHOD AND APPARATUS INCLUDING PLASTICITY DETERMINATION
Richard Q. Fox, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 6, 1972, Ser. No. 303,726
Int. Cl. B21b *37/00*
U.S. Cl. 72—10 **6 Claims**



For the provision of automatic gauge control for the on line control of the delivery gauge of a workpiece passing through at least one roll stand of a tandem rolling mill, it is desired to establish the plasticity of each workpiece in relation to each roll stand of the rolling mill for the entire length of that workpiece from the head end of the workpiece to the tail end of the workpiece. The plasticity of each workpiece is established to provide a desired gauge control operation in relation to that one roll stand.

3,798,942
DEVICE FOR CONTINUOUS MEASUREMENT OF THE TEMPERATURE OF THE EXTRUDED MATERIAL IN EXTRUSION OF METALS IN SECTIONS AND TUBES
Joachim Brackow, Singen, Hohentwill, Germany, assignor to Swiss Aluminium Ltd., Chippis, Switzerland
Filed July 18, 1972, Ser. No. 272,886
Claims priority, application Switzerland, July 20, 1971, 10636
Int. Cl. B21b *37/10*
U.S. Cl. 72—13 **7 Claims**



The invention relates to a device for continuous measurement of the temperature of the metal flowing in the shape-

determining aperture of the die in extrusion of sections and tubes, consisting of a thermo-electric element introduced in the substantially radial direction through the die holder and the die to the shape-determining die aperture, the tip of which is so adjustable that it lies in a plane with the working surface of the shape-determining die aperture and is in direct contact with the surface of the metal flowing in this aperture, and which is connected by a lead with a temperature indicating or press speed regulating device, as well as a holding and adjusting device for the thermoelement.

3,798,943
METHOD AND APPARATUS FOR COLD-DRAWING METALLIC TUBES

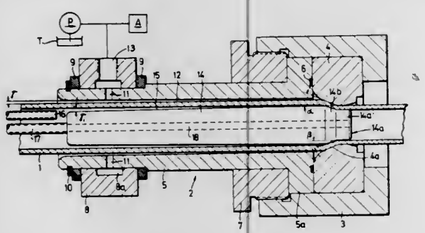
Helmut Benteler, Bielefeld; Franz-Josef Hartmann, Paderborn, and Heinz Hefendehl, Scholss Neuhaus, all of Germany, assignors to Benteler-Werke AG, Schloss Neuhaus, Kreis Padeborn, Germany

Filed June 26, 1972, Ser. No. 265,970

Claims priority, application Germany, June 24, 1971, 2131343

Int. Cl. B21c *3/14*

U.S. Cl. 72—43 **25 Claims**



Steel tubes are cold-drawn in a bench wherein the reducing die is located in front of a sleeve defining with the external surface of the tube to be cold-drawn an elongated tubular confining space which tapers toward the die at an angle of less than 3°. The space is filled with a lubricant at an elevated pressure of up to 100 atmospheres superatmospheric pressure, and such pressure rises automatically to a value exceeding at least 10 times the initial pressure when the tube is moved lengthwise at a speed of up to and in excess of 300 meters per minute. The rise in pressure of confined lubricant is due in part to friction between the lubricant and the external surface of the tube and suffices to insure that the moving tube remains out of mechanical contact with the die. A similar forwardly tapering confining space for reception of a pressurized lubricant can be provided between the internal surface of the tube and a confining member which is connected to and located behind a floating mandrel. The thus treated tube can be subjected to one or more additional cold-drawing treatments to reduce its outer diameter from 8–35 millimeters to about 3 millimeters and its wall thickness from about 3.5 millimeters to about 1 millimeter.

3,798,944
FORGING PRESSES

John Foster, and Geoffrey Wilson, both of Denton, England, assignors to B & S Massey Limited

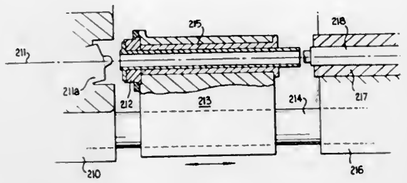
Division of Ser. No. 51,536, July 1, 1970, Pat. No. 3,733,884.

This application Nov. 10, 1972, Ser. No. 305,643

Int. Cl. B21j *9/12, 13/02*; **B21f** *5/00*

U.S. Cl. 72—67 **10 Claims**

An upsetting for forging machine having at least one pair of relatively movable dies, one of which is arranged to carry out a circular rocking motion about a point related to the centre of one of the dies of the die set, the other die including at least one linearly movable element in order that the die can be moved towards or away from the rockable die, there being a



ram means associated with the linearly movable die in order that a workpiece after upsetting or forging can be ejected from the die set.

3,798,945
MACHINE TOOL FOR SHAPING ARTICLES

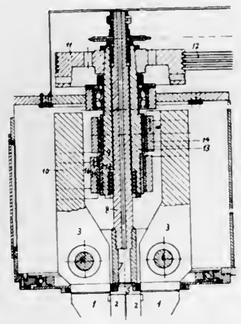
Erich Ribback, 55 Trier, Maximiner Acht, Germany

Filed July 19, 1972, Ser. No. 273,243

Claims priority, application Germany, July 20, 1971, 2136097

Int. Cl. B21j *7/10*

U.S. Cl. 72—76 **3 Claims**



A machine tool for shaping articles comprising a plurality of oppositely moving pressing tools mounted on dual arm levers driven by offset driving means. Oscillating cross-wise disposed joints are mounted on the offset driving means adjacent each other. The offset driving means are mounted on a hollow rotatable shaft which is disposed on a drive shaft, so that said crosswise disposed joints are axially displaceable independently of each other. The joints are mounted at one end to the lever arms so as to provide a relatively long operating stroke for forming the articles.

3,798,946
DEVICE FOR THE CONICAL TAPERING OF ELONGATED WORKPIECES HAVING A CIRCULAR CROSS SECTION

Eberhard Thamasett, Reutti, Germany, assignor to Wieland-Werke AG, Ulm, Germany

Filed Apr. 6, 1973, Ser. No. 348,707

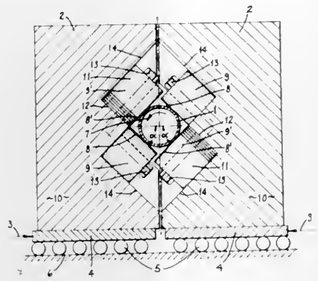
Claims priority, application Germany, Apr. 12, 1972, 2217580

Int. Cl. B21d *22/18*

U.S. Cl. 72—84 **3 Claims**

A device for the conical tapering of a continuously rotating elongated workpiece having a circular cross section which is rotatable about the longitudinal axis thereof. At least two tools

which can be fed radially are simultaneously advanced in axial direction and are arranged in one plane at a right angle to the workpiece axis. Each of the tools consists of two nonmovably connected working surfaces which define an angle with the infeed direction of the tools. On both tools the working surface which is the leading surface into each of the tools in the



direction of rotation of the workpiece is longer than the other working surface and same is at most so long that when the tools are completely moved forwardly against one another the shorter working surface of each tool abuts with its front or leading side the longer working surface of the respectively other tool.

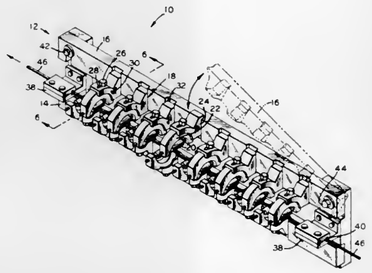
3,798,947
RIBBON STRAIGHTENER

Raymond N. Anderson, Convent Station, N.J., and Stanley J. Gartner, Emporium, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y. and Wilbur B. Driver Co., Newark, N.J.

Filed Sept. 19, 1972, Ser. No. 290,416

Int. Cl. B21d *1/02*

U.S. Cl. 72—165 **3 Claims**



Apparatus for straightening metallic ribbon of substantially rectangular cross-section both in longitudinal direction and camber which comprises a plurality of ribbon workers spaced along a longitudinal line and adjustable toward and away from said line to control tension as well as arcuately about said line to control camber.

3,798,948
METHOD OF STRAIGHTENING ELONGATED WORKPIECES

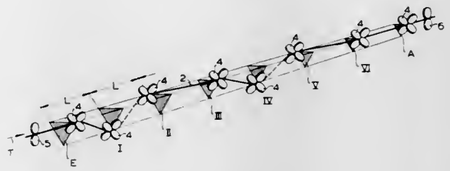
Ralph Fangmeler; Alfons Goeke; Erich Krafft, and Rolf Eckard Koch, all of Solingen, Germany, assignors to Th. Kieserling & Albrecht, Solingen, Germany

Filed May 24, 1972, Ser. No. 256,584

Claims priority, application Germany, May 27, 1971, 2126371

Int. Cl. B21d *3/04*

U.S. Cl. 72—162 **9 Claims**



A method of straightening long tubular or solid stock of circular, oval, square or rectangular profile according to which the stock is conveyed lengthwise, without rotation about its axis, along an elongated path having inlet and outlet ends between which the stock is flexed at a plurality of longitudinally spaced equidistant locations in directions extending transversely of a straight line connecting the inlet and outlet ends of the path. The directions of flexing, as considered in the circumferential direction of the moving stock, make an oblique angle of between 90 and 145 degrees. The flexing locations are defined by discrete passes of straightening rolls which may but need not orbit simultaneously about the aforementioned straight line.

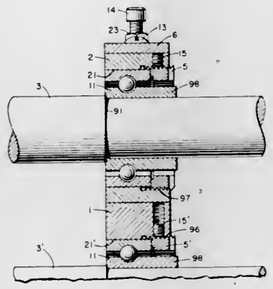
3,798,949
MULTI-SPINDLE ROLLING MACHINE

Raymon Z. Tucker, 1925 Borneman St., Elkhart, Ind.

Filed Feb. 28, 1972, Ser. No. 229,761

Int. Cl. B21d *5/08*

U.S. Cl. 72—181 **5 Claims**

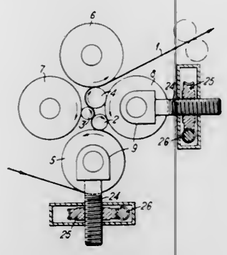


A rolling machine head is described in which adjustments for zero clearance between the bearing and the shoulder of the shaft supporting the roller die may be made through the use of an adjustment plug mounted to vary the position of the bearing. This performs the function of shims or spacers commonly used in conventional systems. The machine structure is such as to allow the variation of the clearance between the upper bearing block and the lower bearing plate through the use of a spring loaded upper bearing block. Thus, the machine is able to compensate for variations in the thickness of a material being rolled.

3,798,950
TREATING STRIP METAL

Jozef Tadeusz Franek, Chorleywood, and Paul Porucznik, Northolt, both of England, assignors to The Metal Box Company Limited, London, England

Filed Feb. 22, 1972, Ser. No. 228,209
Claims priority, application Great Britain, Mar. 5, 1971, 6184/71
Int. Cl. B21b *39/08*
U.S. Cl. 72—205 9 Claims

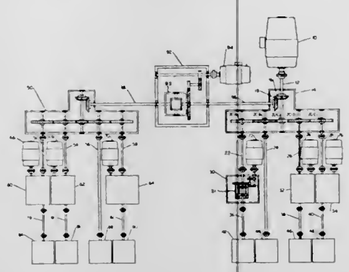


Substantial longitudinal uniformity of the distance between the longitudinal edges of strip metal is obtained by moving the strip lengthwise under tension and subjecting it to multiple bowing in directions substantially at right angles to the longitudinal axis of the strip by passing the strip between at least three straight work rolls and partly around two opposed rolls of four freely rotatable back-up rolls of substantially equal diameters which are large as compared with the diameters of the work rolls, the work rolls being freely rotatable between the back-up rolls and constrained against axial movement. The work roll first engaged by the strip has a diameter less than that of the work roll last engaged and the diameter of the intermediate work roll is less than that of the first and last engaged work rolls.

3,798,951
TORQUE DISTRIBUTION SYSTEM

Augustine A. Fornataro, Ellwood, Pa., assignor to Herr-Voss Corporation, Callery, Pa.

Filed Oct. 3, 1972, Ser. No. 294,503
Int. Cl. B21b *39/08*
U.S. Cl. 72—205 5 Claims

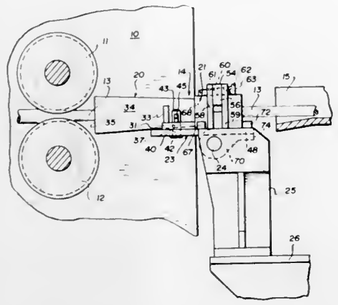


A torque distribution system for a strip bridle system with rolls and shafts having a prime mover coupled to one of the roll shafts driving a first roll. The system has a differential with three inputs. A first input is coupled to a second roll shaft with a roll which rotates at essentially the same peripheral speed as the first roll; a second input is coupled to the main prime mover; and a third input is coupled to a second prime mover of less horsepower than the main prime mover.

3,798,952
NON-STRIPPING GUIDE SYSTEM FOR ROLLING MILL

Holton C. Easter, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Jan. 15, 1973, Ser. No. 323,883
Int. Cl. B21b *39/16*
U.S. Cl. 72—227 6 Claims

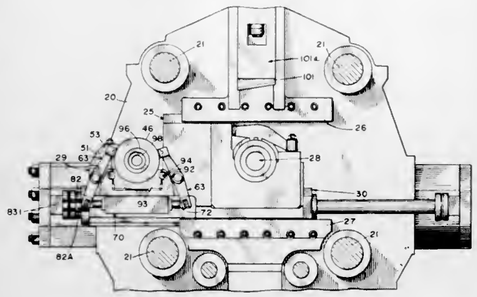


A non-stripping guide system for a mill stand which rolls metal bars such as rods. The parts of the guide system are readily assembled and disassembled. The guide system is readily pivotally movable, as an assembly, between an operational position for receiving and guiding bars from the mill stand and a displaced position which facilitates maintenance at the mill stand.

3,798,953
EXTRUSION PRESSES

Anthony P. Sgambati, Campbell, Ohio; Fred Kamena, Astor, Fla.; Robert L. Barton, Youngstown, Ohio, and Donald J. Gliem, Fairport, N.Y., assignors to Wean United Inc., Youngstown, Ohio

Filed Aug. 3, 1972, Ser. No. 277,651
Int. Cl. B21c *23/00*
U.S. Cl. 72—255 15 Claims

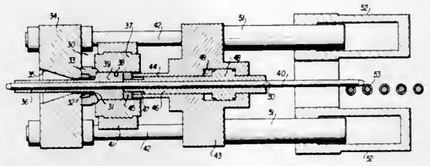


The invention is particularly directed to a die slide construction for an extrusion press, the slide having two die stations, either one of which may be moved to axial alignment with the container and ram of the press. One die station may have a die for extruding a billet to a uniform cross-section while the other station carries a step die for extruding a billet first to a predetermined cross-section and thereafter a larger cross-section. The invention enables the minor die to be removed from the major die with little time or effort. After the step extrusion is completed, the invention provides for exposure of the billet butt in line with a shear for removing the butt.

3,798,954
METHOD AND APPARATUS FOR PRODUCING METAL TUBES BY EXTRUSION OF A HOLLOW BILLET

Akira Asari, Osaka, Japan, assignor to Kobe Steel Company Ltd., Kobe, Japan

Filed Nov. 18, 1971, Ser. No. 200,002
Claims priority, application Japan, Nov. 19, 1970, 45-103030
Int. Cl. B21c *23/00*
U.S. Cl. 72—255 6 Claims

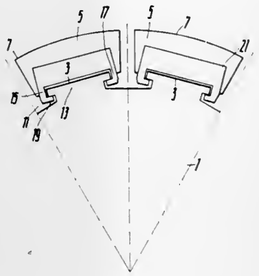


Metal tubes are produced by extruding a hollow billet through an annular die opening defined by a die and a movable rod-shaped mandrel having a larger length than the tube to be produced, and by feeding the mandrel rod through the die together with the tube as it is being formed so that the tube as produced has the mandrel rod disposed therein along its entire length, whereby damage to the inner surface of the tube caused by scratching due to relative movement of the mandrel therewith is avoided and tubes having improved inner surface characteristics are obtained.

3,798,955
TUBE EXPANDER

Helmut Wimmer, Mulheim/Ruhr; Wilhelm Feldmann, Duisburg; Wilhelm Schauenburg, and Reiner Heimerzheim, both of Mulheim/Ruhr, all of Germany, assignors to Mannesmannrohren-Werke Aktiengesellschaft, Dusseldorf, Germany

Filed Sept. 5, 1972, Ser. No. 286,185
Claims priority, application Germany, Sept. 6, 1971, 2145069
Int. Cl. B21d *41/02*
U.S. Cl. 72—393 2 Claims

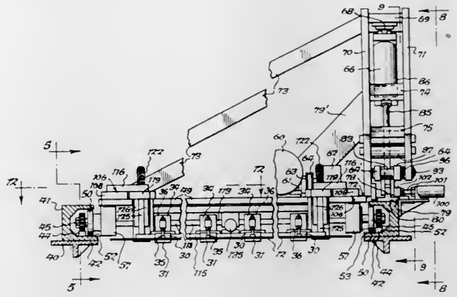


A segmented tube expander with overhung expander segments which run on rectangular glide surfaces or carriers on a truncated pyramid; the segments are scored against lifting off the glide surfaces and are constructed to prevent contamination of a lubricant between blide surfaces and segments.

3,798,956
FEED MECHANISM FOR COMBINED BENDING AND PUNCHING MACHINE

John F. Kopczynski, 1671 Sweeney, North Tonawanda, N.Y.

Filed Apr. 27, 1972, Ser. No. 247,980
Int. Cl. B21j *13/10*
U.S. Cl. 72—420 13 Claims

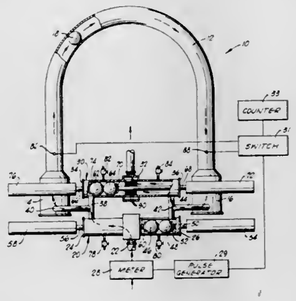


A feed mechanism for advancing a sheet through a combined bending and punching machine in predetermined accurately gauged increments comprising a table, a feed carriage on said table, clamping means on said feed carriage for clamping onto the end portion of the sheet, a scalloped track extending the length of the feed table, a toggle linkage on the carriage, motor means and an associated linkage for bending the toggle linkage and causing a free end thereof to be placed in a scallop prior to straightening the linkage so as to cause the carriage to move a predetermined increment due to the straightening of the toggle linkage, and floating connections to the clamping mechanism for permitting the clamping mechanism to yield in a direction toward the bending machine as the workpiece is being bent and for permitting the portion of the workpiece located between the clamping mechanism and the bending machine to move up and down during the bending, to thereby insure accurate bending as well as the obviating of excessive strain on the portion of the workpiece located between the clamping mechanism and the bending machine.

3,798,957
METER PROVER APPARATUS

Charles G. Shannon; Bernard M. Moroney, both of Tulsa, and Jack R. Neal, Claremore, all of Okla., assignors to Metric, Inc., Tulsa, Okla.

Filed Mar. 16, 1972, Ser. No. 235,122
Int. Cl. G01f *25/00*
U.S. Cl. 73—3 10 Claims



The present invention relates to an improved meter prover apparatus comprised of a prover barrel, a piston or sphere

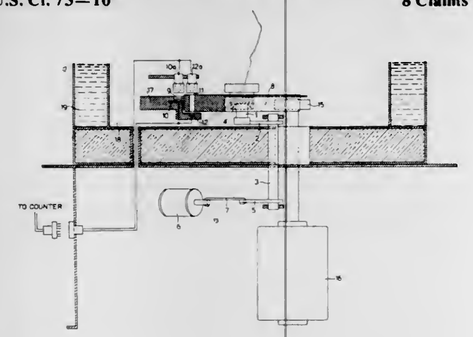
disposed within the prover barrel which is moved through the barrel by the flow of liquid therethrough and means attached to the prover barrel for detecting the passage of the piston so that the known volume of liquid displaced thereby is compared with the volume of liquid measured by a meter being proved. A first elongated cylinder having a metered liquid inlet positioned intermediate to the ends thereof and a second elongated cylinder having a displaced liquid outlet positioned intermediate to the ends thereof are provided. Conduit means connecting opposite ends of the first and second cylinders together and to opposite ends of the prover barrel are provided and piston means are disposed in each of the first and second elongated cylinders. Means for selectively moving the piston means within the first and second cylinders to alternate positions between the intermediate portions thereof and the ends thereof are provided so that metered liquid passing into the first cylinder by way of the mtered liquid inlet is caused to flow through the prover barrel in a selected direction, and displaced liquid from the prover barrel is caused to flow into the second cylinder from where it is removed by way of the displaced liquid outlet.

3,798,958

METHOD AND APPARATUS FOR EVALUATING THE LUBRICATING CHARACTERISTICS OF OILS AND GREASES

Manlio Marini; Oddino Maritano, and Franco Foa, all of Torino, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Turin, Italy

Filed Apr. 15, 1970, Ser. No. 28,822
Claims priority, application Italy, Apr. 15, 1969, 51427/69
Int. Cl. G01n *33/30*
U.S. Cl. 73—10 **8 Claims**



A method and apparatus for precisely evaluating the lubricity characteristics of various oils and greases while they are under load and in motion and subject to variations in temperature.

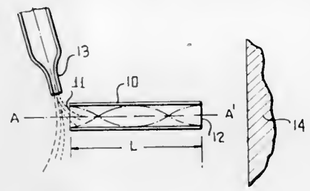
3,798,959

ACOUSTIC GAUGE AND FLUIDIC SIGNAL PROCESSING CIRCUITRY THEREFOR

Romald E. Bowles, Silver Spring, and Peter Bauer, Germantown, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Aug. 11, 1972, Ser. No. 280,054
Int. Cl. G01b *13/00*
U.S. Cl. 73—37.5 **18 Claims**

Fluidic techniques are utilized to provide a highly sensitive gauge. An open-ended tube is excited by a fluid stream flowing past one end to produce standing waves in the tube. Proximity of a sensed object to the opposite tube end is measured in terms of the frequency of the standing waves. For small displacements of the object from the tube there exists a range of increasing displacement over which the standing wave frequency exhibits a large continuous increase. The standing wave frequency is measured with an acoustic pick up or by monitoring the resulting deflections of the excitation stream. In one embodiment the gauge is employed to measure bore holes wherein temperature reference and orientation reference frequencies are provided by similar oscillators. Processing of the measured frequency is effected by counting the temperature reference and measurement frequencies simultaneously in respective counters and stopping the measurement frequency count after the temperature reference



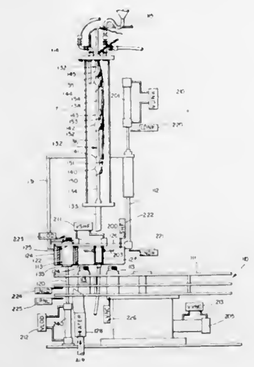
frequency reaches an adjustable predetermined count. The resulting count ratio is a measure of the sensed object displacement, fully compensated for temperature. Alternately, the beat frequency between the measurement and temperature reference frequencies provides partial temperature compensation. In the latter case, a go-no go measurement is achieved by comparing the beat frequency to a fixed clock frequency and actuating an indicator when two beat frequency cycles occur during one clock cycle.

3,798,960

AUTOMATIC VISCOMETER WITH MULTIPLE CAPILLARY VISCOMETER TUBE

John Richard Glass, Mickleton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed June 19, 1972, Ser. No. 263,824
Int. Cl. G01n *11/06*
U.S. Cl. 73—55 **24 Claims**



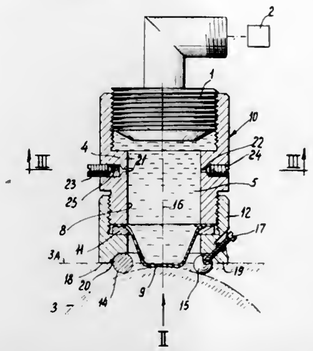
An automatic viscometer featuring the use of a multiple capillary viscometer tube whereby capillary tubes of varying sizes are connected one to another in series and into which a sample liquid is drawn by controlled vacuum. In one of the preferred embodiments of the invention the viscometer utilizes a supply turntable and heated sample jackets for preheating liquid samples, a temperature bath to bring the sample being measured to controlled equilibrium, a series of automatic meniscus sensors to detect the flow of oil, and means for automatically computing viscosity from the sensor output. Thermistors are used as meniscus sensors.

3,798,961

APPARATUS FOR NON-DESTRUCTIVE CHECKING OF WORKPIECES

Christian Flambard, 21, Avenue du Val d'Aunette, 60 Senlis; Alain Lambert, Residence Charles Pranard 94, rue Robert Schumann, Creil, and Michel Pacreau, App. 8-ILM Bonsecours No 2, 60 Senlis, all of France

Filed Feb. 17, 1972, Ser. No. 226,771
Claims priority, application France, Feb. 25, 1971, 71.06401
Int. Cl. G01n *29/04*
U.S. Cl. 73—71.50 **6 Claims**



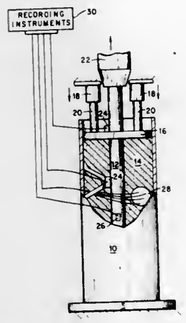
An apparatus for non-destructive checking of workpieces using an ultrasonic probe in which a casing has a bore, and is closed at one end by a flexible diaphragm and at the other end by the probe. The casing is filled with liquid and bearing elements are provided for supporting the casing immovably on a workpiece such that the flexible membrane bears against the workpiece and provides an improved physical connection which in turn provides a connection between the probe and the workpiece under the best possible conditions. The checking apparatus can be supported by a bracket mounted on a base for supporting the workpiece, with the bracket being adjustable in height above the base and the checking apparatus being movable relative to the bracket.

3,798,962

METHOD FOR PREDICTING MOVEMENTS OF STRUCTURAL MEMBERS EMPLACED IN THE EARTH

Leland L. Dibley, Livermore; Maurice Zaslawsky, San Jose, and Alexander Blake, Livermore, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 19, 1972, Ser. No. 247,220
Int. Cl. G01n *3/08, 19/02*
U.S. Cl. 73—88 E **4 Claims**



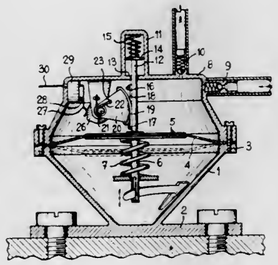
A method for measuring frictional and bearing resistance of compressed granular materials such as sand or gravel to both longitudinal and lateral motion of a long structural member emplaced in a cylindrical container with the granular material packed around the member. The granular material is compressed by means of a platen at one end of the container. Then force is applied between the member and container until the member moves. The frictional and bearing properties of the granular material and the strains in the member may be determined from the amount of force required for the movement. The member is moved axially and radially in separate steps.

3,798,963

DEVICE FOR MEASURING FLUID CONSUMPTION

Jean Claude Evrard, Perthes-en-Gatinais, France, assignor to George Rapee, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 304,273
Claims priority, application France, Mar. 3, 1972, 72.07394
Int. Cl. G01m *15/00*
U.S. Cl. 73—113 **7 Claims**



A device for measuring the consumption of fluid in equipment including a pump, said device comprising a component connected, on the one hand, to a movable part of the pump and, on the other hand, to a rotatable shaft by means of an intermediary member which may be a motion converter. The rotatable shaft is under the influence of a member which locks it in one direction and is connected to a mechanism which includes a revolution counter and a mechanical motion converter which generates electrical pulses capable of being transmitted to a read-out and/or measuring device such as a calculator of average values as a function of time and/or distance. The device is of particular use in giving a reading of gasolene consumption in a motor vehicle, but is not limited to such use: indeed the fluid concerned need not be a liquid but may be a gas.

3,798,964

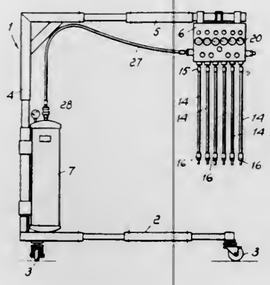
APPARATUS FOR IMMEDIATE SPOTTING OF MECHANICAL AND ELECTRICAL DEFECTS, IN EXPLOSION ENGINES

Giuseppe Misseroni, Via Fabio Filzi, Brescia, Italy (25100)

Filed Aug. 28, 1972, Ser. No. 284,391
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.2 **6 Claims**

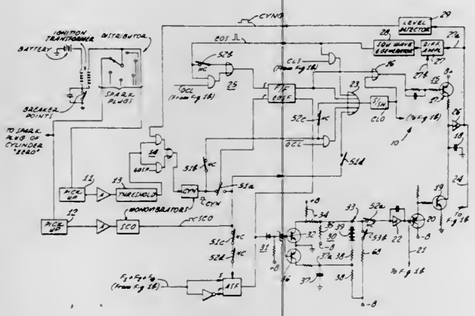
Apparatus for the immediate identification of mechanical and electrical faults particularly for explosion engines comprising a plurality of connectors connected to a compressed air distribution duct and provided each with a respective flexible duct. The latter terminates with an externally threaded connector with the same pitch as the thread of the sparking plugs of an explosion engine. A pressure gauge is connected to at least one of the connectors and a first non-return valve provided between the connector and the pressure gauge. A

second non-return valve is arranged between the distribution duct and a point of the connector upstream of said first non-



return valve. The apparatus also comprises connecting means between the distribution duct and the compressed air receiver and a shut-off valve in such connecting means.

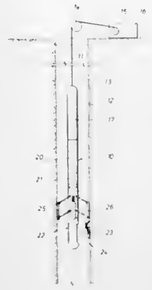
3,798,965
SYSTEM FOR TESTING THE IGNITION OF AN INTERNAL COMBUSTION ENGINE
Edmond R. Pelta, Pacific Palisades, and Kenneth Stewart Gold, Canoga Park, both of Calif., assignors to Autoscan, Inc., Culver City, Calif.
Division of Ser. No. 556,710, June 10, 1966, pat. No. 3,619,767
Filed May 13, 1970, Ser. No. 36,881
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **20 Claims**



A sequence of control pulses is produced in accordance with the selective firing of the different cylinders in an automobile engine. The control pulses control the production of a control signal such as a ramp signal, which is produced to a particular amplitude with a slope dependent upon the speed of the engine.

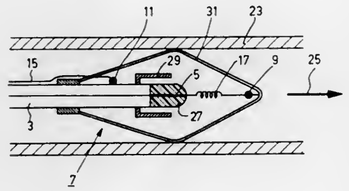
At certain times it may be desired to determine the effect on the speed of the engine when the firing of a particular cylinder is inhibited. At such times the production of the ramp signal for the particular cylinder is inhibited and the ramp signal is produced to a level which may exceed the particular level. The level of the ramp voltage so produced relative to the particular level indicates the effect on the speed of the engine when the firing of the particular cylinder is inhibited.

3,798,966
WELL LOGGING SONDE HAVING ARTICULATED CENTERING AND MEASURING SHOES
Jean Planche, Val De Marne, France, assignor to Schlumberger Technology Corporation, New York, N.Y.
Continuation of Ser. No. 52,869, July 7, 1970, abandoned.
This application Aug. 29, 1972, Ser. No. 284,686
Int. Cl. E21b *49/00*
U.S. Cl. 73—151 **8 Claims**



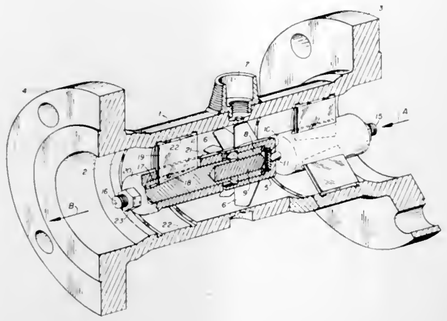
A well logging sonde including a body member having centering shoes mounted on arms and thrust outwardly into engagement with a well bore wall by springs, and a measuring shoe assembly pivotally connected to at least one of the centering shoes and adapted to slide in intimate contact with the well bore wall, said measuring shoe being urged outwardly independently of the centering shoes to enable a reduced measuring shoe pressure with respect to the pressure of the centering shoes against the well bore wall.

3,798,967
PROBE FOR MEASURING THE FLOW OF LIQUIDS
Antonius Cornelis Maria Gieles, and Gerardus Henricus Johannus Somers, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New york, N.Y.
Filed Apr. 13, 1972, Ser. No. 243,597
Claims priority, application Netherlands, Apr. 21, 1971, 7105351
Int. Cl. G01f *1/00*; **A61b** *5/02*
U.S. Cl. 73—204 **8 Claims**



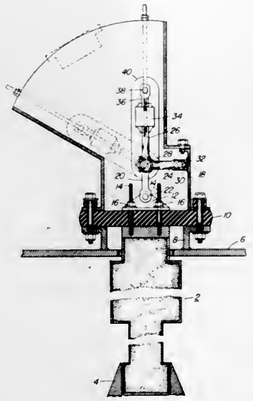
A probe for measuring flow rates of liquids whereby the liquid is locally heated by high-frequency heating and the temperature increase is sensed, the temperature increase being a measure of the flow rate.

3,798,968
TURBINE METER BEARING SUPPORT
Lewis K. Harris, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.
Filed June 26, 1972, Ser. No. 266,011
Int. Cl. G01f *1/06*
U.S. Cl. 73—231 R **4 Claims**



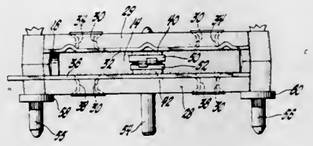
The support and bearing structure for the rotor of a turbine meter is in the form of a spider. Vanes are radiated by inclined surfaces into engagement with the housing bore to fix the bearings for the rotor along the axis of the bore.

3,798,969
TANK LIQUID LEVEL DETERMINING APPARATUS
John P. Jones, Jr., Scarsdale, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed May 22, 1972, Ser. No. 255,610
Int. Cl. G01f *23/12*
U.S. Cl. 73—309 **6 Claims**



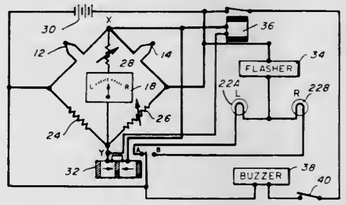
A liquid level responsive device is described for use in tanker vessels to read out ullage directly on a gauge comprising in combination a strain gauge connected to an elongated buoyancy measuring means extending substantially vertically from substantially the bottom of the tank to substantially the top of the tank and sized in at least the upper extremity thereof so that the buoyant force of a liquid on the upper enlarged portion of the buoyancy means per linear incremental change in level of liquid in the tank becomes maximized as the level of liquid fills the tank.

3,798,970
FUEL LEVEL SENDER FOR A VEHICLE FUEL TANK
Manfred P. H. Schlanzky, Frankenmuth, and John E. Creager, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 16, 1973, Ser. No. 333,000
Int. Cl. G01f *23/10*
U.S. Cl. 73—313 **2 Claims**



A fuel level sender for a vehicle fuel tank in which two etched resistors are carried on respective planar surfaces of two bases. The bases are attached so that the resistors are spaced apart. Each resistor is comprised of a plurality of continuous running parallel loops terminating at a common bus bar on one end and terminating at respective output terminals on the other end. The effective length of each of the loops of one resistor are shortened so that the resistance between the output terminals equals a predetermined value. A wiper arm has two electrically coupled contacts engaging the resistors respectively and which are moved arcuately across the loops of the resistors in accordance with fuel level to vary the resistance between the output terminals as a measure of the fuel level.

3,798,971
TEMPERATURE DIFFERENTIAL SENSOR FOR GLIDERS
Carl J. Lowrance, Tulsa, Okla., assignor to Lowrence Electronics Mfg. Corp., Tulsa, Okla.
Filed Nov. 1, 1971, Ser. No. 194,395
Int. Cl. G01k *7/22*
U.S. Cl. 73—342 **6 Claims**



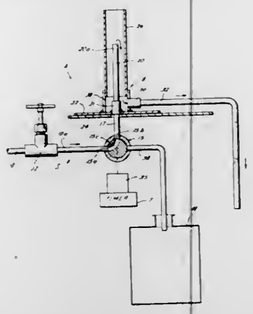
An apparatus for mounting in a glider, including a first air temperature sensor positioned adjacent one point on the perimeter of the glider, such as the tip of the of the glider left wing, an air temperature sensor positioned adjacent a second point on the perimeter of the glider, such as the tip of the glider right wing, and a temperature differential indicating means mounted in the glider cockpit in view of the pilot, the differential indicating means being connected to the air temperature sensors and including means for indicating difference in temperature detected by the sensors, thereby indicating to the pilot the direction towards warm air currents when a temperature differential exists.

3,798,972

COMPOSITE SAMPLER METHOD AND APPARATUS

Henry R. Collins, Jr., 4507 Hemlock, Baytown, Tex.

Filed Feb. 28, 1972, Ser. No. 229,841
Int. Cl. G01n *1/20*
U.S. Cl. 73—422 TC 8 Claims



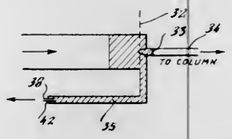
A method and apparatus for sampling the liquid flowing through a conduit wherein the liquid is directed by a valve into a vertical standpipe and flows out of its open upper end. The liquid is confined by a surrounding container which communicates by a conduit with the ultimate destination. When a sample is desired the valve establishes an alternate communication between the standpipe and a sample collection vessel. Means are provided for varying the capacity of the standpipe.

3,798,973

SAMPLE METHOD AND ARRANGEMENT FOR GAS CHROMATOGRAPH

Willard E. Estey, Ridgefield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed July 14, 1972, Ser. No. 271,901
Int. Cl. G01r *1/10*
U.S. Cl. 73—422 GC 8 Claims



A method for providing enhanced stream splitting is provided by conveying a plug comprising a mixture of a sample material and carrier gas to a stream splitting means and initially dividing a leading portion of the plug during a relatively short interval of time into a measurement component and into a discharge component. The division or split ratio is automatically altered to a second value according to which the remaining and principal portion of the plug is divided by conveying the discharge component through a discharge volume which is relatively small with respect to the volume of the plug and through a flow restriction to atmosphere. The measurement component of the plug is simultaneously conveyed toward a chromatographic column. The second split ratio is thereby maintained substantially constant for the passage of the remaining and principal portion of the plug past a split station of the stream splitting means.

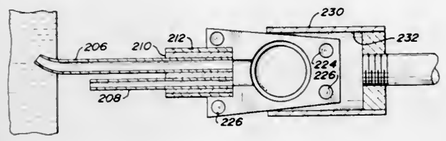
A chromatographic apparatus in accordance with features of the invention comprises a stream splitting means, means providing a flow channel communicating between a first outlet of the stream splitting means and a separating column, and means providing a second flow channel communicating between a second outlet of the stream splitting means and a flow restrictor means which is vented to atmosphere. The second flow channel has a relatively small volume for providing that a discharge component of the plug which flows therein after splitting is rapidly vented to atmosphere. In a particular embodiment, the discharge volume is substantially less in magnitude than the volume of the plug.

3,798,974

SAMPLING APPARATUS

Joseph J. Boron, Doylestown, Pa., assignor to Aikoh Co., Ltd., Tokyo, Japan

Filed May 12, 1972, Ser. No. 252,827
Int. Cl. G01n *1/12*
U.S. Cl. 73—425.4 R 8 Claims



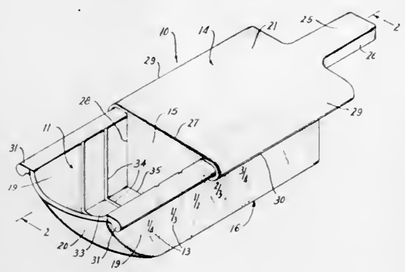
An apparatus for taking samples from a flowing stream which includes a pair separable of elements forming a mold chamber. The elements are provided with a recess at the inlet to the mold cavity for holding a collar which encloses a heat resistant sampling tube adapted to divert a sample from a falling stream. A maniputatable handle is provided for holding the mold forming elements together. After a sample has been taken the elements can be separated to free the solidified metal sample. The device can be reused with only the tube and collar being replaced.

3,798,975

MEASURER

Patricia J. Horst, c/o Innovations, Inc., 2903 Spring Creek Rd., Rockford, Ill.

Filed Sept. 13, 1972, Ser. No. 288,759
Int. Cl. G01f *19/00*
U.S. Cl. 73—429 1 Claim



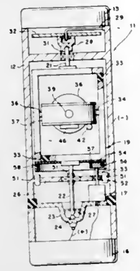
A measurer includes an elongated body with a depending flap connected to one end thereof and a slide mounted on the body defines a measuring chamber between the end of the slide and the flap. By moving the slide to adjust the distance between the flap and the end of the slide, the size of the chamber may be changed as desired.

3,798,976

ROTOR TILT

James M. Lindsey, Houston, and Thomas W. Stell, Richmond, both of Tex., assignors to Sperry-Sun Well Surveying Company, Sugar Land, Tex.

Division of Ser. No. 38,263, May 18, 1970, Pat. No. 3,703,832. This application Sept. 19, 1972, Ser. No. 290,285
Int. Cl. G01c *19/48*
U.S. Cl. 74—5.6 A 9 Claims



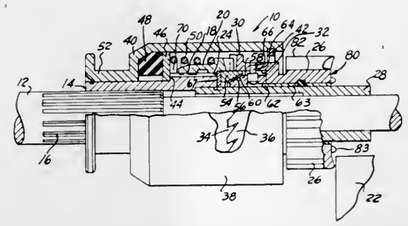
A system for controlling the tilt of a rotor on a gyro includes a sensing device on the rotor housing for detecting tilt, together with light generating devices mounted on opposite sides of the rotor housing and responsive to the tilt detecting device. Light sensors are mounted on the gyro housing and are responsive to light from the light generating devices on the rotor housing. The light detecting devices provide a control signal to a torqueing motor to apply a corrective force to the gyro system. The torque motor is continuously operated, and will rotate in a first direction until a signal is received from at least one of the light sensing devices, whereupon the direction of rotation reverses until light is not detected by one of the sensors. Use of the light activated control system to transmit the error signal obviates the use of any friction-producing physical attachment with the components of the gyro in order to transmit such error signal to the torque motor control system.

3,798,977

PINION FOR STARTER GEARING

James J. Digby, Elmira, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 27, 1972, Ser. No. 249,449
Int. Cl. F02n *15/06*; F16h *55/08*
U.S. Cl. 74—6 1 Claim



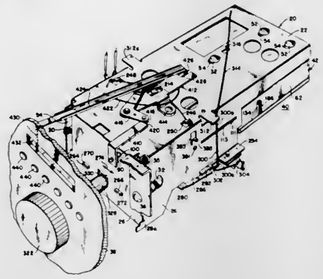
A pinion for starter gearing having a radially extending concave face, the concave face being formed so that the teeth of said pinion gear are angularly disposed with respect to the transverse plane of said pinion thus protruding outwardly from the engaging end of said pinion. In order to aid a starter drive pinion into mesh with a rotating ring gear the concave face allows the tips of the teeth to protrude from the face of the pinion and therefore easily engage the teeth of the ring gear, thus, bringing the pinion up to synchronous speed with the ring gear more quickly than face-friction alone would accomplish.

3,798,978

SIX POSITION MEMORY TYPE UHF TUNER

Joe G. Badger, and Alarico A. Valdettaro, both of Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.

Division of Ser. No. 172,552, Sept. 17, 1971, which is a continuation of Ser. No. 856,277, Sept. 9, 1969, Pat. No. 3,597,870. This application Sept. 5, 1972, Ser. No. 286,069
Int. Cl. H03j *5/06*; F16h *35/18, 55/18*
U.S. Cl. 74—10.8 5 Claims



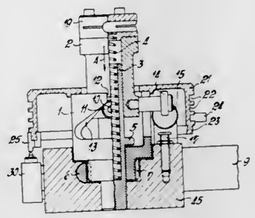
The rotor shaft of a UHF tuner is spring biased by means of a torsion wire which extends longitudinally along the axis of the rotor shaft so that as the rotor shaft is rotated the wire is twisted. A rotatable memory turret is interconnected with the UHF tuner rotor shaft to provide UHF channel selection in any one of six positions of a main selector shaft. Indicator lights are selectively energized by means of a switching arrangement connected to the main selector shaft and a sensitive dial pointer arrangement is provided so that the operator may correlate a particular position of the main selector shaft with the particular UHF station which is being received. An AFC defeat switch is actuated each time the main selector shaft is moved to a different UHF channel position and is closed at all times when the main selector shaft is moved rearwardly for adjustment of the UHF rotor shaft to a new memory position.

3,798,979

ROTARY AND AXIAL DRIVE MECHANISM

Klaus Kienhofer, Niefern near Pforzheim, Germany, assignor to Gebr. Felss, Pforzheim, Germany

Filed Aug. 11, 1972, Ser. No. 279,858
Claims priority, application Germany, Sept. 18, 1971, 2146720
Int. Cl. F16h *21/00*
U.S. Cl. 74—22 R 27 Claims



An input member consists of a rotatable cam slot sleeve formed with a cam slot. An output member consists of a cam follower sleeve, which is coaxial with said cam slot sleeve and rotatable and axially movable relative thereto and carries a cam follower in engagement with said cam slot sleeve in said cam slot. Angular stop means limit the angular movement of said cam follower sleeve from an initial position to a limiting

angular position. Axial stop means limit the axial movement of said cam follower sleeve relative to said cam slot sleeve. Said cam slot and cam follower are adapted to impart to said cam follower sleeve an angular movement in unison with an angular movement of said cam slot sleeve between said initial position and said limiting angular position, and to impart to said cam follower sleeve an axial movement relative to said cam slot sleeve in response to an angular movement of said cam slot sleeve beyond said limiting angular position. Input drive means comprise a fluid-operable actuator and are operable to impart to said input member an oscillating angular movement from said initial position to and beyond said limiting angular position and back to said initial position. A drum coaxially surrounds and is non-rotatably connected to said input member. Control means are provided to control said input drive means in response to the angular movement of said drum. Said control means comprise adjustable cam means carried by said drum for rotation therewith and valve means which communicate with said actuator and are arranged to vary the speed of said actuator under control by said cam means.

3,798,980

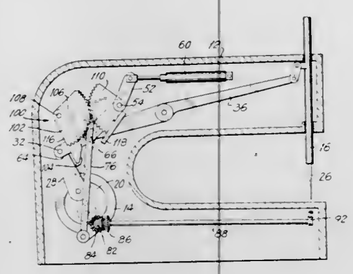
RECIPROCATING MOTION CONTROL DEVICE

Leighton R. McKeen, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.

Division of Ser. No. 128,831, March 29, 1971, Pat. No. 3,688,713. This application May 31, 1972, Ser. No. 258,463

Int. Cl. F16h *21/32*

U.S. Cl. 74—40 **11 Claims**



A sewing machine having a rotary drive mechanism and a needle bar mounted for reciprocation between upper and lower positions with respect to a looper includes a transmission system operably connected between the rotary drive means and the needle bar to convert the rotary motion of the drive means to reciprocating motion of the needle bar. The transmission system includes a lever pivotally mounted intermediate its ends and pivotally connected at one end to the needle bar, a crank pivotally connected at one end to the rotary drive means, and a pitman pivotally connected between the crank and the other end of the lever to convert the rotary motion of the drive means and crank to reciprocating motion for oscillating the lever and reciprocating the needle bar. The crank is operatively connected to the looper for synchronously driving the looper with the needle bar. The transmission system also includes means for selectively maintaining the line of thrust of the pitman in a first position substantially perpendicular to the lever to transmit motion thereto from the drive means for reciprocating the needle bar and in a second position substantially in alignment with the lever whereby the pitman idles under the influence of the drive means without transmitting motion to the lever or the needle bar.

3,798,981

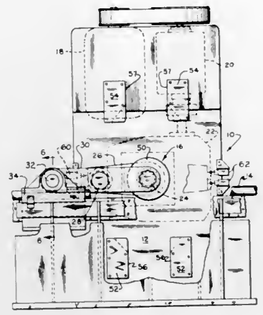
MECHANICAL TRANSFER BAR DRIVE ASSEMBLY

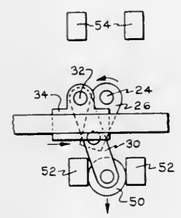
Robert W. Richards, Sterling Heights, and James Egbert, Union Lake, both of Mich., assignors to La Salle Machine Tool, Inc., Warren, Mich.

Filed Oct. 2, 1972, Ser. No. 294,227

Int. Cl. F16h *21/32*

U.S. Cl. 74—40 **8 Claims**





A drive mechanism for imparting simple harmonic motion to the transfer bar in a mechanism for moving workpieces in a generally horizontal direction through a plurality of work stations. The drive mechanism comprises a drive shaft, a drive crank secured to the drive shaft, a drive link pivotally mounted intermediate its ends on the drive crank and a carriage releasably attached to the transfer bar. The carriage is guidably supported for horizontal movement, and is pivotally connected to one end of the drive link. The opposite end of the drive link is guidably supported during certain portions of the movement thereof to assure continuous movement of the transfer bar in one direction in response to one half-cycle movement of the drive crank and continuous movement of the transfer bar in the opposite direction in response to another half cycle movement of the drive crank.

3,798,982

PUMP ACTUATOR INCLUDING ROTATABLE CAMS

Ingemar H. Lundquist, Oakland, Calif., assignor to Origo, Inc., Hayward, Calif.

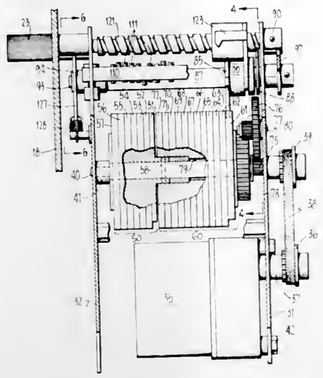
Filed Apr. 25, 1973, Ser. No. 354,242

Int. Cl. F16h *25/08*

U.S. Cl. 74—53 **5 Claims**

The intravenous feeding pump actuator of the present invention comprises a plurality of cam assemblies (preferably two) rotating on a common shaft, one pinned, or otherwise affixed to the shaft and the other assembly mounted on a quill shaft encompassing the common shaft; the cams being provided with a variable number of cam lobes, the height of the lobe preferably being the same on each cam, but the cams having a varying number of lobes (preferably running from "1" to "19"); a follower positionable along said cam assembly

so as to be operated by the rotation of a selected one of said cams; means for adjustably limiting the backstroke of the cam follower; means for operating an intravenous feeding pump, or similar device, from the rocking of the cam follower; and a



drive means including an electric motor and a gear reducer for driving the drive shaft at one speed (preferably 10 r.p.m.) and a gear assembly for driving the quill shaft and its cam assembly at a much lesser speed (preferably one-half of one revolution per minute) or a speed reduction of one to 20.

3,798,983

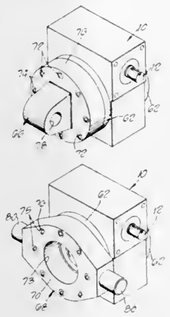
ADAPTABLE GEAR HOUSING FOR LINEAR ACTUATOR CONSTRUCTION

William F. Smith, 2295 Lorain Rd., San Marino, Calif.

Filed May 15, 1972, Ser. No. 253,551

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **1 Claim**



A universal worm gear box capable of multiple selection assembly and gear ratios from a small number of components, wherein there is a hollow worm-rotated hub to drivingly receive a screw shaft in selective position and motion relationship to the hollow hub and a screw follower nut, and means for selectively attaching various anchoring or connecting linkages in different combinations and in different indexed positions of rotation about the longitudinal axis of the hollow hub.

3,798,984

ROTARY CLOTHES HOISTS

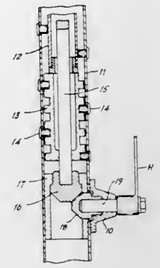
Joseph Ernest McMinn, Alfred Cove, Australia, assignor to Joyce Bros. (W.A.) Pty. Limited, O'Connor, Australia

Filed Aug. 22, 1972, Ser. No. 282,842

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **4 Claims**

The invention relates to a rotary clothes hoist wherein a clothes receiving head comprising a series of radial arms is carried on the upper end of an inner standard rotatably and slidably mounted in the upper end of a main vertical standard



and coupled to elevating means, said elevating means being substantially housed within the main standard.

3,798,985

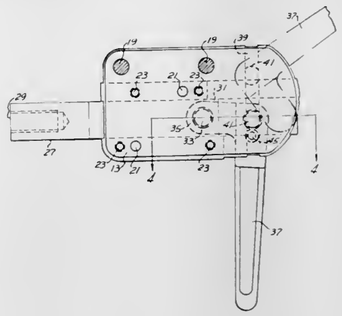
CAM PIN PLUNGER CLAMP

Leland F. Blatt, 821 Lakeshore Dr., Grosse Pointe Woods, Mich.

Filed Aug. 28, 1972, Ser. No. 284,409

Int. Cl. F16h *21/44*

U.S. Cl. 74—102 **8 Claims**



A cam pin plunger clamp has a body mountable on a support having a first longitudinal bore of a polygonal cross section and a second intersecting bore defining internal handle guide walls. Opposed cam guide slots are formed in said walls and are adapted to guidably receive the ends of a cam pin projected through the handle. The handle is nested within the body and at one end is pivotally connected to the plunger whereby, with pivotal movements of the handle with respect to the body, the plunger is projected and alternately retracted therein.

3,798,986

PRE-SELECTOR GEAR SHIFT FOR BICYCLE

Marion A. Clark, 546 W. Pleasant, Tulare, Calif.

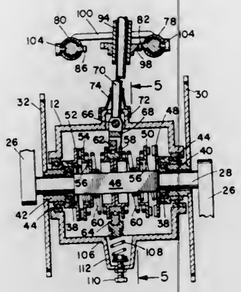
Filed Feb. 26, 1973, Ser. No. 335,882

Int. Cl. F16h *11/04*

U.S. Cl. 74—217 B **9 Claims**

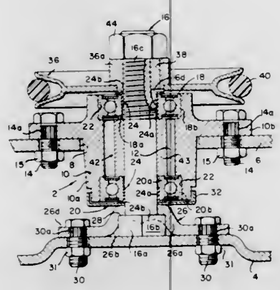
A pre-selector gear shift for a bicycle, utilizing dual pedal driven sprockets coupled by chains to dual derailleur type gear units at the rear wheel. In the pedal supporting hub is a clutch mechanisms, with an actuating lever for coupling either sprocket selectively to the pedals, so that only one derailleur

unit is driven at a time. The actuating lever also operates gear shift means with cable connections to the derailleur units, allowing the non-operating unit to be shifted to a pre-selected



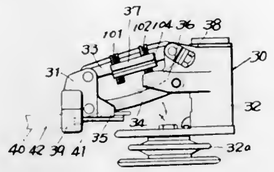
drive ratio while the other unit is in drive operation. A simple positive motion of the lever then engages the pre-selected drive coupling.

3,798,987
SPINDLE ASSEMBLY
David D. Hurd, Springfield, and Robert B. Mead, Wilmington, both of Ohio, assignors to Boise Cascade Corporation, Boise, Idaho
Filed Oct. 6, 1972, Ser. No. 295,519
Int. Cl. F16h *55/36*
U.S. Cl. 74—230.01 R **7 Claims**



A spindle assembly is disclosed for rotatably connecting a mower blade with a lawn mower housing. The spindle assembly includes a casing containing a through bore, a standard hex head bolt journalled within the casing, and a blade adapter member having a non-circular recess for non-rotatably engaging the hex head of the bolt. The spindle assembly also includes a drive pulley non-rotatably connected with the opposite end of the bolt, spacer means between the adapter and pulley, and a nut screw threaded to the bolt to displace the drive pulley and adapter inwardly into engagement with opposite ends of the spacer means, thereby to connect as an integral unit the spacer means, bolt, adapter and drive pulley. In a first embodiment of the invention, the pulley means includes a single blade sheave keyed to the bolt member. In a second embodiment of the invention, the pulley means includes a pair of blade sheaves keyed to the bolt and separated by a spacer sleeve to increase the torque transmitting capacity of the spindle assembly.

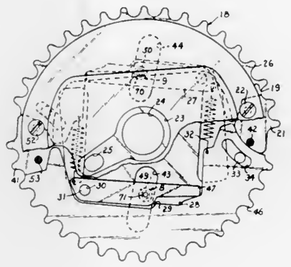
3,798,988
ANTI-BOLT ROTATION MECHANISM
Masashi Nagano, Sakai, Japan
Division of Ser. No. 252,424, May 11, 1972. This application June 11, 1973, Ser. No. 369,072
Claims priority, application Japan, May 12, 1971, 46-31845
Int. Cl. F16h *7/18, 11/04*
U.S. Cl. 74—240 **3 Claims**



The present invention provides a mechanism for preventing the forced rotation of adjusting bolt means adapted to adjust the distance between two members, the moving range within which one of said members is permitted to move toward the other, and also the position where said one of the members is to stop such movement.

Said mechanism comprises a plate member made of synthetic resin material and provided with perforated holes each having a diameter which is substantially smaller than the major diameter of the adjusting bolt means but larger than the minor diameter thereof, said plate member being fixed unmovable to the adjusting bolt means by inserting the bolt means in said perforated holes.

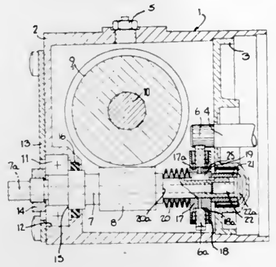
3,798,989
MULTIPLE SPEED DRIVE TRANSMISSION
Guilbert M. Hunt, Brecksville, Ohio, assignor to Tokheim Corporation, Fort Wayne, Ind.
Filed July 10, 1972, Ser. No. 270,083
Int. Cl. F16h *55/30*
U.S. Cl. 74—244 **17 Claims**



This invention relates to a transmission mechanism, for use for example on a bicycle, capable of varying the effective diameter of either the driver or driven member of the transmission, thereby altering the drive ratio involved. A manually settable ratio selecting mechanism actuates an interposer which forces radially outward a plurality of segments, thereby increasing the effective diameter, or releases the segments for retraction to a lesser effective diameter.

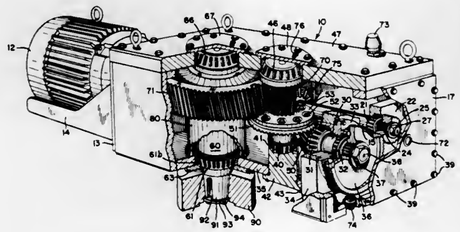
A yieldable slack storing device maintains a fixed tension on a flexible drive means connecting the members of the transmission, thus compensating for the changing diameter of the transmission member.

3,798,990
MOTOR DRIVE
Wolfram Knappe, Kitzingen, and Adolf Lindner, Gerbrunn, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Oct. 26, 1972, Ser. No. 301,160
Claims priority, application Germany, Aug. 25, 1972, 2241794
Int. Cl. F16h *57/00, 1/16*
U.S. Cl. 74—411 **5 Claims**



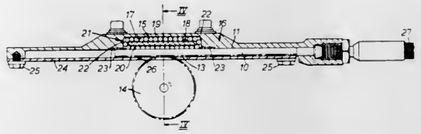
A motor drive includes a gear box having front and back portions and a countershaft journaled inside of the box for transmitting rotative power from a rotative input shaft to a rotative output shaft. The drive from the input shaft to the countershaft is via a slip clutch requiring manual adjustment and located near the rear portion where it is relatively inaccessible without first removing various parts. The front end of the countershaft projects through the front portion of the box where it is accessible, and to give access to the slip clutch to permit its adjustment, this shaft is formed with a bore or passageway so that a long tool can be passed through it to the slip clutch to adjust the latter.

3,798,991
INTERMEDIATE RIGHT ANGLE SPEED REDUCER
Donald L. Kime, Dayton, and Ronald G. Stogdill, Trotwood, both of Ohio, assignors to Chemineer, Inc., Dayton, Ohio
Filed Dec. 18, 1972, Ser. No. 315,922
Int. Cl. F16h *1/20*
U.S. Cl. 74—417 **9 Claims**



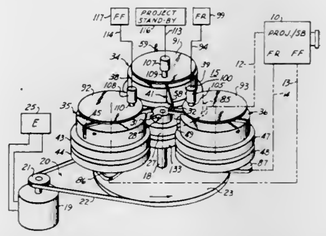
A right angle speed reducer incorporates speed change gears in a first speed reduction stage, a third speed reduction stage for driving the output shaft, intermediate right angle spiral bevel reduction gearing interconnecting the first and third reduction stages, all tapered roller bearings, splash lubrication of all high speed bearings, and a dry well output for the lower output shaft bearing.

3,798,992
RACK AND PINION DRIVES
Anthony Ian Wilson, Leigh-on-Sea, England, assignor to Teleflex Limited, Essex Basildon, England
Filed Feb. 8, 1973, Ser. No. 278,924
Int. Cl. F16h *1/04, 55/06*
U.S. Cl. 74—422 **14 Claims**



A rack and pinion device has an anti-friction bearing comprising a series of bearing balls to support the rack in lateral thrust.

3,798,993
CONTROL MECHANISMS
Ashok B. Nayak, El Monte, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Dec. 29, 1972, Ser. No. 319,576
Int. Cl. F16h *55/04, 57/00*
U.S. Cl. 74—435 **21 Claims**

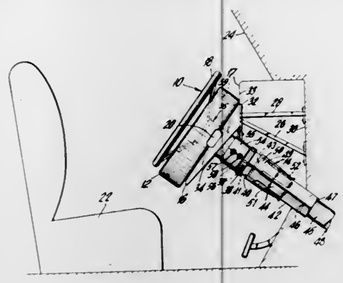


Apparatus for selectively transmitting mechanical power have a first gear wheel and a second gear wheel. The second gear wheel has a tooth-free portion and is mounted adjacent the first gear wheel for meshing engagement. An actuable lever is mounted on the second gear wheel for selectively bringing the second gear wheel into meshing engagement with the first gear wheel. Extensions of this concept involving further gear wheels with tooth-free portions and sensing and control equipment employing this concept are also disclosed.

3,798,994
APPARATUS FOR PROTECTING THE DRIVER OF A VEHICLE
Jesse R. Hollins, 1 Chester Dr., Great Neck, N.Y.
Filed Nov. 1, 1971, Ser. No. 194,662
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **9 Claims**

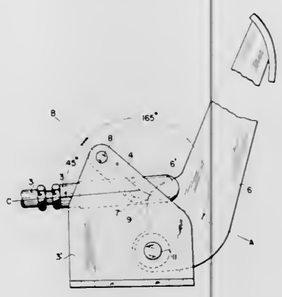
Apparatus for protecting a driver of a vehicle. The apparatus includes a steering wheel, a padded cushion positioned between the steering wheel and an instrument panel of the vehicle, and means for enabling the steering wheel to move towards the cushion so that the steering wheel sinks into the cushion when the body of the driver is thrust against the

steering wheel, or when more than normal pressure is applied to the steering wheel. The cushion will then serve to brace the



body of the driver and protect him from injury, while also protecting the steering wheel and mechanism from being damaged.

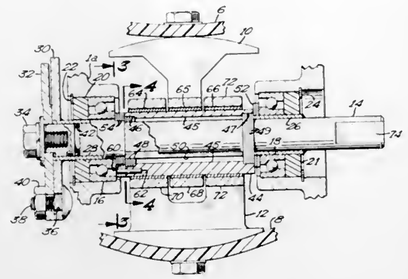
3,798,995
BRAKE OPERATING LEVER SYSTEM
Hans O. Schroter, Robert Koch Strasse 18, 8 Munich 22, Germany
Filed Nov. 9, 1972, Ser. No. 304,974
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **6 Claims**



A brake system for a vehicle is provided with a mechanical hydraulic operator including a variable ratio operating lever wherein a rod which displaces a piston of a master cylinder of the hydraulic brake system is pivotally connected to a pivotally mounted control lever. A pivotally mounted operating lever has an external cam surface which engages a roll at the pivotal connection of said rod and control lever to transmit an operating force to the rod. The distance between the pivotal mount and pivotal connection of the control lever is substantially equal to the maximum displacement of the rod in actuating the master cylinder of the brake system. Particular angular relationships between the direction of operating force acting on the control lever and the piston rod, the piston rod and the control lever are provided in order to produce a predetermined variable ratio as the operating lever moves in the braking direction.

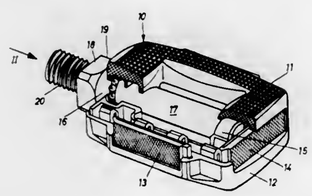
3,798,996
ADJUSTABLE ECCENTRIC CRANKSHAFT
John D. Kirschmann, 323 Airport Rd., Bismarck, N. Dak.
Filed Mar. 23, 1973, Ser. No. 344,335
Int. Cl. F16c *3/28*
U.S. Cl. 74—571 M **10 Claims**

A crankshaft in a reciprocating machine has an outer crank sleeve rotatably mounted on two spaced apart eccentric collar assemblies affixed to the crankshaft which normally clamp the crank sleeve tightly in place. A threaded fastener extending through an accessible adjusting plate at one end of the crankshaft and normally holding the crankshaft assembly



tightly together may be loosened to release the collar assemblies and permit the rotational adjustment of the crank sleeve through coupling means joined to the adjusting plate, to provide a predetermined eccentric displacement with respect to the rotational axis of the crankshaft.

3,798,997
PEDAL FOR BICYCLES AND THE LIKE
Hubert Konzorr, Unna, Germany, assignor to Union, Sils van de Loo & Co., Frondeberg/Ruhr, Germany
Filed May 23, 1973, Ser. No. 363,193
Claims priority, application Germany, Feb. 21, 1973, 2308461
Int. Cl. B62m *3/08*
U.S. Cl. 74—594.4 **3 Claims**

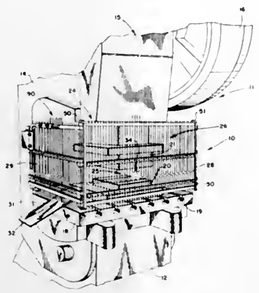


A pedal unit for bicycles and the like is constructed as a foot engaging part freely rotatably mounted on a shaft which extends beyond the foot engaging part and is threaded for engagement into a threaded bore in a crank arm. The threads on the pin run in both directions around the pin, so that the stem can be threaded into a right hand or a left hand threaded hole.

3,798,998
GUARD FOR MECHANICAL POWER PRESS
John J. Connors, Fredericktown, and Charles C. Smith, Lucas, both of Ohio, assignors to The Tappan Company, Mansfield, Ohio
Filed Apr. 27, 1972, Ser. No. 248,068
Int. Cl. F16p *3/00*
U.S. Cl. 74—612 **9 Claims**

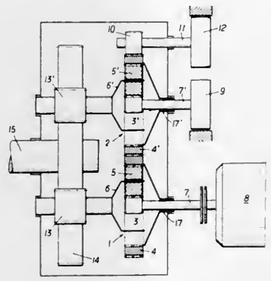
An adjustable barrier guard on a mechanical power press consisting of a three-panel cage for enclosing the sides and front of the point of operation of the machine. The side panels are hinged to the press and pivotally support the front panel with all swingable to fully open positions for set up purposes, being mechanically locked and electrically interlocked in the

operating position. Each panel is a rectangular frame supporting upper and lower rows of vertically disposed facing loops



being individually vertically adjustable and clamped to form a closed protective barrier or any aperture configuration between the rows.

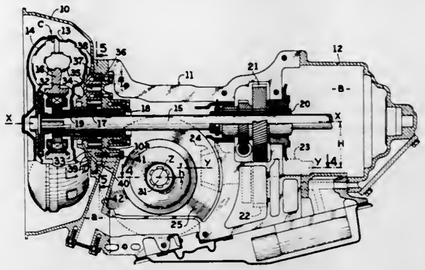
3,798,999
MULTI-SPEED TRANSMISSION
Felix Fritsch, Vienna, Austria, assignor to Cincinnati Gear Company, Cincinnatic, Ohio
Filed July 10, 1972, Ser. No. 270,381
Claims priority, application Austria, July 8, 1971, 5936/71
Int. Cl. F16h *37/06, 57/10*
U.S. Cl. 74—674 **6 Claims**



A multi-speed transmission comprises a plurality of planetary gear trains which are connected to each other and connected between an input shaft and an output shaft. All of said planetary gear trains are coupled to the input shaft. At least one of said planetary gear trains is adapted to be braked.

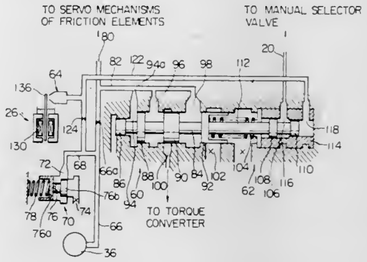
3,799,000
TRANSMISSION WITH GEARBOX OUTPUT SHAFT AND DIFFERENTIAL INPUT SHAFT IN DIFFERENT VERTICAL PLANES
Jean Piret, Bougival, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Boulogne-Billancourt, both of, France
Filed Feb. 1, 1972, Ser. No. 222,552
Claims priority, application France, Mar. 10, 1971, 71.08266
Int. Cl. F16h *37/08*
U.S. Cl. 74—694 **4 Claims**

Transmission device, in particular for an automobile vehicle, having a gearbox and a differential mechanism. The output shaft of the gearbox and a second shaft, driven by the output shaft and carrying the drive pinion of the differential crown wheel, are contained in two different vertical planes.



A specific arrangement is described in which the output shaft of the gearbox and the second shaft are contained in a plane making an angle of substantially 55° with the vertical.

3,799,001
CONTROL SYSTEM FOR AN AUTOMOTIVE AUTOMATIC POWER TRANSMISSION
Takeshi Takagi; Wataru Ishimaru, and Toshiyuki Miyauchi, all of Yokohoma, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Dec. 7, 1972, Ser. No. 312,914
Claims priority, application Japan, Dec. 8, 1971, 46-99327
Int. Cl. B60k *21/00;* **F16h** *47/06*
U.S. Cl. 74—731 **4 Claims**

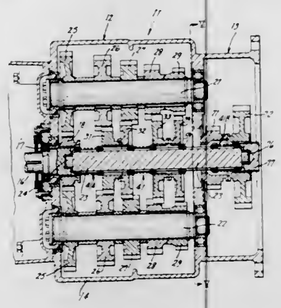


A control system for controlling line pressure in a hydraulic control circuit of an automotive automatic power transmission driven from an engine through a hydrodynamic torque converter in which a line pressure regulator valve cooperates with an amplifier valve adapted to be controlled by a pressure signal produced by a fluid jet nozzle and an electronic actuating device associated therewith. The electronic actuating device is responsive to a voltage signal indicative of an output torque of the engine and a torque of the stator of the hydrodynamic torque converter for varying the pressure signal in dependence thereon so that the line pressure is regulated by parameters of the output torque of the engine and the torque of the stator of the hydrodynamic torque converter.

3,799,002
TRANSMISSION WITH RESILIENTLY LOADED MAIN SHAFT GEARS
Elmer A. Richards, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 60,269, Aug. 3, 1970, abandoned. This application July 31, 1972, Ser. No. 276,376
Int. Cl. F16h *3/02, 3/08;* **F16d** *21/02*
U.S. Cl. 74—745 **28 Claims**

A shiftable change speed gear system, particularly a transmission, having resilient shifting mechanisms for simplying the

transmission structure and the shifting thereof. The transmission is preferably provided with multiple countershafts having countershaft gears thereon disposed in meshing engagement with main shaft gears encircling the transmission main shaft, said main shaft gears being supported on and solely by the countershaft gears. The main shaft gears are axially movable relative to the main shaft by conventional means for effecting shifting of the transmission. The main shaft gears cooperate with clutch rings which surround and are supported on and for rotation with the main shaft, the clutch rings also being axially movable relative to the main shaft and being resiliently urgea-



ble in a direction toward the respective main shaft gear with which same cooperates, whereby shifting of the main shaft gear toward its respective clutch ring causes resilient axial movement of the latter until synchronization is achieved to permit the clutch ring to move axially in response to said resilient urging and engage the main shaft gear. The transmission, in one modification thereof, is provided with a range section which also incorporates a shiftable main shaft gear therein, the main shaft of the transmission comprising a single shaft which extends continuously through both the main transmission section and the range section.

3,799,003

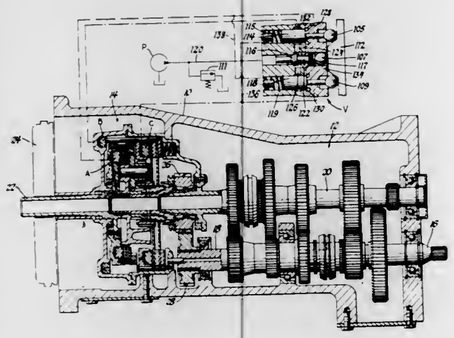
MULTI-RATIO TRANSMISSION AND CONTROLS THEREFOR

Jean Claude Van Dest, Westland, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Continuation of Ser. No. 147,572, May 27, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,848

Int. Cl. F16h *57/10, 5/36*

U.S. Cl. 74—740 **22 Claims**



A speed change transmission system for tractors and the like has an eight speed selective gear transmission preceded by a single planetary gear set. A selective coupling between the two enables the planetary gear to function either as a three forward speed range selector or as a forward-neutral-reverse shuttle transmission, depending upon which output member of the planetary is coupled to the input of the selective gear transmission. The drive paths through the planetary are selected by plate type friction elements which are controlled by a single member acting to operate valves that control the flow of the hydraulic pressure to the friction elements.

3,799,004

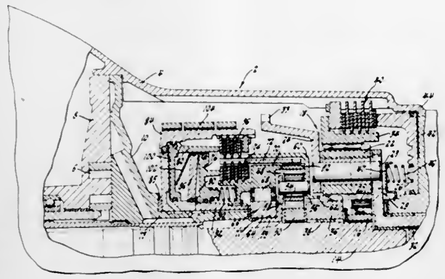
CHANGE SPEED POWER TRANSMISSION

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 26, 1972, Ser. No. 266,057

Int. Cl. F16h *57/10, 3/44*

U.S. Cl. 74—763 **4 Claims**



Change speed transmission having separate clutches selectively applied by hydraulically operated nested pistons disposed within a rotatable drum that can be braked to provide reaction for transmission planetary gearing. A one way brake engages to directly connect a reaction member of the gearing to the braked drum for low range operation. By applying a first one of the clutches there is a shift off of the one way brake to establish an intermediate range. Both clutches are applied as the drum is released for rotation in direct drive.

3,799,005

DRUM WINCH

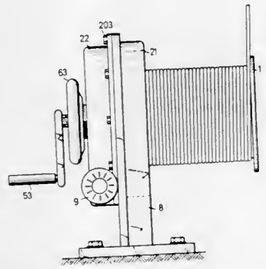
Georg Koehler, Almeidaweg 3, 813) Starnberg, Germany

Filed Dec. 22, 1972, Ser. No. 317,793

Claims priority, application Germany, June 16, 1972, 2229340

Int. Cl. F16h *5/52, 57/16;* **B66d** *1/30*

U.S. Cl. 74—812 **28 Claims**



The present drum winch is especially suitable for use on sailing vessels and comprises in its basic concept two pairs of planetary gear wheels which cooperate with a drive wheel, a disk, and a jack wheel whereby a large step-up ratio may be accomplished in one direction of rotation of the drum shaft. In

addition, a slipping or torque release clutch may be arranged operatively between the jack wheel and the disk and a braking action may be applied to the jack wheel by means of pawls and ratchet wheels in one rotational direction whereby a large step-up ratio is obtained in one rotational direction while in the opposite rotational direction a 1:1 transmission or a large reduction or step-down ratio is obtained. In further modification worm gear means may be provided which are connected to or coupled with the jack wheel when the gear is driven through the disk or which are connected to or coupled with the disk when the gear is driven through the jack wheel whereby an additional large step-down ratio is accomplished for a sensitive back and forth rotation of the winch.

3,799,006

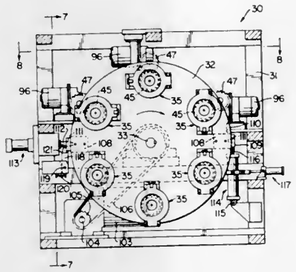
METHOD AND APPARATUS FOR WELDING BELLOWS CONSTRUCTIONS AND THE LIKE

Anthony T. Keller, Pequannock, N.J., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 17,172, March 6, 1970, Pat. No. 3,666,161. This application Mar. 20, 1972, Ser. No. 236,502

Int. Cl. B23b *29/32*

U.S. Cl. 74—815 **8 Claims**



A method for indexing an item from one station of apparatus to another station thereof, the method including the steps of rotating an indexible table relative to a frame in one rotational direction with the indexible table carrying the item, moving a movable bumper carried by the frame into the path of movement of an abutment carried by the indexible table so that the abutment will abut the bumper and thereby stop movement of the indexible table in that one direction when the indexible table has been rotated from one rotational position thereof to another rotational position thereof, and, thereafter, accurately positioning the indexible table with a positioning device carried by the frame and cooperating with a positioning device of the indexible table to position and hold the indexible table in its new rotational position, the positioning devices being separate from the abutment and bumper.

3,799,007

METHOD AND APPARATUS FOR WELDING BELLOWS CONSTRUCTIONS AND THE LIKE

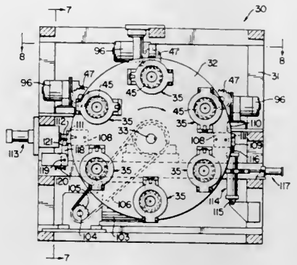
Anthony T. Keller, Pequannock, N.J., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 17,172, March 6, 1970, Pat. No. 3,666,161. This application Mar. 20, 1972, Ser. No. 236,504

Int. Cl. B23b *29/32*

U.S. Cl. 74—815 **10 Claims**

An apparatus for indexing an item from one station of the apparatus to another station thereof, the apparatus having a frame means rotatably carrying an indexible member that carries the item. The indexible member is rotated relative to the frame in one rotational direction and a movable bumper carried by the frame is moved into the path of movement of an abutment of the indexible member so that the abutment will abut the bumper and thereby stop movement of the indexible member in that one direction. A positioning device is carried by the frame and cooperates with a positioning device of the indexible member to position and hold the indexible member



in its new rotational position after the rotational movement of the indexible member has been terminated by the bumper, the positioning devices being separate from the abutment and bumper.

3,799,008

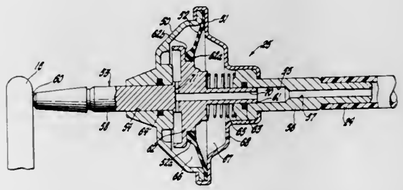
THROTTLE CONTROLLED BY TRANSMISSION RATIO

Michael J. Danek, Laingsburg, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 14, 1972, Ser. No. 262,616

Int. Cl. B60k *21/00*

U.S. Cl. 74—860 **5 Claims**



A throttle control device has a diaphragm actuator controlled by induction vacuum through a solenoid valve to provide increased idle speed in high drive ratio or in reverse and to provide low idle speed in the lower drive ratio with throttle closing at a controlled rate.

3,799,009

APPARATUS FOR THREADING AND UNTHREADING VERTICAL LENGTHS OF DRILL PIPE

William Guier, 3100 E. 71st. St., Tulsa, Okla.

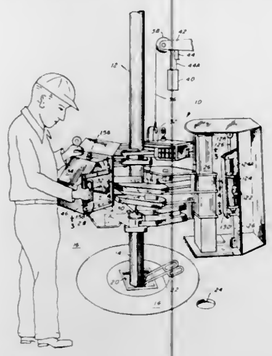
Filed Feb. 10, 1972, Ser. No. 225,191

Int. Cl. B25b *17/00, 13/50*

U.S. Cl. 81—57.16 **11 Claims**

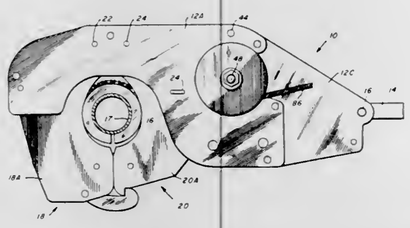
An apparatus for threading together two vertical lengths of drill pipe, one having a female thread and the other having a male thread at the ends to be threaded, including a backup tong removably positioned around the lower drill pipe having means of grasping and holding the lower drill pipe, s spinner removably positioned around the upper drill piping including means of rotating the upper drill pipe to threadably engage it

with the lower drill pipe, and a lead tong removably positioned around the upper drill pipe including means of grasping the



upper drill pipe and rotating it relative to the lower drill pipe to securely threadably set the upper to the lower drill pipe.

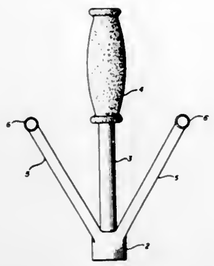
3,799,010
APPARATUS FOR ROTATING A MEMBER
William Guier, 3100 E. 71st. St., Tulsa, Okla.
Filed Oct. 15, 1971, Ser. No. 189,689
Int. Cl. B25b *17/00, 13/50*
U.S. Cl. 81—57.17 **11 Claims**



An apparatus for rotating a member, such as oil well tubing, casing or a drill string, including first and second arms movable between opened positions to receive the member to be rotated and closed positions encompassing the member to be rotated, chain sprockets carried by the arms, an endless chain carried on the sprockets and engagable with the member to be rotated when the arms are in closed position, means of tightening the chain when the arms are in closed position to firmly contact the chain with the surface of a member to be rotated, and means of moving the chain over the sprockets to rotate the member. In addition, the invention discloses improved means of latching the arms in closed position, improved means of moving one of the arms into closed position and latching the arms in closed position utilizing a single actuating member, and improved means of moving the other arm into and out of closed position and tightening the chain utilizing a single actuating member.

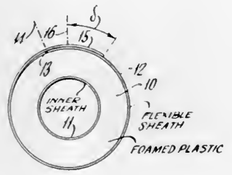
3,799,011
LUG WRENCH
George B. Davis, Jr., 7512 Marbury Rd., Bethesda, Md.
Filed Aug. 31, 1972, Ser. No. 285,312
Int. Cl. B25b *13/06, 19/00*
U.S. Cl. 81—121 R **4 Claims**

This invention relates generally to lug wrenches that are commonly used to remove the nuts or lug bolts that secure an automobile wheel to the break drum and more particularly to a lug wrench of the impact type that will enable the user to



easily remove in seconds the most rusted and impacted on nut and one which otherwise would be impossible to remove using conventional automobile supplied apparatus.

3,799,012
CONDUIT-SLITTING MACHINE
Theodore E. Andrews, Kutztown, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.
Filed Aug. 22, 1972, Ser. No. 282,653
Int. Cl. B26b *7/06*
U.S. Cl. 83—9 **19 Claims**

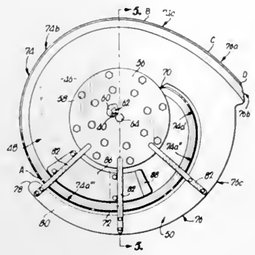


The invention contemplates a method and apparatus for longitudinally slicing tubular workpieces into separate parts which, for the case of cylindrical tubing, conveniently become semi-cylindrical halves. In specific application to flexibly sheathed, foamed-plastic tubing, the slicing action is complete at one local longitudinal alignment along the workpiece wall; but at the diametrically opposite local longitudinal alignment, the slicing action is radially outward to an extent short of severing the sheath, so that the sheath may hingedly connect the otherwise severed semi-cylindrical halves. As disclosed, the invention is applicable to continuous operation on successive lengths of tubing, in a conveyor-fed environment.

3,799,013
BLOCK SLICER AND METHOD
Marshall Long, Leawood, Kans.; Lewis F. Alley, Kansas City, Mo., and Jack M. Miller, Prairie Village, Kans., assignors to Marlen Research Corporation, Overland Park, Kans.
Filed May 15, 1972, Ser. No. 252,986
Int. Cl. B23d *25/04;* **B26d** *1/56*
U.S. Cl. 83—56 **14 Claims**

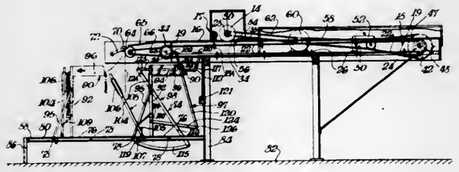
Solidly frozen meat blocks or the like are subjected to the action of a constantly rotating, convolute blade having outer edges along its convolutions that include discrete, helical cutting stretches and lengths for severing the blocks by successive slices into generally rectangular slabs of substantially uniform thickness suitable for further subdivision into elongated strips and thence into cubes usable, for example, in stews. By virtue of the helical nature of the blade, the machine is self-feeding, and provision is made for a dwell time during

which uniform block advancement continues but slicing is interrupted. This is accomplished by use of an intermediate stretch on the blade edge which is concentric to its axis of rotation such that the block is always under the control of the blade because each succeeding slice is therefore commenced and sufficiently deepened prior to completion of the preceding slice. Each slicing action starts rapidly and the rate of slic-



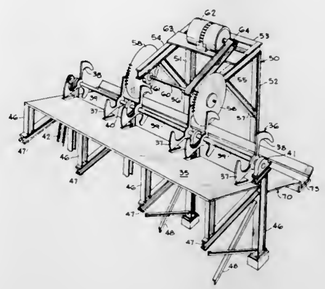
ing is progressively decreased. Moreover, the cut may start at one corner of the block and be gradually widened across the top and along one side of the block before reaching a full length cut diagonally across the block, the forces also being diagonal toward a lower, well-supported corner of the tilted block. A primary function of a trailing convolution of the blade is also block control in addition to its control of the partially cut-away slabs.

3,799,014
CENTERING CUTTING APPARATUS
Michael Page, 2303 Hardee Rd., Kinston, N.C.
Filed Sept. 29, 1972, Ser. No. 293,488
Int. Cl. B26d *3/12;* **B65h** *35/02*
U.S. Cl. 83—83 **22 Claims**



An operator impales the center of the central design of an elongated strip of material over a row of pins protruding upwardly from an endless belt through a slot in an elongated table. Movement of the conveyor pins feeds the strip to a pair of circular cutters which straddle their path, and evenly trims the strip to a predetermined width upon which the impaled design is centered. The conveyor is operated at a relatively slow speed, such as about one foot per minute, to give the operator enough time to impale several successive strips on the pins, which are spaced about a foot apart, as they proceed toward the cutters. The trimmed strip is raised off the pins and discharged through a pair of weakly opposed feed rollers onto a reciprocating stacker coordinated with the pins, which receives and grasps each strip as it is discharged and draped over it.

3,799,015
LOG PROCESSING MACHINE
Thomas P. Bush, Jr., Red Oak Rd., Birmingham, Ala., and Samuel Edward Grant, 7254 Sandy Bluff Dr., Jacksonville, Fla.
Filed Sept. 2, 1971, Ser. No. 177,257
Int. Cl. B27b *5/02, 31/08*
U.S. Cl. 83—84 **6 Claims**

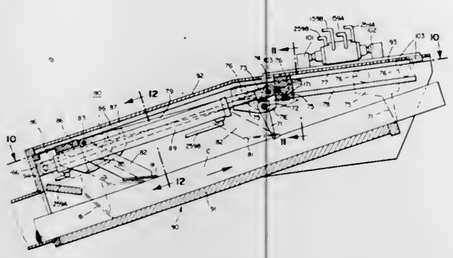


This invention relates to a log handling system for use in processing logs to be used in the paper pulp industry and in saw mill operations. More particularly, this invention includes a series of operable cutting means for cutting a log into a plurality of predetermined lengths. A log feeding means is operatively associated with the log cutting means for moving a log past the cutting means to effect the cutting operations. The log feeding means includes a ramp portion detailed for feeding logs by gravity to the log feeding means. The ramp portion includes a selectively movable section detailed for movement between a ramp log feeding position and an elevated position which will allow a log to be dropped onto a first conveying means for conveying selected logs away from the plurality of cutting means. The first conveyor means includes an operative stop means for stopping the selected logs at a predetermined location along the conveying route. A single operable cutting means is operatively associated with the first conveying means and located at a predetermined location away from the operative stop means and operable for cutting a log located on the first conveying means into a predetermined length for use in a saw mill operation. A pair of log ejecting means are operatively associated with the first conveying means for ejecting a log therefrom in selected opposite transverse directions. A second conveying means is supported on the system at a position below and adjacent the feeding means and has a plurality of cutting means for conveying the plurality of cut lengths of log away from the log handling system. Also, operatively associated with the plurality of cutting means is a collecting ramp for collecting the sawdust created in the cutting operation. The collecting ramp includes a third conveying means for conveying the collected sawdust away from the log handling system. The second conveying means used for moving the plurality of cut logs includes an adjustable end portion selectively movable in a vertical plane for depositing the length of cut logs on a collecting trolley at a plurality of vertically spaced positions.

3,799,016
MOBILE APPARATUS FOR SALVAGING UNDERGROUND AND OVERHEAD ELECTRICAL CABLE
Arthur K. McVaugh, Box 42, Vernfield, Pa.
Filed Mar. 30, 1973, Ser. No. 346,357
Int. Cl. B26d *1/56*
U.S. Cl. 83—176 **15 Claims**

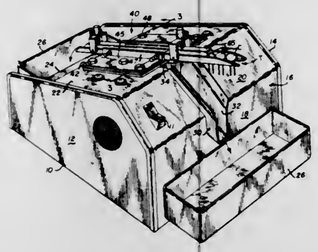
Apparatus for salvaging underground and overhead electrical cable includes a mobile platform, such as a motor truck, on which a cable-receiving tubular guide assembly is adjustably

mounted for guiding cable from a cable-pulling toothed sheave supported at the rearward end of the guide assembly to a travelling guillotine type of cable cutter supported at the forward end. The cable cutter is synchronized to travel with the cable and to cut the cable into short lengths. After each cut of the cable, the cutter is synchronized to travel with the cable



and to cut the cable into short lengths. After each cut of the cable, the cutter is retracted to its start position. Additionally, a pusher may be provided to push into the cutter the end portions of cable which have passed forwardly beyond the cable-pulling sheave and which, except for the pusher, may be left in the tubular guide assembly.

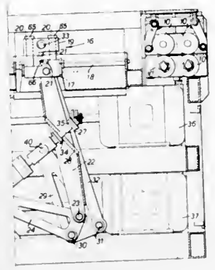
3,799,017
COMPONENT LEAD CUTTER
Dewey D. Halligan, 6251 Empress Ct., San Jose, Calif.
Filed Sept. 14, 1972, Ser. No. 288,929
Int. Cl. B26d *7/06*
U.S. Cl. 83—167 **8 Claims**



An electrical circuit component lead cutter including a slotted track for receiving the downwardly extending component wire leads and conveying them into operative engagement with a shearing mechanism which trims the leads to a selected length. The track is inclined at an angle relative to the horizontal so that the components are gravity fed along the track and between a pair of shearing edges which require no precise registration to effect their trimming function.

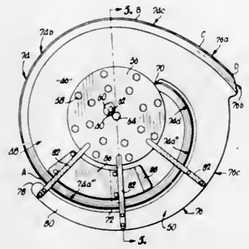
3,799,018
APPARATUS FOR CUTTING LENGTHS OFF A CONTINUOUSLY MOVING STRIP OF METAL
Michael Anthony Mumford, Ailsworth, England, assignor to Spalding Engineering Company Limited, Lincolnshire, England
Filed Apr. 18, 1972, Ser. No. 245,089
Int. Cl. B23d *25/10*
U.S. Cl. 83—298 **8 Claims**

Guillotine apparatus of the flying shear type has its drive means for moving a rod like workpiece through the machine driven synchronously with operation of the flying shear means



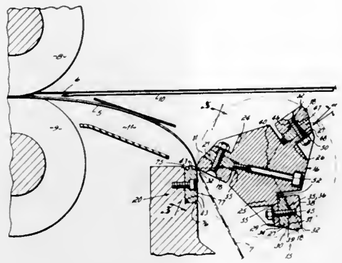
by hydraulic control means from a common source of hydraulic pressure.

3,799,019
BLOCK SLICER AND METHOD
Marshall Long, 9201 Bond St., Leawood, Kans.; Lewis F. Alley, Kansas City, Mo., and Jack M. Miller, Prairie Village, Kans.
Division of Ser. No. 252,986, May 15, 1972. This application July 19, 1973, Ser. No. 380,543
Int. Cl. B23d *25/04*; **B26d** *1/56*
U.S. Cl. 83—342 **14 Claims**



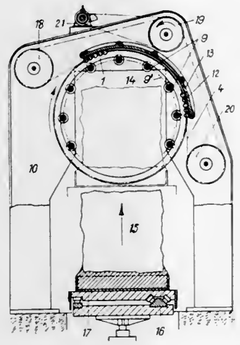
Solidly frozen meat blocks or the like are subjected to the action of a constantly rotating, convolute blade having outer edges along its convolutions that include discrete, helical cutting stretches and lengths for severing the blocks by successive slices into generally rectangular slabs of substantially uniform thickness suitable for further subdivision into elongated strips and thence into cubes usable, for example, in stews. By virtue of the helical nature of the blade, the machine is self-feeding, and provision is made for a dwell time during which uniform block advancement continues but slicing is interrupted. This is accomplished by use of an intermediate stretch on the blade edge which is concentric to its axis of rotation such that the block is always under the control of the blade because each succeeding slice is therefore commenced and sufficiently deepened prior to completion of the preceding slice. Each slicing action starts rapidly and the rate of slicing is progressively decreased. Moreover, the cut may start at one corner of the block and be gradually widened across the top and along one side of the block before reaching a full length cut diagonally across the block, the forces also being diagonal toward a lower, well-supported corner of the tilted block. A primary function of a trailing convolution of the blade is also block control in addition to its control of the partially cut-away slabs.

3,799,020
SCRAP CHOPPER
Karl H. Hoelmer, Cincinnati, Ohio, assignor to the Tool Steel Gear & Pinion Co., Cincinnati, Ohio
Filed May 22, 1972, Ser. No. 255,693
Int. Cl. B23d *25/02, 25/14*
U.S. Cl. 83—349 **12 Claims**



A rotary scrap chopper for cutting scrap edge trimming from flat sheet metal strips. The chopper comprises a pair of knife carrying rotary arbors cooperable with a stationary knife to effect cutting of the edge trimmings into short pieces of scrap metal. The arbor knives are generally rectangular in cross section and have four cutting edges located on two cylindrical faces generated about a surface of revolution, the axis of which crosses the longitudinal axis of the knife. To facilitate a progressive cut, the knives are angulated relative to the axis of the arbor and the stationary knife. They are also supported on nonradial seats of the arbor so as to provide scrap clearance immediately behind the cutting edge. The stationary knife has a cutting edge defined by two surfaces which intersect at an included angle of approximately 105°.

3,799,021
CIRCULAR SAWS
Georg Hammerschlag, Gizichtslaan 82, Bilthoven, Netherlands
Filed Apr. 17, 1972, Ser. No. 244,357
Claims priority, application Germany, Apr. 26, 1971, 2121200
Int. Cl. B27b *5/14*
U.S. Cl. 83—491 **2 Claims**



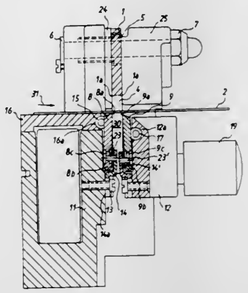
A circular sawing machine having one or multiple circular sawing blades driven at their outside periphery by one or more single or multiple strand chains of the type having inside and outside links connected by pins, the saw blades having for this purpose teeth, the teeth which go in between the inside links of the chain doing this with little clearance, and the teeth going in between the outside links of the chain carrying cutting elements wider than the saw blade, but still capable of passing with ample clearance between the outside links.

The saw blade or blades are not supported by a shaft, but shaped annular or flat. The annular saw blades can be supported by circumferentially grooved rollers located at the inside periphery of the saw blades with the blades fitting in the grooves and in addition indirectly by rollers on extensions of the chain pins rolling on a hollow cylindrical member attached to the frame of the machine just outside of the periphery of the saw blades.

The latter rollers can roll in grooves in these hollow cylindrical members, thus not only supporting the saw blades radially, but also axially.

If the chain and cylindrical hollow member enclose sufficiently more than 180° of the circumference of the saw blades, or if there are two or more chains on sufficiently opposed sides of the saw blades, the rollers on the internal periphery of the annular saw blades can be omitted and the saw blades can be flat circular plates instead of annular plates.

3,799,022
APPARATUS FOR SEVERING PAPER SHEETS OR THE LIKE
Erich Nagel, Anzing; Guenter Engelage, Unterhaching; Lothar Himmelsbach, Munich, and Gerhard Frankiewicz, Sauerlach, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed July 25, 1972, Ser. No. 275,076
Claims priority, application Germany, July 31, 1971, 2138420
Int. Cl. B26d *5/08*
U.S. Cl. 83—583 **16 Claims**



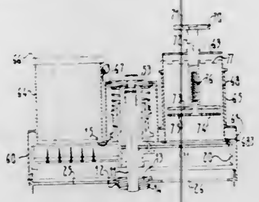
A severing apparatus for stepwise advancing paper webs or the like has a mobile knife which is reciprocable into and out of the gap between two stationary counterknives. The counterknives are pivotable in their support and are biased against the mobile knife by means of hoses consisting of elastomeric material. Two projections of the mobile knife extend into the gap between and are in permanent contact with the counterknives. The mobile knife has two V-shaped cutting edges which cooperate with straight cutting edges of the counterknives to sever the web from the marginal portions toward the center and to separate from the web a narrow strip which descends into the gap between the counterknives. One of the counterknives is detachable to allow for conversion of the severing apparatus into a means for making simple cuts without removal of material from the web. The bias of at least one of the hoses is adjustable and the plane of at least one counterknife is inclined relative to the plane of the mobile knife to permit for gravitational descent of removed strips through the gap between the counterknives.

3,799,023

ROTARY APPARATUS FOR CUTTING VEGETABLES

Francois C. Brignard, 1 bis rue du Marechal Joffre, Nice, France, and Jean E. LeFranc, deceased, "La Montagne", late of Beaune, France (by Suzanne M. Darmigny)

Filed June 12, 1972, Ser. No. 263,757
Claims priority, application France, June 11, 1971, 71.22127; July 13, 1971, 71.26605
Int. Cl. B26d *1/12*
U.S. Cl. 83—663 8 Claims



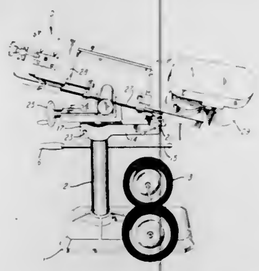
Rotary apparatus for cutting vegetables has one or more removable rotary units with two opposite cutting arrangements which units are adapted to rotate in either direction, and is provided with a device to adjust the thickness of the cut. The apparatus has a cover which is operatively associated with a fixed hopper and a rotary hopper, one of the hoppers being used according to the position of the cover.

3,799,024

BAND SAW

Carl J. Alexander, Moorepark, Mich., assignor to Wells Manufacturing Corporation, Three Rivers, Mich.

Filed Nov. 2, 1972, Ser. No. 303,286
Int. Cl. B23d *55/02*; B27b *13/04*; B23d *55/04*
U.S. Cl. 83—799 4 Claims



A motor-driven saw having an elongated frame support member with a clamp means clamped to a mounting column which has a hollow, open upper end provided with a longitudinal slit in the side wall of said column. The frame support member is also provided with an upwardly projecting trunnion, and a frame support platform is rotatably mounted thereon. Frame means carrying a band saw blade and a motor arranged to drive the band saw blade is pivotally mounted on the frame support platform. The hollow, open upper end of the mounting column is adapted to receive a work support means which is held in place by the clamp means of said elongated frame support member.

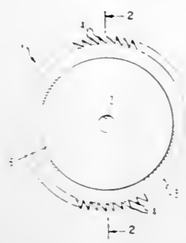
3,799,025

VIBRATION-DAMPED ROTATABLE CUTTING DISK

Kenneth Tsunoda, Closter, N.J., assignor to Paul W. Garbo, Freeport, N.Y., a part interest

Filed July 23, 1971, Ser. No. 165,498
Int. Cl. B27b *33/08*; B23d *61/02*
U.S. Cl. 83—835 6 Claims

The noise generated by a rotating disk-like member when it contacts a fixed or movable element is appreciably diminished by coating one surface of the disk-like member with a viscoelastic material and adhering a rigid sheet to the



viscoelastic material. Rotary saw blades and gear wheels illustrate disks that are vibration-damped pursuant to the invention.

3,799,026

MACHINE TOOL CONSTRUCTION

Howard I. Selch, Canal Fulton, Ohio, assignor to James I. Selch, Fulton, Ohio; Joseph J. Mullane, Richardson, Tex. and Thomas D. Copeland, Jr., Garland, Tex., a part interest to each

Filed Apr. 20, 1971, Ser. No. 135,706
Int. Cl. F16b *37/10*
U.S. Cl. 85—33 2 Claims

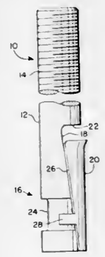
An arbor arrangement for machine tools wherein the cutting tool is located between two bearing supports and may be replaced without disconnecting the shaft from either bearing. The cutter is made in two mating parts and assembled on the arbor shaft by split stop nuts and/or split stop spacers.

3,799,027

ANCHOR BOLT

Lawrence Henry Galloway, Barrington, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 3, 1972, Ser. No. 240,632
Int. Cl. F16b *13/04*
U.S. Cl. 85—79 2 Claims



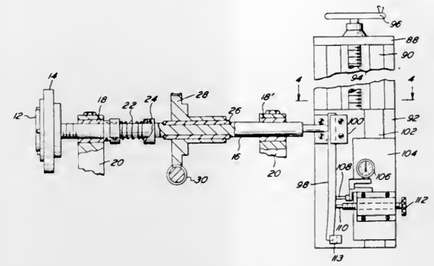
An expansion bolt assembly including an elongated shank with one end of the shank having an expansion portion. The expansion portion of the shank comprises a wedge member which is mounted within a longitudinal inclined recess in the shank and secured in a preassembled fashion on the shank by arm members integrally mounted on the wedge and adapted to snap into a second recess in the shank.

3,799,028

COPYING MACHINE

James C. Coverdale, Jr., Chadds Ford, Pa., assignor to Franklin Mint Corporation, Franklin Center, Pa.

Filed Jan. 17, 1973, Ser. No. 324,249
Int. Cl. B23c *1/18*
U.S. Cl. 90—13.7 10 Claims



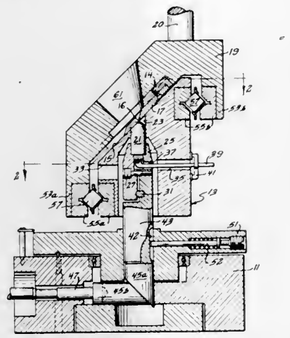
A master pattern and a die blank rotate in the same direction at the same speed. A follower traverses the master pattern and is on a common support with cutting means for cutting the die blank. The master pattern support shaft is movable in an axial direction to permit the die blank to be cut with a concave or convex dome effect.

3,799,029

PRECISION TRIMMER FOR AN ENCAPSULATED SPECIMEN

William R. Cole, Aurora; James W. Harrison, Markham; Bruno S. Kotula, Chicago; Theodore N. Tahmisian, Oak Lawn, and Jovo S. Martich, Hillside, all of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 19, 1972, Ser. No. 316,627
Int. Cl. B23d *1/08*
U.S. Cl. 90—38 R 6 Claims



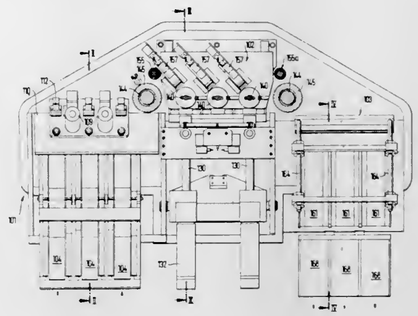
A specimen trimmer includes a carriage assembly which reciprocates a knife blade along a slanted table surface. The specimen is supported in a holder and precisely advanced by means of a micrometer screw towards the blade through an opening in the table surface. Periodically during the trimming operation, the specimen is precisely rotated with a goniometer to obtain a trapezoidal cross section of the trimmed portion of the specimen.

3,799,030

APPARATUS FOR PRODUCING GROOVES BY MEANS OF BROACHING TOOLS

Ludwig Schubert, Solingen-Ohligs, Germany, assignor to Oswald Forst GmbH, Solingen, Germany

Continuation-in-part of Ser. No. 839,304, July 7, 1969, abandoned. This application Feb. 9, 1972, Ser. No. 224,870
Claims priority, application Germany, July 5, 1968, 1752719
Int. Cl. B23d *41/06*
U.S. Cl. 90—73 5 Claims



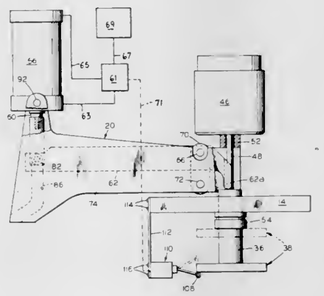
The invention concerns a vertical broaching machine in which several work blanks, such as rings, can be simultaneously provided with grooves at one or more broaching positions to which the work blanks, for example rings, are fed into the machine on a feeding device such as a slide onto a transporting device which moves the work blank or blanks to a broaching position where the grooves are formed by means of tools that move downwardly from the top, and after forming of the grooves the blanks are turned by an angle of 120° and are transported either to another broaching position for forming additional grooves or to a discharge device for completely broached blanks.

3,799,031

HOT STAMPING PRESS MACHINE

Norman P. Hallenbeck, Vernon, and Stephen F. Willard, Andover, both of Conn., assignors to N. P. Hallenbeck Company, Inc., Andover, Conn.

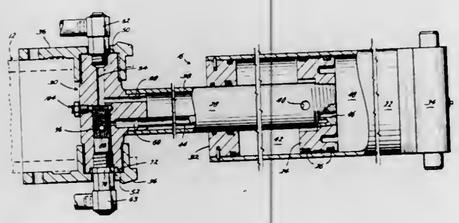
Filed Aug. 22, 1972, Ser. No. 282,843
Int. Cl. F01b *7/00*, *1/00*
U.S. Cl. 91—189 7 Claims



A hot stamping press which is particularly adapted for use with foil and multicolor film includes a ram which carries affixed to its lower end an operating head which supports the foil, the die, etc. The operating head of the ram is driven into

engagement with a fixed bed by means of a first air cylinder. In order to increase the pressure applied by the ram, the subject hot stamping press is provided with a second air cylinder operatively connectable through a mechanical lever mechanism to the ram such that as the operating head of the ram moves to strike the workpiece under the action of the first air cylinder, the second air cylinder is actuated. This results in the inner end of the mechanical lever mechanism being brought to bear upon the upper end of the ram, thus causing increased pressure to be applied throughout the operating head. This increased pressure reaches a predetermined level at a point prior to the termination of the ram's downward stroke and remains constant as the ram moves through the final portion of its downward travel.

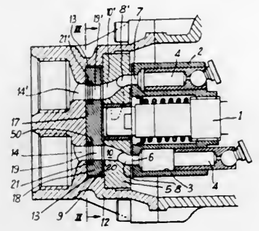
3,799,032
SAFETY HOLDING VALVE ROD EYE ASSEMBLY
Don R. Honeycutt, Bryan, Tex., assignor to Omark Industries, Inc., Portland, Oreg.
Continuation of Ser. No. 821,192, May 2, 1969, abandoned.
This application Jan. 17, 1972, Ser. No. 218,539
Int. Cl. F15b *13/042*
U.S. Cl. 91—420 **3 Claims**



The present invention is directed to rod eye assemblies for use on hydraulic piston and cylinder units, wherein actuating fluid is supplied to both sides of the piston through the piston rod, and more particularly to rod eye assemblies having a safety holding valve in one of the passages leading to the hydraulic unit. Two conduits are employed in the valve, the first being opened when fluid is directed into the hydraulic unit through the safety holding valve assembly. The second conduit is opened when subjected to a large fluid pressure being exerted from the hydraulic unit. This is accomplished by having a spool slidable within a fluid passageway and having on its exterior an annular flange, this flange being biased into engagement with a mating annular flange in the passageway. The other conduit and means is provided by having a ball and seat within a passageway extending through the spool.

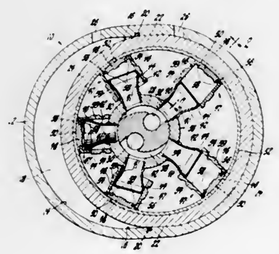
3,799,033
OUTPUT REVERSING VALVES WITH BY-PASS POSITION
Francois C. Pruvot, Billancourt, France, assignor to Regie Nationale Des Usiness Renault, Billancourt, France
Filed Dec. 20, 1971, Ser. No. 209,590
Claims priority, application France, Dec. 21, 1970, 70.45966
Int. Cl. F01b *3/10*
U.S. Cl. 91—482 **6 Claims**

An output reversing valve having a by-pass position for fluid-pressure operated devices has a switching member comprising at least two closing members angularly shifted in relation to the pair of diametrally opposed fluid passage orifices, the closing members and passage orifices being shaped to conform to the first and second pairs of primary parts of the valve body. The first and second pairs of primary ports are con-



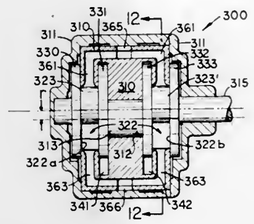
nected to two pairs of secondary ports of the valve body. This valve is applicable notably to the field of hydrostatic transmissions of vehicles.

3,799,034
ROTARY FLUID DEVICE
Robert J. Haglund, and James A. Steele, both of Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 6, 1972, Ser. No. 295,548
Int. Cl. F01b *13/04*
U.S. Cl. 91-490 **8 Claims**



A rotary fluid device includes a rotor mounted eccentrically within an annular race of a housing by a stator having fluid ports. A plurality of radial pistons circumferentially spaced about the rotor have spherical portions at their outer ends and define radial fluid passages that communicate with the fluid ports of the stator during rotation of the rotor. A plurality of composite cups are respectively associated with the pistons, and each includes an annular cylinder member with an inner annular surface that slidably receives the spherical portion of the associated piston and a shoe member that closes the outer end of the cylinder member and has an arcuate surface slidably engaging the annular race of the housing. Pressurized fluid received within the piston and cup arrangements during operation of the rotary fluid device acts on the cups to maintain them radially balanced relative to the housing race. The shoe members of the cups have portions that are plastically deformed over annular attachment flanges of the cylinder members to secure these members to each other. This securement allows the cylinder members to elastically deform independently of the shoe members under the impetus of the pressurized fluid such that the pistons and their associated cylinder members elastically deform in a coordinated manner to prevent fluid leakage at their sliding interfaces. In another embodiment, split washer type fittings are snapped over portions of the shoe members and engage the annular attachment flanges of the cylinder members to allow this coordinated elastic deformation. The wall thickness of the cylinder members varies to provide annular ribs intermediate the ends of these members for controlling their elastic deformation characteristics and coordinating them with the pistons. The pistons are slightly less rigid than the cylinder members such that the pressurized fluid produces a normal force at the sliding interfaces of these components to substantially eliminate any fluid leakage at these interfaces. Generally conical displacement members are mounted on the shoe members pointing inwardly and reduce the volume within the piston and cup arrangements to consequently reduce compressibility losses during operation of the fluid device.

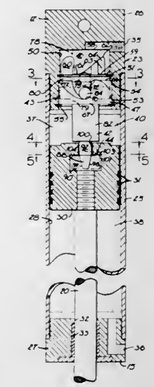
3,799,035
ROTATING PISTON ENGINE
August Uno Lamm, 365 Moseley Rd., Hillsborough, Calif.
Continuation of Ser. No. 878,637, Nov. 21, 1969, abandoned.
This application June 21, 1970, Ser. No. 264,807
Int. Cl. T01b *13/04*
U.S. Cl. 91—493 **13 Claims**



A rotating piston engine for use as an internal combustion engine, hydraulic motor or pump, air or gas compressor, or vacuum pump and the like. A stator supports a cylindrical rotor bored to receive a double-acting piston journalled on the crank of an eccentric mounted crankshaft. Means are provided to overcome the deadspot occurring when the crank pin is aligned with the rotor axis. Multi-piston forms of the invention are provided, and in one form means are provided to array plural pistons in a common plane. In another form the crank pin itself serves as the piston, and a modification of this provides split crank-pins astraddle a second crank pin and with equal effective areas for even fluid flow. In another form the inlet and outlet channels to the cylinders are sized to equalize fluid pressure on the rotor. In another form the rotor is mounted on a cantilever portion of the stator. In another form a floating piston is provided with channels communicating fluid pressure to the crank pin for relieving bearing pressure. In another form, grooves are provided on either side of working ports with rotor passageways communicating these grooves with opposite ports for balancing forces on the rotor. In another form a multi-piston engine includes a plurality of cylinders mounted for radial displacement relative to a rotor for wear compensation, and with the combined action of centrifugal force and fluid pressure assuring a fluid tight seal against the inner surface of the stator. In another form inlet and outlet passageways are provided in the crankshaft with valving communication to the cylinders achieved by relative rotation between the crankshaft and rotor.

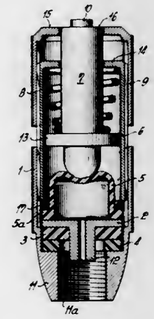
3,799,036
SELF-LOCKING FLUID OPERATED CYLINDER
R. Kemp Slaughter, N. 421 Sycamore St., Spokane, Wash.
Filed July 17, 1972, Ser. No. 272,297
Int. Cl. F15b *15/22*
U.S. Cl. 92—14 **10 Claims**

A fluid operated cylinder is described having a locking means for holding the piston at one end of the cylinder every other time fluid pressure is applied to the cylinder to drive the piston in one axial direction. A locking means is provided adjacent said one end having a control member that is movable in a limited stroke parallel with and in response to the movement of the piston. The control member is also rotatable. Inclined stepping cam surfaces are provided in the longitudinal path of the control member to step index the control



member in one angular direction each time the control member is moved axially. Interlocking elements are provided on the control member and the piston that interlock together when the control member is rotated from a selected angular position and automatically released when the control member is located at the selected angular positions.

3,799,037
VALVE ATTACHMENT
Helmut Schmidt, Pforzheim, Germany, assignor to Helmut Schmidt, Pforzheim and Edwin H. Feitz, Bassum-Oster-Blnde (Bremen), both of, Germany
Filed July 13, 1972, Ser. No. 271,402
Claims priority, application Germany, Mar. 14, 1972, 2212130
Int. Cl. F01b *19/00;* **F16j** *3/00*
U.S. Cl. 92—98 R **1 Claim**



The valve attachment is intended for use on a tubular valve holder and comprises tubular structure defining a prismatic cavity, a diaphragm sealing said prismatic cavity from one end of said tubular structure, means connecting said one end of said tubular structure to said valve holder and for subjecting said diaphragm through said valve holder to the pressure acting on said valve, a cap formed with a central opening and screwed on said tubular structure at the other end thereof, a plunger slidably guided in said cavity and provided with an ex-

tension at its end opposite to said diaphragm, and spring means urging said plunger into engagement with said diaphragm. Said diaphragm is adapted to move said extension through said opening in response to a predetermined pressure to which said diaphragm is subjected through said valve holder

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3,799,038

CURL CORRECTOR APPARATUS FOR OPERATING ON A CONTINUOUS WEB

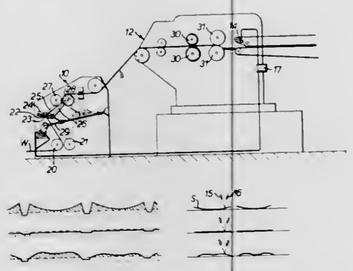
Walter Howard Bossons; Horst Karl Lindstaedt, and Graham Robin Scott Jones, all of Bristol, England, assignors to Masson Scott Thrissell Engineering Limited, Bristol, England

Filed Mar. 27, 1972, Ser. No. 238,226

Claims priority, application Great Britain, Mar. 27, 1971, 8197/71

Int. Cl. B31d

U.S. Cl. 93—1 R **7 Claims**



A curl corrector apparatus has corrector rods around which a continuous web is trained, as it is being unwound, to remove residual curl. These rods are adjustable and are moved to the most effective correcting position in response to signals derived from the web downstream of the corrector rods. When the web is subsequently cut into sheets, any curl in these sheets can be detected, preferably optically or sonically, and corrective signals obtained. When the web is continuous, mechanical sensing means can detect the direction in which the web tends to bow and hence provide a corrective signal.

3,799,039

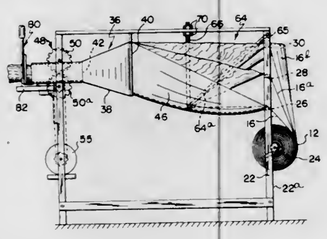
CUSHIONING DUNNAGE MECHANISM AND METHOD

George R. Johnson, Chagrin Falls, Ohio, assignor to Ranpak Corp., Cleveland, Ohio

Filed Dec. 14, 1971, Ser. No. 207,764

Int. Cl. B31d *5/00*; **B31f** *1/08*

U.S. Cl. 93—1 WZ **15 Claims**



A cushioning dunnage producing mechanism which is of compact nature utilizing a single roll of stock material comprising multiple plys of sheet-like material, such as paper stock, which are separated as they are pulled off the composite roll, rolled or urged inwardly at their lateral edges and into generally superimposed condition and passed into a crumpler section where meshed gears coin or stitch the confronting portions of the rolled edges of the stock material together generally centrally in a direction lengthwise thereof, to hold the dunnage product in a light weight, highly compressible, pad-like configuration. A novel method of producing the pad-like product is also disclosed.

3,799,040

THREE-DIMENSIONAL SHAPING OF PANELS OF CARD

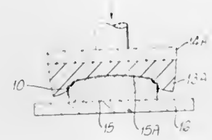
Austin Leslie Fox, and William Arthur Albert Jones, both of London, England, assignors to Molins Limited, London, England

Filed Aug. 18, 1972, Ser. No. 281,911

Claims priority, application Great Britain, Aug. 19, 1971, 38991/71

Int. Cl. B31d *5/02*

U.S. Cl. 93—1 D **7 Claims**



A method and apparatus for doming the top panel of a shoulder type box, or similar, for cigarettes.

3,799,041

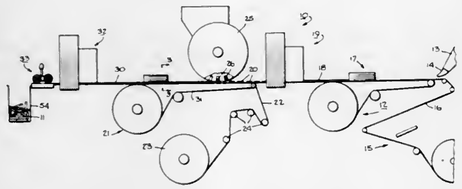
APPARATUS FOR OBTAINING ROUNDED FILTER PLUGS FOR CIGARETTES

Floyd Van Hall, Durham, N.C., assignor to Liggett & Myers Incorporated, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,565

Int. Cl. B30b *3/02*

U.S. Cl. 93—1 C **16 Claims**



The filter plug roller is formed by a pressure applying rotating roller and a holder having two inserts. The roller and inserts define a passageway for the filter plugs in which the first insert is more closely spaced to the roller than is the second insert so as to cause deformation of the filter plugs during rolling of the plugs over the first insert. The second insert is spaced from the roller at a distance equal to the diameter of the filter plug so as to cause a gentle rolling of the filter plugs out of the apparatus. The first insert serves to deform the relatively stiff papers used in enveloping the filter media of the filter plug while the second insert serves to impart a substantially perfect roundness to the filter plug.

3,799,042

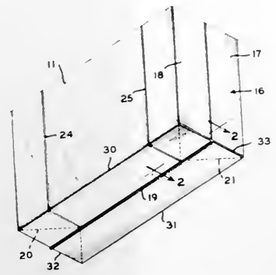
FLAT-BOTTOM PLASTIC BAGS AND METHOD FOR THE PRODUCTION THEREOF

Gerald M. Platz, Champaign, and James B. Honn, Arcola, both of Ill., assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 243,946

Int. Cl. B31b *49/04*

U.S. Cl. 93—35 SB **3 Claims**



A flat-bottom plastic bag produced from an extruded length of gusseted and thermoplastic material including the steps of sealing and severing a length of such material to provide a closed bottom; folding the upper portion of each gusset inwardly toward the center of the bag to create triangular portions at the bottom of each gusset, the bottom corners of the bag tapering inwardly with the taper being determined by the outer leg of each triangular portion; opening the folded gusset portions to a flattened position, each triangular portion being folded simultaneously along a median line and the inwardly tapered bottom configuration of the bag being retained; folding the tapered bottom portion of the bag upwardly toward the front of the bag thereby creating a transverse fold line extending from edge to edge of the bag, the height of this folded portion being substantially identical to the height of the folded median line of each triangular portion, the height of this median line being substantially identical to the depth or width of the gusset; and opening said upwardly folded portion, for packing and/or shipping purposes, to a plane contiguous to that of the remainder of the bag. The invention also contemplates the novel bag produced by the above method.

3,799,043

MACHINE FOR AND METHOD OF AUTOMATICALLY MAKING PARTITION ASSEMBLIES FROM PRECUT PARTITION STRIPS

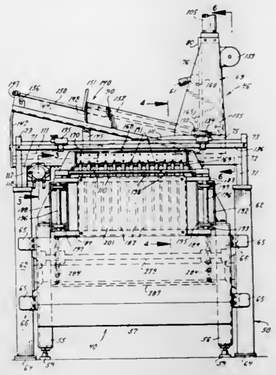
Albert D. Johnson, Saint Davids, Pa., assignor to Systems Engineering Company, King of Prussia, Pa.

Filed Aug. 23, 1971, Ser. No. 174,054

Int. Cl. B31b *1/00*

U.S. Cl. 93—37 R **17 Claims**

This is a novel machine for and method of automatically forming partition assemblies from precut longitudinal and transverse partition strips. The machine includes a long frame, at one end of which is a transversely reciprocatable guillotine type structure which in each flight drives a predetermined number of supplied longitudinal partition strips edgewise on a table and in aligned spaced hoppers. Each such rank of strips is moved edgewise while guided along the table by a continuously moving transverse flight bar to and through an assembly zone where a stationary guillotine type structure successively drives a predetermined number of transverse partition strips into engagement with the longitudinal partition strips as they are moved along to form a complete partition assembly, which the flight bar moves to an adjacent structure. This action is continuous. The machine has capacity for making two



complete aligned partition assemblies simultaneously, and it is designed to assemble partition strips of solid fiber, or chipboard, corrugated board, and the like.

3,799,044

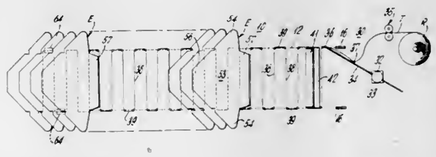
MACHINE FOR PRODUCING SELF-OPENING ENVELOPES

John Manolis, 308 W. 94th St., New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,284

Int. Cl. B31b *1/90*

U.S. Cl. 93—76 **12 Claims**



A machine for producing self-opening envelopes includes a pair of laterally spaced sprocket chains transporting along a longitudinal path regularly spaced pairs of laterally spaced studs and an arm with a strip guide at an end thereof is oscillated to opposite sides of the advancing stud pairs and withdraws tear strip from a roll and interlaces the studs so that successive transverse tear strip sections which are interconnected at alternate ends are applied to the advancing studs by the guide. Adhesive is applied to the transverse tear strip sections and overlapping precut envelope blanks are superimposed on the advancing transverse tear strip sections with the flap, front panel delineating lines coinciding with the tear strip sections and the longitudinal tear strip sections are severed between their ends.

3,799,045

METHOD OF AIR CONDITIONING

Jan Sohlberg, Vallentuna, Sweden, assignor to Carl Georg Munters, Stocksund, Sweden

Continuation-in-part of Ser. No. 866,282, Oct. 14, 1969, abandoned. This application Apr. 28, 1972, Ser. No. 248,684

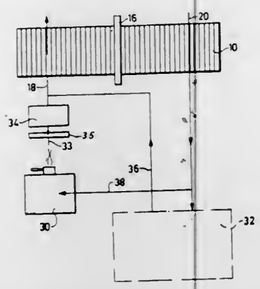
Claims priority, application Sweden, Oct. 16, 1968, 13991/68

Int. Cl. F24f *3/16*

U.S. Cl. 98—32 **2 Claims**

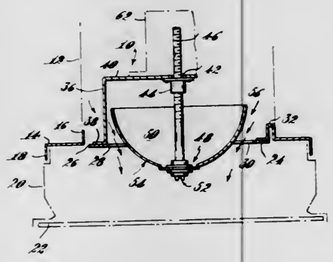
Method of air conditioning a group of enclosures, including a group containing contaminated or malodorous air, by

passing the contaminated air through a carbon filter in the outgoing air passage of the air conditioning system and then



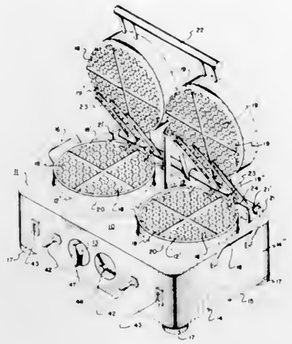
through a regenerative exchanger in heat and moisture exchange relationship with the fresh air being passed through the exchanger in an incoming passage into the enclosures.

3,799,046
DIFFUSER VALVE
Dimiter Gorchev, c/o Mitco Corporation, 440 Somerville Ave., Somerville, Mass.
Continuation of Ser. No. 53,921, July 10, 1970, abandoned.
This application Apr. 6, 1972, Ser. No. 241,805
Int. Cl. F24f *13/06*
U.S. Cl. 98—41 AV **13 Claims**



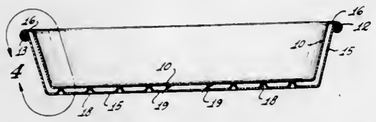
A valve for adjusting flow of heated or cooled air, through a supply duct, characterized by a substantially linear relationship between rate of flow through the valve and the position of a linearly movable impedance member in the valve. The valve comprises an orifice plate, generally circular or rectangular, secured in the duct and having an outer perimeter matching the duct wall and an inner perimeter defining an orifice through which fluid can flow. An impedance member is mounted for linear movement into the orifice, and has a convex tapered outer surface facing the inner perimeter of the orifice plate. The convex tapered outer surface of the impedance member is provided with a shape, for example circular or parabolic in cross section, such that flow through the orifice between the inner perimeter and the convex surface varies substantially linearly with changes in position of the impedance member. In one embodiment, the orifice is circular and the impedance member has a hemispherical or paraboloid surface. The orifice plate carries a mounting bridge which threadably engages a shaft secured to the impedance member. Flow adjustment is accomplished by rotating the orifice to change the amount of flow. In another embodiment, the orifice is oblong and the impedance member has convex surfaces facing the long sides of the oblong and flat mating surfaces on the short sides of the oblong so that all flow is controlled by the convex surfaces. The impedance member is mounted slidably on fixed guides secured to the orifice plate. Adjustment is accomplished by means of a threaded shaft rotatably carried by the impedance means and threadably engaging a member in fixed relation to the orifice plate. Rotation of the threaded shaft moves it and the impedance member into or out of the orifice.

3,799,047
WAFFLE BAKING APPARATUS
Gerald R. Freeman, 1721 Norman St., Wenatchee, Wash.
Filed Sept. 11, 1972, Ser. No. 287,945
Int. Cl. A47j *27/62*; **A21b** *5/02*
U.S. Cl. 99—332 **3 Claims**



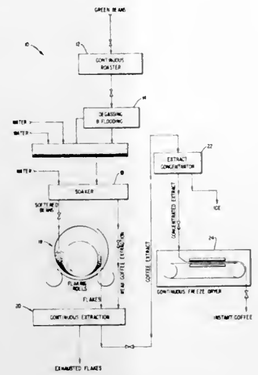
The waffle baking apparatus includes waffle-baking griddle plates, timing means, waffle-plate lifting means, and waffle-ejecting means. The timing means may include indicating indicia and a timing override switch.

3,799,048
DISPOSABLE COOKING UTENSIL WITH EVEN HEATING
Richard O. Finley, 2608 Graham Ave., Redondo Beach, Calif.
Filed Apr. 10, 1972, Ser. No. 242,563
Int. Cl. A47j *37/06, 37/10*
U.S. Cl. 99—415 **7 Claims**



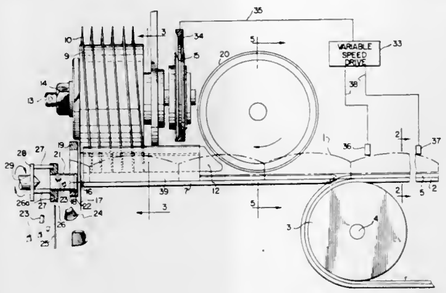
A disposable cooking utensil, primarily for use with uneven sources of heat, which is designed to produce even heating across its frying surface. The pan body consists of two shells, constructed preferably of heavy aluminum foil, which are separated by a spiral raised rib in the flat bottom surface of the outer shell. Apertures in the center bottom of the outer shell and high in one of the shell walls allow heated air to circulate beneath the entire cooking surface of the inner shell to evenly heat the frying surface. The pan is designed so as to be partially foldable for easy manufacture and disposability. Further, since the pan is constructed of thin material and is quite economical to build, it may be discarded after use.

3,799,049
APPARATUS FOR PRODUCING SOLUBLE COFFEE CONCENTRATES
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Division of Ser. No. 97,942, Dec. 14, 1970, Pat. No. 3,672,911.
This application Dec. 6, 1971, Ser. No. 205,168
Int. Cl. A23f *1/02*; **A23n** *9/04*; **F26b** *5/06*
U.S. Cl. 99—470 **10 Claims**



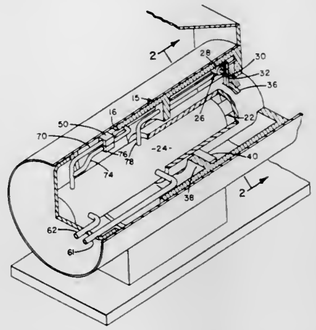
The production of a soluble coffee concentrate by roasting green beans, softening and flaking the roasted beans and thereafter extracting the coffee solubles from them, concentrating the extract, and freeze drying the extracted solubles in the concentrate.

3,799,050
PINEAPPLE CHUNKING APPARATUS
Douglas R. McLane, Honolulu, Hawaii, assignor to Hydril Company, Harris County, Tex.
Filed Dec. 29, 1971, Ser. No. 213,260
Int. Cl. A23n *3/12, 3/14, 15/00*; **A23p** *1/00*; **A47j** *25/00*
U.S. Cl. 99—553 **4 Claims**



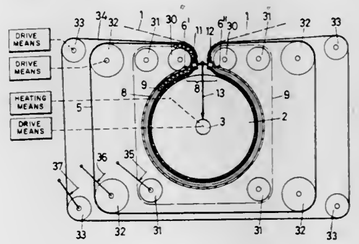
Cored and peeled pineapples, split or halved axially into half spheroids, are fed through segmenting, slicing and usually also recoring operations in the form of a column of end-to-end half spheroids lying flat face down on supporting means having a longitudinal guiding rib slidably engaged by the aligned longitudinal grooves formed by the initial coring operation. Positive feeding of the half spheroids to and through the slicing and recoring operations is provided by a scroll feeder near the head of the column having lateral engagement with the leading half spheroids which have been segmented except for a small amount of unsegmented material immediately adjacent to the core hole, prior to reaching the scroll. The advancing head of the column leaving the scroll is sliced transversely at intervals which provide partially segmented slices of the desired thickness. The advancing head of the column is then recored producing the desired chunks by severing the segments from the ring of material adjacent to the core hole which held the pieces together through the slicing operation.

3,799,051
REFUSE COMPACTING DEVICE
Harvey W. Liberman, Knoxville, Tenn., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Oct. 18, 1972, Ser. No. 298,746
Int. Cl. B30b *15/16*
U.S. Cl. 100—48 **9 Claims**



A waste compacting device of the type wherein waste material is deposited in a chamber and compacted by movement of a compaction ram into the chamber. A single hydraulic power cylinder drives a small auxiliary ram mounted for sliding movement in the main compaction ram. The main ram is driven through a latching mechanism which couples the auxiliary ram to the main ram and which is releasable upon detection of a jam of waste material.

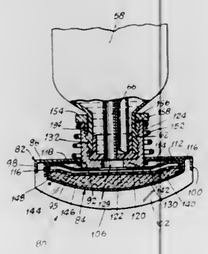
3,799,052
APPARATUS FOR THE CONTINUOUS PRESSURE TREATMENT OF A WEB
Eduard Kusters, Finkenweg 18, Krefeld-Forstwald, and Valentin Appenzeller, Kempen/Ndrh., both of Germany, assignors to said Kusters, by said Appenzeller
Filed Jan. 26, 1973, Ser. No. 326,773
Claims priority, application Germany, Feb. 5, 1972, 2205503
Int. Cl. D21g *1/00*; **D21f** *5/02*; **F26b** *13/18*
U.S. Cl. 100—93 RP **20 Claims**



The apparatus includes a drum and a pressure belt surrounding the drum almost completely with both drum and

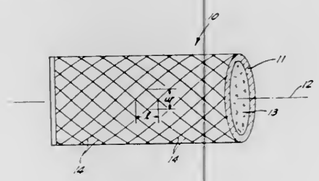
pressure belt being movable with the web disposed inbetween. A sleeve is disposed about the pressure belt as a supporting surface with a friction-reducing means, such as interconnected rollers, between the sleeve and pressure belt to transfer force. The sleeve ends are spaced apart to permit passage of the web and pressure belt while at the same time being urged together to impart a tensile force in the sleeve. This tensile force serves to exert a uniform pressure on the moving web substantially over the entire surface of the drum, which may be heated.

3,799,053
HAND PRINTER
Harold H. Rabelow, Marion, Ill., assignor to The Marsh Stencil Machine Company, Belleville, Ill.
Continuation-in-part of Ser. No. 110,385, Jan. 28, 1971, abandoned. This application July 13, 1972, Ser. No. 271,257
Int. Cl. B41f *15/00, 15/38*
U.S. Cl. 101—125 **13 Claims**



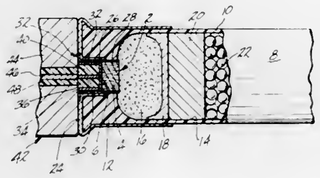
There is shown a hand printer for stenciling, which comprises an inking unit for receiving a stencil, and a table reciprocably supporting said inking unit for stenciling in substantially one extreme position of movement and for storage in the other extrme position of movement. The inking unit includes an ink pad and reservoir disposed beneath the table and an integrated siphon ink flow control squeeze bottle handle providing an ink supply above the table. An operative compression spring maintains the inking unit in rest or storage position, said spring yielding to downward pressure to permit depression thereof for stenciling and returning said unit to storage position after release of such pressure.

3,799,054
CONTROLLED FRAGMENTATION EXPLOSIVE DEVICE
Edward W. LaRocca, Placentia, Calif., assignor to Armament Systems, Inc., Anaheim, Calif.
Filed May 8, 1972, Ser. No. 251,216
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 **18 Claims**



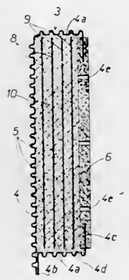
A method and apparatus for controlling the fragmentation of explosive devices of the type including a cylindrical metallic fragmentation casing having a longitudinal axis and an explosive charge therein. The present invention teaches applying to the inner or outer surface of the casing a longitudinal array of metallic strips, so that the strips conform to the contour of the cylindrical casing, the longitudinal axis of the array being substantially parallel to that of the casing. The density of the metal from which the strips are formed is greater than that of the metal from which the casing is formed. The arrays may be in the form of rectangles, diamonds, or parallel bars.

3,799,055
ELECTRICAL INITIATOR
Charles G. Irish, Jr., 49 Sylvan, Cheshire, Conn.; Joseph W. Silva, Foote Hill Rd., Northford, Conn., and Raymond I. Owles, Ansonia Rd., Woodbridge, Conn.
Division of Ser. No. 4,480, Jan. 21, 1970, abandoned. This application Sept. 5, 1972, Ser. No. 286,388
Int. Cl. F42b *9/08*
U.S. Cl. 102—100 **2 Claims**



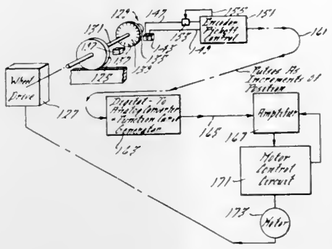
An initiator having a body of nitrocellulose material having a surface characterized by thin fibres or thin webs with a film of a conductive material adhered to said surface.

3,799,056
THERMAL INSULATION BLOCKS, PARTICULARLY FOR SPACE VEHICLES
Pierre Colignon, Courbevoie, France, assignor to Bronzavia, Courbevoie, France
Filed Sept. 18, 1972, Ser. No. 289,639
Claims priority, application France, Dec. 29, 1971, 71.47296
Int. Cl. F42b *11/00, 13/00*
U.S. Cl. 102—105 **10 Claims**



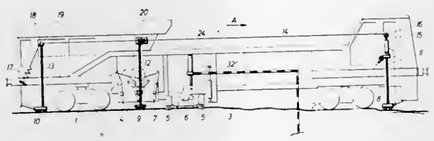
A thermal insulation block for use in particular between a heat shield and the body of a space vehicle comprises an envelope of which the wall adjacent the body is of insulating material. A number of spaced parallel screens are contained within the envelope and serve to reflect infra-red radiation. The spaces between the screens and between the walls of the envelope and the screens are filled with a refractory fibrous material.

3,799,057
ELECTRICAL CONTROL SYSTEM
Harrison H. Cassel, Royal Oak, Mich., assignor to Palmer-Shile Company, Detroit, Mich.
Continuation of Ser. No. 838,856, July 3, 1969, abandoned. This application Jan. 26, 1972, Ser. No. 221,112
Int. Cl. B60l *15/20;* **B65g** *1/00*
U.S. Cl. 104—1 R **23 Claims**



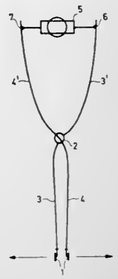
A feedback control system for controlling the acceleration and/or deceleration curve of an automatic material handling apparatus, as for example, an automatic or semi-automatic robot used in conjunction with delivering and retreiving material from a storage warehouse, wherein the distance from a fixed or variably selectable point is sensed and utilized to generate a speed curve for controlling the incremental variation in speed of the material handling device up to a preselected maximum speed or down to zero speed.

3,799,058
TRACK TAMPING AND LEVELING MACHINE
Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria
Filed Dec. 30, 1971, Ser. No. 214,082
Claims priority, application Austria, Feb. 19, 1971, 1457/71; Aug. 23, 1971, 7363/71
Int. Cl. E01b *27/16*
U.S. Cl. 104—7 R **20 Claims**



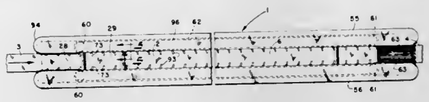
A track tamping and leveling machine with a track tamping unit, a track lifting unit and a reference system for the leveling operation comprises a continuously adjustable electrical track level indicator. The indicator has one indicator part in constant connection with the tensioned reference wire of the reference system and another part in connection with the track to produce a control signal corresponding to the track level prevailing at the track point whereto the other indicator part is connected. A continuously adjustable control device for the track lifting unit drive is electrically connected to the indicator and receives the control signals to adjust the device and correspondingly actuate the drive for the track lifting unit.

3,799,059
PACKING APPARATUS FOR RAILROAD TRACK PACKING MACHINES
Helmut E. Sieke, Wulferode/Hannover, and Rainer W. Sieke, Hannover-Kirchrode, both of Germany, assignors to Research Corporation, New York, N.Y.
Continuation of Ser. No. 68,727, Sept. 1, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,138
Int. Cl. E01b *27/16*
U.S. Cl. 104—12 **4 Claims**



A scissors-like apparatus for packing a ballast beneath railroad ties comprising a pair of rocking levers pivotally mounted on a shaft disposed horizontally and transversely to the track supported by the ties, and a packing plate secured to the lower end of each of said levers. The plates are moved in opposite directions to push the ballast under the ties by means of an adjustable link means interposed between the levers and pivotally connected thereto. In one form, the adjustable link means is connected to the upper ends of the levers above said pivot shaft, and in another form, the adjustable link means is connected to the levers below the pivot shaft.

3,799,060
HIGH SPEED PASSENGER CONVEYOR
Ernest D. Johnson, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 4, 1971, Ser. No. 150,049
Int. Cl. B65g *23/32*
U.S. Cl. 104—18 **19 Claims**

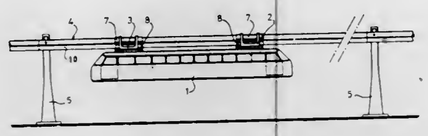


A passenger conveyor having a movable passenger supporting surface for continuously carrying passengers from a low speed boarding area to a high speed zone and then to a low speed unloading area in which the passenger retaining sides of the conveyor in the high speed zone are propelled at the same high speed as the passenger supporting surface to protect the passengers from being injured by impact with stationary or slow moving objects. Spacing members extend transversely of the conveyor and are propelled at the same speed as the supporting surface to prevent crowding of the passengers at the deceleration end of the conveyor and also provide handles for the passengers during acceleration, deceleration and high speed movement along the conveyor. The spacing members may be carried by the moving sides of the balustrades or by platforms having open sides for entering and leaving the conveyor in the low speed areas. The platforms are supported by belts, rollers or on rails and are driven by the rollers or by belts engaging the platforms. Acceleration and deceleration is provided by rollers driven at progressively different speeds or by a series of belts moving at progressively different speeds.

3,799,061
TRANSPORT SYSTEMS COMPRISING A CARRYING TRACK CO-OPERATING WITH GROUND-EFFECT MACHINES

Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France

Filed May 13, 1971, Ser. No. 142,887
Claims priority, application France, May 13, 1970, 70.17368
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS 5 Claims

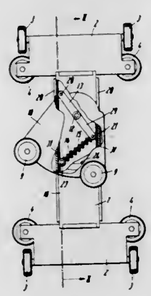


A transport system comprises the combination of an overhead track, having a substantially cylindrical external surface, and a vehicle suspended from a top support member slidable along said track and bearing on the external surface thereof by way of pressure fluid cushions or other lifting means permitting said vehicle to rock around the track axis, and is characterised by means for opposing said rocking motion of said vehicle and angularly stabilizing said vehicle relative to said track, said means comprising an external guide fin projecting from said track external surface and co-operating with guide means carried by said top support member.

3,799,062
RAILWAY VEHICLE WITH A GUIDE SWITCHING APPARATUS

Horst Stocker, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-GmbH, Munich, Germany

Filed Dec. 4, 1972, Ser. No. 311,657
Claims priority, application Germany, Dec. 23, 1971, 2164042
Int. Cl. B61b *3/00*
U.S. Cl. 104—105 6 Claims



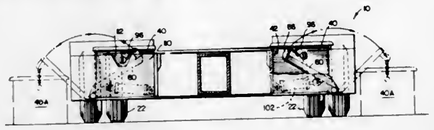
A railway switch system in which rimless guiding wheels of a railway truck are held in one of two limit positions by a toggle mechanism is disclosed herein.

3,799,063
VEHICLE BATTERY CHANGING DEVICE

David M. Reed, P.O. Box 652, Martin, Ky.

Filed Aug. 16, 1972, Ser. No. 281,090
Int. Cl. A63g *21/00*
U.S. Cl. 104—134 5 Claims

A vehicle battery changing and positioning device particularly suitable for use with electric driven vehicles of a mine operating type and the like, including lift arms pivotally mounted to the vehicle frame and releasably attached at their free ends to a battery tray and cover, with hydraulic actuating

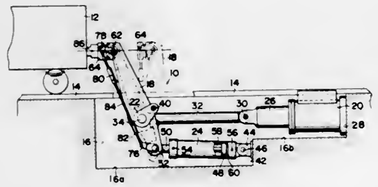


means to pivotally displace the arms and thereby move the battery tray and cover through an arc from an inner to an outer position to facilitate changing or servicing. Releasable hold down and locking means are provided.

3,799,064
RETRACTABLE BUFFER STOP

Takashi Kikuchi, O-Miya; Toshitsune Motoki, Tokyo; Hideo Kobayashi, Yokohama, and Toshiaki Kamei, Tokyo, all of Japan, assignors to Japanese National Railways, Tokyo and Kayabokogyokabushikikaisha, Minato-ku, Tokyo, both of, Japan

Filed Jan. 24, 1973, Ser. No. 326,390
Claims priority, application Japan, Jan. 25, 1972, 47-9377
Int. Cl. B61k *7/18*
U.S. Cl. 104—256 6 Claims



A retractable buffer stop of the type to be installed in a pit between the rails is disclosed. The buffer stop generally comprises an actuating arm, a pair of supporting arms and a hydraulic power cylinder which serves to raise or lower the actuating arm. They are so interconnected as to form a straight-line mechanism in order to permit an impact head pivoted to the upper end of the actuating arm to make a straight linear motion in the horizontal direction when the car strikes against the buffer stop. The impact head is also coupled through a parallel linkage to the pivot pin at the lower end of the actuating arm so that the impact receiving surface of the impact head may be always maintained vertically. A hydraulic shock absorber is also provided to absorb the impact from the car. Since the impact head may make a straight linear motion in the horizontal direction and its impact receiving surface may be always maintained vertically the impact forces from the car may be uniformly distributed over the retractable buffer stop.

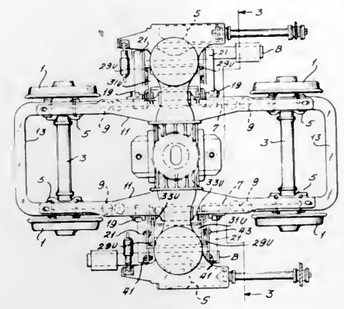
3,799,065
RAILWAY TRUCK SUPPORTING THIRD RAIL COLLECTION EQUIPMENT

Keith L. Jackson, Granite City, Ill., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed July 24, 1972, Ser. No. 274,170
Int. Cl. B60l *5/38*; B61f *3/08, 5/50*
U.S. Cl. 105—182 E 12 Claims

Articulated apparatus for stably supporting third rail current collection equipment at a fixed height and lateral location on railway trucks includes an arm flexibly connected to the truck equalizer, a pair of vertically spaced parallel links pivotally connected at their inner ends on an axis longitudinal

of the truck to the truck frame side member and support members pivotally connected to the outer ends of both of the links and supportingly connected to the arm at points spaced apart transversely of the truck. The links and arms are elongated

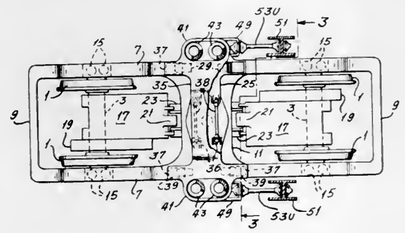


longitudinally of the truck and their connections to the equalizer and truck frame side member are correspondingly spaced apart. The third rail shoe beams are mounted on the outer portions of the arms.

3,799,066
RESILIENT RAILWAY TRUCK SUSPENSION

Keith L. Jackson, Granite City, Ill., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,239
Int. Cl. B61f *3/04, 5/08, 5/16*
U.S. Cl. 105—182 R 17 Claims

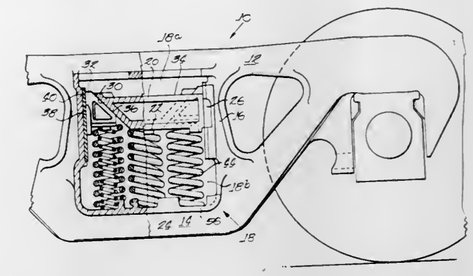


A resilient railway truck and vehicle suspension provides soft body springing while reducing axle to axle load transference. The axle-supported truck frame swivelly mounts a transverse sub-bolster and a transverse bolster is carried on the sub-bolster by elastomeric pad devices oppositely inclined longitudinally of the truck so that their normals intersect at a level below the axles, preferably about rail level. The bolster supports the body by upright springs at each side of the truck and is restrained against longitudinal movement or tilting movement about its transverse axis with respect to the body so that tipping movements of the truck relative to the body including those necessary to accommodate to changes in vertical track curvature occur about the intersection of the elastomeric pad device normals, thereby reducing or eliminating any vertical moment arm through which the tractive forces might act on the truck to cause objectionable axle to axle load transference.

3,799,067
DAMPERED RAILWAY TRUCK FRICTION SHOE SHIM

Otto Walter Neuman, Chicago, and Frank Joseph Korpics, Streamwood, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed June 5, 1972, Ser. No. 259,615
Int. Cl. B61d *5/06, 5/12*; F16f *13/00*
U.S. Cl. 105—197 D 3 Claims

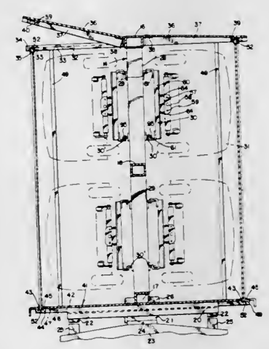


In a railway truck wherein friction shoes are operatively carried in wedge-shaped pockets of the bolster and are urged upwardly and outwardly by one or more control springs between the bottom of the friction shoe and the truck side frame, the invention provides for the restoration of column pressure in the spring columns that support the friction shoes by the insertion of a shim between the bottom of the friction shoe and the control springs. The insertion of the shim compensates for the loss in column pressure that results from the vertical rise of the friction shoe due to wear.

3,799,068
RAILWAY CAR

William L. Pringle, Grosse Pointe Shores, Mich., assignor to Pullman Incorporated, Chicago, Ill.

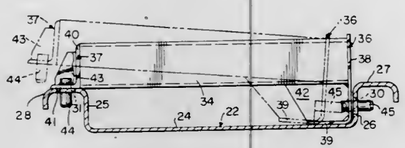
Division of Ser. No. 65,872, Aug. 21, 1970, Pat. No. 3,724,394.
This application May 10, 1972, Ser. No. 251,899
Int. Cl. B60p *7/06*; B61d *45/00*
U.S. Cl. 105—368 R 9 Claims



A railway car consists of articulated sections each including a substantially identical upright longitudinally extending truss structure on which vehicles or other cargo is suspended. The truss structure is the primary structural member extending between the car trucks and also serves as the cargo retaining member during transport operation. The truss structure is provided with suitable beams containing brackets to which the cargo is connected and suspended therefrom. The cargo may be in the form of vehicles which are initially connected to pal-

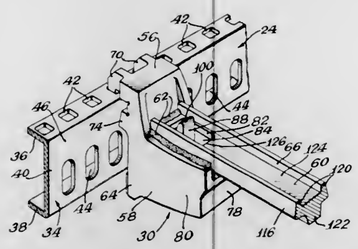
lets or fixtures secured to the underframe members of the vehicle. The fixture is provided with brackets which interengage the brackets on the truss structure to suspend the vehicles directly thereon. The fixture is constructed so that a crane or other material handling device, by engaging and lifting the fixture simultaneously, rotates the fixture and the vehicle into the desired position relative to the truss, the loading operation consisting merely of hanging the fixture and vehicles on the truss so that both are removably retained thereon in suspended relation.

3,799,069
AUTOMOBILE WHEEL CHOCK
Norman M. Szala, Hammond, Ind.; Thomas J. O'Neill, Evergreen Park, and Robert J. Kunst, Chicago, both of Ill., assignors to Pullman Incorporated, Chicago, Ill.
Filed Sept. 8, 1972, Ser. No. 287,379
Int. Cl. B60p *7/16*; **B61d** *45/00*
U.S. Cl. 105—368 R **2 Claims**



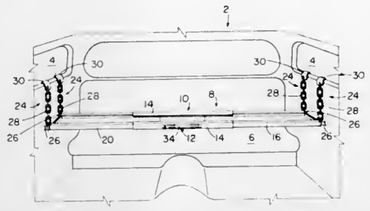
An automobile restraining device comprising transversely extending bar means including a number of hold down finger portions insertable in perforated openings of longitudinally extending wheel guide rails to thereby form a fixed restraining member about a wheel of the transported automobile.

3,799,070
FREIGHT RETAINING BAR
Austin H. Munson, Elmhurst, Ill., assignor to Railway Engineering and Supply Company, Inc., Blue Island, Ill.
Filed Apr. 27, 1972, Ser. No. 247,974
Int. Cl. B61d *45/00*; **B60p** *7/14*
U.S. Cl. 105—369 B **12 Claims**



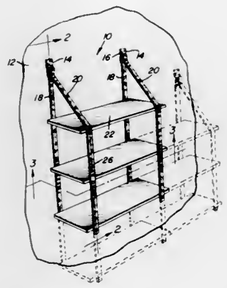
A load restraining system particularly useful for restraining freight in railroad freight cars. The restraining system includes vertically spaced belt rails horizontally mounted along the opposite side walls of the freight car. A cross bar extends between the opposite walls and has end clamps mounted on its opposite ends for engagement with the belt rails. The end clamps may be selectively used with a variety of belt rails. Each end clamp includes a rigid support member having a rearwardly projecting portion which interconnects with the cross bar, and a frontwardly projecting hooked portion for selective interlocking engagement with both upwardly opening apertures or grooves and frontwardly opening apertures, both continuous and discontinuous with the upwardly opening apertures or grooves, in various types of belt rails. An intermediate portion is also provided on the support member for defining a housing which receives a movable member. The movable member selectively engages the side wall or an aperture in the side wall of the belt rail.

3,799,071
VEHICLE TABLE
Doris M. Gerlach, 2501 Osborn Rd., Topeka, Kans.
Filed Sept. 20, 1972, Ser. No. 290,731
Int. Cl. A47b *37/00*
U.S. Cl. 108—46 **1 Claim**



A center table, centrally hinged and having an upstanding flanged rim on the sides is provided. The center table is foldable upon itself for storing. A pair of side tables, having upstanding flanged rims on 3 sides adapted to be slidably fitted in the opposite ends of the coextensive center table is provided to provide a telescoping vehicle table to fit vehicles of varying internal width. Four double hooks are mounted to the outside end corners of the side tables. Four hooks and chains are provided, with the chains connected on the double hooks by hooking a selected link of the chains on the double hooks and with the hooks of the hooks and chains hooked in the sills of the opposite vehicle windows so that the vehicle table is adjustably and reversably suspended in space at the desired position in space in the vehicle. Four pairs of guides are mounted to the sides of the center table and a pair of locking slides are slid in the guides to prevent the center table from folding when suspended in the vehicle in the flat, hinge side up position.

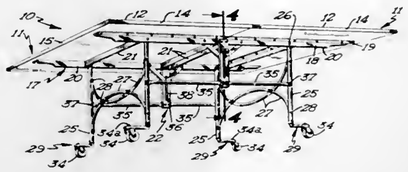
3,799,072
SUSPENDED WALL SHELVING ASSEMBLY
Jeffrey K. Slaboden, Flemington, N.J., assignor to Oden Leather Design, Inc., Phillipsburg, N.J.
Filed Sept. 1, 1972, Ser. No. 285,561
Int. Cl. A47b *9/00*
U.S. Cl. 108—107 **5 Claims**



A suspended wall shelving assembly comprising a plurality of vertically spaced shelves supported by brackets fastened to at least two pairs of elongated, flexible straps, or the like, each pair of straps being connected to a wall anchor and including a

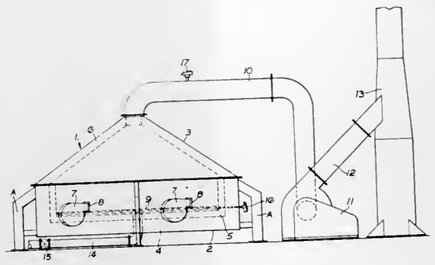
substantially vertical inner strap and an outer strap with an inclined section extending between the topmost shelf and the associated wall anchor. Preferably, the bracket and outer straps are adjustable in length to easily accommodate shelves of different widths.

3,799,073
FOLDABLE TABLE
Otto Severen Nielsen, 4875 Sorell Ave. North, Minneapolis, Minn.
Filed June 19, 1972, Ser. No. 264,165
Int. Cl. A47b *39/06*
U.S. Cl. 108—113 **8 Claims**



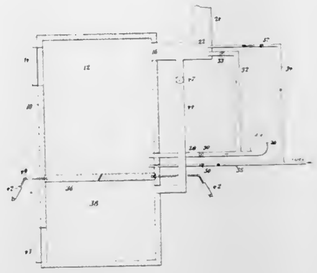
A foldable table includes a pair of pivotally interconnected table top sections and legs having castor wheels. The hinged center portion of the table is folded upwardly from the extended position so that the legs and other support structure is positioned between the table top sections when the table is in the folded condition. The foldable table, which is easily folded and unfolded, is always supported by the legs throughout the folding and unfolding movement, and is folded into a very compact structure which facilates storage. Adjustable stop bolts are provided which engage stop engaging pins connected to the inner ends of the table sections and this arrangement permits ready leveling of the table top in the event that the table top is not in a completely horizontal position in the unfolded condition.

3,799,074
FURNACES FOR BURNING SEWAGE AND LIKE RESIDUES
John Brian Stribling, Sutton Coldfield, Warwick, England, assignor to Lucas Furnace Developments Limited, Wednesbury, England
Continuation-in-part of Ser. No. 159,252, July 2, 1971, abandoned. This application Oct. 26, 1972, Ser. No. 301,197
Int. Cl. F23g *7/00*
U.S. Cl. 110—7 R **7 Claims**



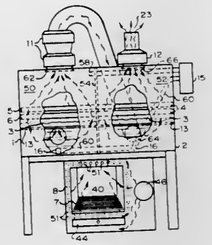
The invention provides a furnace for burning sewage comprising a chamber enclosing a pool of the sewage and a burner directed downwardly onto the pool to bathe the whole of the surface of the pool in flame, the pool having a floor which is conical in two stages, so that the area of liquid subject to flame can be controlled by varying the level of the liquid relative to the conical area.

3,799,075
HOT ASH DUMP
Noel D. Hazzard, and Lloyd L. Lavely, Jr., both of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.
Filed Jan. 16, 1973, Ser. No. 324,025
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 A **3 Claims**



A grateless incinerator having a pyrolyzation chamber, an afterburner that is downstream therefrom, and a subjacent ash discharge chamber separated from the pyrolyzation chamber by movable closure means. Ash including unburned combustible matter is dropped from the pyrolyzation chamber through the opened closure means to the ash discharge chamber subjacent thereto where smoke, fumes, dust, and other matter generated by the incompletely burned residual matter and the agitated ash are returned through a controlled passageway to the afterburner whereby they are again subjected to conditions of combustion before being directed to an exhaust duct.

3,799,076
SMOGLESS COMBUSTION APPARATUS
Willa A. Graves, 2213 Radio Ave., San Jose, Calif.
Filed May 4, 1972, Ser. No. 250,281
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 R **4 Claims**

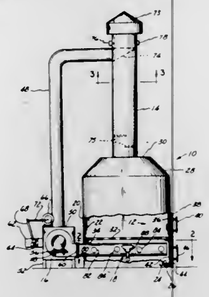


An improved smogless incinerator for combustible waste materials includes a plurality of chambers through which the combustion products are drawn for successive filtering. The combustion products are filtered through a liquid which is maintained in a turbulent condition by forced air bubbling through the liquid along with the combustion products to assure complete entrapment of the partial combustion products within the liquid.

3,799,077
LOW-POLLUTION TRASH INCINERATOR

Roy E. Lowe, 4166 Lakeview, Detroit, Mich.

Continuation-in-part of Ser. No. 178,366, Sept. 7, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,284
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 R 51 Claims

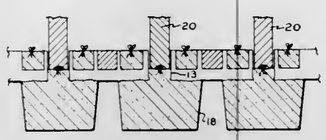


A trash incinerator with a combustion chamber connected to a flue and a blower with an inlet connected with the flue and an air inlet. The outlet of the blower is connected to a discharge manifold within the combustion chamber for recirculating a substantial portion of the partially burned combustion products through the chamber to minimize the pollution of the atmosphere resulting from the burning of waste material in the chamber. The outlet of the blower can also be connected to a manifold to provide a stream of air retarding the escape through an opening in the combustion chamber of hot gases produced by material burning in the chamber, thereby protecting a person from the hot gases while charging waste material into the chamber through the opening.

3,799,078
METHOD FOR TRANSPLANTING PLANTS

Fred N. Blackmore; Fred N. Blackmore, Jr., and John R. Trachet, all of 2412 Yost Ave., Ann Arbor, Mich.

Filed Apr. 19, 1972, Ser. No. 245,376
Int. Cl. A01c *11/02*
U.S. Cl. 111—2 2 Claims



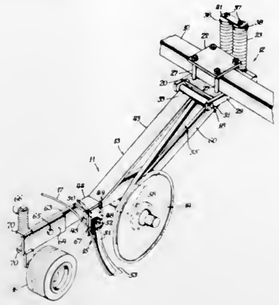
Method for transplanting seedlings from a compartmented germinating tray to larger containers containing soil within which the plants can grow. The method provides for positioning a compartment of the germinating tray over the larger container, pushing the seedling and soil in the compartment of the tray out the bottom of the compartment and into the soil within the container, and then indexing the tray so that the operation can be repeated for a second container.

3,799,079
APPLICATOR FOR DEPOSITING ANHYDROUS AMMONIA UNDERGROUND

William J. Dietrich, Congerville, Ill., assignor to Dietrich Manufacturing, Inc., Goodfield, Ill.

Filed July 10, 1972, Ser. No. 269,955
Int. Cl. A01c *23/00*
U.S. Cl. 111—7 7 Claims

The applicator includes a coulter, applicator knife and packer wheel mounted in trailing relation to a frame which in turn is spring-mounted to a tool bar drawn by a tractor. The frame facilitates removal of the coulter or applicator knife for maintenance or replacement while maintaining the knife in a position directly behind the coulter. The frame further permits

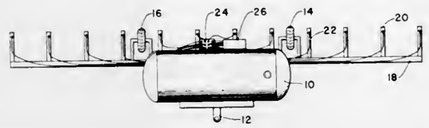


vertical adjustment of the applicator knife relative to the coulter; and means are employed for lateral adjustment of the knife to maintain it directly behind the coulter during operation.

3,799,080
DISTRIBUTOR

Wayne L. Horn, 2602 Flemons St., Stockton, Calif.

Filed Aug. 28, 1972, Ser. No. 284,445
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 7 Claims



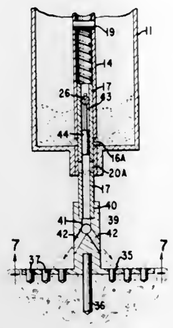
A flow distributing device is described which is useful for effecting even distribution of a liquid from a central source to a plurality of conduits at variable flow rates. The device comprises a distributor housing with a plate bearing connecting means to a plurality of conduits. The connecting means are distributed on the plate on a predetermined pattern while a second plate is positioned in the assembly between the housing and the plate bearing the connecting means. This latter plate is movable between a plurality of positions and bears a series of apertures for each of the multiple connections, which apertures have varied cross-sectional area. The apertures are similarly disposed on the movable plate in a predetermined pattern so that at any position of the movable plate in the assembly, all of the multiple connections will be in communication with the housing through apertures of equal cross-sectional dimensions.

The distributor is particularly useful in combination with a liquid fertilizer distributor. These distributors comprise a storage tank in which the liquid fertilizer is contained, pump means which removes liquid from the storage tank and forces the liquid under pressure to the flow distributor and a plurality of tubing lines connected to the multiple connecting means of the flow distributor, each of the tubing means passing to liquid discharge means. The flow rate or fertilizer application rate for this device is controlled by the displacement or revolution speed of the pump and the settings on the pumping rate are correlated with the settings of the movable flange to provide flow distributing orifices of small cross-sectional area with the low pump rates and proportionally larger apertures with greater rates.

3,799,081
GARDEN SEEDER

Joseph G. Wilson, 15 Weston Hill Rd., Riverside, Conn.

Division of Ser. No. 156,009, June 23, 1971, Pat. No. 3,745,945. This application Feb. 23, 1973, Ser. No. 335,315
Int. Cl. A01c *5/02*
U.S. Cl. 111—10 3 Claims

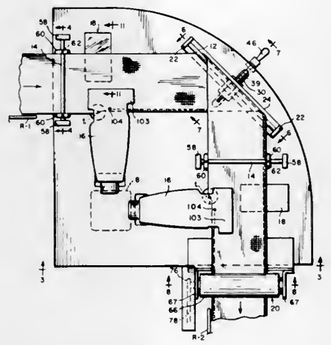


A manually operated seeder and gardening device has a storage hopper for seeds with a tubular member projecting downwardly from the hopper and a second tubular member slideable in the first tubular member. An end on the slideable tubular member has an opening therein to permit the passage of seed from the storage hopper through openings in the fixed member into the openings in the slideable tubular member and out of the end onto a scarifying plate having apertures therein for depositing in the earth. The arrangements of parts and relative sizes is such as to meter the seed to be deposited. The slideable tubular member can have a spiral slot through which passes a fixed transverse pin so that axial movement of the slideable tubular member causes its rotation.

3,799,082
MACHINE FOR SIMULTANEOUSLY SEWING THE OPPOSITE EDGES OF STRIP MATERIAL

Howard E. Redman, Duxbury, Mass., assignor to Mathewson Corporation, Quincy, Mass.

Filed July 26, 1973, Ser. No. 382,854
Int. Cl. D05b *11/00*
U.S. Cl. 112—3 R 31 Claims

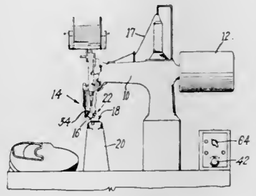


Apparatus for sewing the opposite edges of strip material with one pass of the strip comprising a turn bar supported at 45° to the direction of delivery of the strip material thereto and at 45° to the direction of withdrawal of the strip material therefrom so that the portions of the strip travelling to and from the turn bar are at right angles to each other, a reel for giving up the strip material prior to sewing, a reel for taking up the sewn strip material following sewing, guides for guiding the strip material to and from the turn bar for inversion as it passes about the turn bar, sewing machines arranged to sew the opposite edges of the portions of the strip at the inner side of the right angle that the portions make with each other, and feed rolls for moving the strip material from the one reel to the other relative to the guides, sewing machines and turn bar.

3,799,083
WORKPIECE GUIDANCE MECHANISMS

Ralph E. Karcher, Jr., and Fred T. MacKenzie, both of Beverly, Mass., assignors to USM Corporation, Flemington, N.J.

Filed Oct. 24, 1972, Ser. No. 299,944
Int. Cl. A43d *11/00*; D05b *15/00*
U.S. Cl. 112—47 6 Claims

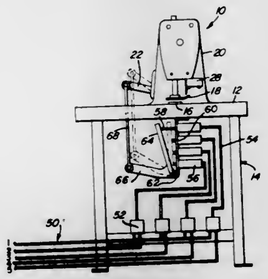


A machine having a tool for operating on a workpiece intermittently with means for moving the workpiece is provided with a guidance mechanism comprising means continuously operable on the workpiece for guiding the workpiece relative to the tool. The guiding means may include a control for determining a path along which the workpiece is guided and means responsive to the control and normally effective for guiding the workpiece along the determined path and additionally comprise means responsive to a particular path configuration for additionally controlling the guiding means to steer the workpiece along the particular path configuration. In the preferred embodiment the workpiece moving means are an oscillatory feed dog and presser foot cooperatively engageable with opposite sides of the workpiece wherein the feed dog and presser foot have a zone of greater cooperation and a zone of lesser cooperation.

3,799.084
FEED CONTROL FOR OPERATIONALLY PROGRAMMED SEWING MACHINE

Anthony Furnari, Indiana, Pa., assignor to Campus Sweater & Sportswear Co.

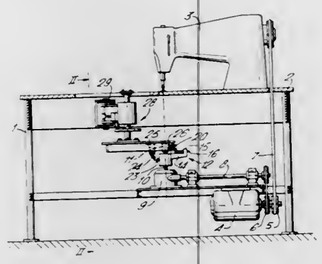
Continuation-in-part of Ser. No. 216,457, Jan. 10, 1972. This application Sept. 22, 1972, Ser. No. 291,339
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.11 12 Claims



The speeds at which material is advanced by the feed mechanism of a sewing machine, is automatically pro-

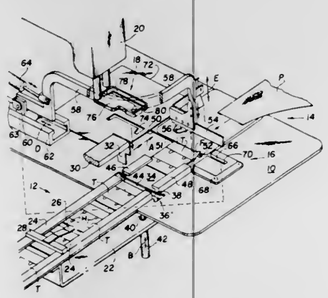
grammed during a controlled sewing cycle. The sewing cycle is initiated in delayed response to detection of the material by a sensor as the material approaches the presser foot. Selectively timed pauses in the sewing cycle enables the operator to reposition the work or perform other functions as well as to accommodate automatic changes in feed rate.

3,799,085
AUTOMATIC CONTROL OF A WORKPIECE UNDER THE NEEDLE OF A SEWING MACHINE
Edward Hulton Webber, 91 Tawa Rd., Hamilton, New Zealand
Filed May 18, 1972, Ser. No. 254,681
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.12 **6 Claims**



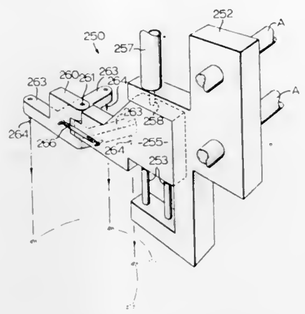
A device for the automatic manipulation of workpieces such as textile blanks, under the needle of a sewing machine. The blanks are held in a clamp secured to a profile member driven by a roller mounted in a fixed location with its axis of rotation co-linear with the needle of the sewing machine. The clamp and profile members are displaceably mounted relative to the sewing machine and arranged such that a right or acute angled corner in the line of sewing performed on the workpiece may be made with little or no curvature of the stitching adjacent the corner.

3,799,086
APPARATUS FOR SEWING GARMENT PARTS
Charles Block, North Bellmore, N.Y., assignor to Gellman Industries, Inc., New York, N.Y.
Filed June 15, 1972, Ser. No. 262,995
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **14 Claims**



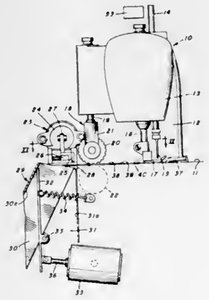
A method and apparatus for joining and sewing garment parts together automatically by means holding the parts together after they are assembled, transferring them automatically to a sewing station where means accomplish the sewing operation while the holding means returns to the assembly station for the start of another operation.

3,799,087
APPARATUS FOR AUTOMATICALLY INTERCONNECTING COMPONENTS OF STITCHABLE MATERIAL
Bernard D. Beamish, Port Credit, Ontario, and David G. Taylor, Etobicoke, Ontario, both of Canada, assignors to Bata Shoe Financial Corporation of Canada Limited, Batavia, Ontario, Canada
Filed June 14, 1971, Ser. No. 152,774
Int. Cl. D05b *33/00*
U.S. Cl. 112—121.29 **9 Claims**



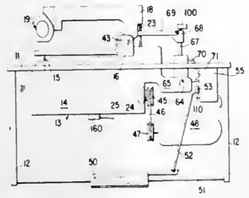
The three components of a shoe upper, namely, a quarter, a vamp and a tongue, are gauged and fed together in a sewing machine, where they are sewn along a predetermined stitching path. The components move during sewing to actuate a variety of switches, which cause the stitching path to change direction. The switches are mechanical and photoelectric, and enable abrupt changes in the stitching path. The finished product is a complete shoe upper, with the three components interconnected in the conventional manner.

3,799,088
APPARATUS FOR MAKING UP FABRIC PIECES OF A PREDETERMINED LENGTH GENERALLY ON SEWING MACHINES
Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy
Filed Sept. 14, 1972, Ser. No. 288,953
Claims priority, application Italy, Sept. 21, 1971, 28861/71
Int. Cl. D05b *37/04*
U.S. Cl. 112—130 **4 Claims**



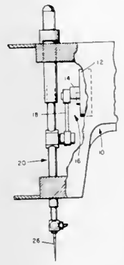
An apparatus for producing preselected lengths of sewn fabric of the type used for belt loops on trousers or for entire belts in which sensing means and related circuitry are provided to detect and provide for elimination of defective material with the minimum amount of waste.

3,799,089
SWINGABLE HOOK CARRIER ARM
Gunter Tolle, Wendelinusstr. 15, 752 Bruchsal 4, Germany
Filed Feb. 16, 1973, Ser. No. 333,078
Claims priority, application Germany, May 8, 1972, 2222549
Int. Cl. D05b *69/00*
U.S. Cl. 112—217.3 **5 Claims**



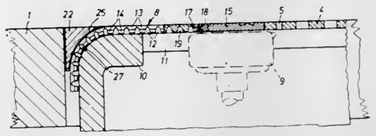
An articulated swing machine frame for a buttonhole sewing machine in which the loop taker carrying arm located above the work is swung up for loading material in the work clamp and returned to sewing position by an air pressure device. Controls are provided for lowering the loop taker carrying arm gradually to facilitate work positioning, and for starting the machine only after the loop taker carrying arm is fully lowered.

3,799,090
NEEDLE BAR
Melvin S. Sheroff, 40 Salisbury Rd., Newton, Mass.
Continuation-in-part of Ser. No. 183,356, Sept. 24, 1971. This application May 14, 1973, Ser. No. 359,916
Int. Cl. D05b *69/36*
U.S. Cl. 112—221 **21 Claims**



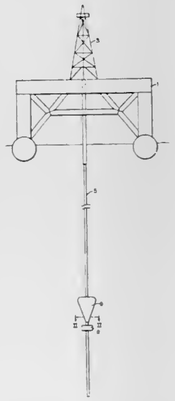
A sewing machine is provided with an improved mechanism to enable the needle bar, which carries the sewing needle, to be disengaged from the drive mechanism in the event that the needle hits an impenetrable object such as a button, zipper or piece of material. The disengaging mechanism includes an elongated sleeve which receives, axially, the upper end of the needle bar. The needle bar is tensioned in a fixed axial position within the sleeve by a number of elements which are adapted to remain in the fixed axial position under normal forces but are adapted to permit the needle bar to become disengaged from its fixed position with respect to the sleeve upon the development of abnormal forces on the needle bar. Means are provided for adjusting easily the tension at which the needle bar is fixed in its axial position to enable disengagement under relatively light forces, as when employing fragile needles to sew light material, or to preclude completely disengagement when sewing extremely heavy materials with relatively heavy needles. In an improved version the adjusting means includes detent means defining a number of different selectable positions for the adjusting means.

3,799,091
SLIDE FOR PROTECTION OF AN OPENING IN THE BASE PLATE OF A SEWING MACHINE
Franz Schneider, and Herbert Wenz, both of Kaiserslautern, Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserlaufen/Pfalz, Germany
Filed Oct. 3, 1972, Ser. No. 294,576
Claims priority, application Germany, Oct. 12, 1971, P 21 50 774.4
Int. Cl. D05b *73/12*
U.S. Cl. 112—260 **2 Claims**



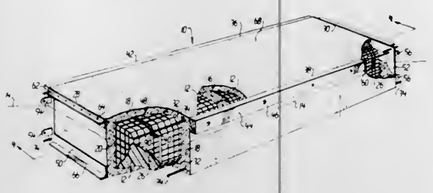
Sewing machines of the type having an opening or aperture in the base plate adjacent the stitch plate to provide access to the looper or other stitch forming means below the base plate, are provided (1) with a slider or closure for such aperture, the slider being curvable or bendable about an axis running transversely to the direction of movement of the slider, and (2) with a passageway which guides the end of the slider downwardly within the edges of the base plate when moved to open the aperture.

3,799,092
EMERGENCY BUOYANCY SYSTEM
Arthur E. Patterson, Jr., Cupertino, and Edward J. Barakauskas, Saratoga, both of Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 14, 1971, Ser. No. 189,383
Int. Cl. B63b *35/44*
U.S. Cl. 114—0.5 D **3 Claims**



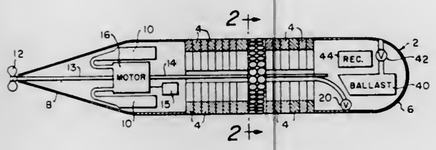
Gases from a solid propellent rocket fuel unit are mixed with carbon dioxide from a pressure vessel to inflate an inflatable buoy, which is connected to a riser pipe utilized in drilling a hole in the bottom of the ocean. The structure buoy is fastened to the riser pipe, about 300 feet below the water, at a level unaffected by wave action, but accessible to divers and is adapted to be rapidly inflated to support the riser pipe, if there is a severe storm and it becomes necessary to cut the drilling platform loose from the riser pipe.

3,799,093
FLOATING PRESTRESSED CONCRETE WHARF
Wade D. Thomson, P.O. Box 3288, Jackson, Tenn.
Filed May 7, 1973, Ser. No. 357,909
Int. Cl. B63b *35/00*
U.S. Cl. 114—.5 F **7 Claims**



A floating prestressed concrete wharf and a method of manufacturing the same are disclosed. The wharf includes pretensioned strands in critical disposition, may include transverse pretensioned cables in its uppermost slab, has wire reinforcing mesh in the concrete and a core of buoyant material.

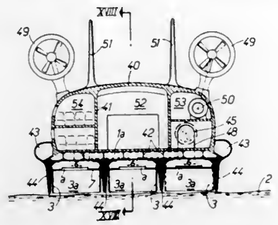
3,799,094
UNDERWATER ACOUSTICAL JAMMING APPARATUS
Freeman K. Hill, Seabrook, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 17, 1971, Ser. No. 154,204
Int. Cl. F42b *19/00*
U.S. Cl. 114—20 R **3 Claims**



A means for jamming underwater detection and tracking signals by sequentially dispensing and firing explosive charges in the area of track. The exploding charges produce shock waves and low intensity sound reverberations which interfer with acoustical signals directed towards the object to be tracked. The present invention particularly discloses a torpedo like device which may be launched from a submarine attempting to "break trail." The self propelled device sequentially ejects a large number of small explosive charges to provide a continuing acoustical shield which enables the submarine to maneuver beyond tracking range.

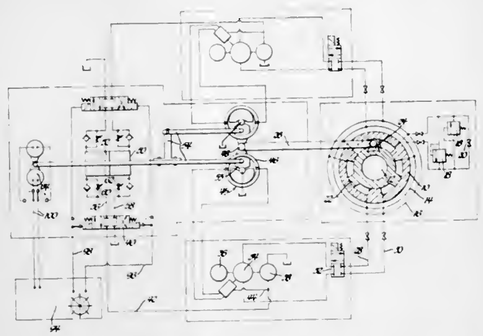
3,799,095
SURFACE-EFFECT MACHINE SUITABLE FOR TRANSOCEANIC TRAFFIC
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cil, Plaisir, France
Division of Ser. No. 44,039, June 8, 1970, Pat. No. 3,688,724.
This application Aug. 23, 1972, Ser. No. 282,919
Int. Cl. B63b *1/34*
U.S. Cl. 114—67 A **5 Claims**

A multi-cushion surface effect machine designed for use as an ocean-going air-cushion vehicle, comprises in its basic structure a flat capacity which extends above the cushion-bounding skirts and which forms a manifold for supplying a number of cushions in parallel from a common pressure fluid source by way of flow-limiting venturis, the same being disposed flat in the capacity. Below the load bearing platform of the machine are fitted three or more projecting walls which extend parallel to the machine longitudinal axis and form



parallel channels, the flexible skirts bounding the fluid cushions being alined in rows as near one another as possible.

3,799,096
POWER TRANSMISSION
Robert W. Jeffery, Franklin, and Robert H. Breeden, Metamora, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.
Filed Jan. 17, 1972, Ser. No. 218,183
Int. Cl. B63h *25/22*
U.S. Cl. 114—150 **5 Claims**

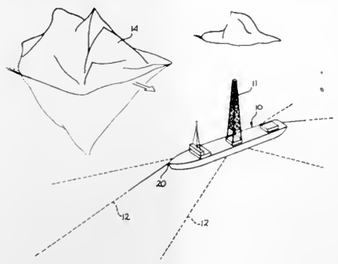


A remote control system for ship's rudders includes a hydraulic rudder actuator and a reversible variable displacement pump connected to drive it, the pump displacement being under the control of a hydraulic bridge circuit utilizing a pair of bleed circuits controlled respectively by variable command orifices and variable response orifices. The command orifices are constituted by a pair of summing valves responsive to the algebraic sum (or difference) of the angular displacements of a command actuator on the one hand and the rudder actuator on the other hand. The command actuator is hydraulically driven and electrically controlled by a closed loop servo system including a helm control which may comprise an automatic pilot.

3,799,097
VESSEL ANCHORING APPARATUS
Gerald L. Robertson, Westminister, Calif., assignor to Fluor Corporation, both of Los Angeles, Calif.
Filed July 20, 1972, Ser. No. 273,485
Int. Cl. B63b *21/26*
U.S. Cl. 114—206 R **4 Claims**

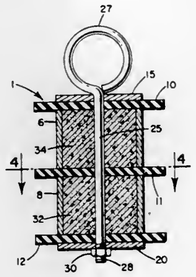
A method and apparatus for quickly releasing and subsequently recovering anchoring lines for a floating structure used for drilling or working operations in the sub-sea floor. The apparatus includes a means for quickly releasing the anchor lines from the structure when it is necessary to move the structure from its location above the sub-sea well site.

When quick release of the anchor lines is made, the anchor lines are each connected to a length of buoyant line, such as nylon rope of sufficient length, so that when the heavy anchor cables or chains reach the bottom of the body of water, a portion of the buoyant line is at the water surface. To reposition



the ship above the sub-sea drilling or working location, the buoyant lines are recovered and reconnected to the structure. When the buoyant lines are pulled back aboard the structure, the anchor lines are reattached to the structure, hauled in, and when properly tensioned, the structure is again on location above the well site or working location.

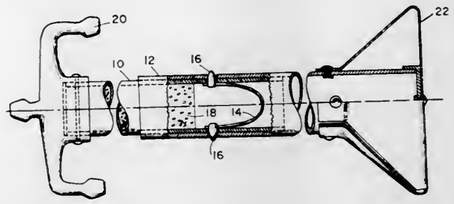
3,799,098
COMBINATION BOAT ANCHOR AND FENDER
Hiram Rex Taylor, P.O.Box 510, Provo, Utah, and Gordon Lee Taylor, 1510 29th St., Moline, Ill.
Filed July 27, 1973, Ser. No. 383,068
Int. Cl. B63b *21/22, 21/04*
U.S. Cl. 114—206 R **7 Claims**



A combination boat anchor and fender comprising an elongated, weighted element, the latter being provided with two square ends of relatively rigid but cushioning material and a square piece intermediate said ends thereof of the same or similar material and of approximately the same dimension, the element and said ends and intermediate piece being clamped together by a central rod which is threaded at one end to receive a bolt thereon and provided with a ring or loop formation at the other end to complete the clamping means, the loop affording means of line attachment thereto for anchoring purposes.

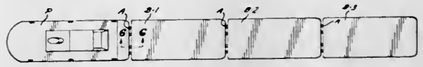
3,799,099
COMBINATION BOAT HOOK AND POLE
Haywood W. Conover, P.O. Box 1106, Punta Gorda, Fla.
Filed Mar. 20, 1972, Ser. No. 221,150
Int. Cl. B63b *21/56;* **B63h** *16/00*
U.S. Cl. 114—221 **1 Claim**

This device will be a telescoping combination Boat Hook and Boat Pole and will lock in extended (or long) position or



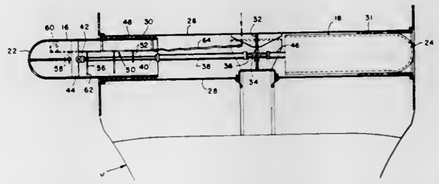
lock in closed (or short) position as need arises in handling of boat and where a boat hook or boat pole is needed for same.

3,799,100
FLEXIBLE CONNECTION FOR ARTICULATING VESSELS
John E. Marriner, Long Beach, Calif.
Continuation-in-part of Ser. No. 88,938, Nov. 12, 1970. This application May 8, 1972, Ser. No. 251,021
Int. Cl. B63b *21/56*
U.S. Cl. 114—235 A **4 Claims**



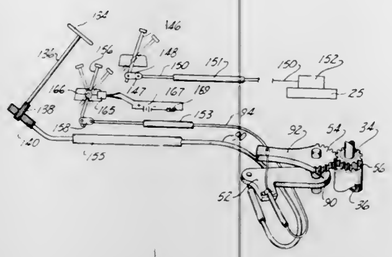
A coupling apparatus interposed between two vessels to connect such vessels in an articulated manner. The vessels may be components of a barge train. The coupling apparatus permits the barges to be individually removed from such train. The apparatus includes one or more resilient posts removably interposed between the vessels. The resiliency of the posts permits the posts to flex and bend for accommodating simultaneous relative movement in roll, pitch, yaw, surge and heave between the vessels resulting from wave action.

3,799,101
BEARING FOR ARTICULATED BARGE OR THE LIKE
Donald W. Finefrock, Chagrin Falls, Ohio, assignor to The Johnson Rubber Company, Middlefield, Ohio
Filed June 29, 1973, Ser. No. 375,045
Int. Cl. B63b *21/56*
U.S. Cl. 114—235 A **7 Claims**



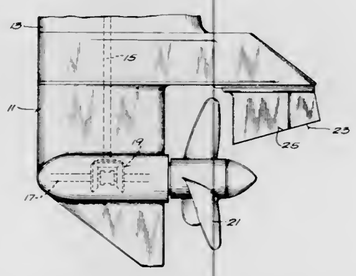
There is provided an improved bearing structure for an articulated tug and barge. The tug is provided with laterally extendible pins in the bow thereof which fit into cylindrical recesses carried by the stern wing walls of a barge. The bearing structure is characterized by a plurlaity of elongated elastomeric staves forming an elastomeric hinge pin encircling bearing surface coacting between the hinge pins and the barge housing means. The individual staves are characterized by an axially extending lubricating medium groove and an integral groove dam portion at at least one end. Retaining means coact between the housing and the ends of the encircling bearing staves for holding them in position and compressively stressing the staves. An improved stave structure is provided.

3,799,102
BOAT PROPULSION SYSTEM
Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., Lincoln Park, Ill.
Continuation-in-part of Ser. No. 249,168, May 1, 1972. This application Sept. 28, 1972, Ser. No. 292,960
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 R **10 Claims**



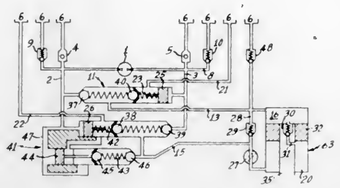
A system for controlling the forward and reverse operation of a boat having a propulsion unit, which unit is mounted on the boat in an appropriate location, fore or aft, and swivelable about a substantially vertical axis to provide normal steering of the boat. Included is a mechanism for providing a rapid turning of the propulsion unit itself through a turn of approximately one-half circle to redirect the force of the propulsion forwardly and in this manner provide reverse drive of the boat. The system further includes a mounting and control arrangement for the propulsion unit which makes possible the selective inclination of the propulsion unit about the substantially vertical axis to provide both trim and tilt of the propulsion unit.

3,799,103
STERN DRIVE UNIT TRIM TAB
Lars E. Granholm, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed June 26, 1972, Ser. No. 266,234
Int. Cl. B63h *25/48*
U.S. Cl. 115—34 R **4 Claims**



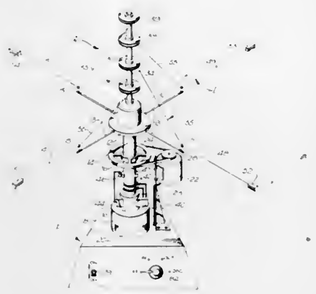
Disclosed herein is a stern drive lower unit comprising a lower portion which is at least partially submerged during normal operation and which includes a rotatably mounted propeller shaft carrying a propeller, and a trim tab which is located rearwardly and above the propeller and which includes two side surfaces, one of which is subject to thrust or impact by water propelled by the propeller and is provided with a forward portion and a rearward portion offset from the forward portion in the direction toward the other of the side surfaces.

3,799,104
HYDRAULIC TRIM/TILT SYSTEM FOR OUTBOARD PROPULSION UNITS
Lennart Kurling, Goteborg, Sweden, assignor to AB Volvo Penta, Goteborg, Sweden
Filed Dec. 20, 1972, Ser. No. 317,061
Claims priority, application Sweden, Dec. 21, 1971, 16407/71
Int. Cl. B63h *5/12*
U.S. Cl. 115—41 HT **6 Claims**



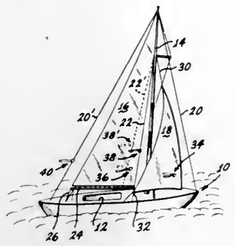
A hydraulic system for trimming and tilting outboard drives for boats. The system comprises a pump adapted to deliver fluid pressure to a double acting cylinder-piston assembly, which is connected to the tiltable outboard drive unit and to a stationary part of the boat. A valve selects between two modes of operation of the cylinder. In one mode the chambers of the cylinder are interconnected to provide rapid tilt operation. In the other mode, one chamber is connected to the pump and the other is connected to the fluid sump to provide relatively less rapid trimming with greater force.

3,799,105
APPARATUS FOR PROTECTING AGRICULTURAL CROPS FROM PESTS
Earl C. Porter, Princeton Ct., Box 63, 38 W. Prince Rd., Tucson, Ariz.
Filed Sept. 2, 1971, Ser. No. 177,899
Int. Cl. G08b *9/00*
U.S. Cl. 116—22 A **5 Claims**



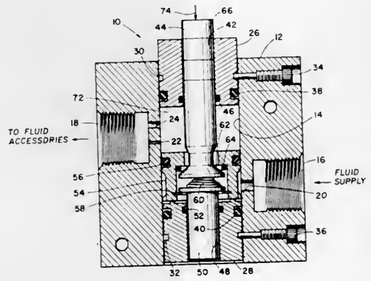
A dynamic apparatus for establishing sight and sound stimuli patterns that are contiguous to agricultural crops, which patterns are generally avoided by crop pests. A rotary structure, which is supported for movement about a generally vertical axis, carries a plurality of weighted lines that are revolved (extended by centrifugal force) to provide the stimuli patterns. The lines as disclosed carry sound-producing weights and the apparatus includes a control means for varying the lengths of the lines extending from the rotary structure. Specifically, the lines may be controlled to be: fully retracted when the apparatus is being started, extended while the apparatus is rotating, retracted while the apparatus is being stopped and oscillated while the apparatus is in operation. Such movements are accomplished by a motor that is supported on the rotor along with a plurality of spools for receiving and dispensing the lines.

3,799,106
NON-FOULING SAILING INDICATOR
Noah Lamport, 2447 Lanterman Ter., Los Angeles, Calif.
Filed Jan. 17, 1972, Ser. No. 218,262
Int. Cl. B60q
U.S. Cl. 116—28 R **1 Claim**



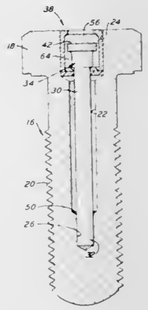
A sailing indicator to indicate optimum pointing angle when sailing to weather and most efficient sail-trim setting for reaching and running. The indicator is in the form of a ribbon or tell-tale material which is attached to the sail a suitable distance aft of the luff and preferably simply by way of an adhesive disc or the like to adhesively secure the ribbon to the sail. Similar ribbons are attached optionally back to back on opposite sides of the sail; and by means of similar adhesive strips, the ribbons can be secured to a stay or shroud line simply by folding the adhesive member or part around the line with the ribbon around the line underneath the adhesive member, or by means of a double-faced adhesive therebetween leaving in either event, two free ribbon parts in free-flowing juxtaposition. The ribbons fly substantially in face to face relationship, and in so doing, they do not individually or collectively become fouled or entangled with themselves or the surrounding rigging to which they are attached, or which is there-adjacent.

3,799,107
POSITIVE FLUID FLOW INDICATOR
Orbie L. Sumner, RFD No. 1, Cleveland, Okla.
Filed June 11, 1973, Ser. No. 368,884
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 **4 Claims**



This disclosure describes a differential pressure valve for indicating fluid flow between an inlet port, supplied with fluid from a source, to an outlet port which connects with fluid accessories, which utilize the fluid from the source. It comprises a block of suitable material with a central cylindrical bore. Two annular bushings are sealed into the block, defining a cylindrical cavity therebetween. The inlet port is connected through a large orifice to the central cavity at one end. The outlet port is connected to the central cavity through two or more orifices of smaller, selected sizes at the other end. There is a free or floating piston which is sealably movable in the central cavity. In one position the free piston is interposed between the inlet orifice and both of the outlet orifices. The floating piston is adapted, by differential pressure below and above its seal in the central cavity, to move upwardly under the effect of the differential pressure, until it uncovers the smallest of the plural orifices leading from the central cavity to the outlet. If the rate of fluid flow out of the outlet is small then the pressure differential across the floating piston will be reduced to a value which will prevent further movement of the floating piston. However, if the pressure on the outlet is still low, due to large fluid flow out of the outlet, then the differential pressure forces the floating piston still farther until it uncovers the larger orifice, and so on.

3,799,108
STRAIN INDICATOR AND METHOD
Jack E. Mosow, Greensburg, Pa., assignor to Modulus Corporation, Cleveland, Ohio
Filed Dec. 13, 1971, Ser. No. 207,260
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 R **13 Claims**

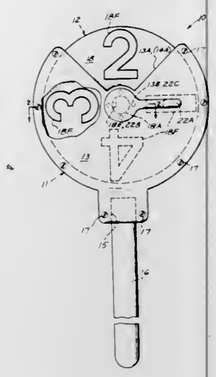


A strain indicator of the type wherein a change in length of a strain member produces a change in color of a visual indicator. An indicator area and a light-absorbing indicator fluid are encapsulated in a member that also includes a window. The capsule is fastened to the strain member with an adhesive. A change in length of the strain member causes the indicator area to become separated from the window with the result that light-absorbing indicator fluid is caused to flow between the indicator area and the window. The method of the invention comprises method steps of manufacturing subassemblies of the strain indicator as well as the method steps leading to complete assembly of the indicator.

3,799,109
FOOTBALL DOWNS MARKER
James Francis Vargo, 5125 Pocono Dr., Dayton, Ohio
Filed Jan. 22, 1973, Ser. No. 326,031
Int. Cl. G09f *9/00*
U.S. Cl. 116—133 **1 Claim**

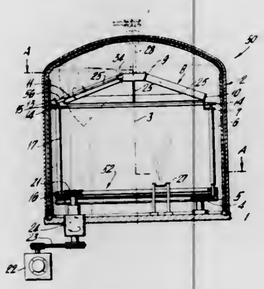
An indicator of football downs used at the line of scrimmage comprises a rotatable disc and a three-quarter circle cover.

The disc is marked on both sides with the four downs, one in each quadrant. One handle is turned to expose the down in the



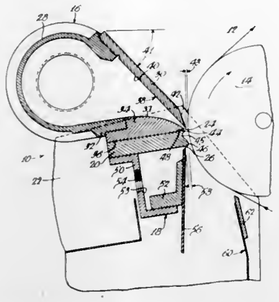
open quadrant of the cover; another handle fixed to the cover is used for holding the indicator for display at the side line.

3,799,110
DEVICE FOR VACUUM COATING
Otto Bellmann, Furstentum, Liechtenstein, assignor to Balzers Patent-und Beteiligungs-Aktiengesellschaft, Balzers, Liechtenstein
Filed Mar. 8, 1973, Ser. No. 339,074
Claims priority, application Switzerland, Mar. 16, 1972, 4066/72
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **8 Claims**



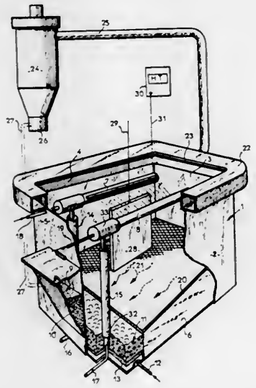
A device for vacuum coating comprises a vessel which is adapted to be evacuated and a structure therein which includes a rotary holding structure upon which is mounted a plurality of supporting plates. The supporting plates are mounted for rotation about an axis parallel to the plate surface. The rotary holding structure is driven by a drive ring which during the initial portion of its rotation is effective to rotate the plates to a position at which they will be oriented in a coating position and thereafter to rotate the whole holding ring structure with the plates. The apparatus advantageously includes means for the electronic sputtering within the vessel to generate ionized gases carrying the coating substance and/or means are provided for evaporating substances to produce the coating material.

3,799,111
WEB COATING APPARATUS
Wayne A. Damrau, Wis. Rapids, Wis., assignor to Consolidated Papers, Inc., Wisconsin Rapids, Wis.
Filed Jan. 26, 1972, Ser. No. 220,895
Int. Cl. B05c *11/00*
U.S. Cl. 118—63 **9 Claims**



In a coating apparatus, the web is conveyed and supported on a rotating roll. Liquid coating material is applied by atomizing the material with air to create a mist adjacent to and contiguous with the supported web. A thin line of pressurized air from the discharge orifice of an air knife is directed toward the web on an angle against the direction of web travel and into a confined space away from the orifice to create a turbulent zone adjacent the web. Liquid coating material is metered under pressure into the turbulent zone through a slot of a chamber. The coating on the web is leveled by the same air stream in a second zone closely adjacent the air orifice.

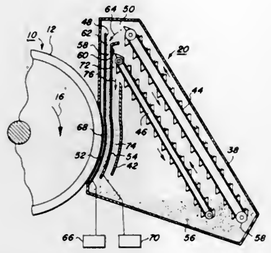
3,799,112
VAT DEVICE FOR THE TREATMENT OF ARTICLES IN A FLUIDIFIED MEDIUM
Andre Huteaux, Chatillon-Sous-Bagneux, France, assignor to Somip, Paris, France
Filed Oct. 26, 1971, Ser. No. 192,623
Claims priority, application France, Oct. 27, 1970, 70.38745
Int. Cl. B05c *5/02*
U.S. Cl. 118—629 **8 Claims**



Vat device for the treatment of articles in a fluidified medium, adapted to perform the coating of various articles with a view to carrying out any appropriate surface treatment comprising an open-top vat having at least one substantially horizontal spraying pipe provided in the upper portion of the

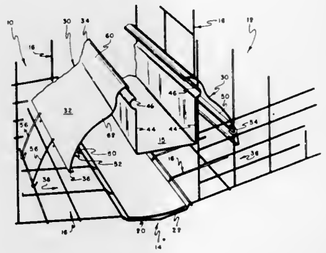
vat in proximity to a wall thereof, the said spraying pipe ejecting into the vat a thin and substantially horizontal layer of fluidified powder.

3,799,113
HYBRID DEVELOPMENT OF ELECTROSTATIC LATENT IMAGE
Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed June 28, 1972, Ser. No. 266,937
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 **10 Claims**



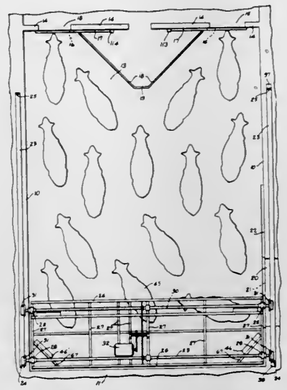
An apparatus in which a cloud of toner particles is produced in a development zone for rendering viewable an electrostatic latent image. Subsequently, the unused toner particles are formed into a cloud of particles in a retrieval zone for return to the developer mix.

3,799,114
EGG GUARD FOR POULTRY CAGES
Raymond J. Kenjesky, Holland, Mich., assignor to U.S. Industries, Inc., New York, N.Y.
Filed Jan. 21, 1972, Ser. No. 219,752
Int. Cl. A01k *31/14*
U.S. Cl. 119—17 **28 Claims**



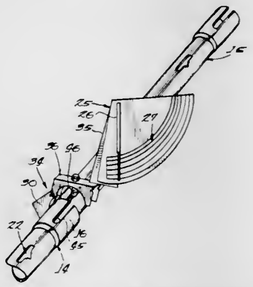
A one-piece guard preferably comprised of extruded plastic is positionable in a poultry cage and extends longitudinally thereof, generally perpendicular to the opposed end walls. The upper margin of the guard has a lip which extends outside the cage and fits over the upper edge of a feed trough for support while the shield portion within the cage has a support-receiving channel which receives a wire-like rod attached to the end walls and helps to support and position the guard within the cage. The shield portion within the cage is curved in its entirety as viewed from within the cage, and defines a reversing curvature which inhibits roosting on the guard by birds within the cage as well as the collection of moisture and dirt.

3,799,115
ANIMAL CROWDING GATE
Marvin R. Fullerton, Box 4, Diamond, Md.; Jess S. Hoover, Rt. 3, and Homer Baugh, Limestone St., both of Carthage, Mo.
Filed Jan. 8, 1973, Ser. No. 321,653
Int. Cl. A01k *29/00*
U.S. Cl. 119—20 **19 Claims**



A gate for crowding animals toward the exit of a runway that has parallel side walls and a floor. The gate extends downwardly from a frame extending across the runway. A motor on the frame drives flanged wheels engaging rails mounted on the side walls. Counterweights are on the frame near the wheels for increasing the frictional grip of the wheels on the rails. The gate has a floor scraper that is mounted so as to be movable up and down and swing about a horizontal axis relative to the gate, and a curved plate mounted to move with the scraper to swing the scraper away from the floor when it encounters debris on the floor during movement toward the exit. Limit switches are provided to halt the motor when the gate reaches the end of its desired travel in either direction.

3,799,116
METHOD AND APPARATUS FOR INSTALLING FEEDING SYSTEM CONVEYOR TUBES
Eldon Hostetler, Middlebury, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.
Filed May 22, 1972, Ser. No. 255,453
Int. Cl. A01k *05/00*
U.S. Cl. 119—51 R **10 Claims**



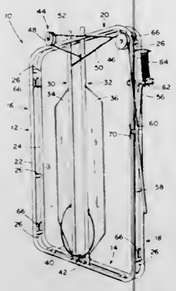
A method and apparatus is disclosed for installing a feeding system conveyor tube to cause the conveyor to generally equally and simultaneously deliver feed to a plurality of feeding stations. An alignment gage is successively attached to preliminarily installed conveyor tube sections and the tube sections are angularly rotated to position feed outlets at a desired predetermined position. This desired position is in-

dicated by the coincidence of a plumb pointer and a hack mark on a gage scale. After rotation into the desired position, each tube section is permanently clamped in place, and the gage is moved to a succeeding tube section.

3,799,117
LIVESTOCK HEADGATE

Billy F. Tribbey, 1002 S. Central, Idabel, Okla.

Filed Oct. 20, 1972, Ser. No. 299,372
Int. Cl. A61d *3/00*
U.S. Cl. 119—98 **8 Claims**

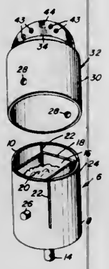


A livestock headgate comprises a rectangular frame adapted for positioning at the open end of a livestock chute. A pair of opposed neck-engaging bars are pivotally supported on the bottom of the frame and are spring-biased toward open positions whereby livestock are permitted to pass through the gate. A chain and pulley system is mounted at the top of the frame and is adapted to draw the neck-engaging bars into closely spaced closed positions. The chain and pulley system is actuated by a lever which operates by toggle action to retain the neck-engaging bars in the closed positions. The actuating lever is supported on a spring-biased plate and is therefore adapted to close and retain the neck-engaging bars even though the bars are prevented from moving to the fully closed positions.

3,799,118
INSECT EXTERMINATING DRUM AND HANGER THEREFOR

Herbert G. Sandefur, P.O. Box 33, Sasakwa, Okla.

Filed Feb. 20, 1973, Ser. No. 333,515
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **8 Claims**



An insecticide containing, insect attracting and exterminating drum having a farm animal neck encircling drum suspending and dangling rope, said drum being made of self-shape retaining moldable plastic material and comprising a cup-like receiver section embodying a cylindrical wall telscoping into a cylindrical skirt-like depending rim on the coordinating cover section. These two sections are separably but retentively assembled, the receptacle portion of the receiver section having a fine mesh screen bottom and enclosing a built-in container for a wad of cotton saturated with a suitably functioning insecticide. The attracted insects (flies, wasps, mosquitoes, ticks, mites and the like) land on the exterior surface of the screen, eat, die and drop to the ground. Currents of air circulate freely and aid in the accumulating and exterminating steps. The sections snap together and promote necessary handling and replenishing steps. The top of the cover section is provided with an upstanding hanger flange having paired holes through which lower free ends of the suspending rope are adjustably threaded.

3,799,119
METHOD FOR REMOVING BOT FLY EGGS FROM HORSES

Nicholas J. Govoruhk, 2329 Harford Rd., Baltimore, Md.

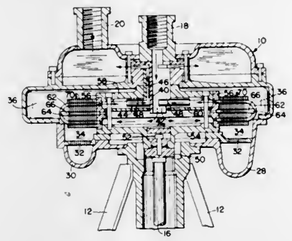
Filed Jan. 10, 1973, Ser. No. 322,472
Int. Cl. A01k *29/00;* **A61k** *27/00*
U.S. Cl. 119—157 **3 Claims**

A method is provided whereby bot fly eggs are removed from the coat and skin of horses, preventing parasitic internal infestation with bot larvae and the undesirable and debilitating effects thereof. The animal is treated by applying a mixture of mineral spirits and 1,1,1-trichloroethane to the skin and coat of the animal and thereafter rubbing with a mildly abrasive material. The treatment is exceptionally effective for the removal of the eggs which are not readily susceptible to other techniques. Removal of the eggs eliminates the principal source of bot larvae infestation of horses.

3,799,120
ROTATING HEAT EXCHANGER

Lothar A. Huettner, 57 Holden St., Holden, Mass.

Filed Mar. 21, 1973, Ser. No. 343,383
Int. Cl. F22b *27/12*
U.S. Cl. 122—11 **10 Claims**



A heat exchanger comprising a housing, a driven rotor in the housing, said rotor including an annular series of finned radially extending multiple tube water conductors and in combination a new and improved water pump; a cold water inlet, and a hot water outlet directly receiving water from the pump, in combination with an annular heating arrangement (preferably gas) in alignment with the annular water conductors heating the same as the rotor rotates.

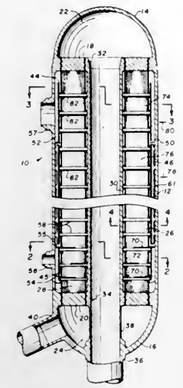
3,799,121
SUPERHEATER FLOW BAFFLING

John W. Alden, Jr., Karlskrona, Sweden, and Kenneth E. Webster, Chattanooga, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 13, 1972, Ser. No. 314,877
Int. Cl. F22b *1/06*
U.S. Cl. 122—32 **12 Claims**

Flow baffle structure is provided for a shell and tube vapor generator for directing the flowing vaporizable fluid through the shell in heat exchange relation to the heating fluid flowing

through the tubes. The structure comprises a plurality of axi ally spaced assemblies each containing a number of horizon tally disposed, radially extending baffle plates. The plates are sector-shaped and circumferentially spaced from one another

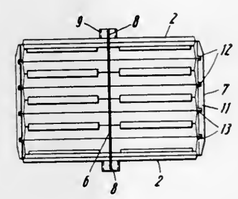


to form openings through which the vaporizable fluid is caused to flow. The plates and intermediate openings in adjacent assemblies are alternately disposed so as to direct the fluid along substantially sinuous courses through the affected region of the unit.

3,799,122
WATER HEATING UNIT FOR GAS-HEATED WATER BOILER

Hans Viessmann, Battenberg, Eder im Haln, Germany

Filed Mar. 1, 1973, Ser. No. 337,179
Claims priority, application Germany, Mar. 2, 1972, 2210015
Int. Cl. F22b *1/23*
U.S. Cl. 122—225 R **6 Claims**

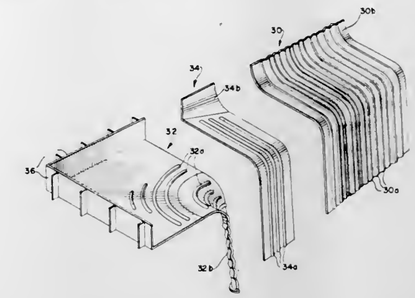


A plurality of water conducting hollow members are assembled side by side and are interconnected by water ducts to enable water to circulate therethrough. Tie bars pass through the water ducts and have ends projecting through the end walls of the assembled hollow members, the tie bar ends being received in, and affixed to, sockets whereby the assembled members are anchored by the tie bars between the sockets to form a hot water radiator unit. Tie members clasp the side walls of the unit, the tie members being U-shaped elements having free ends with notches and the hollow members having ribs engaged by the notches.

3,799,123
DEVICE FOR CONNECTING A BOILER TO A PENTHOUSE

Salvatore J. Reale, Wayne; Clarence C. Eich, Mountain Lakes; Walter J. Van Dyke, Wycoff; Rajnikant P. Dave, Parsippany, all of N.J., and Gilbert C. Whitney, deceased, late of Dansville, N.Y. (by Virginia E. Whitney, executrix), assignors to Foster Wheeler Corporation, Livingston, N.J., by said Salvatore J. Reale, Clarence C. Eich, Walter J. Van Dyke and Rajnikant P. Dave

Filed June 30, 1972, Ser. No. 267,855
Int. Cl. F22b *37/36*
U.S. Cl. 122—494 **5 Claims**

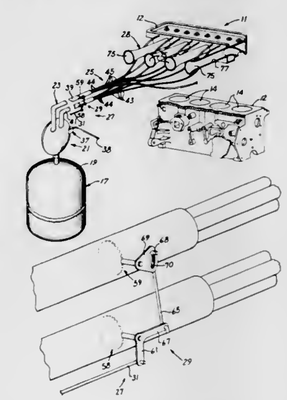


A device for sealingly connecting a boiler to its penthouse including a corrugated, rigid plate-like structure attached to the boiler and to the penthouse. The corrugations extend in two directions to accommodate movements of the boiler relative to the penthouse in two directions in a first plane. The dimension of the plate-like structure in a direction corresponding to the distance between the boiler and the penthouse is such as to accommodate movements of the boiler relative to the penthouse in two directions in a plane perpendicular to the above-mentioned plane.

3,799,124
HYDROGEN ENGINE AND METHOD OF FUELING SAME

Michael R. Swain, Miami, Fla., assignor to Pollution Free Power Corp., Miami, Fla.

Filed May 5, 1972, Ser. No. 250,809
Int. Cl. F02m *21/02;* **F02b** *1/08, 43/10*
U.S. Cl. 123—1 A **14 Claims**



An internal combustion engine is fueled by hydrogen with the ratio of hydrogen to air within the combustion chamber or cylinder being varied to change the speed and power output of

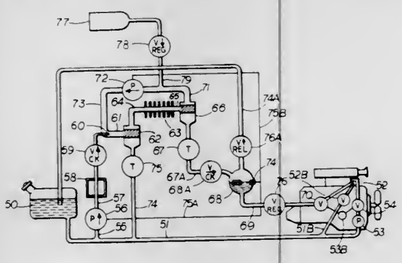
the engine and the flow of air to the engine is substantially unthrottled in contrast to the usual throttled flow of air and hydrocarbon fuel flowing from a carburetor to an engine. The preferred flow of hydrogen is substantially at ambient atmospheric pressure; and at light loads the hydrogen molecules may be concentrated within a portion of the chamber for combustion thereby burning a very lean charge of fuel. The engine and method of fueling provide higher thermal efficiencies, lower fuel consumptions and less pollutant emissions than similar engines fueled by a throttled flow of air-fuel mixtures, particularly hydrocarbon fuel-air mixtures.

3,799,125

PROCESS AND APPARATUS USING CIRCULATING GAS STRIPPING LOOP FOR ON-BOARD PRODUCTION OF VOLATILE FUEL TO OPERATE AN INTERNAL COMBUSTION ENGINE

Donald O. Hutchinson, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 5, 1971, Ser. No. 195,917
Int. Cl. F02b *43/08*; **F02m** *13/04*
U.S. Cl. 123—3 **16 Claims**



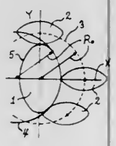
An improved fuel system containing a circulating inert gas stripping loop including means to partially vaporize gasoline, condense the vapor to obtain a volatile fuel for use in start and warm-up of an internal combustion gasoline engine, and recirculate the inert gas. A dual liquid fuel system for an internal combustion engine equipped with a single fuel metering system, means to deliver a volatile fuel to the carburetor or other fuel metering means on start-up and until the engine attains a predetermined operating temperature and fuel switching means to deliver normal gasoline for warmed-up operation is disclosed.

3,799,126

ROTARY MACHINES

Jacob J. H. Park, 659 Chapman Blvd., P.O. Box 8343, Ottawa, Ontario, Canada

Filed Feb. 22, 1971, Ser. No. 117,662
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.01 **5 Claims**



The disclosure describes rotary machines which comprise two or more rotors which are in continuous sliding contact to the neighboring ones forming working compartments of periodically varying volume.

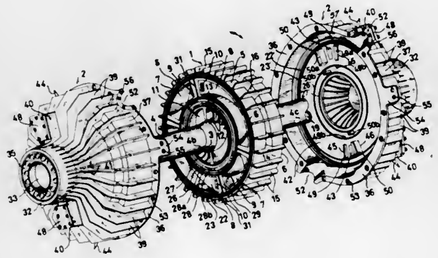
The discription of geometric properties that govern the shape of these rotors, their application to various rotary machines, such as pumps and internal combustion engines, and the discussion of shapes of ports and other practical problems are included.

3,799,127

PISTONLESS ROTARY ENGINE

Sheng-Tsai Tseng, Tao Yuan Hsien, Taiwan, China /Taiwan, assignor to Hwa Te Rotary Engine Company, Taipei, Taiwan, China /Taiwan

Filed Dec. 2, 1971, Ser. No. 204,069
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.27 **18 Claims**



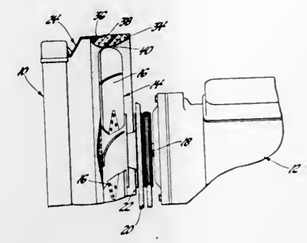
A pistonless rotary engine comprising a generally cylindrical rotor member rotatably disposed in a housing member comprising a pair of symmetrically arranged right and left housing halves. The rotor includes a main shaft member passing through its center and is rotatably journaled in each of the housing halves. The rotor defines at least one chamber set, each of which comprises a compression chamber and an expansion chamber, located on one or both sides of the rotor member. When viewed along the direction of rotation of the rotor for orientation, a mixed gas intake port is provided at the lower end of the frontal portion of the compression chamber. The intake port is in communication with an intake opening in a hollow end of the main shaft. An exhaust port is provided at the rearmost bottom of the expansion chamber and communicates with an opening at the outer circumference of the housing member to exhaust gases from the engine. The housing member defines one or more combination chambers corresponding in number and relative location to the number and relative location of the compression/expansion chamber sets on the rotor. Valve means, including a compression valve and an expansion valve each of which is spring-biased and operated by a valve guide member, are provided for each of the combustion chambers to cooperate with the compression chamber and expansion chamber on the rotor when rotating to provide a thrust to the rotor when the fuel/air gas intake mixture is ignited by a spark plug in the combustion chamber. The compression and expansion valve members are mechanically programmed to extend respectively into the compression chambers and expansion chambers on the rotor to compress the gas mixture in the compression chamber and cause the mixture to pass to the combustion chamber in the housing of the engine, and to control the exhausting of the waste gases from the engine. The compression and expansion valves also cooperate with the intake and exhaust ports in the compression and expansion chambers respectively to control the input of fuel gases and output of waste gases relative to the engine. Sealing means are provided between the housing halves and the rotor to maintain the chamber system in a gas-tight state. Cooling means are also provided for the housing member and the rotor member.

3,799,128

ENGINE COOLING SYSTEM RADIATOR AND FAN SHROUD

Robert C. Small, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1973, Ser. No. 339,197
Int. Cl. F01p *11/10*; **F04d** *29/02, 29/08*
U.S. Cl. 123—41.49 **4 Claims**



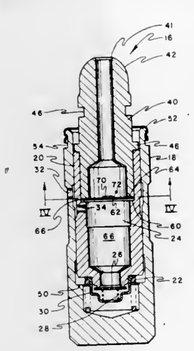
An engine cooling system including a fan rotatably mounted on an engine, a fan shroud secured to a radiator, and a foam ring secured to an inner portion of the shroud immediately radially adjacent the tips of the fan blades such that the blades cut a clearance in the foam ring during operation as required to compensate for any relative movement between the engine and radiator to thus provide for a highly efficient fan-shroud clearance.

3,799,129

HYDRAULIC LASH ADJUSTER OIL METERING MEANS

Richard D. Cornell, Muskegon, Mich., assignor to Johnson Products, Inc., Muskegon, Mich.

Filed Nov. 6, 1972, Ser. No. 304,035
Int. Cl. F01l *1/24, 1/18*; **F01m** *9/10*
U.S. Cl. 123—90.36 **3 Claims**



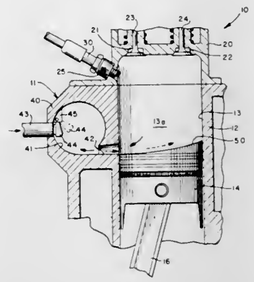
Lubricating oil through the lash adjuster body is directed first into a reservoir formed by a plunger reciprocating within the lash adjuster body and then through a central passageway formed in the closure element which element forms the pivot for the rocker arm. A plate is positioned in the plunger cavity intermediate the reservoir and lower end of the closure element, the latter having a groove extending radially from the central passageway to the clearance between the plunger wall and closure element. The plate is urged by the oil pressure in the reservoir against the lower end of the closure element forming with the groove a restricted passageway which meters the oil flow to the lubricating arm. The plate is also a check valve during engine start up to prevent the ingestion of air into the plunger.

3,799,130

INTERNAL COMBUSTION ENGINE

Karl L. Dahlstrom, 942 Ashwood Dr., Lewisville, Tex.

Filed June 21, 1971, Ser. No. 155,207
Int. Cl. F02m *25/06*; **F02b** *41/00*
U.S. Cl. 123—119 A **9 Claims**



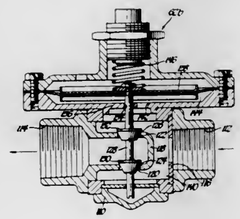
An internal combustion engine including at least one cylinder and piston, a fuel intake system, an exhaust system, and particularly characterized by an exhaust gas recirculation system having a chamber communicating with the base end of the combustion chamber of the cylinder for receiving a charge of exhaust gas at the end of each power stroke and recirculating the exhaust gas charge mixed with fresh air back into the cylinder at the end of each fuel intake stroke of the piston. A valve may be placed in the flow passage communicating the cylinder with the exhaust recirculation chamber for controlling the communication responsive to cam shaft movement or to intake manifold vacuum for correlating the exhaust recirculation with the fuel-air ratio fed to the engine.

3,799,131

EXHAUST GAS RECIRCULATION

Robert A. Bolton, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 19, 1972, Ser. No. 245,587
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **20 Claims**



A control valve assembly responsive to exhaust back pressure controls recirculation of exhaust gases from the intake manifold exhaust crossover passage to the intake manifold induction passages.

3,799,132

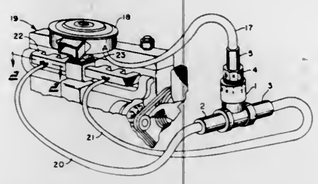
VALVE DEVICE AND SYSTEM EMPLOYING THE SAME

Andrew E. MacGuire, Willowdale, Ontario, Canada, assignor to The Ferry Cap Set Screw Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 278,250, Aug. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 63,186, Aug. 12, 1970, Pat. No. 3,693,650. This application Apr. 9, 1973, Ser. No. 349,073

Int. Cl. F02d *9/00*; **F16k** *15/04, 15/14*

U.S. Cl. 123—119 D **22 Claims**



A fluid pressure responsive valve device and system employing the same for providing variations in air flow to the manifold of an internal combustion engine in accordance with the engine vacuum.

3,799,133

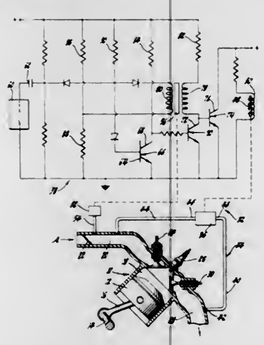
SOLENOID VALVE CONTROL FOR EXHAUST GAS RECIRCULATION

Daniel L. Frank, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 22, 1972, Ser. No. 265,267

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **2 Claims**



A solenoid valve which regulates exhaust gas recirculation in an internal combustion engine is controlled by an electrical circuit responsive to engine speed and intake manifold pressure.

3,799,134

COMBUSTION ENGINE WITH QUICK ARRANGEMENT FOR ITS EXHAUST GAS CLEANING DEVICE DURING COLD OR IDLE RUN

Wolfgang Griese, Gaimersheim, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

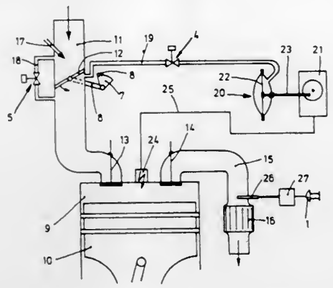
Filed Dec. 11, 1972, Ser. No. 313,869

Claims priority, application Germany, Dec. 14, 1971, 2161946

Int. Cl. F02p *5/04*

U.S. Cl. 123—119 A **7 Claims**

A combustion engine with an exhaust gas cleaning arrangement operable at predetermined temperature and placed in the exhaust gas conduit of the engine, such predetermined temperature is attained by the exhaust gas cleaning arrangement through the heat of the exhaust gases, a device for adjusting the ignition timing and the fuel supply to the engine during a cold start thereof or during an idle running phase of operation thereof for delivering exhaust gases having an increased temperature for quickly heating up the cleaning arrangement including a pair of switching contacts serially connected with respect to each other in a circuit, a pair of magnetically operated solenoid valves connected parallel with respect to each and series with respect to the switching contacts, a suction pipe supplying fuel-air mixture to the engine with a butterfly valve for controlling the quantity of the fuel and air mixture, a conduit branch bypassing the butterfly valve, one of the magnetic valves is coupled into the branch conduit for effecting opening or closing thereof, a low pressure conduit connected to the suction pipe, a device for adjusting the ignition timing connected to the low pressure conduit, the other of the magnetic valves is coupled to the low pressure conduit for effecting the opening or closing thereof, a thermostat for sensing the temperature of the exhaust gas cleaning arrangement and connected for operating one of the switching contacts for effecting energization of the magnetic valves, a cam fixedly coupled with the butterfly valve for effecting the actuation of the other of the switching contacts, the magnetic valves receiving energizing current when both of the switching contacts are actuated, whereby an enriched fuel-air mixture is supplied to the engine through the pipe-conduit when it is opened by one of the magnetic valves, and the ignition timing device is set "delayed" by the adjusting device in response to a pressure condition in the low pressure conduit when the other of the magnetic valves opens the conduit during the idle running operation of the engine.



3,799,135

IGNITION DISTRIBUTOR

Ronnalee House, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 22, 1972, Ser. No. 227,940

Int. Cl. F02p *1/00*

U.S. Cl. 123—146.5 A **6 Claims**

An ignition distributor for sequentially directing the ignition spark energy produced by an ignition coil to the spark plugs of an associated internal combustion engine. An ignition spark energy conductive circuit, connected to the secondary winding of the ignition coil, is in arc-gap relationship with the distributor output circuits through which the ignition spark energy is conducted to the respective spark plugs of the engine. A rotatable member of insulating material, having one or more areas through which ignition spark energy may be conducted to one of the output circuits at a time, is disposed within the arc-gaps and rotated by the distributor shaft.

3,799,136

METHOD OF, AND APPARATUS FOR IGNITION TIMING IN INTERNAL COMBUSTION ENGINES

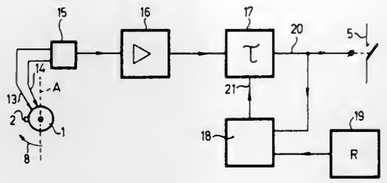
Aart Gerrit Korteling, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed June 21, 1971, Ser. No. 154,815

Claims priority, application Netherlands, June 20, 1970, 7009086

Int. Cl. F02p *5/04*

U.S. Cl. 123—148 E **12 Claims**



The ignition of a gas mixture in an internal combustion engine must take place at a given instant before the top dead centre is reached in the compression stroke. The invention provides a method and an apparatus in which the time interval between the ignition instant and the top dead centre is measured and is maintained constant in a control circuit, using as a reference, for example, a fixed time period from a timer. Data are obtained from a crankshaft transducer, and an output signal is delivered for controlling a contact breaker of the high-tension ignition system of the engine. Vacuum advance or other external influences are obtainable by changing the reference time or by adapting the measuring parameters.

3,799,137

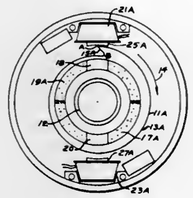
PULSER ROTOR FOR IGNITION SYSTEMS

Komatireddy Narashimha Reddy, Beloit, Wis., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,065

Int. Cl. F02p *1/00*

U.S. Cl. 123—149 R **3 Claims**



An ignition system of the fly wheel magneto type including a pulser rotor which develops an output in the associated coil sufficient to provide an energizing spark to the associated spark plug when a rotor is rotating in the desired direction of the rotor and minimal output when the rotor is rotating in the opposite direction to inhibit energization of the spark plug.

3,799,138

COLD STARTING INSTALLATION FOR INTERNAL COMBUSTION ENGINES

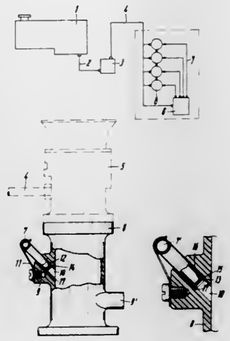
Ferdinand Anton Ernst Porsche, Stuttgart-Nord; Robert Binder, Schwieberdingen, and Ernst Rudolf Weyersberg, Stuttgart-Bad Cannstatt, all of Germany, assignors to Dr. - Ing. h.c.F. Porsche KG, Stuttgart-Zuffenhausen, Germany

Filed Mar. 15, 1972, Ser. No. 234,712

Claims priority, application Germany, Mar. 23, 1971, 2114051

Int. Cl. F02m *39/00*; **F02n** *17/00*

U.S. Cl. 123—179 G **12 Claims**



A cold-starting installation for internal combustion engines, especially for multi-cylinder internal combustion engines of motor vehicles, which includes individual injection lines connected with the fuel line and an electrically controlled cold-starting valve for the control of the fuel injection quantity; a predetermined fuel quantity is injected during the starting of the internal combustion engine by way of the injection lines into the suction pipes of the internal combustion engine whereby a stopped bore is provided laterally of each suction pipe of the internal combustion engine for receiving the injection line, into which is inserted the discharge end of the injection line which is provided with an injection nozzle; the discharge ends are held in place in the stepped bore, for example, by spring clamps.

3,799,139

METHOD AND DEVICE FOR PROTECTING THE STEM OF AN EXHAUST VALVE OF AN INTERNAL COMBUSTION ENGINE OR THE LIKE AGAINST CORROSION

Karl Walter Kuhn, Saint-Germain-en-Laye, France, assignor to Societe D'Etudes De Machines Thermiques, Saint-Denis, France

Filed Sept. 15, 1971, Ser. No. 180,606

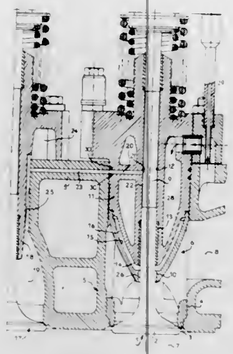
Claims priority, application France, Sept. 23, 1970, 70.34420

Int. Cl. F01p *3/14*

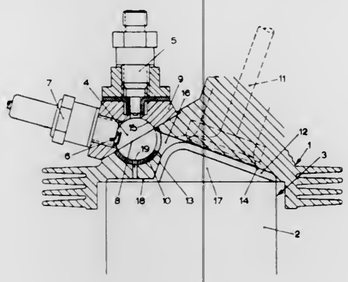
U.S. Cl. 123—188 GC **12 Claims**

In a device for protecting an exhaust valve stem of an internal combustion engine against corrosion, auxiliary fluid injection duct means connected to a source of auxiliary gaseous

pressure fluid and extending through the valve stem guide to open close to the valve stem into an annular space surrounding the latter and located between the valve disk and the stem area exposed to corrosion.

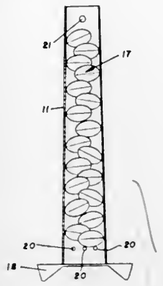


3,799,140
CYLINDER ARRANGEMENT FOR COMBUSTION ENGINES HAVING A PRE-COMBUSTION OR ANTE-CHAMBER AND A COMBUSTION CHAMBER
Gustav Vogelsang, Braunschweig, and Istvan Geiger, Wolfsburg, both of Germany, assignors to Volkswagonwerk Aktiengesellschaft, Wolfsburg, Germany
Filed July 12, 1971, Ser. No. 161,843
Claims priority, application Germany, July 29, 1970, 2037532
Int. Cl. F02b *19/16*
U.S. Cl. 123—191 S 12 Claims



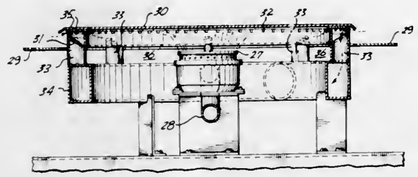
A cylinder arrangement for combustion engines in motor vehicles with external ignition comprising a cylinder having a piston mounted therein for movement, a combustion chamber and a pre-combustion or ante-chamber in communication with each other, a valve means opening into the pre-combustion chamber for injecting the fuel mixture thereinto and a spark-plug having electrodes for the ignition of such mixture, the combustion chamber having an extension adjacent the pre-combustion chamber, with such extension having a saw-tooth-like cross section wth a steep side and a flat side, the pre-combustion chamber communicating with the combustion chamber adjacent the steep side of the saw-tooth-like extension chamber, the flat side of the extension chamber going over to the pre-combustion chamber in a tangential fashion.

3,799,141
CHARCOAL STARTER STRUCTURE
Eugene B. Simmer, 3230 Lee Ave., Golden Valley, Minn.
Filed May 8, 1972, Ser. No. 251,477
Int. Cl. F23q *1/06*
U.S. Cl. 126—25 B 3 Claims



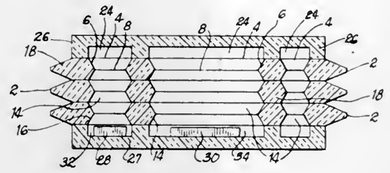
A charcoal ignition starting device for charcoal briquettes of generally regular configuration, the device including a means for substantially vertically stacking the individual briquettes prior to ignition. The structure includes a sleeve means for providing a stacking column, the sleeve having a generally elongated conical configuration with a diameter generally less than two times the maximum dimension of the individual charcoal briquettes. The base of the sleeve is a plurality of spaced support members to provide spaced apart air flow channels through the base of the open sleeve. A plurality of bores are formed in the wall of the sleeve for receiving a grate means therewithin, the grate means including a gripping handle and a plurality of elongated tines for supporting a column of charcoal briquettes within the open sleeve.

3,799,142
METHOD AND APPARATUS FOR SEQUESTERING OPEN FLAME COMBUSTION GAS
Fred H. Jensen, Rt. 5, Box 1330, Camano Island, Wash.
Filed Apr. 26, 1972, Ser. No. 247,722
Int. Cl. F24c *3/00*
U.S. Cl. 126—39 J 5 Claims



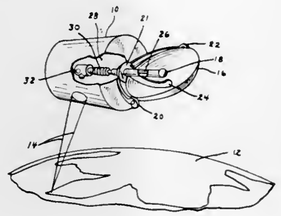
Combustion gas channelled to flow alongside a surface of an open burner, such as over the usually upright catalytic bed of a space heater, or a generally horizontal stove cooking top or pot bottom overlying the open burner, is segregated by an aperture in the path of flow of the combustion gas, so that the gas flows through such aperture, instead of being dissipated into a room space and mixed with the ambient gases of the space. The effluent combustion gas thus sequestered is withdrawn by suction through a discharge duct. The opening through such aperture or discharge duct can be regulated by a shutter or damper, which can be adjusted by temperature-responsive thermostatic means, responsive to the temperature of combustion gas flowing through the segregating aperture or discharge duct, to enlarge the opening as the temperature rises and to restrict the opening as the temperature decreases.

3,799,143
FOOD SERVICE SYSTEM
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.
Continuation of Ser. No. 869,753, Oct. 27, 1969, abandoned.
This application Nov. 24, 1971, Ser. No. 201,929
Int. Cl. A47b *31/02*
U.S. Cl. 126—246 2 Claims



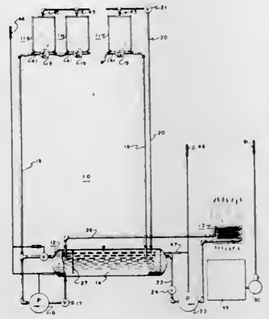
This application discloses a food service system consisting of a plurality of trays formed from an insulating material as by molding. Each tray may have one or more receptacles to receive food holding containers. The bottoms of the receptacles open into coextensive inverted dish portions which may receive the upper portion of a food holding container in a vertically aligned receptacle in the tray beneath. When stacked, the matching receptacles and inverted dish portions form a series of compartments in a vertical column into which foods of like temperature may be put. Upper and lower closures may be provided for insulation at the top and bottom of a stack of trays. Also disclosed is the provision of heated or cooled means at the bottoms of one or more of the vertical columns to help maintain the food at the desired temperature.

3,799,144
SOLAR HEAT SOURCE AND RECEIVER SYSTEM
James W. Ramsey, Golden Valley; Roger N. Schmidt, Minnetonka, and Carl B. Petersen, Fridley, all of Minn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 21, 1972, Ser. No. 236,629
Int. Cl. F24j *3/02*
U.S. Cl. 126—270 3 Claims



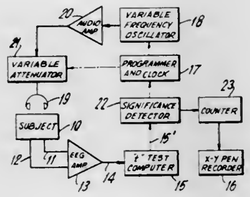
A system for collecting solar heat to meet high power heat requirements as in a Vuilleumier cycle cryogenic refrigerator, in space application. The system includes a short focal-length-to-diameter ratio collector, a heat receiver having a convex surface attached to a heat pipe further containing a heat storage element which is connected to the use, i.e. a cryogenic refrigerator. The heat receiver utilizes a novel coating allowing the system to realize an effeciency in excess of fifty percent.

3,799,145
SOLAR HEATING SYSTEM
Delwin W. Butterfield, Rt. 3, Twin Falls, Idaho
Filed Sept. 21, 1972, Ser. No. 290,903
Int. Cl. F24j *3/02*
U.S. Cl. 126—271 4 Claims



The solar heating system includes solar chambers each comprising a housing having a lens suitably mounted on the uppermost terminal side of the housing and a convection plate disposed parallel between the lens and the back wall of the housing operable to divide the heating chamber into a convection plenum and a heating chamber cavity which is operable to circulate fluid; reservoir means; and pumping means.

3,799,146
HEARING TESTING METHOD AND AUDIOMETER
Erwin Roy John, Riverdale, and Robert Laupheimer, Westbury, both of N.Y., assignors to Neuro-Data, Inc., Cliffside Park, N.J.
Filed Oct. 6, 1971, Ser. No. 187,003
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 B 10 Claims

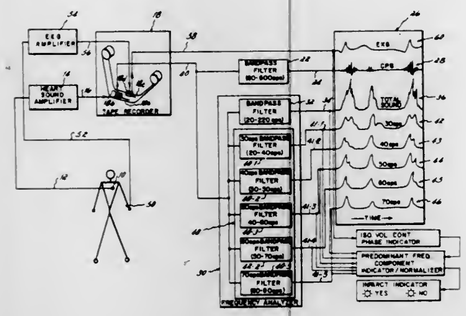


A hearing testing method permits the testing of infants and others who cannot respond and provides an accurate and rapid test for others. A group of pure tones at selected amplitudes and frequencies is played, through earphones, to a subject. Electrodes connected to the subject's head detect the subject's brainwaves which are evoked responses to those tones. The brain waves are amplified, averaged according to the tone frequencies, automatically analyzed on a statistical basis using the "t" test, and used to display a profile of the subject's hearing ability.

3,799,147
METHOD AND APPARATUS FOR DIAGNOSING MYOCARDIAL INFARCTION IN HUMAN HEART

Robert J. Adolph, and John F. Stephens, III, both of Cincinnati, Ohio, assignors to Board of Directors of the University of Cincinnati, Cincinnati, Ohio

Continuation of Ser. No. 44,281, June 8, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,442
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 S **10 Claims**

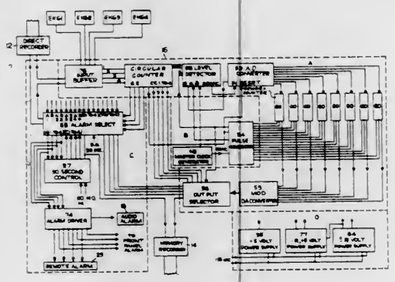


Apparatus and method for diagnosing myocardial infarction predicated on analysis of the acoustical frequency spectrum of the human heart during the isovolumic contraction phase of the cardiac cycle for the purpose of detecting a shift in the predominant frequency component of the spectrum from a 30–50 cps frequency band, typical of a noninfarcted heart, to a 20–40 cps frequency band, indicative of an infarcted heart.

3,799,148
TWO RECORDER APPARATUS FOR MONITORING HEART ACTION

David M. Rowen, Milwaukee, Wis., assignor to St. Mary's Hospital, Milwaukee, Wis.

Filed Jan. 13, 1972, Ser. No. 217,475
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **11 Claims**

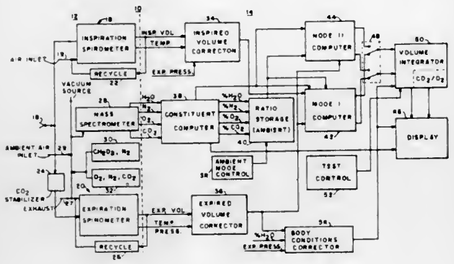


Apparatus for monitoring the heart action of one or more coronary patients comprises an electrocardiograph (EKG) for each patient, a direct recorder connected to the EKG's for providing an electrocardiogram (ECG) of a patient's heart action in the event apparent heart action irregularity (arrhythmia) occurs, and a memory recorder for providing a reconstructed ECG of that patient's heart action during a 30 second interval just prior to onset of the apparent arrhythmia. The memory recorder is connected to a solid state memory unit which receives data from the EKG for each patient. Each EKG provides data in analog form and the solid state memory unit samples the analog, converts the sample analog to digital form (wherein binary numerical values correspond to amplitudes of the sample analog), stores the digital samples for about 30 seconds and reconverts the digital samples derived from any one of the EKG's to analog samples which are reconstructed into a wave form for use by the memory recorder on demand.

3,799,149
METABOLIC ANALYZER

John A. Rummel, Houston, Tex., and Cortes L. Perry, Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 26, 1972, Ser. No. 318,152
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.07 **15 Claims**

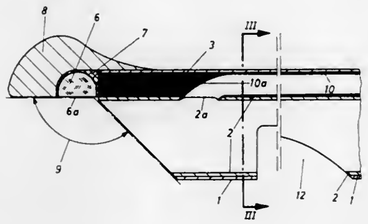


An apparatus for the measurement of metabolic rate and breathing dynamics in which inhaled and exhaled breath are sensed by sealed, piston-displacement type spirometers. These spirometers electrically measure the volume of inhaled and exhaled breath. A mass spectrometer analyzes simultaneously for oxygen, carbon dioxide, nitrogen and water vapor. Computation circuits responsive to the outputs of the spirometers, mass spectrometer, temperature, pressure and timing signals compute oxygen consumption, carbon dioxide production, minute volume and respiratory exchange ratio. A selective indicator provides for read-out of these data at predetermined cyclic intervals.

3,799,150
ENDOSCOPES

Ludwig Bonnet, 28 Johnstrasse, Knittlingen, Germany

Filed Dec. 2, 1971, Ser. No. 204,249
Claims priority, application Germany, Dec. 5, 1970, 7045081
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **1 Claim**

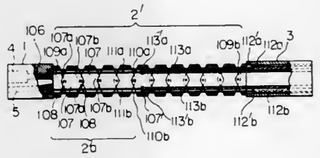


This invention relates to endoscopes of the kind having a stem that provides a free view of and allows illumination for an area of examination of a body cavity. The object of the invention is to provide an endoscope that is of particular use for examining narrow body cavities so that a direct view can be obtained without the necessity of using an optical system extending through the endoscope stem. In the invention, this stem is of oval cross-section and is provided with a viewing tube eccentrically positioned therein and a sickle-shaped area is defined between the stem and viewing tube. The stem encloses a fibre light conductor comprising a bundle of light-transmitting fibres and a semi-cylindrical light radiator of optical glass is mounted on the distal end of the viewing tube. This member has a semi-cylindrical surface in a thickened head portion of the stem and is located in front of the distal end of the stem and viewing tube: moreover, it has a flat surface which is directed towards the longitudinal axis of the viewing tube.

3,799,151
CONTROLLABLY BENDABLE TUBE OF AN ENDOSCOPE

Masaharu Fukaumi, Yokohama, and Toshiyuki Mori, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 15, 1971, Ser. No. 208,212
Claims priority, application Japan, Dec. 21, 1970, 45-115426; Dec. 21, 1970, 45-115427
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **4 Claims**



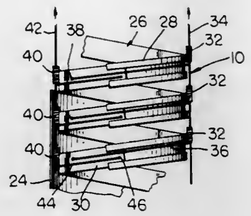
A controllably bendable tube section of an endoscope is connected between the distal end casing and the yieldably flexible main tube of the endoscope. Two pairs of wires extend through the controllably bendable tube section and the flexible tube, the wires in each pair being located at diametrically opposite sides of the tubes, their distal ends being secured to the end casing. The proximal ends of the pairs of wires are connected respectively to two control mechanisms provided in the control housing of the endoscope, so that the wires in each pair can be alternately tensioned by operating the associated control mechanism. A first pair of non-contractable sheaths slidably surrounds the respective wires of one pair, the distal ends of the flexible sheaths being secured to the distal end of the flexible tube and their proximal ends being secured to respective stationary portions of the control housing, whereby the controllably bendable tube section may be bent in its entire length by the operation of the one control mechanism regardless of the flexure of the flexible tube. A second pair of non-contractable sheaths slidably surrounds the respective wires of the other pair, and the distal ends of the second set of flexible sheaths are secured to a longitudinally intermediate part of the controllably bendable tube section while the proximal ends are secured to respective stationary portions of the control housing, whereby only the distal portion of the controllably bendable tube may be bent by the operation of the other control mechanism.

3,799,152
FLEXIBLE AND EXPANDABLE ESOPHAGOSCOPE

Sung Soo Kim, 4724 Imperial Pk. Dr., Fort Wayne, Ind.

Filed Aug. 21, 1972, Ser. No. 282,256
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **19 Claims**

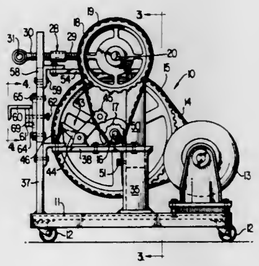
An elongated flexible tubular element for use as an esophagoscope and the like and an arrangement for selectively expanding and contracting the tubular element. The flexible tubular element is adapted to have associated therewith or to receive therein a suction tube and/or a fiber optical bundle for illumination of the region at the inner end of the tubular element, and another optical element for checking or photographing the region at the inner end of the tubular element can also be introduced through the tubular element if so desired. A control box at the outer end of the tubular element is provided for controlling the expansion and contraction thereof.



3,799,153
SLEEP-INDUCING DEVICE

Doris Marie Short, 6849 Randal Mill Rd. Rt. 4 Box 202, Fort Worth, Tex.

Filed Feb. 15, 1973, Ser. No. 332,770
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 **10 Claims**



An improved sleep-inducing device is disclosed for attachment to a bed, particularly a hospital bed, of the type having a frame, a coil spring assembly supported by the frame and a mattress supported on the spring assembly. The device comprises a base member, a motor mounted on the base member, a clamp for connecting the base member to the bed frame, a crank disc mounted on a telescoping support member permitting vertical adjustment of the disc with respect to the base member, a drive assembly associated with the motor to drive the crank disc and a link arm connecting the crank disc to the spring assembly. For use on a hospital bed, the machine is provided with a special elevating stand, a frame-like member adapted to fit over any of the sections into which a hospital bed is divided and a horizontally adjustable means to attach the link arm to the spring in order to accommodate the presence of a guardrail on the bed.

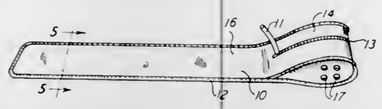
3,799,154
MASSAGE TYPE OF PORTABLE VIBRATOR

Frederick J. Knop, 802 Kentucky St., Racine, Wis.

Filed Feb. 1, 1973, Ser. No. 328,762
Int. Cl. A61h *1/00*
U.S. Cl. 128—36 **7 Claims**

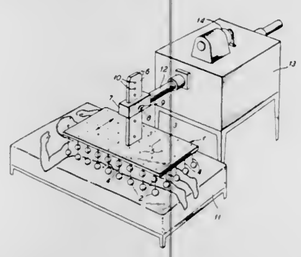
A massage type of portable vibrator including a motor having an eccentric and being enclosed with a housing terminat-

ing in a flange on one side thereof. An elongated member, in the form of a U-shaped rod, is attached to the flange by passing through holes therein and therefore rigidly connected to the motor housing to vibrate in response to operation of the motor. The U-shaped rod is disposed in one plane which is coincident with the plane along the axis of the motor shaft, and



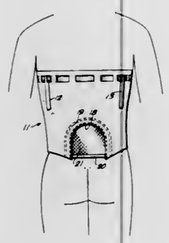
the eccentric weight is in a plane transverse to the plane of the U-shaped rod. A removable cover snugly extends over the parts mentioned, and a hem is provided around the edge of the cover at the periphery of the rod. The rod portion of the vibrator can be inserted under a seat cushion or a bed mattress to vibrate the object.

3,799,155
MASSAGING MACHINE
Stephen Gerlich, 5320 S. Albany St., Chicago, Ill.
Filed Dec. 20, 1972, Ser. No. 316,861
Int. Cl. A61h *7/00*
U.S. Cl. 128—44 **9 Claims**



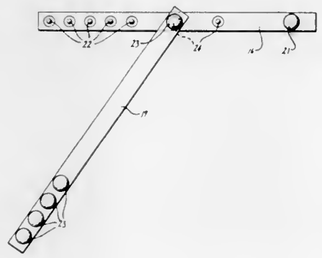
A massage device comprising a plurality of massaging elements, preferably of spherical configuration, each of which is suspended by a non-rigid line from a common supporting structure which is laterally reciprocable, whereby such massaging elements may be drawn back and forth across a surface to be massaged, disposed in the path of such elements.

3,799,156
ORTHOPEDIC TRACTION DEVICE
David E. Gurkin, 3165 S.W. 18th St., Miami, Fla.
Filed Nov. 27, 1972, Ser. No. 309,728
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **6 Claims**



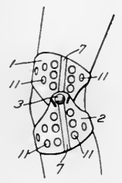
An orthopedic traction device including upper and lower torso support members and spreader mechanism removably attachable between the upper and lower support members for imparting a tensional stress therebetween and thereby applying traction along the spine. The upper torso support member extends from just under the arms to lower portions of the abdomen for providing abdominal support as well as traction support. The lower torso support member comprehends the use of a pair of hip abutment members securable by belt means directly above the hip bones of the wearer so as to provide for firm anchoring of the lower ends of spreader bars provided for effecting thrust from below upon the upper torso support member.

3,799,157
THERAPEUTIC GENITAL DEVICE
Richard Kenneth McIntire, San Francisco, Calif., assignor to Ballmor, San Francisco, Calif.
Filed Apr. 27, 1972, Ser. No. 247,997
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **4 Claims**



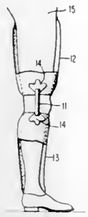
A therapeutic device for maintaining the human penis in an erect condition by damming the blood from flowing back into the trunk, including a first band encircling the base of the penis and a second band connected to the first band, encircling the neck of the scrotum. Snap fasteners are provided to form the bands into loops and to afford adjustability.

3,799,158
KNEE BRACE
Harris L. Gardner, 174 Riverside Ave., Cranston, R.I.
Filed Oct. 6, 1971, Ser. No. 187,021
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 C **2 Claims**



A knee brace having perforated upper and lower members coated with a soft plastic material and adapted to take the form of and to be secured to the leg of a user above and below the knee. A semi-ball joint attaches the upper and lower members and provides free pivotal rotation while restricting lateral rotation. Reinforcing ribs are formed on the upper and lower members to provide rigidity along a line parallel to the leg.

3,799,159
HYDRAULIC FLEXION CONTROL DEVICE
Charles M. Scott, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.
Filed Oct. 28, 1971, Ser. No. 193,327
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 C **9 Claims**



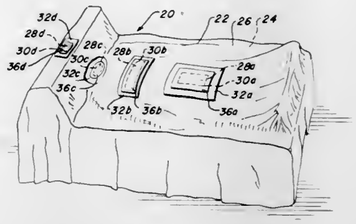
A hydraulic knee flexion control device which when unlocked is completely flexible and free to align with the knee joint axis. It is comprised of a rectangular cross-section spring wound tight with a flexible cable positioned in the center of the spring. A hydraulic system holds the cable immovable when the joint is to remain rigid and lets the cable extend thus permitting the spring to bend when flexion is desired.

3,799,160
DEVICE AND METHOD FOR CORRECTING INGROWN TOENAILS
Harry L. Hahn, 13715 Cordary Apt. 137, Hawthorne, Calif.
Filed Sept. 21, 1972, Ser. No. 290,822
Int. Cl. A61f *5/00*
U.S. Cl. 128—81 A **9 Claims**

An improved device for correcting ingrown toenails comprises a flexible, preferably thin and flat, self-supporting nail support adapted to fit between the free portion of a toenail at the rear corner terminus thereof and the underlying toe flesh and/or cuticle attachment at said corner. The device also includes a flexible protector strip detachably secured to one side of the nail support and attaching means for holding the device in place around a toenial. Preferably, a backing strip is detachably placed on the opposite side of the nail support and, in accordance with the present method, is stripped from a portion of the nail support before the support is positioned at a rear corner terminus of the free portion of the toenial. The device keeps the cuticle and toe flesh in that region from overlapping the growing toenail.

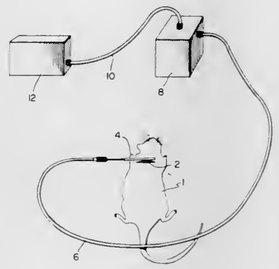
3,799,161
MULTIPLE PURPOSE DRAPE
Robert F. Collins, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.
Filed Feb. 24, 1972, Ser. No. 229,019
Int. Cl. A61b *19/06*
U.S. Cl. 128—132 D **10 Claims**

A drape for performing a plurality of individual surgical procedures on a patient's body. The drape includes a flexible main sheet having a lower and an upper surface which respectively contact and face away from the patient's body after placement of the drape, and the main sheet has a plurality of fenestrations located in the drape for performing a plurality of separate surgical procedures through the drape. The drape includes a plurality of cover sheets which are removably secured to the upper surface of the drape over the fenestrations. An in-



dividual cover sheet may be removed from the drape to perform a select surgical procedure through the associated fenestration, and the remaining cover sheets maintain a sterile barrier over the remaining fenestrations during the selected surgical procedure.

3,799,162
METHOD OF PRODUCING COLLAGENIC MATERIAL FOR THE CLOSURE OF LESIONS
Cesar Aurelio Romero-Sierra, Bath Ontario, and Joseph A. Tanner, Ottawa, Ontario, both of Canada, assignors to Canadian Patents and Development, Limited, Ottawa, Ontario, Canada
Filed Aug. 14, 1972, Ser. No. 280,736
Int. Cl. A61m *37/00*
U.S. Cl. 128—172.1 **4 Claims**

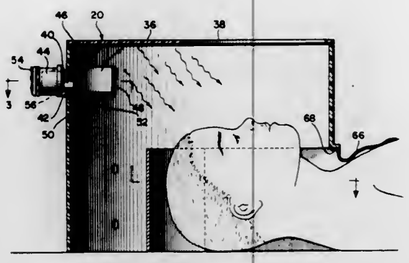


The production of collagenic material for the closure of lesions in enhanced, and thus the healing of a lesion accelerated by applying histamine to the lesion and then radiating the tissue cells bounding the lesion with electromagnetic radiation. The electromagnetic radiation being in the non-ionizing range of frequency, and having an intensity less than one milliwatt.

3,799,163
ENVIRONMENTAL CHAMBER
Walter Heath, Chicago, Ill., assignor to Parkland International Inc., Melrose Park, Ill.
Filed July 28, 1972, Ser. No. 276,255
Int. Cl. A61m *16/02*
U.S. Cl. 128—191 A **6 Claims**

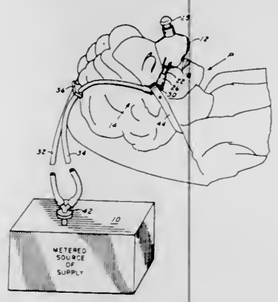
An environmental chamber for maintaining a stabilized gas mixture environment about the head portion of a patient disposed therein formed by a chamber having peripheral side walls and an open bottom end and bounded by a closed top wall, a patient receiving opening in the side walls bounded by

substantially parallel sides, a gas inlet disposed adjacent the top wall of the chamber, a gas baffle associated with the gas inlet and constructed to baffle the gas entering therein up-



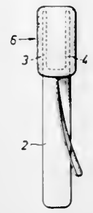
wardly against the closed top wall and down about the head portion of a patient, and a closure member for closing off the patent receiving opening during use.

3,799,164
ANALGESIC APPARATUS
Richard R. Rollins, Broomfield, Colo., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 12, 1971, Ser. No. 171,287
Int. Cl. A61m *15/00*
U.S. Cl. 128—206 **9 Claims**



A hose-linkage device is specifically intended for use in connecting and delivering analgesic gas from a suitable gas supply source to a nasal inhalator which is used in dental work or surgery. The device includes a pair of flexible extension hoses leading away from the gas inlet means on the inhalator and a flexible gas supply hose connected to each of the extension hoses by means of an elbow joint in such a manner that when the patient is in a prone position, the extension hoses will extend away from the inhalator in opposite directions to a point alongside the patient's head and the gas supply hoses will extend substantially horizontally along the sides and over the top of the patient's head where they are joined together by a hose clip and thereafter will continue for connection into the gas supply source. An adjustable connecting strap has opposite ends connected to the elbow joints and passes behind the patient's head in order to retain the inhalator in proper position over the patient's nose.

3,799,165
MENSTRUAL-LIQUID ABSORPTION TAMPON WITH INSERTION TOOL
Bengt Axel Wennerblom, Sundsvall; Ruth Gunvor Anna Britt Udden; Per Edward Carl Udden, both of Timra, and John Ivar Lindgren, Sorberge, all of Sweden, assignors to Svenska Cellulosa Aktiebolaget, Sundsvall, Sweden
Filed May 8, 1972, Ser. No. 251,386
Claims priority, application Sweden, May 25, 1971, 6726/71
Int. Cl. A61f *15/00*
U.S. Cl. 128—263 **10 Claims**

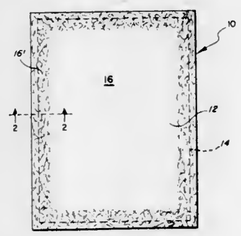


An absorption tampon with an insertion tool. The tool has two fingers extending from a common handle, the fingers detachably engaging the tampon in elongated channels therein.

3,799,166
STARCH TYPE GEL SEALS FOR OSTOMY PATIENTS
Arthur E. Marsan, 6700 Escondido Dr. 4-B, El Paso, Tex.
Continuation-in-part of Ser. No. 884,842, Dec. 15, 1969, Pat. No. 3,667,469. This application May 22, 1972, Ser. No. 255,543
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **8 Claims**

This invention relates to modified starch gel seals for ostomy patients that can be produced in relatively high purity and at low cost, composed essentially of gelatinized starch, with or without a plasticizer such as glycerol or the like and glyoxal. The seal has a low rate of solubility that can be controlled and provides protection for the skin surrounding the stoma. One small size stoma opening in the center of the seal can be stretched and will fit larger size stomas without causing strangulation of the stoma. The gels can also act as a vehicle for medicinals, odor-control materials, or water retardants and can be made of multiple layers to satisfy the various needs of the patient.

3,799,167
DISPOSABLE ABSORBENT PAD
Alan H. Miller, Hickory, and Grover C. Currie, Lenoir, both of N.C., assignors to Cellu-Products Company, Patterson, N.C.
Filed Dec. 30, 1971, Ser. No. 214,168
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **1 Claim**



An absorbent pad structure is provided of the sort that is arranged to be disposable and that is particularly suited for use

in forming disposable diapers. The disclosed structure incorporates pad means of moisture permeable material having a peripheral margin thereof rendered moisture impermeable and a moisture impermeable backing sheet secured at the peripheral margin of the pad means.

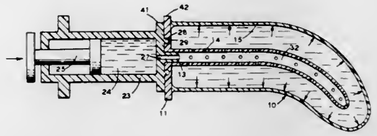
3,799,168
ELECTRO-SURGICAL HANDLE
Rudolph W. Peters, 5786 Balmoral Dr., Oakland, Calif.
Filed Feb. 28, 1972, Ser. No. 229,720
Int. Cl. A61b *17/40;* **A61n** *3/00;* **H01r** *13/00*
U.S. Cl. 128—303.14 **3 Claims**

A disposable electro-surgical handle in which a single electrode may be provided with different shapes at its respective ends, such as a blade and a ball. Either end of the electrode is insertable into the handle and is releasably secured therein. A spring loaded current conducting clip insures electrical contact with the electrode.

3,799,169
LATERAL RELEASE SUTURE
Howard Beroff, Somerville, and Robert G. Ferguson, Redbank, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed May 11, 1972, Ser. No. 252,176
Int. Cl. A61b *17/06*
U.S. Cl. 128—339 **41 Claims**

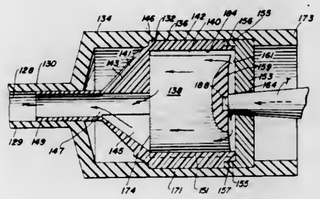
A surgical needle is manufactured with an open channel at the blunt end thereof sized to receive a suture. The suture is bonded to the channel with an adhesive that prevents "pull-out" of the suture as it passes through tissue. After suturing, the surgeon may easily remove the needle from the suture by turning the needle so that the channel is at an angle of about 90° to the direction of the suture and peeling the suture out of the channel.

3,799,170
THERAPEUTIC DILATOR, DISPOSABLE OR REUSABLE
Michael Adrian Walsh, 81 Witherbee Ave., Pelham Manor, N.Y., and Edward F. Costigan, 348 Central Ave., Scarsdale, N.Y.
Filed May 31, 1972, Ser. No. 258,385
Int. Cl. A61m *29/02*
U.S. Cl. 128—344 **11 Claims**



An insertible and expandable dilator for use on a singular therapeutic basis to dilate a body channel, duct or tubular organ such as the urethra.

3,799,171
INFLATION VALVE FOR CATHETER RETENTION BALLOON
Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Chicago, Ill.
Division of Ser. No. 185,018, Sept. 30, 1971, Pat. No. 3,726,282. This application Sept. 7, 1972, Ser. No. 287,169
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 BV **3 Claims**



An inflation valve for a retention balloon in a catheter having an inflation lumen communicating with the balloon. The valve has a housing defining a chamber, opening means at one end of the housing communicating between the chamber and the inflation lumen, and an inwardly directed flange at the other end of the housing. A rim is secured to the flange and has a first portion projecting into the chamber, a second portion projecting outwardly from the flange, and a tapered passageway extending through the rim. The valve also includes a compressible plug received in the chamber and having a first shoulder, a neck extending from the first shoulder, a second shoulder extending from the neck, and a tapered stopper extending from the second shoulder and received in the passageway. The plug biases the stopper against the tapered portion of the passageway in sealing engagement to prevent passage of fluid from the chamber, and the plug compresses responsive to the insertion of a syringe tip into the passageway from its outer end to permit passage of fluid from the syringe into the chamber and inflation lumen.

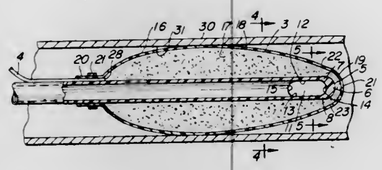
3,799,172
RETENTION CATHETER
Roman Szpur, 2685 Culver Ave., Kettering, Ohio
Filed Sept. 25, 1972, Ser. No. 291,675
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R **6 Claims**

A plurality of circumferentially spaced slits are formed within the inlet end portion of an elongated flexible plastic

tube adjacent a resilient tip portion. The slits define links which flex outwardly to expanded retaining positions in response to a pulling force exerted on the tip portion by a small diameter flexible actuating line extending within the tube. A Y-shaped fitting is connected to the outlet end portion of the tube and slidably supports an actuating member which

is connected to the corresponding end of the actuating line to provide for remotely flexing the links and locking them in their expanded positions. The actuating member also serves to close the outlet within the fitting during insertion and withdrawal of the tube, and the tube is adapted to compress axially in the event the actuating member is pulled before the inlet end portion of the tube enters the bladder.

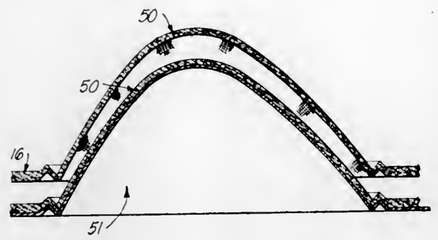
3,799,173
TRACHEAL TUBES
Jack M. Kamen, 440 Tippecanoe Pl., Gary, Ind.
Filed Mar. 24, 1972, Ser. No. 237,897
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **5 Claims**



A tracheal tube for use in intubating a trachea, and which embodies passageways and openings therein which are constituted and arranged in a manner particularly effective for the passage of suction catheters, and the like, therethrough into bronchi, and the like. The tube preferably embodies a cuff mounted on the end and sides thereof for effecting a seal between the tube and the trachea, and for protecting the trachea against injury. The cuff embodies resilient means for maintaining it in expanded position, and is contractible by means of a vacuum applied thereinto by a secondary tube mounted on the tracheal tube.

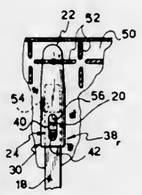
3,799,174
MOLDED BREAST CUP AND METHOD OF MAKING THE SAME
Jack E. Howard, Los Angeles, Calif., assignor to International Fabric Molders, Inc., Los Angeles, Calif.
Filed June 26, 1972, Ser. No. 266,268
Int. Cl. A41c *3/00, 5/00*
U.S. Cl. 128—464 **10 Claims**

A complete molded breast cup which is unitary and seamless and which is ready for use in a brassiere or other garment. The breast cup is molded from a composite formed by lightly adhering together the adjacent surfaces of an outer layer of fabric, an inner layer of fabric and an intermediate layer of non-woven fiberfill material. The three layers preferably comprise or contain a substantial quantity of polyester material, so that they have compatible heat forming characteristics. The



composite is molded into a three dimensional shape in closed molds to form a unitary integral breast cup having smooth seamless interior and exterior surfaces.

3,799,175
GARMENT FRAME
Ross F. Rowell, 5361 Belmare Ave., Montreal, Quebec, Canada
Filed May 9, 1973, Ser. No. 358,626
Int. Cl. A41c *3/00*
U.S. Cl. 128—476 **8 Claims**

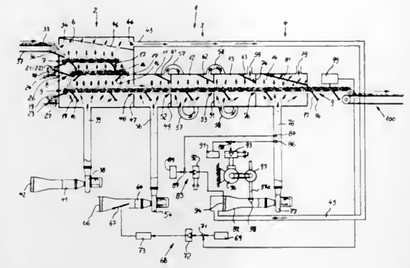


The disclosure herein describes a frame for stiffening and/or shaping ladies' garments, such as brassieres, corsets, and similar articles, which comprises an elongate flexible member, the ends of which are capped with terminals having a first section readily pierceable by a sewing needle and a second section displaying an elongated slot on one side wall thereof. Adjacent each end of the frame member, a small projection extends on one face thereof and is received in the slot thereby securing the terminal on the frame member while allowing relative movement therebetween whereby a certain play by the terminal on the member, due to garment shrinkage, is obtained.

3,799,176
METHOD AND APPARATUS FOR CONDITIONING TOBACCO
Waldemar Wochnowski, Hamburg, Germany, assignor to Hauni-Werke, Korber & Co. KG, Hamburg, Germany
Filed Jan. 25, 1972, Ser. No. 220,599
Claims priority, application Germany, Jan. 27, 1971, 2103671; June 29, 1971, 213226
Int. Cl. A24b *3/04*
U.S. Cl. 131—135 **23 Claims**

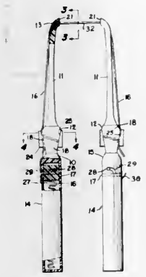
The moisture content of tobacco, particularly greenleaf tobacco, is reduced to an accurately determined value by conveying a continuous tobacco stream through three successive sections of a transporting system wherein the tobacco is contacted by air currents. In the first section, a relatively hot current of air is conveyed countercurrent to the direction of tobacco transport; in the second section, the flow of hot air is concurrent with the direction of tobacco transport; in the

third section, the tobacco is contacted by relatively cool air having a relatively high moisture content. The air which is conveyed through the third section is withdrawn from the first section, and the temperature of air in the second section is regulated as a function of deviations of moisture content of



partially or completely conditioned tobacco from a desired moisture content. The temperature and moisture content of air in the third section are maintained at a constant value to bring about a hygroscopic equilibrium between air and tobacco particles in the third section.

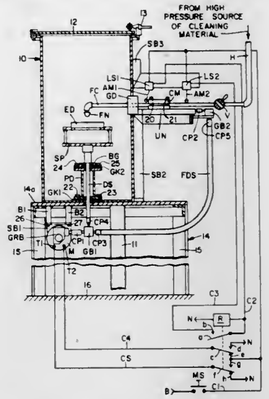
3,799,177
TOOL FOR MANIPULATING DENTAL FLOSS
Kenneth R. Bragg, 635 Poseo de la Plaza, Redondo Beach, Calif.
Filed Jan. 26, 1972, Ser. No. 220,873
Int. Cl. A61c *15/00*
U.S. Cl. 132—92 **31 Claims**



A tool for use in cleaning teeth with dental floss. Among other features, the tool includes means for making the floss either slack or taut, means for reciprocating the floss axially, means for flattening the floss to ribbon shape, means to utilize a floss container as a tool handle, and means to facilitate clamping and release of the floss with respect to the tool.

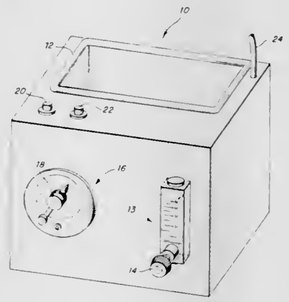
3,799,178
EXTRUSION DIE CLEANING APPARATUS
Vernard C. Anderson, Painted Post; Francis A. Cantaloupe, Horseheads, and Kenneth T. Overman, Painted Post, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Oct. 30, 1972, Ser. No. 302,128
Int. Cl. B08b *3/02*
U.S. Cl. 134—58 R **8 Claims**

An apparatus or machine for cleaning dies used for extrusion-forming of a ceramic material in a plastic state into formed cylindrical bodies or articles of the material. The apparatus comprises a support member for horizontally supporting within a fluid-tight enclosure, vat, tub, tank or chamber, a die to be cleaned, a motor for rotating the support and die at a selected speed and for reciprocatively and linearly moving the outlet end of a high pressure ejection nozzle across at least part of the upper face of the supported and rotating die at a speed synchronized with the speed of rotation of the die, and a



conduit for supplying a fluid cleaning material to the nozzle at a high pressure and ejecting such material from the outlet end of the nozzle against the upper face of the rotating die and against any of the ceramic material remaining in the extrusion channels or passages extending vertically through the horizontally supported die.

3,799,179
PROCESSING APPARATUS WITH PRECISELY CONTROLLED AGITATION
Gertrude L. Thomas, 14 Fuller St., Magnolia, Mass.
Filed Mar. 20, 1972, Ser. No. 236,380
Int. Cl. B08b *3/10*
U.S. Cl. 134—95 **8 Claims**

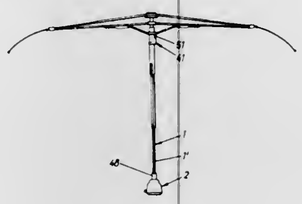


Apparatus for processing semiconductor wafers while providing precise control over the rate of agitation of processing solution in contact with the wafers. The invention has utility in several processing operations on semiconductor wafers such as developing, photolithographic etching and bubble cleaning. The apparatus includes a tank for holding a quantity of processing solution. A sparger, placed in the tank, has a plurality of apertures for releasing a precisely controlled amount of an inert gas such as nitrogen into the processing solution. A carrier loaded with a plurality of semiconductor wafers is placed on top of the sparger. During processing a precisely controlled amount of gas is released through the apertures in the sparger and bubbles up through the processing solution in intimate contact with the semiconductor wafers. This bubbling action provides precisely controlled agitation of the processing solution in intimate contact with the wafers.

3,799,180
UMBRELLA HANDLE

Heinz Weber, Hilden, Germany, assignor to Telesco Brophey Limited, East Montreal, Quebec, Canada

Filed June 14, 1972, Ser. No. 262,737
Claims priority, application Germany, June 15, 1971, 2129559
Int. Cl. A45b *9/02*
U.S. Cl. 135—20 R 4 Claims

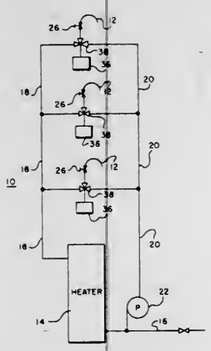


The handle of the umbrella telescopes on the stick in order to reduce the overall length of the stick and handle when the umbrella is collapsed to a closed condition. Snap catch means are provided near the bottom of the bore defined in the handle to engage a flange at the end of the stick and retain the handle in a telescoped condition relative to the stick and snap catch means are provided near the top opening of the handle to engage the flange of the stick and retain the handle in an extended position relative to the stick.

3,799,181
HOT WATER SUPPLY SYSTEM AND METHOD

Herbert J. Maddren, 29 Springlane Drive, Blackwood, N.J.

Filed Sept. 5, 1972, Ser. No. 280,443
Int. Cl. F16k *49/00*
U.S. Cl. 137—1 14 Claims

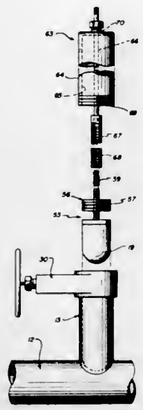


A hot water supply system and method adapted for use in residental and/or commercial edifices. The hot water supply system provides for water at a predetermined temperature to be passed through a faucet for use. Where the water temperature is less than the required predetermined temperature, the water is recirculated to a hot water heater. The system includes a pumping mechanism for forcing recirculated water into the hot water heater. Further, the system provides a mechanism for directing water in a predetermined flow path responsive to the water temperature. The flow path of the water is either through the faucet or directed back to the hot water heater dependent on the aforementioned water temperature.

3,799,182
ADD-ON STOPPER VALVE FOR EXISTING PIPING

George M. Long, Hinsdale, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Apr. 28, 1972, Ser. No. 248,660
Int. Cl. B23b *41/08*; F16e *41/04*
U.S. Cl. 137—15 8 Claims

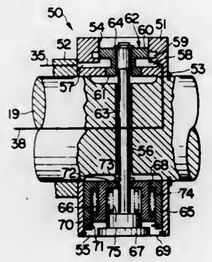


The invention comprises an add-on valve which includes, generally, a holding chamber which is adapted to be fixedly secured to a pipe, a gate valve assembly which is adapted to be removably affixed to the holding chamber, a saw chamber assembly including a saw for sawing an opening into the pipe, a pipe plug assembly including a closure which is operable to block the flow of fluid in the pipe, an insertion chamber assembly for inserting the pipe plug assembly into the holding chamber, and a completion bonnet for completing the assembly of the add-on valve.

3,799,183
GOVERNOR VALVE ASSEMBLY FOR AN AUTOMATIC TRANSMISSION

Ohshima Shoichi, Tokyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed June 8, 1972, Ser. No. 260,894
Claims priority, application Japan, Nov. 5, 1971, 46-87610
Int. Cl. G05d *13/10*
U.S. Cl. 137—56 8 Claims

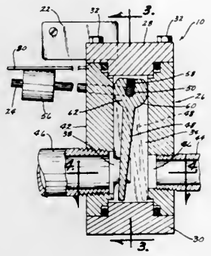


A governor valve assembly for use with an automatic transmission is rotatably mounted on the output shaft of the transmission and is secured against axial displacement along the shaft. The valve assembly includes at least one chamber having an inlet port for introducing a pressurized fluid medium into the valve assembly and an outlet port for supplying the pressurized fluid medium at governor pressure to the automatic transmission. A combination of a valve member and an assembly of weights and springs is arranged within the chamber so that, as the output shaft rotates at increasing speeds, variable centrifugal forces are developed by the assembly of weights and springs and the position of the valve member is regulated to determine the governor pressure supplied to the output port. The valve member can be formed as one of the weights or as a separate valve spool. The assembly of weights and springs consists of at least three different weights and at least two different springs with each spring extending between a different pair of weights. Accordingly, by means of the arrangement of the weights, it is possible to change the governor pressure in three steps.

3,799,184
FLUID FLOW DETECTOR AND CONTROL FOR A HOT WATER SYSTEM

George D. Conlee, Humboldt, Iowa, assignor to Slifer Manufacturing Company, Incorporated, Humboldt, Iowa

Filed May 16, 1972, Ser. No. 253,831
Int. Cl. F22b *37/42*; F23n *1/00, 1/08*
U.S. Cl. 137—94 10 Claims



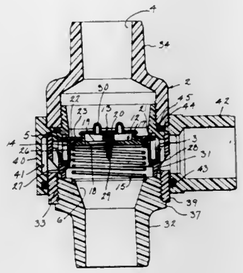
A hot water system includes a heater element and an outlet valve. A flow detector and control is provided [illegible] inlet line to the water heater such that when water flow is stop[illegible]d the detector deactivates the heater. The detector includes a rectangular shaped vane pivoted in a rectangular in cross section chamber having an inlet and outlet port on opposite sides thereof. The chamber is enlarged at the outlet port by including lune-shaped openings on opposite sides of the vane to provide a bypass when the vane is moved to adjacent the outlet port. The rectangular vane corresponds substantially to the dimensions of the rectangular in cross section chamber when the vane is adjacent the inlet port thereby preventing fluid flow around the vane. The vane includes semicylindrical shoulders on opposite sides of the pivotal axis so positioned at the chamber side walls to prevent flow therebetween. The vane is normally pivoted to a position adjacent the inlet port and in response to fluid flow pivots to a position adjacent the outlet port thereby actuating a control for operating the heater.

3,799,185
BREATHING VALVE

Peter M. Milnes, Sheboygan, and Kevin D. Muellenbach, Reedsville, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed July 3, 1972, Ser. No. 268,432
Int. Cl. F16k *15/14*
U.S. Cl. 137—102 5 Claims

A breathing valve of the type having concentric inhalation and exhalation valves has an exhaust passage with tapered inlet ports that provide a variable orifice to minimize flutter. Flutter is further reduced by having the exhalation valve mounted on an unsupported rubber sleeve that can flex to accommodate pressure variations, and by a mushroom inhalation valve that has a U-shaped flex ring with its open end facing the inhalation chamber so that the periphery of the valve lifts as a whole. A modified version of the valve for respiratory

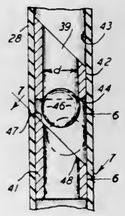


use includes a control ring operable to progressively open and close the exhaust passage, another modified version for use in anesthesia includes a collector shroud that encloses the exhaust passage and is connectable to a discharge line, and a third modified version includes both the ring and shroud.

3,799,186
DRAIN TUBE VALVE

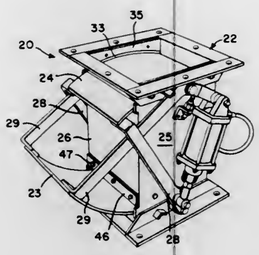
Shelly A. Bulin, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 26, 1972, Ser. No. 318,168
Int. Cl. F16k *15/04, 31/22*
U.S. Cl. 137—204 3 Claims



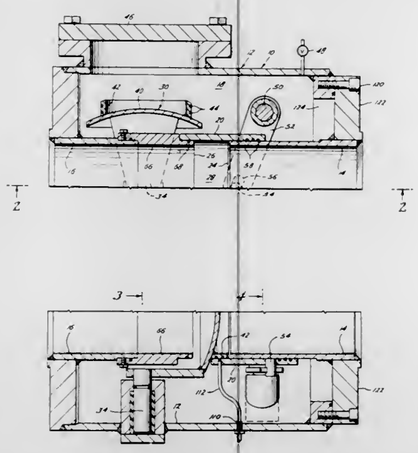
A drain tube valve having an outer drain tube with two tubes disposed in spaced-apart relation along the axis of the drain tube and having a sphere therebetween. The two spaced-apart tubes have an inner diameter which is less than the diameter of the sphere so that the sphere can fluid-tightly seat upwardly against the lower edge of the upper one of the two tubes. The lower one of the two tubes has an oblique upper edge which presents an elliptical opening which prevents the sphere from falling through the lower tube but which permits liquid to drain past the sphere and through the lower tube. The drain tube is subjected to vacuum at a point above the two tubes, and the sphere is of a light weight and is elevated by the vacuum condition to thus have the sphere fluid-tightly sealed with the lower edge of the upper tube. The two tubes are of the same configuration and can be inserted into the drain tube in one motion of sliding the two tubes with the sphere therebetween. At least the upper one of the two tubes is fluid-tight with the drain tube and prevents dust and air from flowing upwardly in the drain tube, but liquid can flow downwardly in the drain tube when the sphere is down and against the lower tube.

3,799,187
VALVE SEALS
George W. Armstrong, P.O. Box 507, Fairborn, Ohio
Filed Oct. 2, 1972, Ser. No. 294,454
Int. Cl. F16k *3/20*
U.S. Cl. 137—246.22 7 Claims



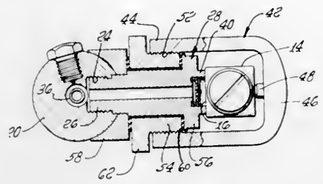
Rolling and sliding gate-type valves for controlling the flow of dry particulate material are provided with improved blade seals to handle finer materials over increased pressure differentials. Improved blade side and end sealing arrangements for adjusting the position of a curved blade on its blade-supporting arm permits the blade to be accurately adjusted in relation to the seals.

3,799,188
VALVE
Clyde H. Chronister, Houston, Tex., assignor to Chronister Development, Inc., Houston, Tex.
Filed Jan. 26, 1973, Ser. No. 326,779
Int. Cl. F16k *43/00*
U.S. Cl. 137—271 17 Claims



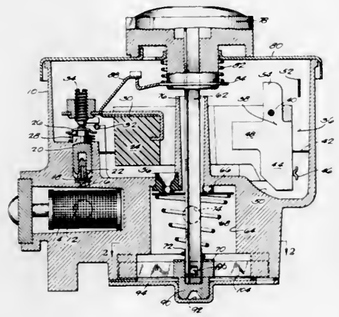
A valve having first and second conduits extending into a housing and spaced from each other to provide an opening therebetween with a sleeve telescoping with the conduits so as to close the opening to provide a through conduit valve, and to retract to allow a rotative flow control device for controlling the flow through the conduits to be moved into and out of the opening. The flow control means may include a spherical portion carrying a tubular member with the tubular member sized for engagement with the sleeve. The flow control means may include one or more flow control elements, such as a closure, check valve, orifice valve and/or regulating valve, which may be selectively rotated into the opening.

3,799,189
FIRST STAGE SCUBA REGULATOR
Raymond A. Christianson, Redondo Beach, Calif., assignor to Under Sea Industries, Inc., Compton, Calif.
Filed Oct. 6, 1972, Ser. No. 295,477
Int. Cl. F16l *19/00*
U.S. Cl. 137—316 5 Claims



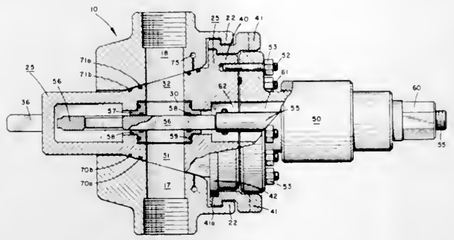
A yoke for attaching a tank valve to an inlet fitting of the regulator has a threaded base ring telescoped over the inlet fitting, the base ring engaging a lead screw journalled on the base of the fitting. Rotation of the lead screw moves the yoke to clamp or release the tank valve. A ball is clamped by the yoke against the inlet fitting to exclude moisture when the regulator is not in use.

3,799,190
OIL CONTROL
William A. Biermann, Brookfield, Wis., assignor to Controls Company of America, Schiller Park, Ill.
Filed Nov. 21, 1972, Ser. No. 308,349
Int. Cl. F16k *11/02*
U.S. Cl. 137—405 2 Claims



Oil flows into the control valve body past the float controlled inlet valve to maintain a constant level in the body. The thin metering disc is rotatable to multiple positions in which a metering orifice underlies the float chamber outlet to accurately meter the flow. The disc is biased against the outlet by a spring which gives a constant spring force on the disc. The disc is turned by means of the manual knob operating a shaft at the lower end of which is a detent star wheel keyed to the shaft and engaged by springs which engage the valleys in the wheel to properly position the metering disc with a selected orifice in registry with the outlet. The detent arrangement does not impose any vertical loading on the shaft and cannot affect the spring force acting on the disc. The opposed springs acting on the star wheel balance each other so far as any load on the shaft is concerned. When the knob is turned to "off," the spring arm acts on the link to lift the float and force the inlet valve closed. If the oil level rises too high (due to leakage at the inlet valve), the inverted L-shaped safety float flips clockwise to wedge in the valve closed position until manually reset.

3,799,191
COMPARTMENTED UNDERWATER EQUIPMENT
Joseph A. Burkhardt; Dewitt K. McLallen, Jr., both of Chatsworth, and Thomas W. Childers, Woodlands Hills, all of Calif., assignors to Esso Production Research Company, Houston, Tex.
Continuation of Ser. No. 855,110, Sept. 4, 1969, abandoned. This application Jan. 31, 1972, Ser. No. 222,408
Int. Cl. F16k *3/02, 51/00*
U.S. Cl. 137—454.2 14 Claims

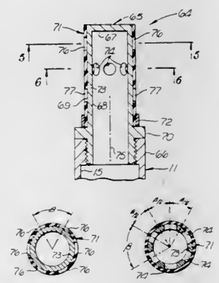


Packaging apparatus for mounting underwater equipment to be used in oil and/or gas well operations into a receptacle arranged in a subsea flow conduit. A retrievable body member provided with a compartment for containing the underwater equipment has at least two exterior wall surfaces which mate with counterpart interior wall surfaces within the receptacle. The latter surfaces define a cavity or chamber into which the body member is plugged through an entrance opening in the body member. The body member and receptacle each have flow path openings which are aligned when the body member is inserted into the receptacle chamber. At least one surface of the receptacle slants inwardly from the entrance thereof and at least one other surface extends linearly from the entrance thereof. These surfaces face corresponding exterior surfaces on the body member when the body member is positioned in the receptacle cavity. The spaces between the mating surfaces of the body member and receptacle surrounding the flow passageways are sealed off. The body member is releasably locked to the receptacle entrance after insertion into the receptacle cavity. To ensure proper alignment and orientation of the body member within the receptacle, additional guides such as a groove formed on the flat surface of the receptacle and a lug formed on the flat mating surface of the body member, engagable in the groove may be used.

3,799,192
VELOCITY SENSITIVE SAFETY VALVE
David E. Young, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Aug. 7, 1972, Ser. No. 278,319
Int. Cl. F16k *17/00*
U.S. Cl. 137—498 9 Claims

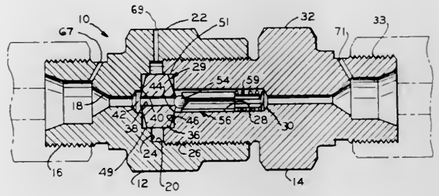
In accordance with an illustrative embodiment of the present invention, a downhole safety valve that closes automatically in response to excessive flow rate or velocity has an enlarged piston section on the upper end of the valve actuator to reduce the influence of seal friction and the like as an impediment to repetitive closing movements of the valve, and oppositely extending sleeves providing for fluid communication to the low pressure side of the piston section in such a manner as to provide a protection against damage to seal elements and surfaces by abrasive particles in the production fluids.

3,799,193
COMBINATION VALVE AND COMPONENT THEREOF
Roger Greenwood, Valencia, and Thomas Roberts, North Hollywood, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 20, 1971, Ser. No. 210,007
Int. Cl. F16k *15/00, 11/02*
U.S. Cl. 137—525 15 Claims



A pilot operated three-way diaphragm valve having a vent valve including a closed end metal cylinder having an open end to receive the three-way valve exhaust. The cylinder has holes through it. A rubber tube is assembled over the cylinder. The cylinder and tube have an interference fit. The tube seals the cylinder holes shut until the differential pressure across the vent valve to cause venting rises to a predetermined pressure. The tube also has holes which do not lie in registration with those of the cylinder. Moreover, the tube holes are staggered relative to the cylinder holes.

3,799,194
BALL CHECK VALVE
Alfred Bedo, 7225 Spanghurst Dr., Walton Hills, Ohio, and Edward Beck, 1584 S. Taylor Rd., Cleveland Heights, Ohio
Continuation of Ser. No. 243,498, April 12, 1972, abandoned. This application Dec. 20, 1972, Ser. No. 316,961
Int. Cl. F16k *15/04*
U.S. Cl. 137—539.5 1 Claim



A ball check valve for high pressure applications, and including axially bored telescoping and threadedly engaged body portions which define a through flow path and an internal valve chamber. An annular ball seat component is posi-

tioned between and sealingly engaged by opposed inner ends of the body portions. Carried within the internal valve chamber is a ball retainer which has a first end facing the seat and a reduced diameter portion which extends downstream in the bore. The retainer is continuously biased toward the seat by a spring that surrounds the reduced diameter portion and bears against a shoulder in the bore. A ball is positioned between the first end of the retainer and the seat. The retainer has a conical, axially extending recess in its first end which engages the ball with line contact. Additionally, longitudinal grooves are formed in the retainer to allow flow along the retainer when the ball is forced away from the seat. Also, the reduced diameter end portion of the retainer is hollow and axially cut out to define circumferentially spaced legs between which fluid can flow.

3,799,195

DEVICE FOR CONTROLLING A MIXTURE OF TWO GASES

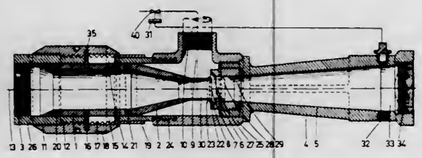
Fernand Victor Francois Hermans, Uccle, Belgium, assignor to Le Four Industriel Belge, Uccle, Belgium

Filed Feb. 17, 1972, Ser. No. 227,492

Claims priority, application Belgium, Mar. 17, 1971, 764407

Int. Cl. F16k *19/00*

U.S. Cl. 137—553 **7 Claims**



A device for controlling a mixture of two gases comprises two nozzles mounted in the extension of one another and movable one with reference to the other, a ring, provided with an internal screw thread, being mounted in movable manner on a stationary sleeve enclosing one of the nozzles, the other one being mounted so as to be able to slide inside the said sleeve, at least one slot being provided in the sleeve, one driving member for the second nozzle, cooperating with such slot, being secured to the wall of the said nozzle and entering freely in the ring, so as to permit the said nozzle to move inside the device by making the ring rotate around its axis with reference to said sleeve.

3,799,196

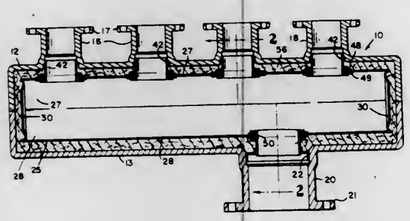
EXHAUST GAS MANIFOLD

George Edward Scheitlin, Columbus, and Leonard Jack Hardin, Franklin, both of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Dec. 3, 1971, Ser. No. 204,589

Int. Cl. F01n *7/00*; **F17d** *1/00*

U.S. Cl. 137—608 **8 Claims**



An exhaust gas manifold for an internal combustion engine having an outer shell provided with a plurality of inlets adapted to be connected to the engine and an outlet adapted to be connected to an exhaust pipe. An inner shell assembly is carried within the outer shell and is provided with inlets slidably connected thereto and an outlet carried in the outer shell inlets and outlet, respectively.

3,799,197

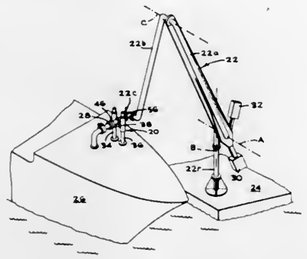
DUAL JACK ASSEMBLY FOR MARINE LOADING ARMS

Harold M. Gibbons, Long Beach, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 3, 1972, Ser. No. 240,612

Int. Cl. F16l *3/08*

U.S. Cl. 137—615 **10 Claims**



A dual jack assembly for supporting the outboard end of a marine loading arm on the deck of a marine tanker to which it is connected during transfer of fluid between the tanker and a reservoir facility. The jack assembly comprises a pair of hydraulic motor-operated jacks secured to opposite ends of a saddle structure that serves the double function of attaching the assembly to the arm and transferring the arm's moment load to the jacks. The jacks are oriented vertically, and each contains a helically threaded screw that is extended or retracted from a tubular housing in response to operation of the motor to which it is connected. The jacks are individually adjustable to compensate for different distances between the saddle structure and the tanker's deck, and the lower end of each jack terminates in a ball joint that carries a foot-like base which adapts to the slope of the deck or other structure on which the jack is based.

3,799,198

ELECTRONIC AUTOMATIC FAUCET DEVICE

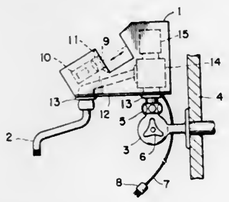
Shigenori Kijimoto, Tokyo, Japan, assignor to Kabushikikaisha Aiden and Itaru Otsu, both of Tokyo, Japan

Filed Dec. 8, 1972, Ser. No. 313,324

Claims priority, application Japan, Jan. 27, 1972, 47-10945; Feb. 1, 1972, 47-12765; Apr. 18, 1972, 47-45082; Apr. 20, 1972, 47-46054; May 12, 1972, 47-54594; May 16, 1972, 47-56299; Aug. 23, 1972, 47-97683

Int. Cl. F16k *31/04*

U.S. Cl. 137—624.11 **10 Claims**



An electronic automatic faucet device wherein an emitting element of visible or invisible rays, a receiving element for said rays, and a magnet valve are provided for the faucet of a water conduit, wherein the beam path between both the elements is momentarily intercepted, that is, the beam is shut for a short time and the original irradiating state is immediately recovered, thereby to energize the magnet valve into the water feeding state. When the beam path is subsequently intercepted for a moment, the magnet valve is deenergized into the water stopping state. Furthermore, simultaneously with initiation of the water feeding state, a timer circuit starts so as to automatically change said water feeding state to the water stopping state when a predetermined period of time has elapsed.

3,799,199

DEVICE FOR MIXING TWO COMPONENTS

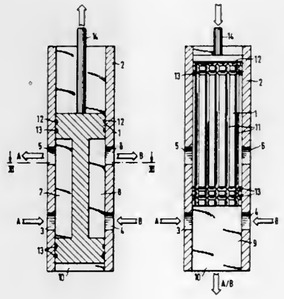
Dieter Rumpff, Geretsried, Germany, assignor to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Apr. 5, 1972, Ser. No. 241,130

Claims priority, application Germany, Apr. 10, 1971, 2117533

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.4 **7 Claims**



A device for mixing two components, e.g., two or more substances adapted to form a moldable synthetic resin, in which longitudinal grooves are provided in the external periphery of a valve body.

3,799,200

FLOW AND PRESSURE REGULATING CONTROL FOR HYDRAULIC MOTORS

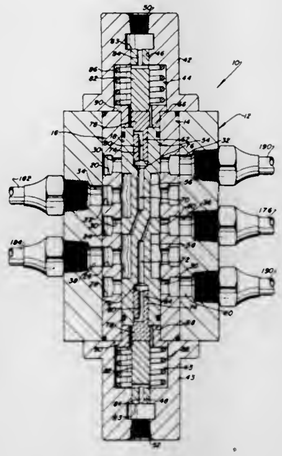
Joe D. Tipton, Garland, Tex., assignor to Gardner-Denver Company, Quincy, Ill.

Filed June 12, 1972, Ser. No. 261,885

Int. Cl. F15b *13/42*; **F16k** *11/00*

U.S. Cl. 137—625.6 **10 Claims**

A hydraulic flow and pressure regulator control comprising a spool type valve which is self-centering and blocks a hydraulic fluid supply port in the centered position. Opposite ends of the valve spool are disposed in opposed chambers which are operable to receive pilot pressure fluid and fluid from the working discharge port of the valve, respectively. Shuttle valves disposed in the spool and the opposed chambers provide for reversible operation of the spool valve. The pressure regulator spool valve is operated to control flow, direction of flow, and pressure by a pressure differential control valve which can be manually operated to supply fluid at variable



pressure to either of the opposed chambers. The flow and pressure regulator control is particularly adaptable for control of hydraulic feed or pull-down mechanisms for rock drills.

3,799,201

DISTRIBUTOR VALVE FOR AN INTERNALLY SHAFTED ORBITAL PISTON MACHINE

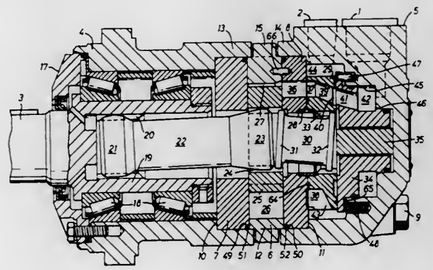
Gunnar Lyshoj Hansen, Nordborg, and Rolf Christensen, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Apr. 5, 1973, Ser. No. 348,300

Claims priority, application Denmark, Apr. 26, 1972, 22203505/72

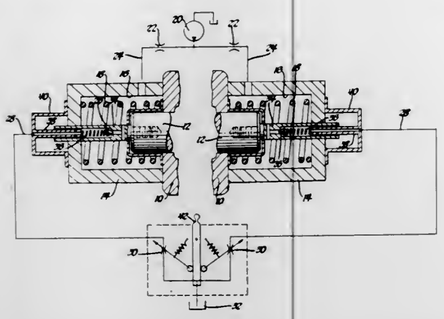
Int. Cl. F16k *11/02*

U.S. Cl. 137—625.21 **6 Claims**



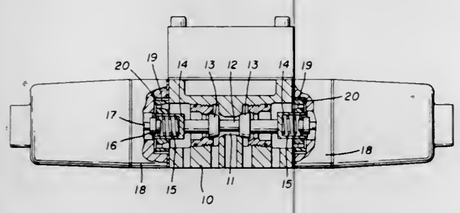
The invention relates to the distributor valve aspects of an internally shafted orbital piston machine. The distributor valve includes a fixed and movable valve part with the movable valve part being biased against the fixed valve part by an axially movable plunger. A central bearing bushing between the fixed and movable valve parts provides for precise centering of the movable valve. The fixed valve part is formed by brazing together two annular elements.

3,799,202
POWER TRANSMISSION
Dennis J. McAvoy, Rochester, Mich., assignor to Sperry Rand Corporation, Troy, Mich.
Filed Nov. 29, 1972, Ser. No. 310,288
Int. Cl. F15b *13/04, 31/00*
U.S. Cl. 137—625.61 **3 Claims**



In a hydraulic power transmission apparatus, the position of the spool of a directional valve is remotely and infinitely variably positionable to either side of a center position by a duplex hydraulic bridge circuit. Each branch of the circuit has three restrictions in it between a pilot pressure source and an exhaust point, the middle restriction being a relief valve adjustable in accordance with the position of the directional valve spool; one of the other two restrictions being fixed and the third restriction being adjustable for command purposes.

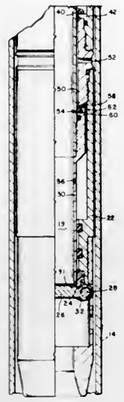
3,799,203
FLOATING DETENT FOR SPOOL VALVES
Kingsley A. Doutt, Alpena, Mich., assignor to Kay Pneumatics Michigan Corp., Alpena, Mich.
Filed Dec. 4, 1972, Ser. No. 311,750
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.65 **5 Claims**



A solenoid operated valve having a free floating sliding spool is provided with an improved detent device loosely caged in the body of the valve and slidably engaging the sliding spool to frictionally restrain longitudinal movement thereof.

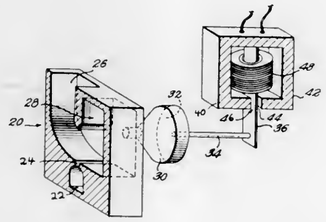
3,799,204
EQUALIZING MEANS FOR WELL SAFETY VALVES
Fred E. Watkins, and William H. Dietz, both of Houston, Tex., assignors to Camco Incorporated, Houston, Tex.
Filed May 1, 1972, Ser. No. 249,678
Int. Cl. F16k *31/12*
U.S. Cl. 137—629 **5 Claims**

Equalizing means are provided for reducing the pressure differential across the seat of a well safety valve when opening the valve to avoid damage to the valve element and seat. A passageway communicates with a point below the valve seat to a point above the valve seat and includes an equalizing valve which is closed when the valve is closed and opens prior to the opening of the safety valve. The pressure in the passageway



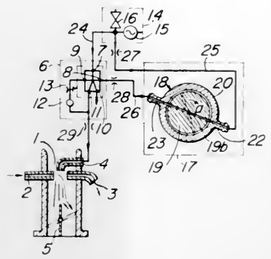
downstream of the equalizing valve acting on the valve in a direction to keep the safety valve closed. A restriction in the passageway upstream of the equalizing valve dampens the speed of opening the well safety valve.

3,799,205
FLUID OSCILLATORS
Evan D. Fisher, and Carl J. Campagnuolo, both of Chevy Chase, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 18, 1966, Ser. No. 566,081
Int. Cl. F15c *1/08*
U.S. Cl. 137—826 **4 Claims**



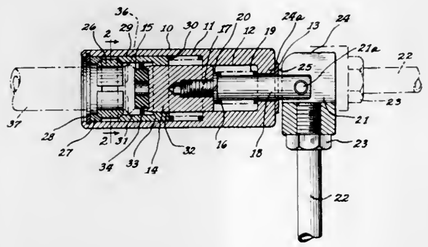
A fluid generator system having an improved constant frequency fluid oscillator and a pneumatic generator which utilizes the principles of fluid flow to generate electrical energy. The oscillator has a flow-through cavity and a resonant cavity. In addition, a second cavity cooperates with the resonant cavity so that the frequency being generated will not change with changes in input pressures. The output of the fluid oscillator causes a diaphragm to vibrate a metallic armature in a magnetic field to create an electromotive force.

3,799,206
FLUIDIC PULSE GENERATOR FOR INTERNAL COMBUSTION ENGINES
Kazuma Matsui, Toyohashi, and Hideo Tsubouchi, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan
Filed Mar. 18, 1971, Ser. No. 125,641
Claims priority, application Japan, Mar. 28, 1970, 45-29578; Dec. 27, 1970, 45-136159
Int. Cl. F15c *3/00*
U.S. Cl. 137—830 **2 Claims**



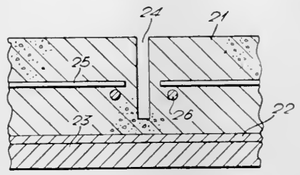
A fluidic pulse generator wherein a fluid passage in the form of a recess or through-hole is formed in a rotary shaft slidingly rotatable in a casing of an ignition interrupter but not movable axially, and two conduits which can be communicated with each other through said fluid passage are connected to said casing with one ends thereof open in said casing. When pressurized fluid is supplied into one of the conduits, the flow of pressurized fluid is interrupted intermittently, whereby fluidic trigger pulses are generated.

3,799,207
QUICK ATTACHABLE ENCLOSURE FOR CONDUITS
William D. Richardson, Palos Heights, and Ronald A. Zurawski, Chicago Ridge, both of Ill., assignors to Tuthill Pump Company, Chicago, Ill.
Filed Sept. 7, 1972, Ser. No. 287,044
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 **6 Claims**



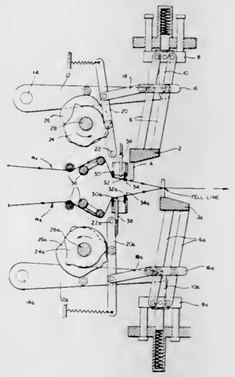
A quick attachable and detachable closure and seal for open ended conduits. A housing receives the conduit. A plunger in the housing seals against the end face of the conduit and a conduit gripper grips the exterior wall of the conduit.

3,799,208
PIPELINES
John William Ells, Bexleyheath, England, assignor to The British Petroleum Company Limited, London, England
Filed May 11, 1973, Ser. No. 359,433
Claims priority, application Great Britain, May 26, 1972, 24933/72
Int. Cl. F16l *9/14*
U.S. Cl. 138—175 **7 Claims**



In a concrete coated pipeline, the concrete coating is discontinuous, the maximum length of any section of coating being 12 feet and the gap between adjacent coatings (which can be filled with bitumen) at least one-sixteenth inch. Preferably the length is from 2 to 8 feet and the thickness of the coating 2 to 3 inches. The advantage of the structure is that breaking of the coating when laying the pipeline is reduced.

3,799,209
MACHINE FOR FORMING TRIAXIAL FABRICS
Norris F. Dow, Radnor, and Murray Halton, Bryn Mawr, both of Pa., assignors to Doweave, Inc., Strafford, Pa.
Filed Apr. 19, 1972, Ser. No. 245,586
Int. Cl. D03d *41/00, 13/00, 49/60*
U.S. Cl. 139—11 **6 Claims**

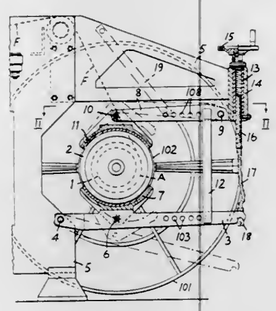


Improved machine for forming triaxial fabric wherein a two beater combination and a single beat up movement in each fabric formation cycle are utilized to form a stable triaxial fabric more efficiently than has heretofore been possible.

3,799,210
BRAKE UNIT FOR THE WARP BEAM OF WEAVING LOOMS
Adriano Gardella, 24 B, Via Al Capo di Santa Chiara, Genoa, Italy
Filed June 12, 1972, Ser. No. 261,959
Claims priority, application Italy, June 19, 1971, 12759/71
Int. Cl. D03d *49/08*
U.S. Cl. 139—100 **2 Claims**

The brake unit for the warp beam of weaving looms comprises a pair of supporting levers for the warp beam, which

supporting levers are provided each one with a supporting member, in the form of a brake shoe, for the shaft of the warp beam. Above said supporting levers there is provided a pair of



corresponding braking levers, which are also provided each one with a brake shoe acting from above onto the warp beam shaft portion. A tie rod connects each supporting lever with the corresponding braking lever.

3,799,211

METHOD OF AND APPARATUS FOR PREPARING A WEFT SUPPLY IN A MAGAZINE FOR WEFT INSERTION IN SHUTTLELESS LOOMS

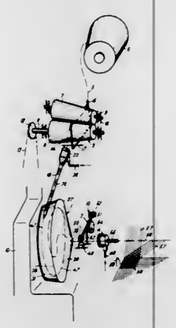
Ladislav Klinecky, and Stanislav Krmela, both of Sumperk, Czechoslovakia, assignors to Zbrojovka Vsetin, narodni podnik, Vsetin and Vyzkumny ustav Lykovych Vlaken, Sumperk, both of, Czechoslovakia

Filed Aug. 7, 1972, Ser. No. 278,630

Claims priority, application Czechoslovakia, Aug. 5, 1971, 5692/71

Int. Cl. D03d *47/36*

U.S. Cl. 139—122 R **22 Claims**



Method of and apparatus for preparing weft supply in a magazine for weft insertion in shuttleless looms, particularly looms with pneumatic or hydraulic weft insertion. The yarn path is prolonged by the action of an air flow in the magazine, into which the weft is continuously fed upon being withdrawn from a supply bobbin. The weft is withdrawn from the magazine in weft inserting intervals in a length sufficient for one pick. The inside of the magazine is constituted to produce a helical air flow which directs the fed weft into a spatial spiral or helox, from which the inserting length is axially withdrawn.

3,799,212

YARN FEEDING DEVICE FOR TEXTILE MACHINES

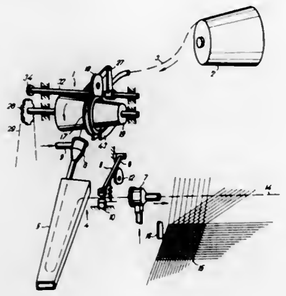
Krmela Stanislav, and Ladislav Klinecky, both of Sumperk, Czechoslovakia, assignors to Zbrojovka Vsetin, narodni podnik, Vsetin and Vyzkumny ustav Lykovych Vlaken, Sumperk, both of, Czechoslovakia

Filed July 12, 1972, Ser. No. 271,129

Claims priority, application Czechoslovakia, July 14, 1971, 5168/71

Int. Cl. D03d *47/36*

U.S. Cl. 139—122 R **25 Claims**



A device for feeding yarns in textile machines, particularly for weft measuring devices in looms with hydraulic or pneumatic weft insertion. The device includes two rotary bodies, one rotary body being constituted by a ring provided with an inner frictional surface and an outer frictional surface, the ring being mounted on a rotary conical driving body. The other rotary body is a yarn pressing disc, the axis of rotation of which is parallel to the axis of rotation of the rotary conical driving body. The ring and the pressing disc form a yarn-forwarding nip between them. The ring and the conical rotary driving body constitute a frictional pair of which at least one member is axially traversable with respect to the other member of said frictional pair.

3,799,213

CURTAIN HEADING TAPE

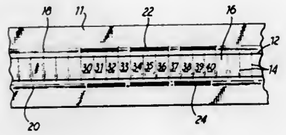
William Wood, Gatley; John Sellers, Chorley; Michael Carroll, Heywood, and Mary Griffiths, Middleton, all of England, assignors to Thomas French & Sons Limited, Manchester, England

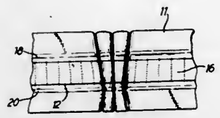
Filed Oct. 6, 1972, Ser. No. 295,458

Claims priority, application Great Britain, Oct. 21, 1971, 48885/71

Int. Cl. D03d *3/02*

U.S. Cl. 139—387 A **14 Claims**





A heading tape for a curtain of the type which has part of the curtain extending upwardly from the suspension hooks.

The curtain heading tape provided by the present invention prevents the upwardly extending part of the curtain from folding downwardly and resulting in an unsightly appearance. The curtain heading tape comprises core yarn disposed weft wise to give transverse stiffness to the tape, at least two spaced apart tubes forming a part of the tape and disposed warp-wise thereof for accommodating draw cords at intervals along said tape. The tubes include a continuous filament yarn in the warp-wise direction, and the continuous filament warp yarn is of sufficient stiffness to stiffen in the warpwise direction at least those parts of the tubes accommodating draw cords.

3,799,214

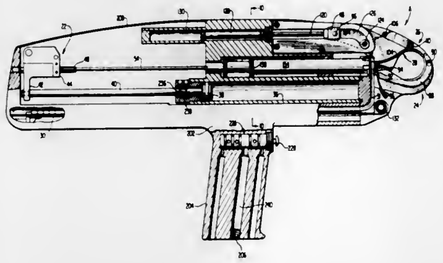
STRAPPING METHOD

Albert J. Countryman, Mohawk, N.Y., assignor to Ty-Lok Assembly Systems, Inc., Ilion, N.Y.

Division of Ser. No. 151,517, June 9, 1971, Pat. No. 3,721,750, which is a division of Ser. No. 6,084, Jan. 27, 1970, Pat. No. 3,633,633, which is a continuation-in-part of Ser. No. 831,527, June 9, 1969, abandoned. This application Dec. 4, 1972, Ser. No. 311,617

Int. Cl. B21f *9/02*

U.S. Cl. 140—93.2 **2 Claims**



A portable strapping apparatus and method for semi-automatically applying an indeterminate length of plain flat surface plastic strapping around a bundle of electrical conductors includes a strapping material feed mechanism capable of feeding the strapping in opposite directions, a pair of jaws openable to accommodate the bundle of electrical conductors, strapping guides for guiding the strapping around the bundle of electrical conductors inside the jaws, and a cutter for cutting the strapping to separate the strapping supply from a portion of the strapping extending around the bundle of electrical conductors. The end of the strapping is twisted and together with a hollow closure fastener it forms a detent for holding the strapping during reverse feeding. After reverse feeding, a combination twister cutter cuts the strapping adjacent the closure fastener and twists it simultaneously to form a further detent. The closure fasteners, which are molded plastic of unique configuration, are fed into operative position from a magazine. The apparatus is embodied in a simple light weight trigger operated gun.

3,799,215

WELDING WIRE DRIVING AND STRAIGHTENING DEVICE

Gerardus Antonius Maria Willems, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

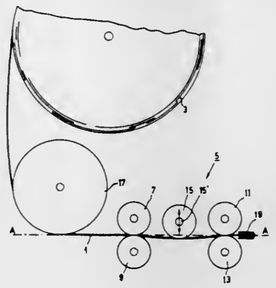
Filed Nov. 15, 1972, Ser. No. 306,899

Claims priority, application Netherlands, Nov. 19, 1971, 7115945

Int. Cl. B21f *1/02*

U.S. Cl. 140—147 **3 Claims**

A device for driving and straightening welding wire comprising a supply reel and a driving and straightening mechanism having two pairs of transport rollers and one straightening roller which is arranged between the transport rollers. The shaft of the straightening roller is located on the side of the common tangential plane of the transport rollers facing the supply reel. The straightening roller is adjustable



both in its axial direction and in a plane at right angles to the axial direction. The device is particularly suitable for straightening welding wires to be supplied at high speed in plasma-MIG welding processes.

3,799,216

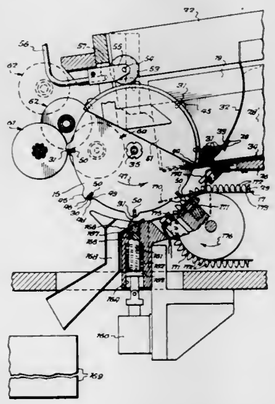
STRAIGHTENING MACHINE FOR ELONGATED WORKPIECES

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,547

Int. Cl. B21f *1/02*

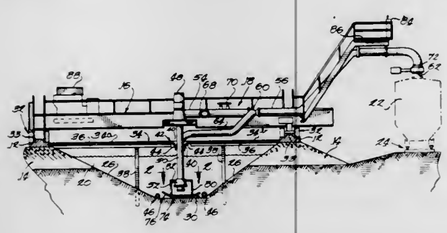
U.S. Cl. 140—147 **20 Claims**



A machine for simultaneously straightening leads extending in opposite directions from the central portion of a member such as a diode including a base, a plurality of substantially parallel roll series mounted on said base for defining a space for receiving the leads for simultaneously rolling said leads therebetween, a conveyor in the form of a feed wheel for magnetically engaging the central portion of a member at a vibrating hopper and carrying the member to said space and for holding said member at said space for a period of time sufficient to effect the straightening of the leads and thereafter carrying the member to a station where it is removed from the feed wheel and deposited on a conveyor for carrying to a subsequent packaging station. The feed wheel can be driven by a Geneva gear mechanism in an intermittent stepwise manner, or, alternatively, the feed wheel can be driven by a gearing arrangement in a continuous manner which causes the workpiece to be carried from the hopper at a relatively high speed

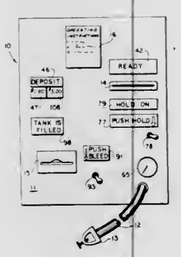
to the space between the rolls where it slows down for a very short period of time and thereafter is carried at a relatively high speed to the conveyor which carries it to the packaging section. Certain of the rolls of the straightening machine are mounted in a cantilevered manner so that the feed wheel passes between axially aligned cantilevered rolls. The straightening machine includes either a series of rolls or a cam arrangement which cooperates with the straightening rolls so as to guide the workpiece through the space in which the leads are straightened, with this series of rolls or the cam means operating in timed relationship to the movement of the feed wheel through suitable gearing. The workpiece can be tested while at the straightening space by passing an electric current through it to check its electrical characteristics. Ejection mechanism is provided for removing the workpiece from the feed wheel before it reaches the conveyor which carries it to the packaging station if the workpiece tests unsatisfactorily.

3,799,217
LIQUID LOADING SYSTEM
William J. Bauer, La Grange, Ill., assignor to Bauer Engineering, Inc., Chicago, Ill.
Filed Jan. 17, 1972, Ser. No. 218,412
Int. Cl. B65b *37/00*
U.S. Cl. 141—1 **20 Claims**



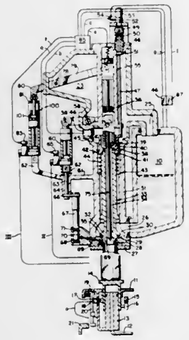
Pumpable material, such as sewage sludge, is stored in an elongated lagoon and pumped into successive tank cars of a unit train on a parallel adjacent track. The pumps are positioned on a movable platform which travels along the length of the lagoon and train, filling each car.

3,799,218
APPARATUS FOR DISPENSING COMPRESSED GAS AT PROGRAMMED PRESSURE AND VOLUME
Mayward Clyde Douglass, 2678 Warwick Cir., Atlanta, Ga.
Filed Mar. 27, 1972, Ser. No. 238,242
Int. Cl. F17c *5/06*; **G07f** *13/00*
U.S. Cl. 141—18 **10 Claims**



Apparatus for filling containers such as gas cylinders with predetermined pressure and volume of a compressed gas. The disclosed embodiment of the present apparatus is useful for user-paid vending of refills for air tanks of the kind used for scuba diving apparatus, and provision is made for preprogrammed selection of the appropriate pressure and volume or air to be supplied to a particular air tank. The apparatus includes provision for temporary suspension of tank filling without disrupting the fill vending cycle, for bleeding air pressure from a tank connecting conduit upon completion of a filling operation, and also includes apparatus which prevents unauthorized or improper use of the dispensing apparatus.

3,799,219
FILLING UNIT FOR COUNTER-PRESSURE FILLING MACHINES
Gerhard Uth; Rudolf Riedel, and Klaus Kaiser, all of Bad Kreuznach, Germany, assignors to Seitz-Werke G.m.b.H., Bad Kreuznack, Germany
Filed Dec. 16, 1968, Ser. No. 783,834
Claims priority, application Germany, Dec. 16, 1967, 1632004
Int. Cl. B65b *31/06*
U.S. Cl. 141—39 **16 Claims**

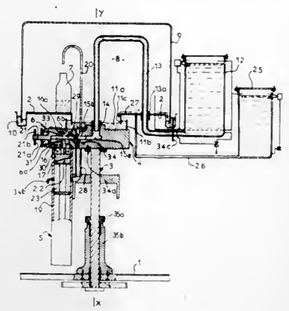


An electrical control probe is provided longitudinally movable in a passage of filler valve means and the probe can be retracted and introduced with respect to a container engaged with a counter-pressure filling unit. A proximity switch, loading gas valve, liquid valve and magnetic control valve are affected by probe movement for actuation and deactuation respectively during liquid filling into the container. A sleeve around the probe includes passage means communicating for liquid filling, loading gas supply and exhaust with respect to the container. A control rod engageable with a valve seat collar determines valve opening and closing according to probe position. An electrical plug card and contact strip interconnect electrical and electronic control units for the filling operation.

3,799,220
APPARATUS FOR ASEPTIC PACKING OR CONDITIONING OF PRODUCTS, NOTABLY FOOD PRODUCTS
Jean-Luc Berry, Mesnil sur L'Estree, and Edgar J. Dardaine, Sorel-Moussel, both of France, assignors to E. P. Remy et Cie, Dreux, France
Filed Aug. 5, 1971, Ser. No. 169,171
Claims priority, application France, Aug. 7, 1970, 70.29313
Int. Cl. B67d *5/02, 5/62*; **F16j** *15/14, 15/42*
U.S. Cl. 141—46 **11 Claims**

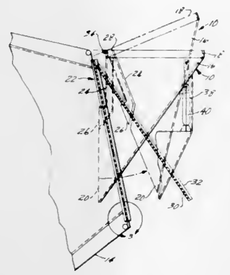
Apparatus for conditioning food products. The apparatus comprises a frame, a plate located at an upper level and supporting the receptacles to be filled and a rotary proportioning assembly driving the receptacles and filling the latter by means of a proportioning device, a distributing device and a device for discharging the product into the receptacles, and an enclo-

sure which is sealed with respect to the atmosphere and the bottom of which is formed of said plate, said proportioning and distributing devices being located below the plate, and the



edges of the plate opening, through which the discharging device is connected with the distributing device forming with the latter a fluid-tight rotary joint.

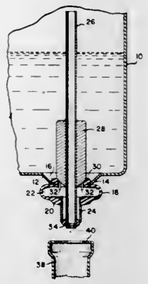
3,799,221
DUST COLLECTION SYSTEM
Clifford A. Vincent, Chio, Calif., assignor to Consolidated Rock Products Co., Los Angeles, Calif.
Division of Ser. No. 94,447, Dec. 2, 1970, abandoned. This application Oct. 4, 1972, Ser. No. 295,023
Int. Cl. B65b *1/28*
U.S. Cl. 141—93 **11 Claims**



There is provided a system for collecting dust during the filling of a mixer with cementitious materials. Basic to the system is a hopper having a conduit for transport of materials to the mixer, a seal which surrounds the outlet of the conduit and engages the inlet of the mixer and an exhaust duct having an inlet which faces the interior of the mixer and outlet for connection to a source of suction. Application of suction to the exhaust duct during filling of the mixer removes the dust generated during the filling of the mixer. The hopper may be used in conjunction with aggregate dispenser having a seal which contacts the periphery of the inlet of the hopper and an exhaust manifold which aids in exhausting dust and the air displaced during the filling operation.

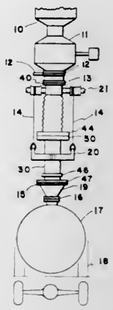
3,799,222
CONTAINER FILLING APPARATUS
Henry H. Franz, 3201 Falls Cliff Rd., Baltimore, Md.
Filed May 11, 1972, Ser. No. 252,354
Int. Cl. B65b *3/06*
U.S. Cl. 141—291 **4 Claims**

An apparatus for filling a container with a liquid wherein a reservoir or tank is provided with a nozzle having a vent tube extending therethrough. The nozzle is provided with a bellows-like member that coacts with a valve member on the vent



tube for sealing the liquid contained within the reservoir. The reservoir is subjected to a vacuum which is communicated to the containers by way of said vent tube.

3,799,223
TELESCOPING CONDUIT
George Feneziani, Buffalo, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.
Continuation of Ser. No. 48,234, June 22, 1970, abandoned. This application May 19, 1972, Ser. No. 255,296
Int. Cl. B65b *3/10*
U.S. Cl. 141—388 **7 Claims**

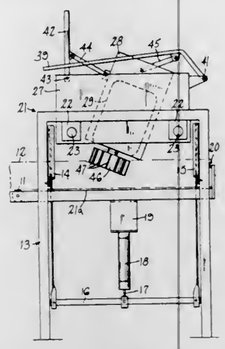


A leakproof telescoping conduit which comprises two slideably connected rigid conduits having disposed over the smaller conduit a flexible conduit and having means at the point of the slideable connection for holding and compressing packing material to control the friction between the rigid conduits and to prevent leaks at the slideable connection.

3,799,224
RAFTER BEAM NOTCHING APPARATUS
Vito M. Vizziello, Hamden, Conn., and Charles A. Bouteiller, Barrington, Mass., assignors to New England Log Homes, Inc., New Haven, Conn.
Filed Feb. 16, 1973, Ser. No. 333,063
Int. Cl. B27c *5/02*
U.S. Cl. 144—133 **6 Claims**

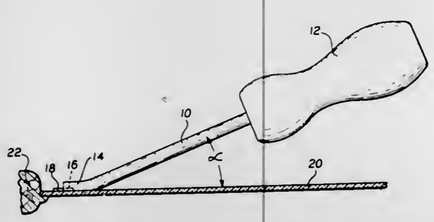
Rafter beam notching apparatus in which a power driven rotary saw is fixedly mounted on a pair of rods which travel horizontally in unison through the superstructure of a frame. The frame includes a table for horizontal placement thereon of a rafter beam to be notched. A first vertical support plate is fixedly mounted on the rod transversely thereof so as to travel with the rods, and has at least one guide pin projecting from a

surface thereof. A second vertical support plate has at least one guide slot therethrough positioned to receive the guide pin of the first plate such that the second plate may be arranged in coplanar contact with the first plate in a plurality of predetermined positions. The second plate fixedly supports



the motor of the rotary saw such that the cutter of the saw extends downwardly between the rods. The saw thus may be set at a plurality of angles to the horizontal corresponding to the plurality of positions of the second plate on the first plate, whereby notches of predetermined dimensions may be cut in the beam without requiring inclination of the beam.

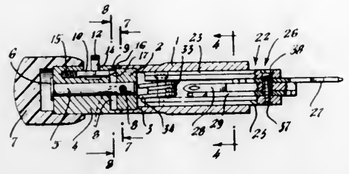
3,799,225
GLAZIER'S TOOL
Albert Chenel, Jr., 86-15 Broadway, Elmhurst, N.Y.
Filed Jan. 15, 1973, Ser. No. 323,671
Int. Cl. B25c *3/00*
U.S. Cl. 145—46 **4 Claims**



A tool for setting diamond-shaped glazier's points comprising a shank having a flattened working head at one end and a handle at the other, the flattened working head making an angle of about 15° to 46° with the shank end being magnetized, said head being provided with a flat triangular recess whose apex is directed toward the handle, said recess corresponding in thickness and angle approximately to a glazier's point, whereby a point can be seated magnetically in said recess with a portion thereof projecting beyond said head and upon sliding said tool along a glass pane in a frame the point will also slide along said pane and be driven into the frame.

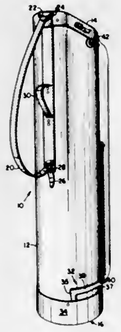
3,799,226
MULTIPLE BLADE TOOL
Raymond P. Lavietes, Wepawaug Rd., Woodbridge, Conn.
Filed June 12, 1972, Ser. No. 261,746
Int. Cl. B25b *15/04*
U.S. Cl. 145—50 C **4 Claims**

A multiple blade tool in which a blade holder telescopes within a tubular handle. The blade holder includes two spaced longitudinal members in which a plurality of blades are pivoted at one end by a staked stud and screw pivot assembly. The blades are pivoted to lie between the spaced members when not in use and extend therefrom when being used. The tool further includes a ratchet drive at the other end of the



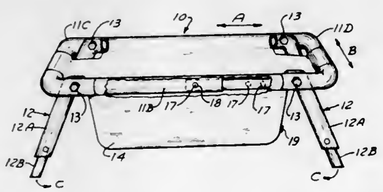
handle to permit positive drive in both directions and one way ratchet drive in either direction. The construction of the ratchet drive is improved by utilizing a headed spindle which greatly simplifies assembly procedure, reduces the cost of the tool, and increases its strength and durability.

3,799,227
GOLF BAG
David Byrne Cantwell, 1580 Edgeworth Ave., Colma, Calif.
Filed Apr. 14, 1969, Ser. No. 815,958
Int. Cl. A63b *55/00*
U.S. Cl. 150—1.5 R **6 Claims**



A golf bag having a hand hold formed at the lower portion of the golf bag body out of line with the shoulder strap of the golf bag.

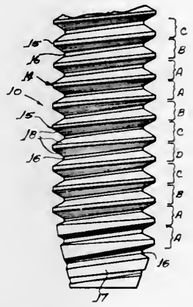
3,799,228
PORTABLE, COLLAPSIBLE MULTIPURPOSE CONTAINER
James A. Crawford, P.O. Box 1421, Stuart, Fla.
Filed Apr. 3, 1972, Ser. No. 212,974
Int. Cl. A47k *3/06*
U.S. Cl. 150—49 **6 Claims**



A portable, collapsible multipurpose container for use as a baby bath or the like having a perimeter frame telescopically

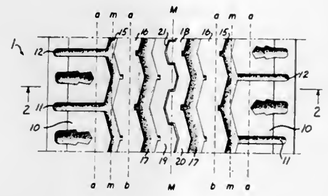
adjustable to predetermined positions in length and width for individually supporting different-sized, flexible liquid holding means removably attached about the frame. Supporting telescopic legs are rotatably coupled to the frame and are movable to storage positions.

3,799,229
LOCKING THREAD FASTENER
Lawrence D. Johnson, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Oct. 26, 1971, Ser. No. 191,987
Int. Cl. F16b *39/30*
U.S. Cl. 151—14 R **14 Claims**



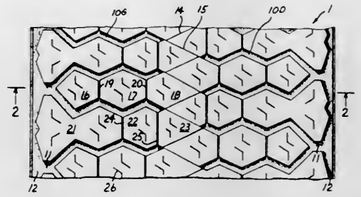
A locking thread fastener for use in a mating part having a conventional internal thread where the thread of the fastener has a varying pitch distance along the length of the screw so that interference is encountered on the flanks of the thread when the fastener is driven into the mating part. The pitch distance varies in an oscillating manner between maximum and minimum values.

3,799,230
HIGH-SPEED RADIAL TIRE
Jean Bernard Montagne, Cebazat, France, assignor to Compagnie Generale Des Etablissments Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Pug-de-Dame), France
Filed July 7, 1972, Ser. No. 269,800
Claims priority, application France, July 8, 1971, 7125142
Int. Cl. B60c *11/06*
U.S. Cl. 152—209 R **6 Claims**



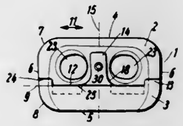
The crown of a radial tire designed for high speeds has two lateral portions and a center portion, the lateral portions being narrower and more rigid than the center portion. The tire tread comprises, starting at the edges and proceeding towards the center: (a) two circumferential lateral ridges cut over their entire width by transverse grooves, (b) two circumferential lateral grooves substantially centered on the median lines of the comparatively rigid lateral portions of the crown, (c) two circumferential intermediate ridges substantially centered on the lines of junction of the comparatively rigid lateral portions and the less rigid center portion of the crown, (d) two circumferential center grooves, and (e) one circumferential center ridge at least as wide as the intermediate ridges.

3,799,231
HIGH-SPEED RADIAL TIRE
Jacques Boileau, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissments Michelin raison sociale Michelin & Cie, Clermont-Ferrand, (Pug-de-Dame), France
Filed July 10, 1972, Ser. No. 270,023
Claims priority, application France, July 13, 1971, 71.25808
Int. Cl. B60c *11/08*
U.S. Cl. 152—209 **8 Claims**



A radial tire designed for high speeds has a tread comprising blocks arranged in transverse rows and formed with narrow grooves by which adjacent blocks in the same row are closely spaced apart and with transverse grooves each opening on at least one edge of the tread. The transverse grooves are relatively wide in the vicinity of such edge and relatively narrow in the vicinity of the median line of the tread.

3,799,232
WEAR LINK FOR TIRE CHAINS
Werner Schnurle, Dewangen, Germany, assignor to Eisen-und Drahtwerk Erlau Aktiengesellschaft, Erlau, Aalen, Germany
Filed Mar. 15, 1972, Ser. No. 234,878
Claims priority, application Germany, Mar. 24, 1971, 2114206
Int. Cl. B60c *27/04*
U.S. Cl. 152—231 **30 Claims**

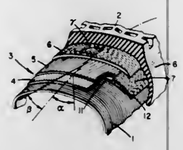


A wear link for tire chains in which the wear link consists of a link body which may be a link of the tire chain that is disposed edgewise to the tire. The wear link also includes a wear body engaging the side of the link body facing away from the tire with the wear body presenting a road engaging surface which is preferably substantially wider than the link body. The link body and wear body have interfitting portions which hold the bodies together against relative lateral and longitudinal and tilting movements and one or more connectors is provided for fixedly interconnecting the wear body and the link body.

3,799,233
PNEUMATIC TIRE FOR VEHICLE WHEELS
Giulio Cappa, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy
Filed Sept. 11, 1972, Ser. No. 287,916
Claims priority, application Italy, Sept. 29, 1971, 29250/71
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 R **6 Claims**

A pneumatic tire for vehicle wheels composed of a carcass, a breaker structure formed from two superimposed layers of cord fabric made from textiles, metals or glass, and at least one annular element on each shoulder constituted of a rubber compound in which is embedded particles of a material having

a modulus of elasticity of at least 5,000 Kg/mm². The particles are oriented with the axis of orientation forming an angle smaller than 10° with tangents to the parallels of the tire. The annular elements are in contact with the lateral edges of the layers of the breaker structure by being positioned between



the layers and the carcass, by being composed of two strips one of which is positioned between the layers and one of which is positioned between the layers and the carcass or being composed of two strips of which each is formed into a U-shape and envelops one lateral edge of each breaker layer.

3,799,234

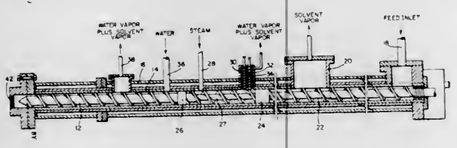
COUNTERCURRENT VAPOR STRIPPING IN SCREW DEVOLATILIZER

Richard H. Skidmore, Strafford, Pa., assignor to Welding Engineers, Inc., King of Prussia, Pa.

Filed Feb. 22, 1971, Ser. No. 117,332

Int. Cl. B01d *1/28, 1/00;* **A01j** *17/00*

U.S. Cl. 159—2 E **12 Claims**



Volatile components are stripped countercurrently from a plastic material in a screw extruder filled with such material by injecting a gas into the material and removing a significant portion of the gas combined with the volatile components at a point upstream from the point of injection.

3,799,235

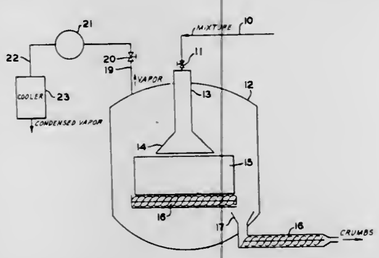
METHOD AND APPARATUS FOR DESOLVENTIZING ELASTOMERS

Seid Hossein Moosavian, and Charles Robert Johnson, both of Akron, Ohio, assignors to The Fuestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 27, 1970, Ser. No. 93,357

Int. Cl. B01d *1/16;* **F26b** *3/12*

U.S. Cl. 159—3 **21 Claims**



A method and apparatus for removing volatile material from an elastomer by releasing a pressurized fluid mixture of the elastomer and volatile material into an elongated conduit. Some of the volatile material flashes into vapor and the remaining mixture forms discrete crumbs. The vapor and crumbs exit the conduit into an enclosure maintained at a lower pressure, and the crumbs fall into crumb-collecting means such as a drum drier or a screw conveyor. The crumbs are removed from the enclosure by vapor-tight means such as a sealed screw conveyor or extruder. Vapor is removed at the top of the enclosure, and can be condensed and recycled.

3,799,236

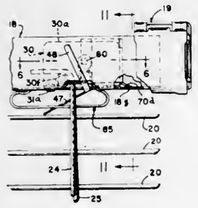
VENETIAN BLIND HAVING A CORD LOCK WHICH IS ACTUATED UPON FULL RAISING OF THE BLIND

Victor Debs, Staten Island, N.Y., assignor to Levolor Lorentzen, Inc., Hoboken, N.J.

Filed Nov. 10, 1972, Ser. No. 305,410

Int. Cl. E06b *9/324*

U.S. Cl. 160—178 C **12 Claims**



As the blind is raised into uppermost position, the top slat of the blind moves an actuator that swings the locking dog of the cord lock into locking position. This locks the blind in its fully raised position.

3,799,237

FOLDING DOOR CONSTRUCTION

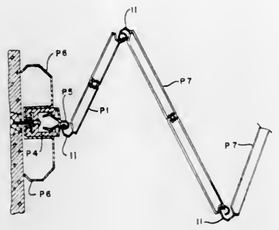
Ivan Proserpi, Via Turat 13, Milan, Italy

Filed Feb. 24, 1972, Ser. No. 229,066

Claims priority, application Italy, Feb. 27, 1971, 21150/71

Int. Cl. E05d *15/26*

U.S. Cl. 160—199 **3 Claims**



A partition structure, such as a folding door, is made up of a plurality of panels, longitudinally suspended from a track, and hinged together by integral portions thereof. The panels, which are hollow, are formed of a plastic material and have central integral internal cores which serve as expansion joints, the cores additionally serving as means for attaching panel hanger or supporting elements, the latter in certain instances having headed ends adapted to slide in the track.

3,799,238

METHOD OF SEALING THE STOPPING AND WITHDRAWING HEAD IN A CONTINUOUS CASTING MOLD

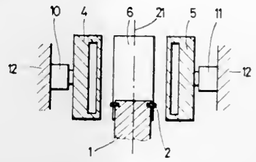
Werner Bruderer, Feldmeilen, and Peter J. Koenig, Zumikon, both of Switzerland, assignors to Concast AG, Zurich, Switzerland

Filed Feb. 23, 1972, Ser. No. 228,765

Claims priority, application Switzerland, Feb. 25, 1971, 2881/71

Int. Cl. B22d *11/08*

U.S. Cl. 164—82 **10 Claims**



A method of sealing the stopping and withdrawing head in a continuous casting mold wherein movable mold wall means of the continuous casting mold are displaced from a casting position away from the longitudinal casting axis so as to open the continuous casting mold, the stopping and withdrawing head is then introduced into the open continuous casting mold until it has assumed a prescribed position within such casting mold, and with a seal or seal member located intermediate the clearance gap between the stopping and withdrawing head and the walls of the casting mold, and finally the clearance gap is sealed through the action of the seal member by returning the mold walls into casting position. It is possible to either apply the seal member to the stopping and withdrawing head prior to the time that the latter is introduced into the open continuous casting mold or after such stopping and withdrawing head has already been introduced into the casting mold.

3,799,239

METHOD FOR CONTINUOUS CASTING OF METAL

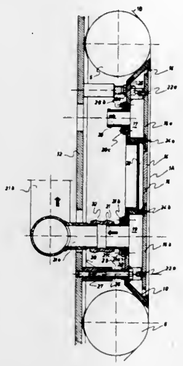
Jacques Dumont-Fillon, Saint Germain-en-Laye, and Louis Vedda, Metz, both of France, assignors to Institut De Recherches De La Siderurgie Francaise, Saint Germain-en-Laye, France

Continuation of Ser. No. 879,861, Nov. 25, 1969, abandoned. This application Feb. 29, 1972, Ser. No. 230,496

Claims priority, application France, Nov. 26, 1968, 68.175275

Int. Cl. B22d *11/06*

U.S. Cl. 164—87 **7 Claims**



Continuous casting method wherein molten metal is poured into a vertical passage bounded by the inner stretches of four endless metallic bands which travel downwardly at the speed of metal flow. The inner stretches are cooled by liquid coolant which is admitted into upper ends and is discharged at the lower ends of narrow chambers each adjacent to and extending along the full width and length of a stretch. The inlets and outlets of the chambers are bounded by arcuate surfaces which insure that the coolant enters and leaves the chambers without appreciable turbulence. Each inlet receives fresh coolant from a first compartment and each outlet admits spent coolant into a second compartment.

3,799,240

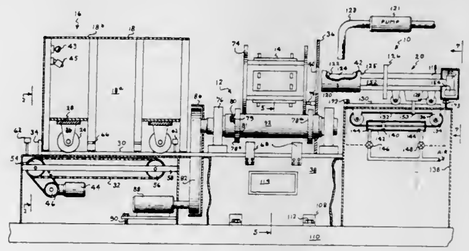
HORIZONTAL CENTRIFUGAL CASTING MACHINE

Frederick W. Baumann; William C. LaBahn, both of Scotia; Robert G. MacNary, Elnora, and William R. Smith, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,285

Int. Cl. B22d *13/04*

U.S. Cl. 164—298 **9 Claims**



A horizontal centrifugal casting machine capable of producing diversely dimensioned structures is characterized by a pair of motor driven rollers for rotating an axially open, wheeled mold seated thereon. Molten charge in a quantity corresponding to the size of the structure to be cast is deposited in a thermally insulated ladle situated at one end of the mold and a variable speed drive is utilized to transport the ladle into the mold interior at a rate determined by the quantity of molten charge within the ladle. The pour rate of molten charge from the ladle into the rotating mold also is regulated, e.g., by a piston driven rack communicating with a pinion secured to the ladle shaft, to permit diverse pour rates for casting structures of different dimensions. The casting machine also is provided with a hood which is moved axially into an overlying attitude relative to the mold to maintain the mold at an elevated temperature prior to casting and to protect against unseating of the mold from the rollers during casting.

3,799,241

REGENERATIVE AIR PREHEATER

Siegfried Hans-Dietmer Schluter, Wenden-Biggetal, and Gerhard Kritzler, Freudenberg, both of Germany, assignors to Apparatebau Rothemuhle Brandtt & Kritzler, Rothenuhle, Postfach, Germany

Filed Apr. 6, 1972, Ser. No. 241,604

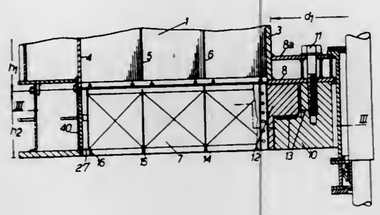
Claims priority, application Germany, Apr. 6, 1971, 2116728

Int. Cl. F28d *17/02*

U.S. Cl. 165—4 **15 Claims**

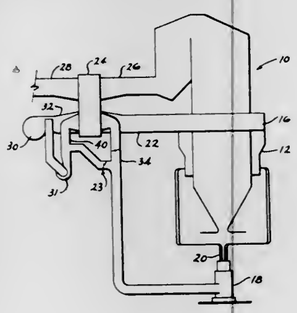
In a regenerative air preheater of the stationary cylindrical regenerator chamber type, a rotatable heat-exchange element

carrier is provided at the cold end of the regenerator chamber. The chamber wall has an aperture opposite the carrier



through which access can be had to the heat-exchange elements in the carrier for their radial installation or removal.

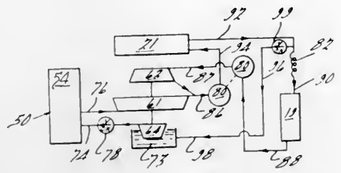
3,799,242
REGENERATIVE AIR HEATER WITH REVERSIBLE DRIVE
David A. Harris, Simsbury; Henry E. Burbach, Avon, and Joseph G. Singer, Bloomfield, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 30, 1971, Ser. No. 213,860
Int. Cl. F28d *19/00*
U.S. Cl. 165—7 **2 Claims**



A heat exchanger of the regenerative type wherein combustion gases pass in contact with heat exchange surface and gives off heat to the surface. The surface is rotatably mounted so as to come into contact first with a primary air stream to give off heat thereto, and upon further rotation it comes into contact with a secondary air stream to also impart heat to it. A reversible drive is provided for the rotatably mounted heat exchange surface so that when desired the secondary air stream first encounters the heat exchange surface in its hottest state, and upon further rotation, the primary air stream is heated to a lesser extent.

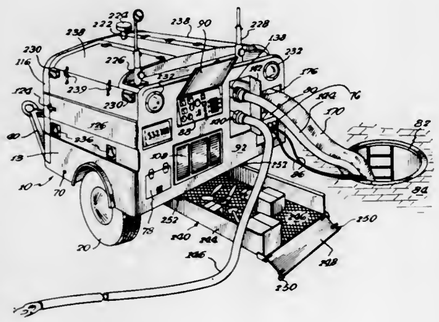
3,799,243
LIQUID-VAPOR CYCLE AIR-CONDITION SYSTEM
Herman B. Castillo, Clawson, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 4, 1972, Ser. No. 312,012
Int. Cl. F24f *3/14*
U.S. Cl. 165—19 **30 Claims**

A flame powered liquid-vapor cycle air conditioning system having a turbine, a compressor and a liquid feed pump on a common shaft and a housing rotatably mounting this shaft and defining a liquid reservoir for the pump. The system includes a reversing valve for switching between an air heating mode and an air cooling mode. In the heating mode, the coefficient of



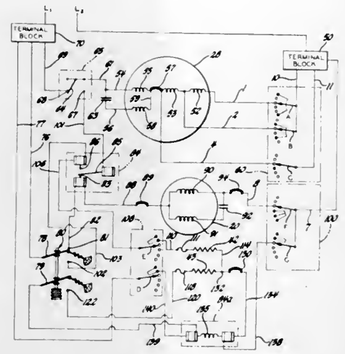
performance of the system is improved by recovering waste heat and water vapor from the exhaust gases produced by the flame. In the heating mode, the recovered water is also used to increase the humidity of the conditioned air.

3,799,244
SERVICE VEHICLE FOR MANHOLE OPERATION
Robert F. Strauss, Cary, and Carl F. Lawrenz, Skokie, both of Ill., assignors to Service Dynamics, Inc., Lake Bluff, Ill.
Filed Feb. 28, 1972, Ser. No. 229,642
Int. Cl. B60h *3/04*
U.S. Cl. 165—23 **7 Claims**



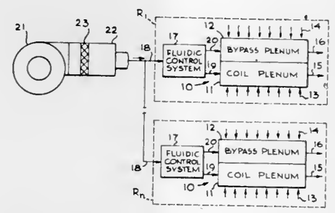
A wheeled service vehicle for manhole operation adapted for towing and comprising a chassis frame mounting a variety of equipment, the vehicle and equipment all being self-contained and including a prime mover with several pieces of equipment driven thereby. A housing for the vehicle is independently removable from the chassis frame without disturbing the equipment thereby making access and servicing of the equipment a simple matter. The equipment includes a generator driven by the prime mover to provide electrical power, a water pump driven by the prime mover and means for conditioning air supplied by a blower powered by the generator. Novel heat exchange means enables the air furnished by the blower to be warmed by the exhaust and coolant of the prime mover. The prime mover is fueled by bottled fuel and means are provided to warm the bottles for cold weather operation.

3,799,245
CONTROLS TO CYCLE FAN WITH ELECTRIC HEATER OR COMPRESSOR ON HEAT-COOL ROOM AIR CONDITIONER
Donald C. Ferdelman, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 20, 1972, Ser. No. 308,238
Int. Cl. F25b *29/00*
U.S. Cl. 165—29 **3 Claims**



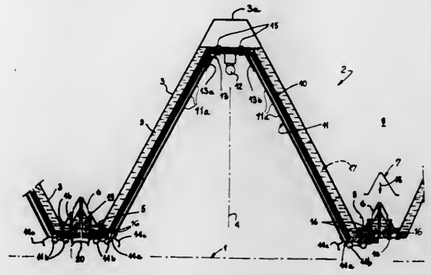
A control system for a heat-cool room air conditioner which allows the user to select whether the fan motor should cycle on and off with the stage thermostat when a preselected temperature is reached while the unit is operating either during a heating or cooling mode.

3,799,246
INDUCTION TERMINAL UNIT FOR AIR-CONDITIONING SYSTEMS
Gene W. Osheroff, Las Vegas, Nev., assignor to Fluidtech Corporation, Inglewood, Calif.
Filed July 1, 1971, Ser. No. 158,766
Int. Cl. G05d *23/00*
U.S. Cl. 165—35 **23 Claims**



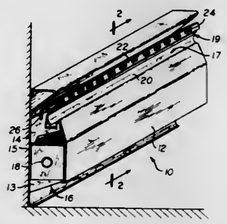
The present invention provides a new type of induction terminal unit in which a pure fluid system is used to control the switching of the air between the conditioning and non-conditioning paths of the unit. The fluidic control system permits a simplification in the construction of the unit as well as a more efficient and effective operation of it.

3,799,247
ROOF COMPOSED OF MULTIPURPOSE SELF-SUPPORTING LONGITUDINAL ELEMENTS, METHOD AND INSTALLATION FOR ITS MANUFACTURE
Alain Champot, Baron S/Odon, France, assignor to Ateliers De Constructions Metalliques De Caen
Filed July 28, 1972, Ser. No. 276,127
Claims priority, application France, Aug. 4, 1971, 71.28624
Int. Cl. F24f *7/02*
U.S. Cl. 165—49 **7 Claims**



A roof construction and method of making and installing the same, whereby roof sections for extending across the entire roof of a building, and embodying lighting, heating and ventilating equipment, and the like, may be manufactured as individual units for installation in side-by-side relation to the roof-supporting structure of a building.

3,799,248
DAMPER CONSTRUCTION
Norman B. Wenig, Scarsdale, N.Y., assignor to Thermal Science Corporation, Farmingdale, N.Y.
Filed May 22, 1972, Ser. No. 255,432
Int. Cl. F24h *3/00*
U.S. Cl. 165—55 **1 Claim**

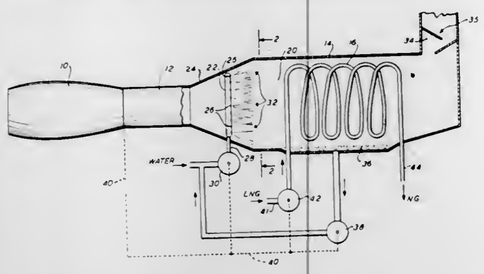


An improved damper construction for a heat exchanger in which heating or cooling surface is contained within a hollow wall structure and air entering through an inlet of the wall structure flows in contact with the heating/cooling surface and exits through an elongated outlet of the wall structure. The improved damper is hollow and has slot apertures that allow a limited outflow of air when the damper is closed, and present less interference to air flow when the damper is open.

3,799,249
HOT GAS HEAT EXCHANGER
Hans D. Linhardt, Costa Mesa, Calif., assignor to Air Reduction, Incorporated, New York, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,041
Int. Cl. F24f *3/14*
U.S. Cl. 165—60 **11 Claims**

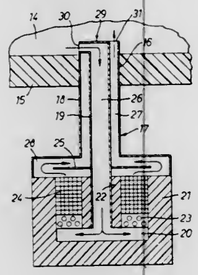
A heat exchanger comprising a jet engine with exhaust conduit, heat transfer coils containing a cryogenic liquid to be

vaporized within the conduit and in the path of the engine exhaust gases, a manifold in the conduit located upstream of the heat transfer coils and toward the engine exhaust for injection



of water spray into the hot exhaust gases, and circulation pumps for the cryogenic liquid, spray water, and spray water condensate respectively, operated by power-takeoff from the engine.

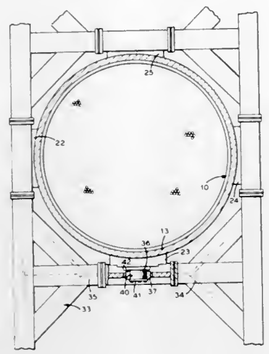
3,799,250
AIR TREATMENT EQUIPMENT
Morgens Dyre, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Division of Ser. No. 54,486, July 13, 1970, Pat. No. 3,654,432. This application June 30, 1971, Ser. No. 158,502
Int. Cl. F25b *29/00*
U.S. Cl. 165—61 **4 Claims**



The invention relates to air treatment equipment for removing impurities from the air, particularly substances having an odor or taste and bacterial spores. The equipment includes a heating element, maintained at a high temperature, over which the air passes or is directed and this causes air borne particles to break down into odorless substances. The equipment includes a heat exchanger arrangement which serves to reduce the temperature of the heated air returned to the room or space from which the air was withdrawn. The heating element of the heating unit is made of electrically conducting silicon carbide having a thin coating of catalyst material.

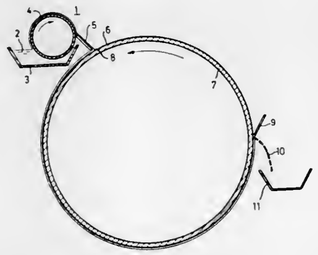
3,799,251
INDUSTRIAL TECHNIQUE
Gerald G. Anderson, and Ronald C. Hutto, both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Dec. 21, 1971, Ser. No. 210,476
Int. Cl. F28f *9/00*
U.S. Cl. 165—68 **3 Claims**

A heat exchanger that transfers heat generated within a nuclear reactor to a secondary coolant has a support system that accommodates thermal expansion and contraction as well as seismic forces through an arrangement of trunnions and trunnion bearings. The trunnions that are secured to the outer edge of the top tube sheet are limited to movement in a longitudinal direction. The bottom tube sheet trunnions confine



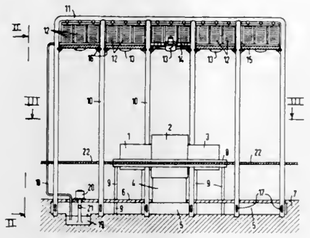
the heat exchanger to movement in only one transverse direction. Turning movements produced at the trunnions because of these motions are relieved through lubricated rotation blocks in the trunnion bearings.

3,799,252
FEEDING DEVICE FOR A ROLLER DRIER OR THE LIKE
Wilhelm Soll, Pacellestrasse 20, 7990 Friedrichshafen, Germany
Filed Oct. 21, 1971, Ser. No. 191,172
Claims priority, application Germany, Nov. 10, 1970, 2055222
Int. Cl. F28d *11/02*
U.S. Cl. 165—91 **4 Claims**



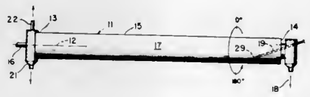
Feeding device for applying the material to be treated onto the treatment cylinder of a roller drier, by means of a rotatable take-up cylinder immersed in a bath of the material, and a doctor plate extending downwardly and stripping the layer of said material from said take-up cylinder; a gap is left free between the lower end of said doctor plate and the treatment cylinder; said material flowing over said doctor plate and impinging on the peripheral surface of said treatment cylinder can flow away in a guided fashion through said gap.

3,799,253
CONDENSATION SYSTEM FOR LOW PRESSURE GASEOUS MEDIA, SUCH AS EXHAUST STEAM OF STEAM POWER PLANTS
Fritz Kelp, Mulheim, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany
Filed Feb. 14, 1972, Ser. No. 226,071
Claims priority, application Germany, Feb. 13, 1971, 2107013
Int. Cl. F28h *3/00*
U.S. Cl. 165—111 **11 Claims**



In an air-cooled condensation system for low pressure gas media, such as exhaust steam of steam power plants, a low level collecting chamber is connected to elevated cooling elements by a multiplicity of vertically extending distribution tubes.

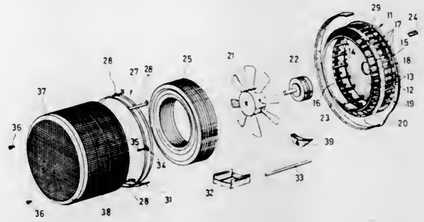
3,799,254
SOLIDS-TO-SOLIDS HEAT EXCHANGE APPARATUS
William V. Bauer, New York, N.Y., assignor to The Lummus Company, Bloomfield, N.J.
Filed Oct. 5, 1972, Ser. No. 295,287
Int. Cl. F28c *3/18*
U.S. Cl. 165—111 **7 Claims**



An inclined rotary kiln for direct-contact heat exchange between a coarse and a fine granular material. The coarse material travels downward through the kiln. The fine material is introduced near the lower end of the kiln and is transferred up the kiln stagewise via helical ducts in the kiln's wall. Inlets to the ducts have grates which reject the coarse material but accept the fine material. The ducts extend helically upwardly relative the kiln and rearwardly relative kiln rotation so that the fine material is discharged from the ducts up the kiln.

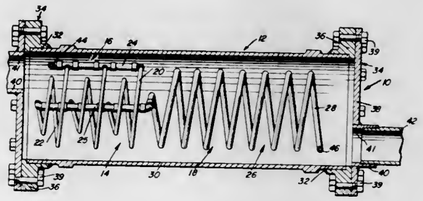
3,799,255
HEAT EXCHANGE UNIT
Hugo Luderssen, Brezgerweg, Germany, assignor to Robert Bosch Hausgeraete GmbH, Giengen, Germany
Filed June 29, 1972, Ser. No. 267,711
Claims priority, application Germany, July 21, 1971, 2136369
Int. Cl. F24h *3/08*
U.S. Cl. 165—122 **9 Claims**

A carrier forms a drum-shaped housing having opposite open ends and a plurality of air-flow apertures. A support extends across one of the open ends and an axial blower with its associated drive is located within the housing. A spirally convoluted heatsexchanger unit is located at the other end of the



housing so that air aspirated by the blower passes into the housing in contact with the heat-exchanger unit.

3,799,256
APPARATUS FOR TRANSFERRING HEAT
Paul C. Gaines, Jr., 1043 Alogonquin Trl., Frankfort, Ky.
Filed Nov. 18, 1971, Ser. No. 199,989
Int. Cl. F28f *9/22*
U.S. Cl. 165—145 **5 Claims**

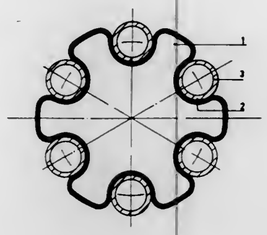


A medium passed from a high temperature system is cooled by the steps of retarding the normal rapid expansion of the medium while maintaining a relatively high velocity thereof while cooling same; passing medium cooled by the first step through a coil section for further cooling same, and performing the first two steps in the presence of a cooling medium. A heat exchanger for carrying out the method has a shell providing a flow path for a cooling medium, and a coil arranged within the shell and including a first coil section which controls expansion of the medium to be cooled and maintains the velocity high enough to maintain any condensate formed in the coil to be rapidly moved along the coil in front of the expanding medium to be cooled thus preventing hammering by preventing spaced areas or slugs of liquid condensate from moving rapidly toward each other as gaseous pockets therebetween are condensed which normally cause reduced pressure areas therebetween, and a second coil section connected to the first coil section to receive the medium to be cooled for further cooling same. The first coil section has a pair of headers and a plurality of helical loops connected between the headers. The second coil section is formed by a plurality of helical loops connected together in series.

3,799,257
HEAT EXCHANGER
Willy J. C. De Clercq, Voorhout, Netherlands, assignor to B. V. Neratoom, The Hague, Netherlands
Filed Apr. 7, 1969, Ser. No. 813,856
Int. Cl. F28b *1/32*
U.S. Cl. 165—171 **4 Claims**

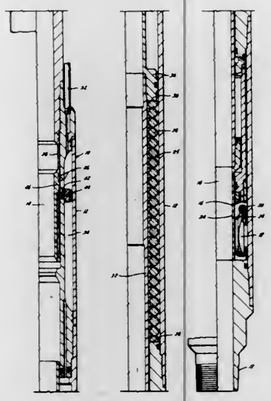
Heat exchanger or unit for a heat exchanger for heat exchanging media reacting vigorously at direct contact composed of one tube for a heat transferring medium and one or more tubes for a heat absorbing medium each tube for the

heat absorbing medium being externally in heat conductive contact for at least a large part of its length with the tube for the heat transferring medium by means of a channel-shaped recess provided externally in the wall of the tube for the heat transferring medium, each recess forming a location for a tube



for the heat absorbing medium, the profile of which location corresponds to the external shape of each tube for the heat absorbing medium, and is carried out in such a way that the tube for the heat absorbing medium is located in this recess for not more than half its circumference.

3,799,258
SUBSURFACE WELL SAFETY VALVE
Gilbert H. Tausch, Houston, Tex., assignor to Camco Incorporated, Houston, Tex.
Filed Nov. 19, 1971, Ser. No. 200,401
Int. Cl. E21b *33/03, 43/12*
U.S. Cl. 166—72 **5 Claims**



A subsurface well safety valve for connection directly into a well tubing for shutting off flow of well fluids through the tubing when adverse well conditions occur, but yet providing a valve bore of substantially the same size as the bore of the well tubing for allowing unrestricted passage of well equipment. The valve bore of the safety valve including means for supporting a second safety valve in the event that the first safety valve becomes inoperative. A fluid control line extending from the surface to the first safety valve which valve includes a port communicating with the control line and opening into the valve bore with shearable means initially closing the port but when sheared communicating control fluid into the first valve bore for controlling a second safety valve supported in the first valve bore.

3,799,259
SIDE POCKET KICKOVER TOOL
Robert W. Dinning, Houston, Tex., assignor to Macco Oil Tool Co., Inc., Houston, Tex.
Filed Apr. 12, 1972, Ser. No. 243,380
Int. Cl. E21b *7/06*
U.S. Cl. 166—117.5 **22 Claims**

A well tool for installing a valve assembly in a side pocket valve mandrel connected in a pipe string comprising: a tubular body member adapted to coaxially receive a valve assembly for transportation through the pipe string to the mandrel. The body member is connected to an orientation assembly which is cooperable with the mandrel to orient the tool relative to the side pocket of the mandrel. Carried by the body member is a kickover assembly adapted to force the valve assembly out of the body member toward the mandrel side pocket for engagement therewith. A retainer assembly may also be carried by the body member for selective engagement with the valve assembly to prevent the kickover assembly from prematurely forcing the valve assembly toward the side pocket. The tool may be operated by wireline or pump-down equipment.

3,799,260
WELL PACKER
Burchus Q. Barrington, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed July 3, 1972, Ser. No. 268,327
Int. Cl. E21b *23/06*
U.S. Cl. 166—185 **10 Claims**

An open hole drill stem testing packer is disclosed wherein the packer assembly has a resilient packer element positioned

between a lower anchor and a top adapter and fixedly attached to a telescoping mandrel. The packer has pressure relief means to prevent hydraulic lock between two adjacent packers and has an expanding shoe to prevent extrusion of the packer.

3,799,261
TECHNIQUE FOR MEASURING FLUID DRIFT
Harry A. Deans, and Robert L. Dalton, Jr., both of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.
Filed Apr. 12, 1972, Ser. No. 243,358
Int. Cl. E21b *47/00*
U.S. Cl. 166—250 **10 Claims**

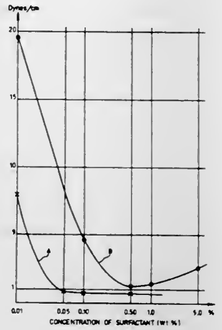
Disclosed herein is a method for determining the presence and magnitude of fluid drift within a subterranean formation. A volume of a tracer chemical is injected into the formation by means of a well. The tracer is then displaced through the formation by injecting a volume of tracer-free fluid through the well. The volume of this displacing fluid is at least 25 percent of the total injected fluid. The well is then shut-in for a sufficient period of time for the tracer to move through the formation due to the influence of fluid drift, and the well is then returned to production. By measuring the time periods of production, injection, and shut-in and the corresponding production and injection volumes, the presence and magnitude of fluid drift within the formation can be determined. This method has particular applicability for use in conjunction with a tracer method for determining fluid saturations within the subterranean formation.

3,799,262
METHOD FOR REDUCING THE FLOW OF WATER THROUGH PERMEABLE EARTH STRATA
Robert K. Knight, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Nov. 16, 1972, Ser. No. 306,985
Int. Cl. E21b *33/138, 43/22*
U.S. Cl. 166—270 **14 Claims**

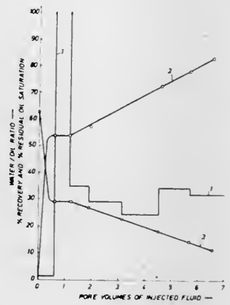
A method for reducing the flow of water through permeable earth strata in which the earth strata is contacted with an aqueous solution containing hydroxyethyl cellulose and a water-soluble substituted poly(hydroxyalkyl) bis(triazinylamino)stilbene. The method can be used to reduce the flow of water through particular strata in communication with a water injection well and to treat producing wells to reduce producing water/oil ratios.

3,799,263
ENHANCING THE RECOVERY OF OIL FROM SUBTERRANEAN FORMATIONS
Marcel Prillieux, Aignan, and Robert Tirtiaux, Rouen, both of France, assignors to Esso Production Research Company, Houston, Tex.
Filed July 12, 1972, Ser. No. 271,075
Claims priority, application France, July 15, 1971, 71.25817
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **15 Claims**

A surfactant for use in secondary and, more preferably, tertiary oil recovery operations, comprising a salt of at least one mono-, di- or tri-alkyl, 1,2-dimethylbenzene sulphonic acid. The alkyl group(s) is or are each C_{8+}, preferably C_9 to C_{13}, most preferably about C_{10} to C_{13}, the monoalkyl 1,2-dimethylbenzene sulphonate salts being preferred. The sulphonate salts may be derived from mixtures of sulphonic acids having different chain lengths of alkyl group. Although any water soluble sulphonate of the foregoing type has excellent surfactant properties for secondary and tertiary oil recovery, the preferred cations are derived from diethanolamine and triethanolamine.



3,799,264
SURFACTANT OIL RECOVERY PROCESS FOR USE IN FORMATIONS CONTAINING HIGH CONCENTRATIONS OF POLYVALENT IONS SUCH AS CALCIUM OR MAGNESIUM
Ricardo L. Cardenas; Joseph T. Carlin, and Kenoth H. Flournoy, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 13, 1972, Ser. No. 314,868
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **19 Claims**



A surfactant composition usable in the presence of from about 500 to about 5,000 parts per million polyvalent ion concentrations, such as calcium and/or magnesium, comprising a sulfated aliphatic anionic surfactant such as sodium tridecyl sulfate, a water soluble guanidine salt such as guanidine hydrochloride, and a nonionic surfactant such as polyethoxylated aliphatic alcohol.

3,799,265
USE OF MICELLAR SOLUTION AS AN EMULSION BREAKER

Thomas O. Webb, Casper, Wyo., assignor to Marathon Oil Company, Findlay, Ohio

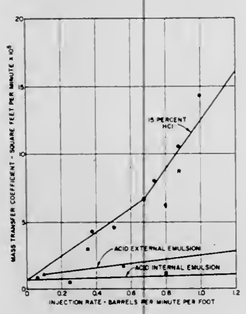
Division of Ser. No. 192,710, Nov. 9, 1971, which is a continuation-in-part of Ser. No. 762,140, Sept. 24, 1968, Pat. No. 3,554,289. This application Jan. 15, 1973, Ser. No. 323,673. The portion of the term of this patent subsequent to Jan. 12, 1988, has been disclaimed.
Int. Cl. E21b *43/25*
U.S. Cl. 166—305 R 10 Claims

Production of formation fluids through a well bore from a hydrocarbon-bearing subterranean formation having a water and hydrocarbon emulsion blockage surrounding the well bore is restored by injecting about 1 to about 500 gallons per vertical foot of hydrocarbon-bearing formation of micellar dispersion into the formation to "solubilize" the emulsion. The micellar dispersion is comprised of a surfactant having an average equivalent weight of 350–525.

3,799,266
FRACTURING METHOD USING ACID EXTERNAL EMULSIONS

Othar M. Kiel, Homeworth, Ohio, assignor to Esso Production Research Company, Houston, Tex.

Continuation-in-part of Ser. No. 263,081, June 15, 1972, Pat. No. 3,760,881, which is a continuation-in-part of Ser. No. 146,349, May 24, 1971, Pat. No. 3,710,865, which is a continuation-in-part of Ser. No. 76,887, Sept. 30, 1970, abandoned. This application Aug. 18, 1972, Ser. No. 281,694
Int. Cl. E21b *43/26, 43/27*
U.S. Cl. 166—308 17 Claims



A subterranean carbonate formation is treated by injecting into the formation an emulsion comprising an aqueous acid solution as the external phase and a hydrocarbon oil as the internal phase. The external acid phase constitutes at least 20 volume percent of the emulsion and preferably between 20 and 50 volume percent of the emulsion.

3,799,267
HYDRAULIC FRACTURING METHOD USING BENZOIC ACID TO FURTHER INCREASE THE VISCOSITY OF LIQUID HYDROCARBON

John W. Ely, and Robert L. Tiner, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 21, 1972, Ser. No. 308,361
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 5 Claims

The viscosity of a liquid hydrocarbon is increased by first solvating an aluminum soap of an aliphatic carboxylic acid in the liquid hydrocarbon and thereafter dissolving benzoic acid therein. Viscous liquid hydrocarbons are particularly useful as fracturing fluids.

3,799,268
METHOD AND APPARATUS FOR EVACUATING DRILLING FLUIDS FROM A WELL

Chudleigh B. Cochran, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

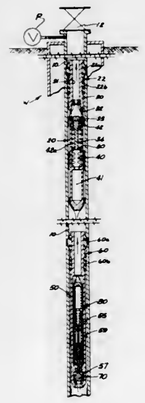
Filed Oct. 6, 1971, Ser. No. 186,994
Int. Cl. E21b *33/122, 33/124*
U.S. Cl. 166—313 5 Claims

A method of evacuating drilling fluids from between axially spaced well packers in which a circulating joint is disposed between the packer in a tubing string penetrating both packers. Pressure is applied to the tubing string to unblock circulating ports through the joint, allowing circulation into the area between packers and out of the well through a shorter tubing string penetrating only the upper packer. After circulation, pressure is applied to the long string causing the joint ports to be closed. The circulating joint comprises a tubular body with circulating ports through its walls and a sleeve assembly surrounding the body blocking the ports. Expansible chambers between the sleeve and body are employed to first unblock the ports and then to block them again upon selective introduction of pressure to the chambers.

3,799,269
SAFETY MEANS FOR WELL FLOW CONTROL

Joe R. Brown, and Joseph L. Johnson, both of Houston, Tex., assignors to Macco Oil Tool Co., Inc., Houston, Tex.

Filed Apr. 3, 1972, Ser. No. 240,733
Int. Cl. E21b *43/12*
U.S. Cl. 166—315 35 Claims



Two self-contained, subsurface operated, subsurface safety valves are positioned at vertically spaced locations within a well production tubing. The upper valve closes automatically when the tubing pressure falls below a predetermined low value and the lower valve closes automatically when the tubing pressure rises above a predetermined high value. The system is surface operated by closing the wellhead which permits the tubing pressure to rise to the high value, closing the lower valve. Reopening the wellhead permits the tubing pressure to drop to the low value, closing the upper valve. The valves may also be remotely or surface operated by dropping the wellhead pressure to the low pressure value which closes the upper and then the lower valves. Both valves also close automatically when well damage permits uncontrolled well flow which causes tubing pressure to drop to the low value. If well damage terminates or limits flow, the tubing pressure rises to automatically shut in the high pressure valve. Both valves may be reopened by pressuring from the wellhead.

The preferred form of the high pressure valve of the present invention includes means for reopening the valve by increasing the wellhead pressure above that required to close the valve. For this purpose, a pressure sensitive actuator in the valve is reengagably detachable from the valve closure elements.

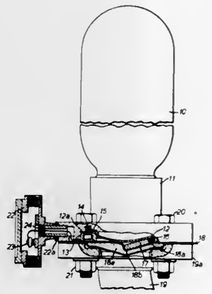
The invention includes methods for automatically or remotely closing a well, for reopening the well, and for testing valve operation.

A modified form of the invention employs flow rate responsive valves rather than pressure responsive valves. In the modified form, one valve closes when the flow exceeds a predetermined rate and the other valve closes when the flow drops below a predetermined rate.

3,799,270
FLUID CONTAINERS

Colin G. Boud, 27 Larkswood Dr., Crowthorne, England

Filed July 17, 1972, Ser. No. 272,176
Claims priority, application Great Britain, July 20, 1971, 33885/71
Int. Cl. A62c *35/02*
U.S. Cl. 169—28 9 Claims

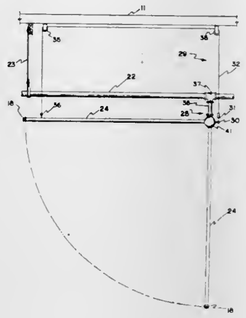


A sealed vessel, containing a fire extinguishant or explosive suppressant, has, clamped to the outside of a frangible wall portion of the vessel, a cap-shaped member supporting an explosive line charge arranged around part of a circle and held against the vessel. An electrically actuated detonator is also carried by the cap member for detonating the charge and opening the frangible opening to release the vessel contents into an exit pipe. A layer of explosive suppressant is carried by the cap member to overlie the explosive charge and to suppress the advance of its explosive along the exit pipe.

3,799,271
FIRE EXTINGUISHING APPARATUS AND SYSTEM WITH AUTOMATICALLY LOWERING SPRINKLER HEADS

William S. Mitchell, Oakland, and Lloyd G. James, Alameda, both of Calif., assignors to Safeway Stores, Incorporated, Oakland, Calif.

Filed Aug. 29, 1972, Ser. No. 284,572
Int. Cl. A62c *35/22*
U.S. Cl. 169—57 21 Claims

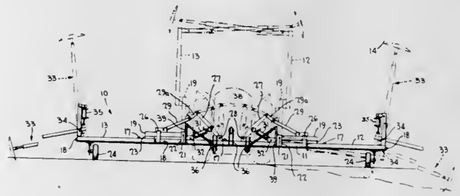


An automatic overhead sprinkler system supported from the roof of a structure to be protected. The system consists of a network of fixed pipes conveying a fire extinguishing liquid and a number of movable piping means connected to the fixed pipe network. Sprinkler heads are attached to the movable piping means at a point remote from where the piping means connect to the fixed pipes. The movable piping means are held in an elevated out-of-the-way position by heat sensitive support means which are responsive to heat generated by a fire and which initiate lowering of the movable piping means carrying the sprinkler heads to a fire extinguishing position.

3,799,272
SIX AND EIGHT ROW CULTIVATOR AND PLANTER FRAME

Douglas M. Watson, Box 513, Hawkinsville, Ga.

Filed May 16, 1972, Ser. No. 253,799
Int. Cl. A01b *17/00, 73/00*
U.S. Cl. 172—126 3 Claims

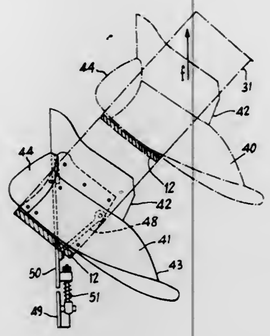


A rigid frame assembly including articulated central, enclosed box frame and outer enclosed box frame units capable of being raised into a vertical position relative to the central unit, and capable also of freely following the ground contour during travel of the assembly therealong. Each frame unit is capable of being filled with a fluid for increasing the weight along the assembly, and a three-point hitch arrangement is provided for enabling the assembly to be hydraulically lifted by a draft vehicle.

3,799,273
MULTIPLE PLOW

Henri Despretz, 3, Rue Des LiLas, Chateaubriant, France

Continuation of Ser. No. 24,189, March 31, 1970, abandoned.
This application Aug. 8, 1972, Ser. No. 278,728
Int. Cl. A01b *15/00*
U.S. Cl. 172—754 6 Claims

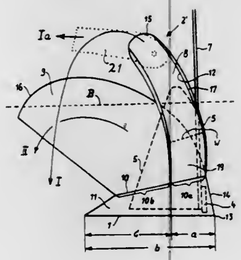


A multishare plow in which the generally vertical earth-cutting edge of the plow share and mold board is tilted away from the vertical to form an obtuse angle with the horizontal cutting edge of the plow share and in which the counterslade, if any, is of small area with the result that the staggered formation of plow shares has a relatively small degree of longitudinal staggering.

3,799,274
MOLDBOARD PLOW

Ernst Rower, No. 142, Kreis Verden/Aller, 3091 Blender, Germany

Filed Oct. 12, 1970, Ser. No. 79,619
Claims priority, application Germany, Oct. 14, 1969, 1951626
Int. Cl. A01b *15/00*
U.S. Cl. 172—759 11 Claims

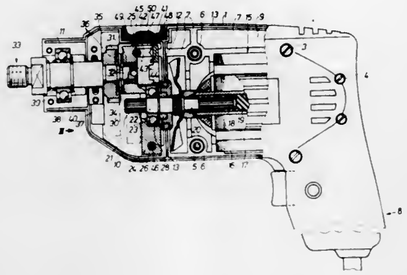


A plow having a body structure including a share and a rear moldboard carried by the body structure and having a lower edge joining a rearward part of the share, is provided with a second moldboard having a lower edge joining a forward part of the share for the purpose of effectively covering weeds, stubble, straw and the like material. The second forwardly disposed moldboard includes an arcuate channel having a generally vertical section and an arcuate section extending forwardly for directing material received by the second moldboard into the previous furrow.

3,799,275
HAMMER-DRILL

Dieter Gotsch Plattenhardt; Reinhard Hahner; Hans Lederer; Manfred Kirn, all of Stuttgart, and Gerhard Kuhlmann, Stuttgart-Feuerbach, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 13, 1972, Ser. No. 217,579
Claims priority, application Germany, Feb. 5, 1971, 2105335
Int. Cl. E21c *3/32*
U.S. Cl. 173—48 6 Claims



A synthetic plastic housing of a hammer-drill has an output shaft for coupling with the drill bit, the output shaft being mounted in the housing for rotary and reciprocable displacement. A drive drives the output shaft in rotation and the inner end of the output shaft carries a disc which is normally in engagement with a juxtaposed but fixed disc, with the two discs having respectively engaging projections so configurated that when the disc on the output shaft rotates with the latter, it will alternately be urged away from and be allowed to move closer to the fixed disc so that the output shaft reciprocates axially. A cylindrical control element extends transversely of the axis of the output shaft in the region of the rear end thereof, having at least two surfaces which extend in parallelism with the axis of the cylindrical control member but are located at different distances from this axis. The control member is turnable so that, when the surface located closer to this axis is juxtaposed with the inner end of the output shaft, there is no contact with the latter, whereas when the surface which is farther from the axis of the control member is juxtaposed with the inner end of the output shaft it presses against the latter, urging the same and thereby the disc thereon away from and out of engagement with the fixed disc so that the output shaft will only rotate but not reciprocate.

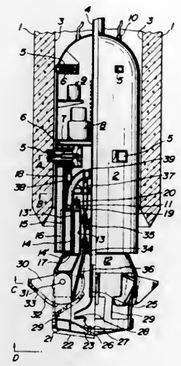
3,799,276
FLUID DRIVEN BELOW GROUND MOTOR FOR SINKING A CAISSON

Kunijiro Matsushita, Toyokawa, and Mineya Tanaka, Yokohama, both of Japan, assignors to Kumagai Gumi Company Limited, Fukui City, Japan

Filed Oct. 10, 1972, Ser. No. 295,951
Claims priority, application Japan, Oct. 30, 1971, 46-86613
Int. Cl. E21b *3/12*
U.S. Cl. 175—94 1 Claim

An apparatus for sinking a caisson to the bottom of the water without utilizing a pneumatic caisson. A housing provided at its lower end with a cutter body is hung down with the aid of an air lift pipe extending through the housing into a vertical cavity formed in the caisson and locked therewith. Then, the cutter body is driven by groups of oil jacks so as to effect

both boring and reaming operations of the cutter body whereby the bottom of the water is excavated to form a bored hole which is also enlarged to beneath the caisson. Subsequently, the caisson is released from the housing and sunk to the bottom of the water by its own weight or conventional forced sinking operation.



3,799,277
FORCE APPLICATOR

Jackson M. Kellner, Midland, Tex., assignor to Smith International Inc., Midland, Tex.

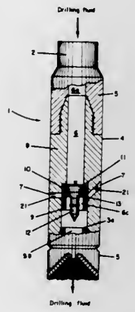
Continuation of Ser. No. 189,844, Oct. 18, 1971, abandoned.
This application Apr. 16, 1973, Ser. No. 351,629
Int. Cl. E21b *7/00, 3/12*; E21c *9/00*
U.S. Cl. 175—94 45 Claims

A force applicator comprises a mandrel to be connected to a rotary drilling machine, a piston on the mandrel, a cylinder around the piston, a spline connecting the mandrel and cylinder, and two earth bore engageable releasable anchor means, one of the anchor means being connected to the mandrel and the other to the cylinder. The mandrel is tubular to supply pressure fluid to the drilling machine and to the piston and cylinder for applying axial force to the mandrel. Suitable control means enables the operator to release the mandrel anchor means and set the cyliner anchor means and apply pressure fluid to the outer face of the piston to press the mandrel in toward the end of the hole being drilled or apply pressure fluid to the inner face of the piston to withdraw the mandrel from the hole; or to release the cylinder anchor means and set the mandrel anchor means and apply pressure fluid to the inner head of the cylinder to move the cylinder towards the end of the hole or apply pressure fluid to the outer head of the cylinder to move the cylinder out of the hole. By this method the drill is progressively advanced in the hole under force or withdrawn therefrom. Guide means is provided at the inner end of the mandrel to point the mandrel and drilling machine in the desired direction. In one embodiment the control means is part of the same in-hole unit as the rest of the force applicator and includes an automatic valve that automatically shifts the pressure fluid from one anchor means to the other and one side of the piston to the other to apply inward pressure to the mandrel to the stroke limit of the cylinder and then apply inward pressure to the cylinder to reset it and then repeat the cycle, but no control means is available to actuate the anchor means and piston and cylinder means to withdraw the mandrel and cylinder. In another embodiment the control means is a separate unit outside the hole and five flexible conduits connect the in-hole force applicator unit to the control means to supply pressure fluid to the drilling machine, to the two opposite sides of the piston, and to the two anchor means. Special winch means are provided for the parallel conduits.

3,799,278
WELL CIRCULATION TOOL

Don L. Oliver, Houston, Tex., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Aug. 31, 1972, Ser. No. 285,145
Int. Cl. E21b *41/00*
U.S. Cl. 175—237 13 Claims



A tool for use with a well string to improve circulation of fluid pumped to a well hole. The tubular body section of the tool has a channel for fluid which extends through the side wall to the outside. Inside the body section there is a previously set operable member which covers over the channel and thus blocks the flow of fluid and which can be operated by an action taken at the surface to uncover the channel and permit flow of fluid from the tool into the well hole. Among other uses, the tool can be employed to restore adequate circulation to a bore hole when a bit plugs, or to increase and/or control circulation during the drilling, fishing, or servicing of a hole.

3,799,279
OPTIONALLY STABILIZED DRILLING TOOL

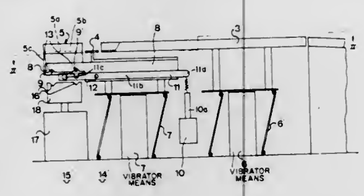
Ralph J. Farris, 601 Edwin St., New Iberia, La.

Filed Sept. 25, 1972, Ser. No. 291,129
Int. Cl. E21c *9/00*
U.S. Cl. 175—325 1 Claim

A hollow shaft is tapped and threaded at respective ends for engaging between a drill stem and a conventional cripple bit.

A plurality of radially and longitudinally extending stabilizers are spaced longitudinally apart on said shaft. Each stabilizer is fixed to a collar mounted for rotation on the shaft, and retained thereon by fixed collars secured to the shaft overlapping end flanges of rotational collars. The shaft is recessed under each stabilizer to reduce friction of rotation thereon. Transverse holes are defined through the respective stabilizers to equalize pressures on the sides thereof. In rotational drilling, the stabilizers are randomly misaligned around the shaft to stabilize the drilling end portion of the drill string in its bore. If the bit changes direction to a side for any reason, the stabilizers are all aligned by a near side of the bore and cease to act as stabilizers. Rotational drilling is stopped and percussion drilling is begun with the crippled bit oriented by well known methods and equipment to correct to original direction. By resuming rotational drilling when correction is made the stabilizers become misaligned and stabilization is resumed.

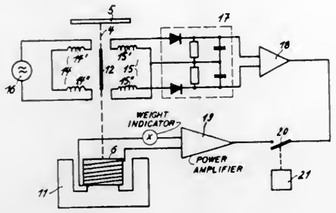
3,799,280
AUTOMATIC WEIGHING APPARATUS INCLUDING CONVEYOR MEANS
Matias L. C. Aarts, Vught, Netherlands, assignor to Mettler Instrumente AG, Zurich, Switzerland
Filed Jan. 9, 1973, Ser. No. 322,202
Claims priority, application Netherlands, Jan. 14, 1972, 7200598
Int. Cl. G01g *13/00*
U.S. Cl. 177—53 **6 Claims**



Automatic weighing apparatus including weighing means, a weighing pan movable between loading and weighing positions remote from and in operative engagement with said weighing means, respectively, and conveyor means for supplying articles to said weighing pan when in the loading position. The conveyor means includes a preliminary vibratory channel portion and an intermediate vibratory portion. First article sensing means are provided for automatically displacing the weighing pan from the loading position to the weighing position upon the supply of an article to the weighing pan, and for simultaneously interrupting operation of said intermediate vibratory conveyor portion. Second article sensing means are operable upon the discharge of an article from the preliminary vibratory channel means for successively reducing the conveying speed of said vibratory channel means between high-speed, low-speed and completely de-activated operating conditions, respectively.

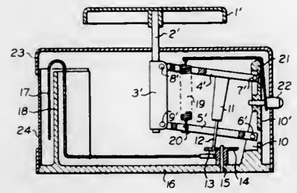
3,799,281
DEVICE FOR ELECTROMECHANICALLY WEIGHING
Peter Wernitz, Aachen, Germany, assignor to Dr. Hans Boekels & Co., Aachen, Germany
Filed Nov. 8, 1972, Ser. No. 304,737
Int. Cl. G01g *3/14, 7/00, 3/08*
U.S. Cl. 177—210 **4 Claims**

A device for electromechanically weighing, which comprises a support movably guided relative to a stationary frame in a predetermined direction and acted upon by a weight while a generator of a magnetic field of a known strength is connected to said support, said generator being located within the region of a further stationary generator of a magnetic field of a likewise known strength. These generators are arranged relative to each other in such a way that a force acting counter to the effect of the weight is ascertained upon the support. There is furthermore provided a contactfree sensing device for converting the position of the support relative to the frame into electrical values while a control device is connected to the



sensing device for controlling the strength of the magnetic field at least of one of said generators in such a way that the support is held in a predetermined position, a device being provided for indicating and/or further evaluating the strength of the controlled magnetic field or fields or a value of another physical value proportional to said strength.

3,799,282
SPRING BALANCE
Karl Otto Schmidt, Idar-Oberstein, Germany, assignor to Gebruder Schmidt Metallwarenfabrik O.H.G., Idar-Oberstein, Germany
Filed Sept. 4, 1973, Ser. No. 393,755
Claims priority, application Germany, Apr. 27, 1973, 2321288
Int. Cl. G01g *23/26*
U.S. Cl. 177—230 **5 Claims**

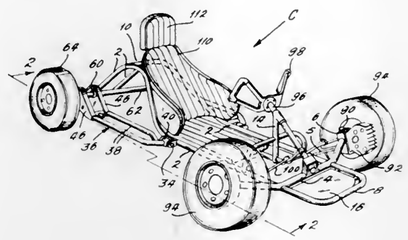


A spring balance with a horizontal scale, which comprises a housing, and a weighing pan which is mounted to perform a substantially vertical movement upon placing a weight on the weighing pan, and includes a support and a drive pin disposed at its end. A pointer is movable in a horizontal direction and indicates the weight on a scale. A device for converting the vertical movement of the weighing pan into a horizontal movement of the pointer. The converting device includes a deflection wheel which has a radial slot receiving the pin and is mounted in the housing. A spring is engaged to and holds the weighing pan in its starting position and serves as standard of comparison.

3,799,283
GO-CART AND FRAME THEREFOR
Elmer C. Freber, St. Louis, Mo., assignor to Marquette Tool and Die Company, St. Louis, Mo.
Filed July 3, 1972, Ser. No. 268,737
Int. Cl. B60g *9/00*
U.S. Cl. 180—56 **18 Claims**

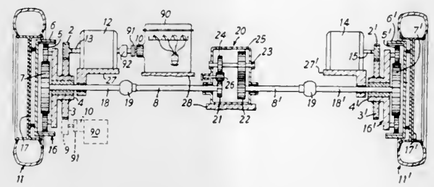
A go-cart has a frame provided with longitudinal frame rails, a rear cross member extended across the rear ends of the longitudinal rails and resiliently connected thereto, and suspension arms positioned to the sides of the longitudinal

rails and extended between the side rails and the rear cross member. The suspension arms at their forward ends are pivotally connected to the side rails about axes extending longitudinally of the frame and at their rear ends are pivotally connected to the rear cross member about axes extending transversely of the frame, all to provide the frame with a relatively high degree of flexibility. A rear drive axle, having wheels at its ends, extends through and is journaled in the suspension arms, but not the longitudinal rails. The suspension



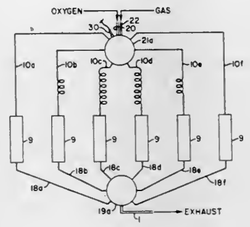
arms further carry the motors which power the drive axle. Since the frame is quite flexible, the wheels of the car tend to remain in contact with the ground even where the track has extensive surface irregularities. Also, the longitudinal rails bow upwardly over the rear axle with sufficient clearance to permit axle mounted components such as centrifugal clutches to be shifted along the axle to afford access thereto, thus permitting servicing without disassembling the entire rear end of the go-cart.

3,799,284
DRIVE SYSTEMS
Berkeley Stephens Hender, The Meadows Llanvetherin, Abergavenny, England
Filed Oct. 30, 1972, Ser. No. 302,011
Claims priority, application Great Britain, Oct. 30, 1971, 50546/71
Int. Cl. B60l *15/20;* **B60k** *1/02*
U.S. Cl. 180—65 A **18 Claims**



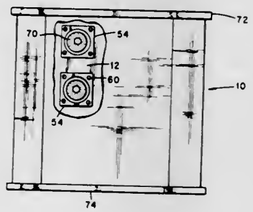
A versatile drive system suitable for battery powered electric vehicles or other machinery employs two electric motors driving a respective rotatable element, such as a road wheel, or together driving a single rotatable element. The motors are interconnected through a reversing gear unit. The system includes a simple electrical control circuit, whereby a parameter such as the field of one or both motors is varied in response to an accelerator pedal or other control device, and is also controlled in response to an electrical parameter such as armature current. The motor armatures are connected in series with each other, and the arrangement is such that the motors can run at high speed even while the vehicle is stationary. In addition, the motors can be run up in an off-load condition one at a time, the second motor acting regernatively while the first is running alone. A simple modification in which the system is hybridized with an internal-combustion or other engine, useful for example in vehicles running where exhaust fumes are not objectionable, is also described.

3,799,285
SEISMIC ENERGY SOURCE
Robert Andrew Kirby, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.
Filed June 6, 1973, Ser. No. 367,671
Int. Cl. G01v *1/10*
U.S. Cl. 181—.5 NC **5 Claims**



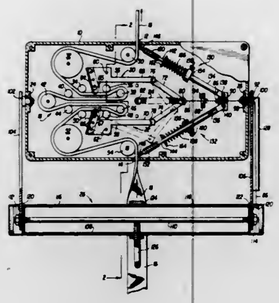
A seismic energy source comprises a plurality of inflatable chambers supported on heat conductive members adapted to be cooled by the flow therethrough of liquid in the medium in which the source is to operate. The sources are connected to a gas mixing and ignition chamber through a plurality of conduits of substantially equal length, preferably having diameters in the range 0.2 to 1.5 centimeters. Each chamber is associated with an individual exhaust conduit having different lengths and preferably having different diameters. Preferably no two of the lengths of the exhaust conduits are the same, and preferably no two of the diameters of the exhaust conduits are the same.

3,799,286
LOUDSPEAKER
James C. Carroll, P.O. Box 5301, Knoxville, Tenn.
Filed Dec. 20, 1972, Ser. No. 316,822
Int. Cl. G10k *13/00;* **H04r** *1/28*
U.S. Cl. 181—31 B **9 Claims**



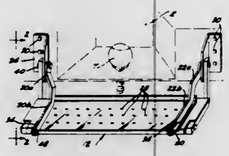
A loudspeaker comprising a plurality of side panels disposed uprightly with their side edges facing, and post means between the facing side edges of adjacent panels, each post having a pair of elongated grooves for receiving a pair of panel edges to define a polygonal housing, no two sides of which are parallel to each other, each post further including an elongated portion defining a support for a grill cloth disposed about the girth of said housing and adapted to space said grill cloth apart from each panel of the housing. A plurality of substantially identical speakers are mounted in at least three of the panels, about one-fourth of the speakers facing forwardly of the loudspeaker and about three-fourths of the speakers facing generally rearwardly of the loudspeaker.

3,799,287
EMERGENCY DESCENT APPARATUS
Albert C. Ledner, 5328 Bellaire, New Orleans, La.
Filed Mar. 23, 1973, Ser. No. 344,436
Int. Cl. B65h *59/14*; **A62b** *1/14*
U.S. Cl. 182—5 **9 Claims**



A device useful for descending from an elevated location along a strand of webbing or similar material is disclosed, which includes a housing containing a tortuous path through which the strand is drawn as the housing moves downward on the strand. Means for controlling the rate of descent are included, and a novel handle arrangement permits immediate reuse of the device without having to draw the strand back through the housing.

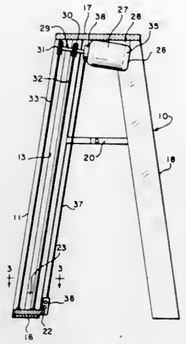
3,799,288
ROTATABLE STAIR ASSEMBLY ADAPTED FOR ATTACHMENT TO A VEHICLE PLATFORM
Larry N. Manuel, deceased, late of 16611 Grand Dr., Bellflower, Calif. (Ruby L. Manuel, administratrix)
Filed May 17, 1972, Ser. No. 254,062
Int. Cl. B60r *3/02*
U.S. Cl. 182—91 **6 Claims**



A stair assembly attachable to a vehicle platform to provide one or more rotatably positionable stair members. The described stair assembly includes two stair members, four support arms, two brackets, hinge fasteners for hinge fastening the support arms to the brackets, and hinge fasteners for hinge fastening the stair members to the support arms.

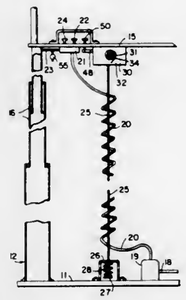
3,799,289
ELECTRIC STEPLADDER
Joseph A. Cecere, Jr., 736 Landis Ave., Vineland, N.J.
Division of Ser. No. 272,114, July 17, 1972, abandoned. This application Dec. 1, 1972, Ser. No. 311,224
Int. Cl. E06c *7/12*
U.S. Cl. 182—145 **7 Claims**

A self-standing, collapsible stepladder including laterally spaced side members or rails supporting therebetween a platform for movement up and down along the rails for raising and



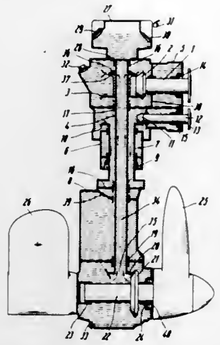
lowering a load, and having actuating means accessible to an operator on the platform.

3,799,290
CABLE RESTRAINT FOR MULTI-STAGE PNEUMATIC LIFT ASSEMBLY
Robert E. Fisher, Larkspur, and Newell T. Partch, Berkeley, both of Calif., assignors to Up-Right, Inc., Berkeley, Calif.
Filed July 12, 1972, Ser. No. 270,920
Int. Cl. E04g *1/22*
U.S. Cl. 182—148 **14 Claims**



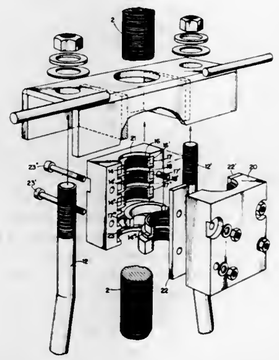
A pneumatic lift assembly wherein a platform is elevated by applying air under pressure to a telescoping lift cylinder. An inextensible cable is fixed at one end to the base of the assembly and extends up to the platform. When the platform is at any desired height the operator secures the cable to the platform to prevent further upward movement of the platform. Additional pressure can then be applied to the lift cylinder, placing the cable under tension, thereby preventing the platform from thereafter raising or lowering because of variations in loading on the platform. In addition, means are provided to secure the cable to the platform automatically upon sudden upward movement of the platform and thereby prevent dangerous upward surge of the platform in the event normal upward movement of the platform is interrupted and the lift cylinder becomes overpressured.

3,799,291
LUBRICATING DEVICE FOR A Z-DRIVE FOR SHIPS
Josef Becker, Spay/Rhein, Germany, assignor to Schottel-Werft Josef Becker KG, Spay/Rhein, Germany
Filed Mar. 2, 1971, Ser. No. 231,227
Claims priority, application Germany, Mar. 5, 1971, 7108306[U]
Int. Cl. F16n *7/14*
U.S. Cl. 184—6.18 **7 Claims**



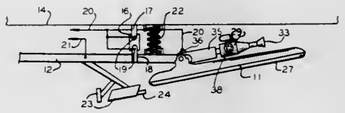
Lubricating system especially applicable to an outboard-inboard marine drive system. The entire power train housing is filled with lubricant to a point above the upper gears therein and the rotation of the drive shaft is utilized to pump lubricant through suitable separate channels from the relatively cool underwater housing to the relatively hot above water gear box and return, thereby providing a constant flow through the underwater housing for cooling same, a constant supply of cool oil to the upper gear box and a constant circulation thereof to prevent localized overheating. In the specific embodiment here disclosed the vertical drive shaft is hollow and utilized for the upflowing oil while the channel outside thereof and including the bearings therefor are utilized for the downflowing oil. A suitable impeller is placed on the drive shaft to cause the circulation.

3,799,292
SCREW-NUT AND NUT FOLLOWER-CONTROLLED LIFT APPARATUS AND COMPONENTS
Leonhard Katz, Woburn, Mass., assignor to Astro Dynamics, Inc., Burlington, Mass.
Filed Jan. 5, 1972, Ser. No. 215,576
Int. Cl. B66f *7/14*; **F16h** *25/00*
U.S. Cl. 187—25 **13 Claims**



This disclosure deals with novel screw and nut and nut follower mechanisms involving a plurality of in-line, resiliently mounted, independent nut segments adapted to follow long drive screws for such applications as controlling vehicular lifts and for more general uses, as well.

3,799,293
EMERGENCY-STOP BRAKE
Paul W. Howells, Morrisville, and Edwin H. Lederer, Syracuse, both of N.Y., assignors to Syracuse University Research Corporation, Syracuse, N.Y.
Filed Dec. 18, 1972, Ser. No. 316,357
Int. Cl. B60t *1/14*
U.S. Cl. 188—5 **3 Claims**

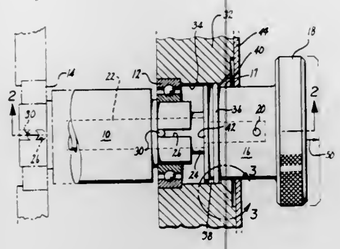


A vehicle brake for emergency stops comprises a pad suspended back of the rear wheels by an arm at each side extending forward to a pivotal connection to the main frame member, each arm having an offset portion for clearing the rear axle when the pad is dropped. The pad is normally held elevated by a linkage including explosive bolts between the frame and arm at eadh side, the arms being biased downward by spring means. The pad includes a metal housing to which is secured reinforced tire tread rubber sections for contact with the rotary interspersed with air passages leading to a chamber quickly exhaustible by a jet-pump. A partial torus around the edge of the housing has secured therein an inflated rubber ring for sealed contact with the roadway. Supported ahead of the pad is a plow and a squeegee for clearing the roadway. Deployment of the brake is initiated by panic pressure on the brake pedal exceeding the normal lock-up brake pressure, the pedal including shear pin means for disabling the normal vehicle brakes and switch means connected to the vehicle electrical system for exploding the linkage bolts and for firing the explosive jet pump. The pad chamber includes a spring-biased vacuum spoiler valve actuated by deceleration force to limit deceleration to a selected rate.

3,799,294
BRAKE FOR ROTATABLE SHAFT
Edgar B. Symmons, and George L. Coad, both of Walnut Creek, Calif., assignors to Applied Radiation Corporation, Walnut Creek, Calif.
Filed June 23, 1972, Ser. No. 265,703
Int. Cl. B65h *59/10*
U.S. Cl. 188—67 **4 Claims**

A brake for a rotatable shaft in which the shaft is joined or is integral to one of a concentric pair of members consisting of an inner and outer members having an annular gap therebetween in which an O-ring is disposed of such a size as to make an interference fit with both members and therefore is radially compressed and deformed in the gap to provide a high static braking torque. One of the members is axially moveable between limiting axial positions, such movement

causing a rolling of the O-ring along the gap. A recess is formed in the outer member for interrupting the annular gap



and providing free accomodation of the O-ring in one position of axial relationship of the members to permit relative rotation therebetween.

3,799,295

VEHICLE DRUM BRAKES

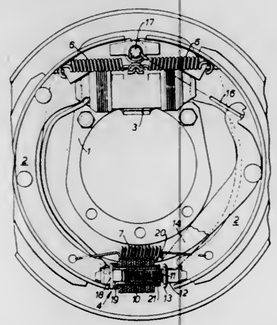
Albert Charles Hill, Tyseley, England, assignor to Girling Limited, Birmingham, England

Filed Sept. 30, 1971, Ser. No. 185,336

Claims priority, application Great Britain, Oct. 2, 1970, 46946/70

Int. Cl. F16d *65/56*

U.S. Cl. 188—79.5 GC **7 Claims**



A brake shoe reaction strut for supporting a brake shoe against braking reaction forces, is constructed as a telescopic strut provided with pre-stressed resilient means for resisting contraction thereof. The resilient means yields under a predetermined thrust loading to permit partial retraction movement of the brake shoes to allow, for example, for thermal contraction of the drum. The strut is advantageously combined with auto-adjuster means for compensating shoe lining wear by increasing the overall length of the strut.

3,799,296

CABLE DRUM BRAKE

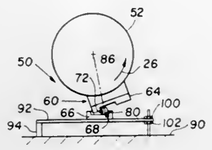
Russell H. Lester, Commack, N.Y., assignor to The Celotex Corporation, Tampa, Fla.

Filed Jan. 22, 1973, Ser. No. 325,869

Int. Cl. F16d *65/06*

U.S. Cl. 188—82.8 **6 Claims**

In a side coiling door having cables to pull the door through its closing movement, a brake to exert a selected extent of opposition against unwinding rotation of the cable drum so that the upper cable spanning across the upper edge of the door opening does not sag down into the opening under its own weight causing a snagging hazard or the like, and which brake, however, does not impede or otherwise interfere with the wind-up directional rotation of the cable drum. Moreover, the



functioning of the brake which contemplates a jamming together of parts to produce the resistance or opposition to rotation is used to advantage by having said brake mounted on a multi-position spring, so that a selected spring position produces a corresponding spring urgency or bias which determines the braking force produced during said jamming.

3,799,297

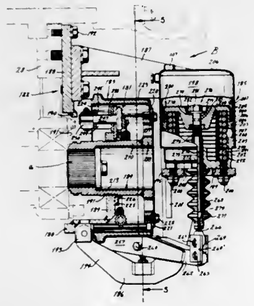
PNEUMATIC BRAKE SYSTEM

Kenneth D. Ryburn, Chillicothe; Robert J. McClone, and Charles E. Fox, both of Washington, all of Ill., assignors to Honeywell, Inc., Minneapolis, Minn.

Division of Ser. No. 108,579, Jan. 21, 1971, Pat. No. 3,702,715. This application June 8, 1972, Ser. No. 261,119

Int. Cl. F16d *65/24*

U.S. Cl. 188—170 **1 Claim**



A pneumatic brake system for an electrically driven vehicle having conventional service and novel parking brakes, which system integrates a service braking system, a dynamic braking system, an emergency braking system, and a parking braking system for selective and automatic application. The dynamic and service brakes are controlled by a brake application valve having a foot treadle adapted to for engagement by the vehicle operator and connected in tandum with service and dynamic braking valves so that upon initial engagement of said treadle dynamic braking is effected and upon further engagement service braking is effected. The emergency brake system is operated automatically through the use of emergency relay valves upon attainment of a predetermined air pressure within the brake system and includes a brake reapplication system which may be employed to release and then reapply the service brakes after an emergency braking conditon. The parking brake is of the spring operated, air pressure released type and is adapted for independent application by a manual control valve disposed within the parking brake line.

3,799,298

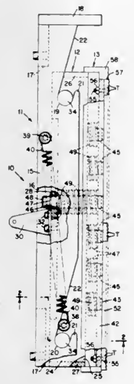
SAFETY BRAKE ASSEMBLY FOR ELEVATORS AND THE LIKE

Weston R. Loomer, Candalgua, N.Y., assignor to Hartman Metal Fabricators, Inc., Victor, N.Y.

Filed June 26, 1972, Ser. No. 266,445

Int. Cl. F16d *59/02*

U.S. Cl. 188—189 **8 Claims**



Each brake assembly comprises a plurality of elongate, metal files that are releasably secured side by side to a flat surface on a metal plate, which is resiliently mounted on a reciprocable carrier. The carrier slides on inclined wedging surfaces on a housing between active and inactive positions. The housings of each of a plurality of these brake assemblies are secured on an elevator with their file teeth normally disposed in spaced, confronting relation to braking surfaces on the mast on which the elevator travels. When the elevator descends at an excessive speed, the reciprocable carriers are shifted to active positions by sliding along the inclined, wedging surfaces. This causes the files to be shifted laterally to engage the file teeth resiliently with the mast to stop the elevator.

3,799,299

DAMPING DASHPOT ASSEMBLY

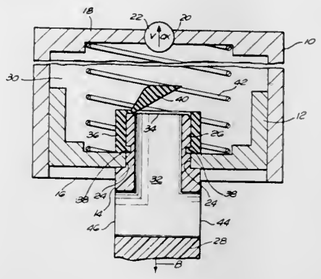
Arthur M. Cohen, Westport, Conn., assignor to Airpot Corporation, Norwalk, Conn.

Filed Nov. 6, 1972, Ser. No. 303,776

Int. Cl. F16f *9/34*

U.S. Cl. 188—282 **12 Claims**

A piston-connecting rod assembly for use in damping dashpot cylinders. The connecting rod in the assembly has a fluid passage extending therethrough and a sleeve member mounted on the rod with a movable flap which overlies and covers the passage. The movement of the flap between open and closed positions is responsive to the fluid flow induced by the movement of the piston in the cylinder, the closed position corresponding to an operative damping position and the open position corresponding to an inoperative position. The sleeve



aids in securing the piston to the connecting rod without any play therebetween.

3,799,300

HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

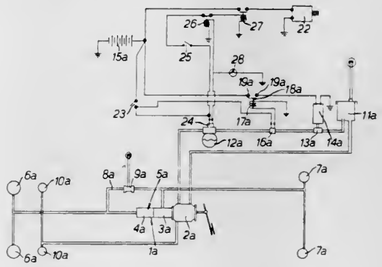
Robin Adam Cochrane, Haseley Knob; Brian Ingram, Balsall Common, and Douglas Roy Spence, Olton, all of England, assignors to Girling Limited, Birmingham, England

Filed Feb. 9, 1972, Ser. No. 224,768

Claims priority, application Great Britain, Feb. 22, 1971, 5115/71; July 3, 1971, 31,263/71

Int. Cl. F15d *67/00*; **F15b** *1/02*

U.S. Cl. 192—3 R **2 Claims**



In an hydraulic braking system for vehicles the master cylinder of a booster-operated master cylinder assembly is adapted to supply fluid under pressure to a first hydraulic actuator of a wheel brake, and a source of hydraulic fluid under pressure is connected to a second hydraulic actuator of the same or a different wheel brake through a normally closed connection in the assembly which is opened upon operation of the booster whereby fluid under pressure from the source of hydraulic fluid is supplied to the second hydraulic actuator.

3,799,301

METHOD AND APPARATUS FOR ENGINE OPERATION

David R. Bentley, Temperance, Mich., assignor to Quester Corporation, Toledo, Ohio

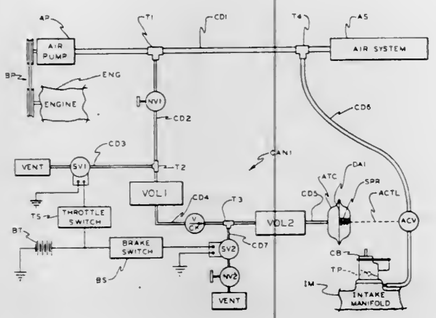
Filed Oct. 4, 1972, Ser. No. 294,952

Int. Cl. F16d *67/00*; **F02d** *31/00*; **F02m** *23/04*

U.S. Cl. 192—3 R **35 Claims**

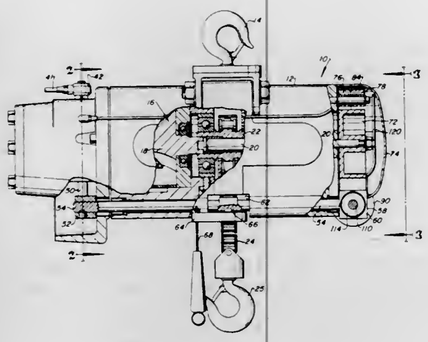
The invention is disclosed herein in method and apparatus for normalizing the exhaust system temperature during norml high engine load conditions. In a specific embodiment, the apparatus may divert air from an air injection system to the intake manifold below the carburetor throttle plate under predetermined conditions so that the air-fuel ratio is leaned out. This allows less combustibles to enter the emssion control system and thereby lowers reaction temperatures and improves fuel economy. The method and apparatus for sensing

the engine speed or load condition is also novel and includes sensing the pressure of the air supplied by the air pump on an engine to obtain a signal indicating the operating condition of an engine, including engine speed and load. Air under pressure from the air pump is connected to lean out the fuel-air mixture supplied by the carburetor to the engine when an air



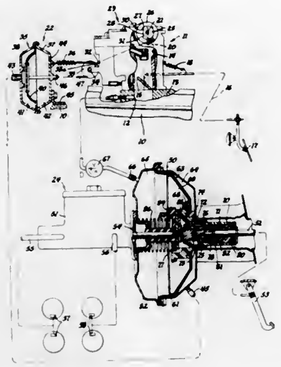
pump pressure is sensed which provides an indication of a predetermined engine speed and/or load. The sensing of the air pressure may be inhibited in response to a predetermined low throttle setting. The highest engine speed-load signal sensed may be stored and the magnitude of the stored signal reduced in response to application of braking to the vehicle.

3,799,302
MANUAL AND FLUID PRESSURE BRAKE RELEASE FOR HOISTS
Lawrence H. Workman, Green Bay, Wis., and John R. Bos, Grand Haven, Mich., assignors to Gardner-Denver Company, Quincy, Ill.
Filed Oct. 12, 1972, Ser. No. 297,157
Int. Cl. F16d *23/00*
U.S. Cl. 192—3 R **5 Claims**



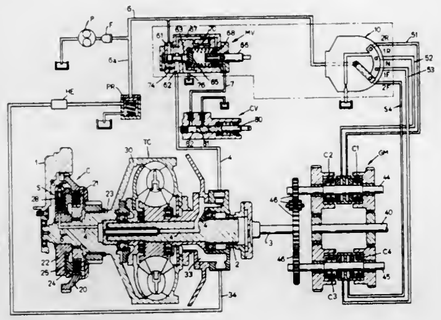
The release mechanism of a manually actuated brake for a pneumatic hoist includes piston and cylinder type pneumatic actuators interposed in the actuating mechanism for the brake shoes. Actuation of the brake release mechanism when the air supply to the hoise is insufficient to raise or hold a load will result in movement of the actuator piston rods with respect to the cylinders to prevent movement of the brake shoes.

3,799,303
BRAKE SYSTEM CONTROLLED CHOKE VALVE
Donald D. Stoltman, Henrietta, N.Y., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 11, 1972, Ser. No. 313,850
Int. Cl. B60k *29/02*
U.S. Cl. 192—3 M **3 Claims**



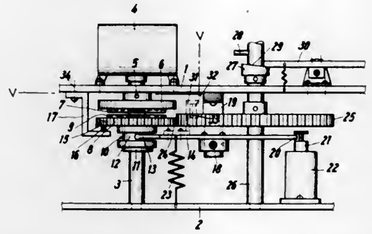
A throttle override system for a conventional throttle controlled internal combustion engine in a vehicle wherein the choke valve in the engine air induction passage is also controlled by a spring and vacuum motor mechanism to partly close the choke valve to control the flow of air to the engine when the vehicle operator actuates the vehicle brake system with a predetermined force.

3,799,304
HYDRAULIC CONTROL SYSTEM FOR POWER TRANSMISSION HAVING A MODULATED FRICTION CLUTCH
Wendell E. Richmond, Rockford, and Robert W. Meyer, Pecatonica, both of Ill., assignors to Twin Disc Incorporated, Racine, Wis.
Filed Oct. 30, 1972, Ser. No. 302,239
Int. Cl. F16d *67/00;* **F16h** *47/00*
U.S. Cl. 192—3.57 **1 Claim**



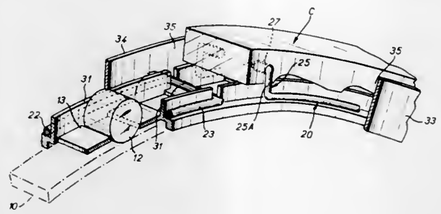
A hydraulic control system for a power transmission of the type having a modulated friction clutch and torque converter. The transmission also includes a multi-ratio gear selection unit which is hydraulically operated and the entire transmission is interposed between a source of power such as an internal combustion engine and the load. The control mechanism also includes a modulating valve for the friction clutch and a separate control valve for the modulating valve.

3,799,305
DEVICE FOR CONTROLLING ONE OR MORE PROCESSES
Walter Limberger, Hamburg-Poppenbuttel, Germany, assignor to Lumoprint Zindler KG, Hamburg, Germany
Filed Mar. 17, 1972, Ser. No. 235,679
Claims priority, application Germany, Mar. 18, 1971, 2113075
Int. Cl. F16d *71/00, 67/06*
U.S. Cl. 192—33 **11 Claims**



An improved device for controlling one or several processes or process steps as a function of a trigger pulse, comprising a continuously revolving shaft with a disk-shaped drive element, wherein the pulse causes a control disk to be coupled for a certain arc of the rotation, and wherein the said control disk is mounted on a shaft parallel to the drive shaft, wherein the improved device is adapted to provide with small forces and travels non-positive and non-slip connections with a drive mechanism for transmitting large forces. This device has a mechanical construction, operates reliably and is of simple design. Certain control functions are achieved either by dimensioning the angle of rotation or by a positive engagement.

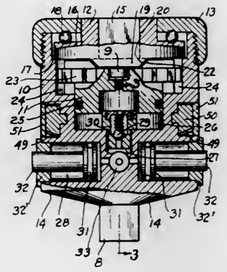
3,799,306
FREE-WHEEL MECHANISMS AND FREE WHEELS INCORPORATING SUCH MECHANISMS
Michel Theophile Rist, Boulogne, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France
Filed July 26, 1972, Ser. No. 275,273
Claims priority, application France, July 27, 1971, 71.27411
Int. Cl. F16d *15/00*
U.S. Cl. 192—45 **5 Claims**



The present invention is concerned with improvements in free-wheel mechanisms adapted to couple together or to disconnect two members capable of relative rotation. The free-wheel mechanism is intended to cooperate with two circular tracks, an inner track and an outer track, one of said tracks comprising ramp means, a plurality of jamming members such as rollers, an assembly cage for said jamming members, said cage having a circular series of windows adapted to receive said jamming members, elastic means such as a ring for urging said members directly or indirectly into the jamming position, abutment means carried by said cage and provided so as to limit the radial movement of said jamming members, said mechanism further comprising, at least on one side, an abutment side-plate immobilized in rotation with respect to said track with ramps by means of a part of said elastic ring adapted to co-operate with a groove formed in said abutment side-plate.

These free-wheel mechanisms find numerous advantageous applications in transmission systems for vehicles, for example, in hydraulic torque converters.

3,799,307
TORQUE APPLYING AND TORQUE LIMITING TOOL
Harry R. Tate, 3131 Dyes Inlet Rd., Bremerton, Wash.
Filed Jan. 29, 1973, Ser. No. 327,826
Int. Cl. F16d *43/20*
U.S. Cl. 192—56 F **7 Claims**

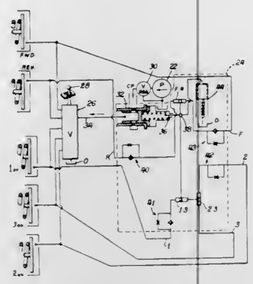


A compact torque limiting unit to be turned by an ordinary hand or slow speed power wrench. It releases and spins freely when the limit for which it is set is reached. This prevents over torqueing. It comprises a cup shaped housing containing two clutch members, one rotatable in and fluid supported for longitudinal movement in said housing and the other rotatable in the housing and having an outwardly opening socket to receive a driving part of a conventional wrench. The two clutch members are connected with each other by interengaging means which transmits torque and releases for free running when a maximum torque for which the tool is set is reached. The housing has an external shank to receive a wrench socket by which a threaded part can be turned. The housing has in it a self contained, adjustable, valve controlled fluid circulation system which includes fluid storage cavities and controls release of the two clutch members for free running.

3,799,308
TRANSMISSION CLUTCHES WITH FEEDBACK CONTROLLED PRESSURE MODULATOR
Edward R. Erisman, Oak Park, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Oct. 20, 1972, Ser. No. 299,523
Int. Cl. F16d *25/10*
U.S. Cl. 192—87.13 **11 Claims**

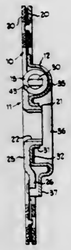
Hydraulic mechanism in a transmission for engaging a clutch for first, second, or third speed before a clutch for the F-R, or forward or reverse, direction. Flow of pressure fluid to each speed clutch and to each direction clutch is by way of a scheduling valve which is back-pressure-operated in controlled way for throttling the flow. Back pressure originates in a sensing line from the power unit of each speed and direction clutch, and the different lines are differently orificed. After the power unit for the clutch for first, second, or third speed and the power unit for the F-R clutches are pre-filled with fluid, pressure in the power units is then slowly raised linearly toward its maximum, the slowness of rate depending upon the smallness of the orifice in each sensing line affected. The speed clutches are constructed, proportioned in size, and ar-

ranged to have smaller energy absorbing capacity in their design and they operate so as to be fully hydraulically engaged



at a slightly lower pressure than, and hence slightly before, the F-R clutches.

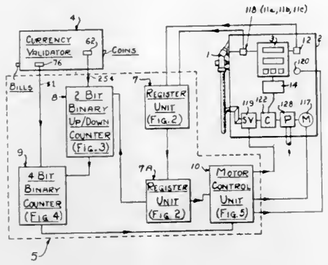
3,799,309
CLUTCH DRIVEN MEMBER ASSEMBLY WITH VIBRATION DAMPER
Leo W. Cook, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed July 10, 1972, Ser. No. 270,423
Int. Cl. F16d *3/14*
U.S. Cl. 192—106.2 **7 Claims**



A clutch driven member assembly of the damper type including a hub, a single formed drive plate, a plurality of damper springs, and a friction surface supporting means, the hub including radially directed lugs which frictionally engage the supporting means. The drive plate is secured to the supporting means and frictionally engages the hub. The springs are disposed in notches formed in the hub and pockets formed in the drive plate, and serve to resiliently transmit torque between the hub and the drive plate and supporting means.

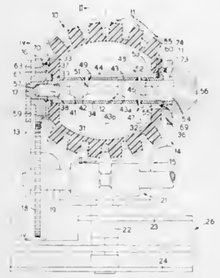
3,799,310
LIQUID DISPENSER HAVING SOLID STATE CONTROL
Powell O. Mims, Golden, Calif., assignor to Tokheim Corporation, Fort Wayne, Ind.
Filed May 25, 1972, Ser. No. 256,810
Int. Cl. G07f *7/04*
U.S. Cl. 194—5 **6 Claims**

A system, including a totally electronic logic control device, is provided for controlling a dispenser of liquids, primarily gasoline, in response to currency introduction before and during delivery. The control, consisting exclusively of electrical connections between the currency validator, electronic control device and dispenser, will permit precise delivery of a determined amount in relation to instantaneously correlated control signals. Additionally, the invention is adaptable to



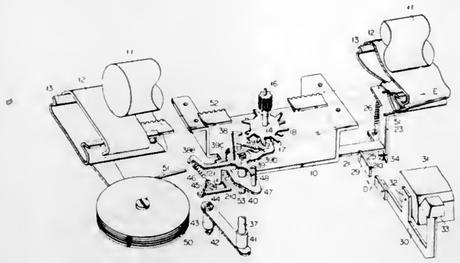
control delivery in response to a remote console unit where credit is preselected manually by an operator.

3,799,311
REMOVABLE TYPEHEAD FOR A PRINTING MECHANISM
Gian Paolo Guerrini, Ivrea, and Remo Falconieri, San Giorgio, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Torino), Italy
Filed Sept. 9, 1971, Ser. No. 179,042
Claims priority, application Italy, Sept. 16, 1970, 70106/70
Int. Cl. B41j *1/32*
U.S. Cl. 197—18 **14 Claims**



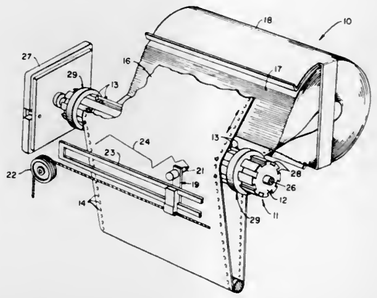
A removable typehead for a printing device in which the typehead is rotated to align a particular type for printing. The typehead is mounted on a shaft supported by a pair of spaced opposed arms. One of the arms has a bearing completely encircling the shaft and the other arm has a bearing having a radial slot of width less than the diameter of the shaft. The shaft is axially shiftable between a printing position and a release position by means of a knob attached to one end. The shaft has a reduced diameter portion that is aligned with the slot in the release position so that the shaft can be moved laterally out of the slotted bearing and pivoted out of the other bearing to remove the typehead from the printing device. The typehead has a recess that engages a drive gear mounted on the arms to rotate the typehead. The arms are mounted for rotation about an axis perpendicular to the shaft and provides the necessary compound rotational movement for the typehead. The typehead and support arms are further provided with interengaging elements for facilitating alignment of the type during insertion, and with means for supporting the typehead when the shaft is in the release position disengaged from the bearings.

3,799,312
REPEAT SPACING MECHANISM FOR TYPEWRITERS
Masao Jozuka, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan
Continuation-in-part of Ser. No. 75,649, Sept. 25, 1970, abandoned. This application Feb. 23, 1973, Ser. No. 335,148
Claims priority, application Japan, Sept. 26, 1969, 44-77112; Sept. 27, 1969, 44-92454; Oct. 24, 1969, 44-85095
Int. Cl. B41j *19/00*
U.S. Cl. 197—82 **7 Claims**



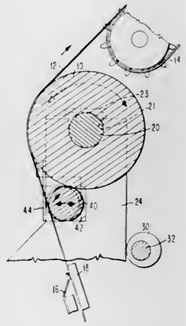
In a repeat spacing mechanism for typewriters, first and second wheels are rigidly mounted on a shaft rotatably engaged with a carriage in an axial direction. Generally, the wheel faces a pair of pawls rotatably mounted on a pawl shaft in a plane parallel with the rotating plane of these wheels and alternately engaged with or disengaged from the wheels. There is provided a weight at the lower end of the pawl shaft. Depression of a type key or space bar causes the pawls to be alternately engaged with or disengaged from th first wheel and the carriage to make a normal single step movement, and while a repeat spacing key remains depressed, the pawls are alternately engaged with or disengaged from the second wheel, thereby permitting the carriage to make a repeat spacing movement at a proper speed under the influence of the weight.

3,799,313
ADJUSTABLE SPROCKET ASSEMBLY
Barry L. Shevick, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Apr. 13, 1972, Ser. No. 243,749
Int. Cl. B41j *15/00*
U.S. Cl. 197—133 P **1 Claim**



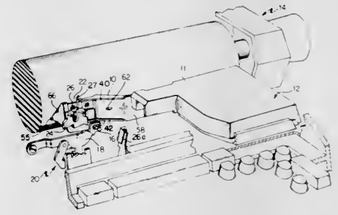
A sprocket assembly for a teletypewriter, or other device wherein perforated webs are to be advanced, includes a horizontally stationary, rotatable platen or roller which mounts a plurality of sprocket pins thereon for drivingly engaging marginal apertures in a web. The platen has a plurality of axially extending, equiangularly spaced grooves formed in the outer surface thereof. The sprocket pins are mounted for sliding movement within the grooves and thereby are adaptable for engaging webs of various widths. A keeper ring, which may be formed integrally with the sprocket pins, or as a separate element, aligns the sprocket pins for engagement with the web apertures and can be selectively positioned along the platen to accommodate webs of various widths. A mechanism is provided for releasably locking the sprocket assembly in the desired preset position along the platen.

3,799,314
PLATEN BRAKE AND PAPER BLOUSING ELIMINATOR
Jack E. Smith, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 12, 1972, Ser. No. 262,160
Int. Cl. B41j *15/00*
U.S. Cl. 197—133 R **5 Claims**



A rod is rotatably and slidably mounted adjacent a rotatable platen. A continuous form fed past the platen engages both the platen and the rod causing the rod to slide toward and contact the platen. The form tends to rotate the platen clockwise while the rod being rotated clockwise by the form engages and tends to rotate the platen counterclockwise causing it to stop concurrent with cessation of form feed, particularly during high speed skip operations.

3,799,315
RIBBON GUIDE FOR TYPEWRITER RIBBON CARTRIDGE
Durwood Stewart, Groton, N.Y., assignor to SCM Corporation, Cortland, N.Y.
Filed May 3, 1972, Ser. No. 249,953
Int. Cl. B41j *33/14*
U.S. Cl. 197—151 **11 Claims**



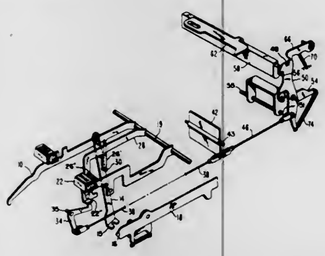
A ribbon guide or carrier arm for a typewriter ribbon cartridge is disclosed. The carrier arm which is pivotally connectable to the cartridge housing to laterally extend therefrom, has means for guiding a ribbon from the housing to a print point and back to the housing. An aperture is provided adjacent the end of the arm for exposing a portion of the ribbon to a type element at the print point. A retaining finger is

provided adjacent the aperture to retain the ribbon for uniform smudge free typing. A cap on the end of the arm cooperates with the retaining finger in retaining the ribbon.

3,799,316
AUTOMATIC ERASE MECHANISM

Ronald V. Davidge; Clayton J. Davis; Selahattin A. Okcuoglu, and John O. Schaefer, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,696
Int. Cl. B41j *29/16*
U.S. Cl. 197—181 1 Claim

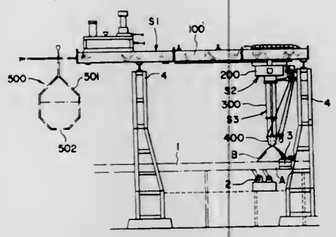


A mechanism is disclosed for the automatic erasing of typing errors utilizing a fully serialized and automated correction apparatus where the correction is accomplished by a single backspace operation allowing both the erasure of the erroneously typed letter and the typing of the proper letter. The backspace operation repositions the typewriter carriage for the correction of the erroneous letter and at the same time inhibits the escapement of the carriage for a single print cycle allowing the corrected letter to be printed over the correction without requiring an additional backspace operation. The escapement mechanism is re-engaged during the correction cycle so that the carriage advances of the print cycle.

3,799,317
ARTICLE TRANSFERRING APPARATUS

Seiya Shibata; Takehiko Kannari, and Junichi Mizuuchi, all of Osaka, Japan, assignors to Tsubakimoto Chain Co., Ltd., Osaka-chi, Japan

Filed July 24, 1972, Ser. No. 274,407
Claims priority, application Japan, July 29, 1971, 46-56414
Int. Cl. B65g *47/42*; B66b *17/00*
U.S. Cl. 198—20 R 10 Claims

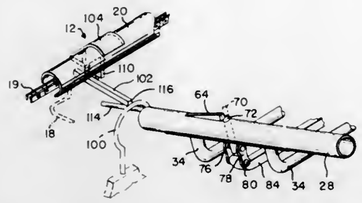


An article transferring apparatus for transferring articles between various types of conveyors, such as through a three-dimensional route. The apparatus includes a device for picking up an article as carried on a first conveyor, which device is mounted on a carriage movable substantially parallel to a second conveyor. The carriage has means associated therewith for moving the article laterally toward the second conveyor and for depositing same on the second conveyor when the carriage and the second conveyor are moving at substantially the same speed.

3,799,318
CONVEYOR LOADING APPARATUS

John W. Dekoekkoek, Seattle, Wash., assignor to Western Automation Corporation, Redmond, Wash.

Filed Oct. 4, 1971, Ser. No. 186,171
Int. Cl. B65g *47/00*
U.S. Cl. 198—26 8 Claims

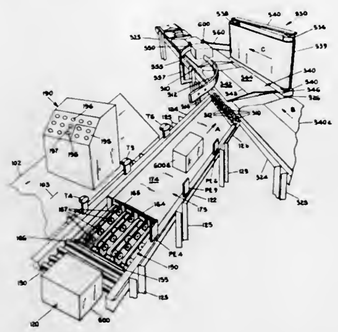


Apparatus for loading hanger type article supports onto a conveyor, and particularly, apparatus for loading hangered garments onto a conveyor of the type including a plurality of spaced hanger support members extending from an endless chain or the like. The apparatus includes: an elongate arm positioned adjacent the conveyor on an angle such that hangered garments placed thereon tend to slide toward the conveyor; a retaining block on the arm preventing the hangered garments from sliding thereby; and, a lifting finger raising individual hangered garments past the retaining block in response to a signal from a switch adjacent the conveyor upstream from the elongate arm which is actuated by the hanger support member to be loaded. A hanger release arm is positioned transverse the conveyor adjacent the elongate arm to hold individual hangered garments on the arm until the hanger support member to be loaded pivots it away from the arm such that the hangered garment slides onto the hanger support members.

3,799,319
ARTICLE ALIGNING APPARATUS

James F. Cutler; Wesley R. Maxted, and Edward C. Soderstrom, all of Grand Rapids, Mich., assignors to Rapistan, Incorporated, Grand Rapids, Mich.

Filed Apr. 27, 1972, Ser. No. 248,301
Int. Cl. B65g *47/22, 47/34*
U.S. Cl. 198—29 6 Claims



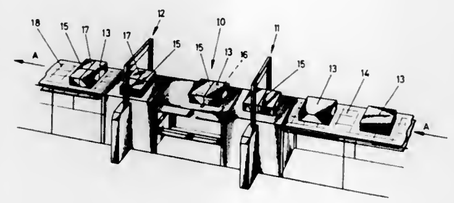
An induction apparatus includes a pair of induction stations having input ends coupled to feed conveyors for transferring articles to the induction stations. Each station includes an induction line extending between an input conveyor and a sorting conveyor and inter-secting the sorting conveyor at an acute angle. The induction line of each induction station includes a powered conveyor, an indexing station and a variable speed feed conveyor controlled to induct cartons onto

predetermined trays of the sorting conveyor in a synchronous manner. Aligning means are provided for finally aligning cartons on the trays once they are inducted thereon.

3,799,320
TURN TABLE DEVICE

Pieter Arnoldus V.D. Bilt, Duinweg 24, Bosch En Duin, Netherlands

Filed Sept. 6, 1972, Ser. No. 286,681
Int. Cl. B65g *47/24*
U.S. Cl. 198—239 3 Claims



The present invention relates to a turn table device by means of which objects, such as bundles of news papers, can be rotated about a vertical axis over an angle of, e.g. 90°. The turn table has the form of a vertically movable and rotatable cross having its wings below the plane of conveying means when retracted and above said plane when in operation. The device has been provided with switches and abutments to space the objects and to make sure that only one object at a time can be brought above the cross of the turn table device and that no feed or discharge can take place when this is not desired by the presence of objects downstream.

The turn table device of the invention in particular is intended to be installed between two strapping machines to cross-tie bundles of news papers.

3,799,321
APPARATUS FOR ASSEMBLING GROUPS OF STORAGE BATTERY PLATES

Eizo Agui, Takatsuki, Japan, assignor to Yuasa Battery Company Limited, Takatsuki, Japan

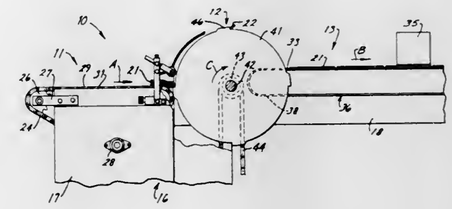
Filed Feb. 22, 1972, Ser. No. 228,113
Int. Cl. B65g *59/00*
U.S. Cl. 198—35 3 Claims

This invention relates to an apparatus for assembling groups of storage battery plates comprising respective required numbers of positive plate separating devices, separator separating devices and negative plate separating devices provided with the racing devices conveying chains for conveying battery ele ments separated from these devices and composing them into unit plate groups while conveying them, a regulating mechanism for fixed plate groups and a delivering device for them as formed to be operatively connected with one another.

3,799,322
GRID FEEDER

Ronald C. Van Linder, Watervliet, and Basil R. Van Linder, Kalamazoo, both of Mich., assignors to Kalamazoo Manufacturing Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 125,622, March 18, 1971.
This application May 22, 1972, Ser. No. 255,755
Int. Cl. B65g *59/00*; G65g *47/24*
U.S. Cl. 198—35 27 Claims



A grid feeder device for storage battery grids or plates comprises a pivotally oscillating bellcrank-like member and associated grid stop means and grid guiding means which, with pickup disks, are interposed between input and output conveyors. The input conveyor consists of a pair of continuously orbiting endless flexible conveying elements or chains upon which a plurality of grids are supported in substantially vertical orientation, the continuous movement of the conveying elements tending to maintain such grids closely packed together and for urging the leading or forward several of the grids onto a support edge of the oscillating member when the latter is in its lower and rearwardmost position and against an abutment thereon. The support edge of the oscillating member periodically moves forwardly and upwardly carrying the several grids therewith and moving the forwardmost one of the grids into the path of a tooth on the rotating pickup disk, which rotates in synchronism with the oscillating member. The grid stop means limit the forward movement of the forwardmost grid so that only that grid is picked up by the tooth on the rotating pickup disk. As the forwardmost grid is lifted from the support edge of the oscillating member by the rotating pickup disk, the grid guiding means urges same firmly against the surface of the pickup disk above the tooth thereon and the support edge of the oscillating member returns downwardly and rearwardly to its original position for receiving an additional grid or grids from the input conveyor to repeat the above mentioned cycle of operation. In the meantime, the rotating disk transfers the aforementioned forwardmost grid to the output conveyor, the speed of the output conveyor being adjusted with respect to the speed of the rotating disk and oscillating member so that grids will be placed on the output conveyor in a horizontal and close spaced condition to allow further operations to be carried out thereon, such as a grid pasting operation.

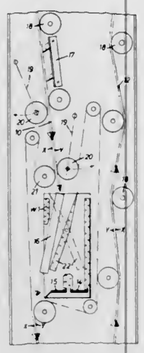
3,799,323
CONVEYOR ASSEMBLY FOR TRANSPORTING CONVEYOR CONTAINERS ALONG HORIZONTAL AND VERTICAL CONVEYOR PATHS

Erich Schneider, Postfach 46, 7346 Wiesensteig, Germany

Filed July 7, 1972, Ser. No. 269,749
Claims priority, application Germany, July 9, 1971, 2134264
Int. Cl. B65g *43/08*
U.S. Cl. 198—38 4 Claims

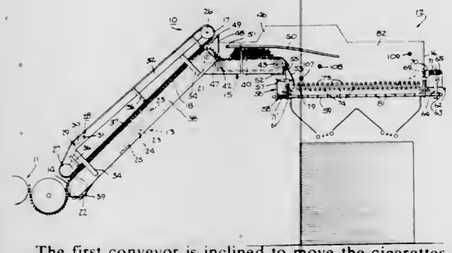
A belt conveyor for transporting containers from one destination to another in a multiple deck installation. The multiple decks have horizontal conveyors, and these conveyors are associated with a single vertical conveyor employing twin belts between which the container is held and transported.

Container transfer means are provided at the intersection of the horizontal conveyors and the vertical conveyor and are ar-



ranged by suitable control thereof to move a container directly from one deck to another.

3,799,324
AUTOMATIC CIGARETTE FEED MACHINE
Floyd V. Hall, Durham, N.C., assignor to Liggett & Myers Incorporated, New York, N.Y.
Filed Apr. 15, 1970, Ser. No. 28,640
Int. Cl. B65g *47/00, 15/14, 47/16*
U.S. Cl. 198—45 **8 Claims**

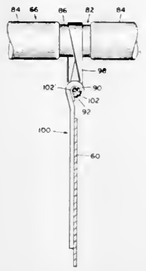


The first conveyor is inclined to move the cigarettes from the cigarette making machine upwardly in single line fashion to the second conveyor which conveys the cigarettes horizontally in stacked fashion into the hopper of the cigarette packaging machine. The packaging machine is linked in a one-to-one relationship with the cigarette making machine and is capable of high speed production of at least 3,600 cigarettes per minute.

3,799,325
FLEXIBLE CONVEYOR SYSTEM
William C. Benson, 101 Hollyhill Ln., Denton, Tex.
Filed Sept. 25, 1972, Ser. No. 292,119
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **20 Claims**

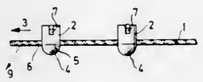
A flexible conveyor system includes a central power unit and a plurality of flexible conveyor units extending in opposite directions from the power unit. The power unit comprises a prime mover and a speed reducer system for supplying operating power to a longitudinal drive shaft. Each flexible conveyor unit comprises a flexible sheet which supports a plurality of powered roller assemblies having one or more idler roller assemblies therebetween. Each flexible conveyor unit further includes a flexible drive shaft which extends along the flexible sheet to drivingly interconnect the drive shaft of the power unit and the powered roller assemblies of the flexible conveyor unit.

The drive shafts of the power unit and the flexible conveyor units support a plurality of sheave members each of which is aligned with a powered roller assembly. Each sheave member comprises a central cylindrical portion and opposed conical portions which taper inwardly from the cylindrical portion



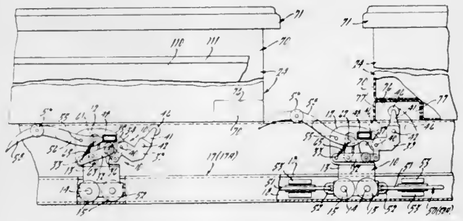
toward the drive shaft. A wide, flat belt extends around the sheave member and the adjacent roller to form a driving connection therebetween. The belt engages one of the conical portions of its respective sheave member in accordance with the direction of rotation of the drive shaft.

3,799,326
CABLE HAULAGE INSTALLATION
Heinz Kretschmar, Weisensteig, Germany, assignor to Ralfs GmbH, Wiesensteig, Germany
Filed Oct. 4, 1972, Ser. No. 295,002
Int. Cl. B61b *11/00*
U.S. Cl. 198—130 **5 Claims**



A cable haulage installation comprises a cable-like transport element and cable pulleys over which the element travels. Shaped members are fixed at intervals to the transport element and at least one drive pulley is formed with corresponding recesses engageable by the shaped members.

3,799,327
CONVEYOR SYSTEM AND DOG
Floyd R. Schulz, 37820 Rhonswood Dr., Northville, Mich., assignor to Floyd R. Schulz Associates Inc., Northville, Mich.
Filed Dec. 7, 1971, Ser. No. 205,524
Int. Cl. B65g *19/00*
U.S. Cl. 198—170 **13 Claims**

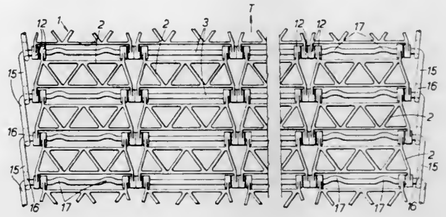


The conveyor system features plural endless and independently powered conveyor chains traveling individual guide

tracks, one chain and track representing a main power conveyor line traversing the entire length of the system, and one or more further and similar chain and track-type branch lines which, at spaced zones therealong, converge and diverge in relation to the main line, paralleling the latter through some length. Thus, pusher dogs on the parallel-traveling conveyor reaches may selectively be brought into and out of propelling engagement with a given article-containing tray atop the parallel track reaches. As thus selectively impelled by only a single pusher dog on one or the other line, the tray may travel straight past a point of divergence or exit of a branch chain-track line in relation to the main line, or the tray may be mechanically switched into and out of one or more branch routes, under propulsion by a branch track dog, the power chain having been "de-dogged" from the chain at a zone of selection upstream of the diversion or exit zone. The diversion may be, for example, into and out of an elevator unit or "vertical", prior to entering which the trays are removed from the branch line, being later returned thereto for convergent reentry to the main line. Selection of the path of tray travel is computer-controlled, and is effected through the agency of a pair of ganged mechanical tray-diverting (or returning) switch arms which pivot about axes upstream of the direction of power and branch chain-travel, so that "spearing" of a tray is impossible. The ganged switch arms trip electrical limit switches at opposite extremities of the switch swing, the occurrence of which is governed by two or more movable ramp-type de-dogging units, at least one associated with each of the main and branch line tracks upstream of the diverting or exit zone. Under the control of such units dogs on the main power and branch chains are respectively left drivingly engaged with or drivingly disengaged from the trays, in effect disabling the selected pusher chain in the last named condition. Mechanical operation of the de-dogging units is in turn under the control of individual braking type electric motors intermittently operating the de-dogging ramps. These motors receive energizing signals from a read-out unit or sub-assembly under the above-mentioned master computer control; and under such governing from the read-out unit the motors operate electrical limit switches timing 180° rotations thereof in determining whether dogging or de-dogging shall take place. Read-out signals are electromagnetically received by the reader from the magnetically coded strip or plate means on the bottoms of the trays, such means thus designating the tray's destination, and being in due course re-coded for another trip of the tray through the system by write-in means similar to the read-out unit. In order to eliminate impact noise and shock upon its dogging engagement by a pusher dog traveling at considerable chain-powered speed, each tray has like front and rear walls of a semi-rigid nature, at least adjacent the bottom thereof, behind which the power chain and branch pusher dogs will engage to propel the trays; a yield of such wall portion in becoming dogged will absorb impact noises and at the same time will operate in the manner of a return spring in maintaining the dog's tray propelling contact.

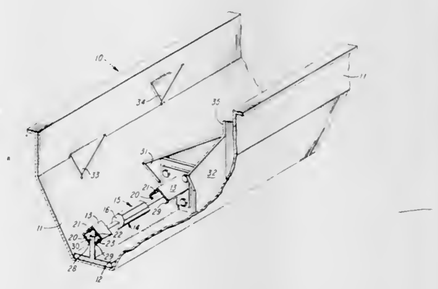
3,799,328
ENDLESS BAND CONVEYORS
George Arthur Harvey, Blakedown, England, assignor to Umec-Boydell (Belting) Limited, West Bromwick, England
Filed Sept. 14, 1972, Ser. No. 288,942
Claims priority, application Great Britain, Oct. 15, 1971, 42997/71
Int. Cl. B65g *15/30*
U.S. Cl. 198—195 **8 Claims**

In an endless band conveyor in which the endless band is composed of load-bearing components hinged to and supported by rod members extending transversely of the direction of travel of the band, the load-bearing components are moulded plastics modules which releasably clip onto the rod members. The modules have C-shaped connecting portions with mouths opening into their interiors by way of which the rod members can be engaged in the connecting portions by



movement of the connecting portions laterally of the rod members, to clip the modules onto the rod members.

3,799,329
HARPOON-TYPE CONVEYOR
Daniel T. Fitzpatrick, Kalamazoo, Mich., assignor to Prab Conveyors, Inc., Kalamazoo, Mich.
Filed July 24, 1972, Ser. No. 274,435
Int. Cl. B65g *25/08*
U.S. Cl. 198—221 **5 Claims**

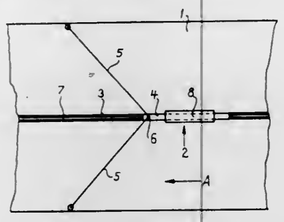


A harpoon-type conveyor provided with self-aligning, readily replaceable bearing inserts which support a reciprocating hollow conveyor rod having mounted thereon an appropriate conveying means. The hollow conveyor rod has a generally square transverse cross-section and is slidably supported at the inner surfaces thereof by a bearing insert having a generally octagonal transverse cross-section.

3,799,330
DUNG REMOVER
Sigismund Floter, Hamburg, Germany, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Aug. 22, 1972, Ser. No. 282,830
Int. Cl. B65g *25/08*
U.S. Cl. 198—224 **11 Claims**

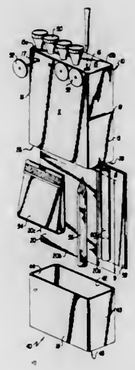
By means responsive to reciprocation of a driving element, a dung scraper is first advanced step-by-step along a path while in a scraping position and is then returned step-by-step along the path while in a non-scraping position, said means including mechanism operable to press a clamp body against the

driving element for effecting each said step during movement of the driving element in one direction and to loosen the



clamp body from the driving element during movement thereof in the opposite direction.

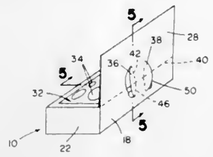
3,799,331
GOLFER'S POCKET KIT
Frederick G. White, 10215 Forest Ave., Fairfax, Va.
Filed Apr. 20, 1972, Ser. No. 245,729
Int. Cl. A45c *15/00*; **B65d** *1/24*
U.S. Cl. 206—38 R **7 Claims**



A golfer's pocket kit comprising a rectangular container open ended at one end, having closure means for the open end; having a partition therein parallel to and spaced between the front and rear wall thereof and extending between the side walls and to the closed end wall thereof, forming a pair of compartments therein; having a plurality of first spaced apertures, adapted to receive golf hall tees in the closed end wall portion parallel and adjacent to the front or rear wall of the container; and having a plurality of second spaced apertures adapted to receive golf ball markers, in the front or back thereof, proximate the closed end thereof and staggered with respect to the apertures in the end wall, the apertures in the bottom wall and in the front or back wall forming openings in the same compartment.

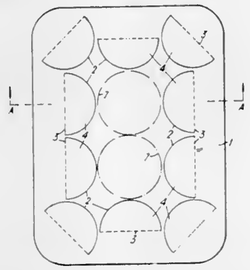
3,799,332
SHIPPING AND DISPLAY CONTAINER
Patrick R. Jeronimus, Park Forest, Ill., assignor to The Gillette Company, Boston, Mass.
Filed Aug. 9, 1972, Ser. No. 279,212
Int. Cl. B65d *5/50, 5/52*
U.S. Cl. 206—44 R **5 Claims**

A combined shipping and display container, the body of which contains a filler member with cavities adapted to holding articles, having a hinged lid constructed of a double thickness of cardboard, both sides of which are suitable for advertising purposes; and an improved means for releasably maintaining the lid in an open position, the improvement comprising one or more tabs extending across the lid hinge axis, cut from the blank form from which the container is made,



coplanar with the lid and body portions of the container when the lid is in a closed position.

3,799,333
ASSEMBLING OF A PREDETERMINED NUMBER OF CONTAINERS FOR CONVEYANCE AS A UNIT
Alan Weir, Brior Bank, Springfield Rd., Upper Poppleton, County of York, and Geoffrey Eric May, 47 Stubley Ln., Dronfield, Sheffield, Yorks, both of England
Filed May 7, 1971, Ser. No. 141,111
Int. Cl. B65d *81/00, 85/62*
U.S. Cl. 206—482 **4 Claims**



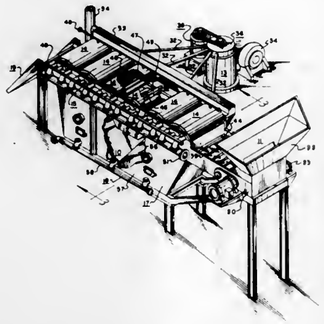
This invention relates to a method of assembling a predetermined number of cans or other containers for conveyance on a unit, particularly through a shrink wrapping tunnel, and to a carrier for use in said conveyance. The carrier is provided with raisable portions, which are raised after cans with peripheral rims have been loaded on to the carrier so as to engage with said rims, the cans being so arranged that they are then retained against movement relative to the carrier, or is provided with pre-formed raised portions on which the cans can be positioned to achieve the same effect, or is provided with sunken portions to receive cans which need not have peripheral rims.

3,799,334
METHOD AND APPARATUS FOR RECOVERING GOLD
William O. Collins, 2255 Foothill, Reno, Nev.
Filed Mar. 6, 1972, Ser. No. 231,851
Int. Cl. B03b *1/02*
U.S. Cl. 209—11 **2 Claims**

The process comprises the sequential steps of classifying and selecting from gold-bearing siliceous material that fine material which passes a preselected screen, heating or roasting the selected material to a predetermined temperature, dry-air-float concentrating the material, and separating the material by wet-float slurry means. In practice, it has been found that the steps of heating and dry-air-float concentrating of the material may be performed concurrently.

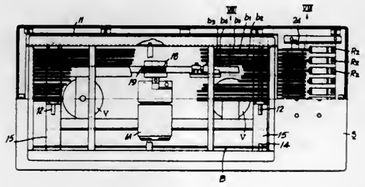
Apparatus includes an inclined frame; a endless pervious belt assembly having a screen layer, a fabric layer and a multiplicity of riffle bars suitably fastened transversely at intervals to the fabric layer, the pervious belt being rectilinearly disposed at an angle coincident with the frame; a plurality of

air-float cell assemblies transversely mounted in the frame and having one of the respective walls thereof contiguous with the belt; and a pulsating air supply assembly in communication with each of the respective air-float cell assemblies. In combination with the assemblies above described, the apparatus



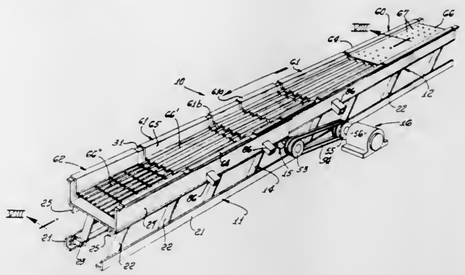
may be provided with a substantially enclosed housing formed by a multiplicity of abutting transversely mounted reflector assemblies disposed on the frame distally above the endless belt, and a tank assembly mounted on the frame. A heat assembly may be mounted in the housing between the reflector assemblies and the belt.

3,799,335
CARD-RETRIEVING METHOD AND APPARATUS
Kuichi Takeda, No. 15-13, Hikari-cho 2-chome, Kokubunji-shi, Tokyo, Japan
Filed Oct. 27, 1972, Ser. No. 301,481
Claims priority, application Japan, Oct. 30, 1971, 46-86376
Int. Cl. B07c
U.S. Cl. 209—80.5 **12 Claims**



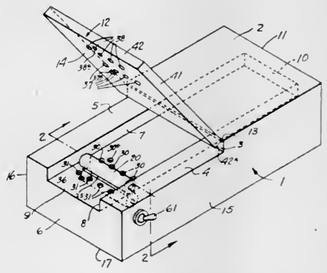
A card-retrieving method and apparatus capable of retrieving a card carrying desired information from a random series of cards. The cards are formed at their bottom edges with notches corresponding to the information on the cards, and when a card is to be retrieved all of the cards are raised by a pair of bars one of which is selected in accordance with the desired information. The selected bar will be aligned with a notch corresponding to the desired information, so that a card which has the latter notch will receive the selected bar in its notch while all of the remaining cards will be raised without having any bars received in the notches thereof. As a result, the card which is to be retrieved will tilt about one bar while having the selected bar received in its notch, so that a bottom corner of the card which is to be retrieved will project beyond all the other cards. This bottom corner is held at the elevation to which it is initially raised by a suitable structure while all of the cards are again lowered, so that only the card which is to be retrieved remains in a tilted position at the elevation to which it was initially raised. This tilted card will, as a result of the lowering of the remainder of the cards, project freely at a top corner above all of the other cards so that the card to be retrieved can be readily removed as a result of its projection at an upper corner from all of the cards after the lowering of the latter.

3,799,336
METHOD AND APPARATUS FOR TREATING DISCRETE ARTICLES
Lee B. Holman, Whittier, Calif., assignor to Standun, Inc., City of Industry, Calif.
Filed Nov. 3, 1972, Ser. No. 303,498
Int. Cl. B07b *13/04*
U.S. Cl. 209—85 **12 Claims**



A method and apparatus for using a vibratory type conveyor means for processing discrete articles, for example elongated articles or produce, including grading the articles by length. Readily removable and adjustable tray means are carried by the conveyor means in spaced relation to a bottom wall of the conveyor means, the tray means comprising a plurality of tray sections of selected configuration and design depending upon the treatment of the article. Tray sections are designed to longitudinally orient elongated articles, certain of said tray sections having their trailing discharge edges spaced longitudinally and vertically from the adjacent end portion of the succeeding tray section. The tray section is provided with longitudinally extending fingers to span the space between adjacent ends of tray sections for retaining orientation of those articles which pass over said space, permitting articles of less than a selected length to fall to the conveyor wall there beneath for separation purposes. A tray means including a plurality of tray sections of different design and configuration for varying the treatment of articles transported by said conveyor means. A vibratory conveyor means having a resilient support means and drive means therefor to provide an efficient versatile material handling apparatus.

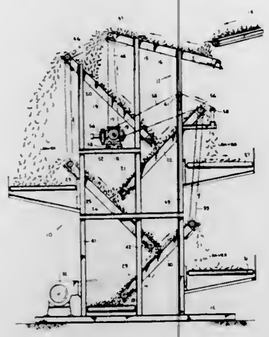
3,799,337
MAIL CANDLING APPARATUS
Rollo G. Green, Rt. 2, box 603K, Austin, Tex.
Filed Aug. 25, 1972, Ser. No. 283,731
Int. Cl. B07c *5/342*
U.S. Cl. 209—111.7 **5 Claims**



A mail candling apparatus for feeding an envelope to photocell scanners which depending on the density of the envelope as when the envelope contains an enclosure, will reject the envelope or when the envelope is empty will pass the same

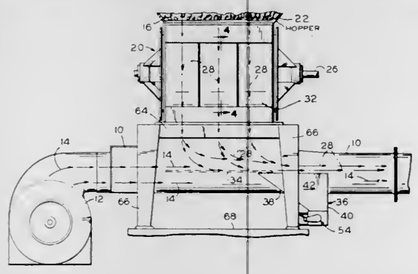
for disposal and including means for rejecting the envelope when containing bulky material.

3,799,338
LEAF SEPARATOR
John L. Duda, Jr., Rt. 1, Box 91A, Ovideo, Fla.
Filed Sept. 20, 1971, Ser. No. 181,978
Int. Cl. B07c *9/00*
U.S. Cl. 209—114 **8 Claims**



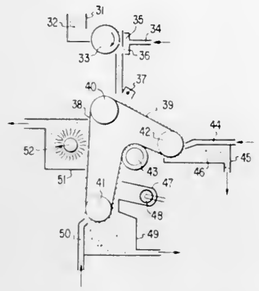
This invention relates to a mechanical leaf separator designed to automatically separate leaf portions and other undesirable components from a cut-up vegetable such as diced celery or the like, using one or more inclined conveyor belts. This novel device is so effective and efficient as to render unnecessary any of the hand labor practices usually associated with the removal of leaf portions from cut-up produce.

3,799,339
ROCK TRAP FOR CONVEYOR TUBE
Claes Breitholtz, Sollentuna, and Gunnar Lindberg, Jarfalla, both of Sweden, assignors to Rader Companies, Inc., Portland, Oreg.
Filed Apr. 13, 1973, Ser. No. 351,091
Int. Cl. B07b *3/00*
U.S. Cl. 209—115 **10 Claims**



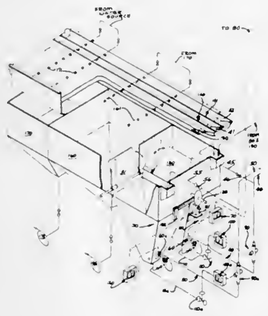
A rock trap is described for removing rocks and other heavy foreign objects from particulate material transmitted through a conveyor tube by a conveyor fluid, such as air. The particulate material is injected into the conveyor tube through an inlet openng at the top thereof, intermediate the ends of such tube, and the rock trap is positioned beneath and downstream from such inlet opening. A baffle plate is provided in the conveyor beneath the inlet opening so that such baffle plate extends longitudinally in the tube across such inlet opening and terminates above the top opening of the rock trap pocket. Rocks and other heavy foreign objects in the particulate material strike the baffle plate and roll and slide off the end of such plate into the rock trap pocket. The conveyor fluid is transmitted through the tube both above and below the baffle plate, and the conveyor fluid under such properly positioned plate flows across the top of the rock trap to prevent the particulate material from falling into such trap, while enabling rocks and other foreign objects to fall into such trap.

3,799,340
REFINING PHOTOCONDUCTIVE PARTICLE
Yasuo Tamai, Asaka, and Shigeru Sadamatsu, Odawara, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 2, 1971, Ser. No. 204,055
Claims priority, application Japan, Dec. 2, 1970, 45-106638
Int. Cl. B03c *7/08*
U.S. Cl. 209—127 R **7 Claims**



Apparatus for refining composite photoconductive particles comprising transparent cores with photoconductive films disposed thereon, the apparatus comprising means for uniformly charging and dispersing the composite particles in a layer on an electroconductive member so that the composite particles are electrostatically attracted to the electroconductive member, means for uniformly exposing the layer of composite particles to radiation within the sensitive wavelength region thereof to reduce the electrostatic attraction of desired composite particles for the electroconductive member, and first removing means for removing the desired composite particles from the electroconductive member.

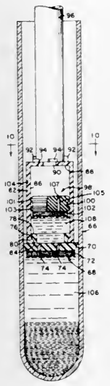
3,799,341
MINERAL SEPARATION CONTROL SYSTEM
Robert L. Papworth, Rt. 1, Box 155, Chassell, Mich.
Filed Sept. 22, 1971, Ser. No. 182,589
Int. Cl. B03b *3/40*
U.S. Cl. 209—172.5 **18 Claims**



This float-sink apparatus utilizes media of two different densities in which the liquid level in the higher density media sump is automatically sensed and controlled through the addi-

tion of media makeup to the sump when the level is low. The change in density is sensed by a density sensor which controls the addition of water in the flow line between the high density sump and the high density separator. The low density system is similarly controlled, except that the level sensor controls the diversion of high density media from a drain screen into the low density sump, rather than controlling the addition of media makeup to the low density sump. The wash circuit of the system directs washed media makeup from both the high density separated product and the low density separated product to a magnetic separator and then to a densifier which acts at a constant rate to feed all of the washed and separated media makeup directly into the high density media sump.

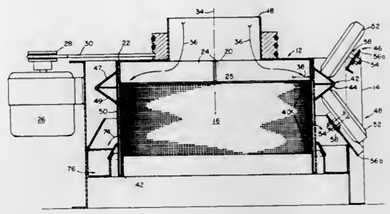
3,799,342
METHOD OF USING A SERUM SEPARATOR
Donald J. Greenspan, Riverside, N.J., assignor to U.S. Medical Research & Development, Inc., Riverside, N.J.
Continuation-in-part of Ser. No. 58,557, July 7, 1970, Pat. No. 3,661,265. This application June 23, 1972, Ser. No. 265,707
Int. Cl. B01d *21/26, 33/00*
U.S. Cl. 210—73 **30 Claims**



The method of isolating serum or plasma from the formed elements of blood comprising steps of effecting precipitation of the formed blood elements to the bottom of a container, inserting a plug into the container, said plug having normally closed valve means which are openable when pressure within the container is greater than atmospheric pressure. A handle for manipulating the plug functions as a container to collect and remove serum or plasma. In a second embodiment, the handle is removably attached to the plug so that the plug can be left in place in the container to maintain isolation between the serum or plasma and the formed blood elements. In a third embodiment, the plug is provided with a container for collecting and storing the serum or plasma. A similar plug inside the container is used to effect an additional filtration step.

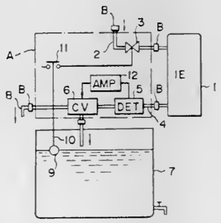
3,799,343
CENTRIFUGE AND METHOD
Larry E. Lang, 820 N. Delaware, Apt. 314, San Mateo, Calif.
Filed Aug. 28, 1969, Ser. No. 853,809
Int. Cl. B01d *21/26*
U.S. Cl. 210—78 **10 Claims**

In a centrifuge having a basket rotatably mounted in a fixed frame for the separation of the liquid fraction from a mixture thereof with a particulate material, the improvement of providing such basket with a cam assembly including a flange extending radially outwardly therefrom and rollers secured to the fixed frame for rolling contact with the flange, such rollers and flange controlling the position of the basket in respect to the frame as the basket is rotated about its central longitudinal axis, the flange surface circumjacent to the basket being inclined so that as the basket and mixture contents therein rotate through a portion of each revolution, the basket is advanced axially in the direction of its discharge end, and thereafter, through an alternate portion of each revolution of rotation due to an abrupt change formed in the inclination of the flange, the basket and its contents are abruptly axially displaced in the opposite direction, so that the liquid-particulate material mixture within the basket is displaced relative to the



wall thereof in the direction of the discharge end for eventual discharge therefrom in relatively liquid-free condition after passage through the centrifuge; and the method of transporting a liquid-particulate material mixture through a centrifuge embracing the steps of gradual axial advancement in one direction of a centrifuge basket so that the material clinging to the walls thereof is displaced in respect to such walls and repositioned thereon thereby advancing the mixture with the basket toward the discharge end thereof.

3,799,344
PURE WATER SUPPLY DEVICE
Hideyuki Nishizawa, No. 68, Nakazato-cho, Kita-ku, Tokyo-to, Japan
Filed May 26, 1972, Ser. No. 257,318
Claims priority, application Japan, May 31, 1971, 46-45006
Int. Cl. B01d *15/04*
U.S. Cl. 210—96 **1 Claim**

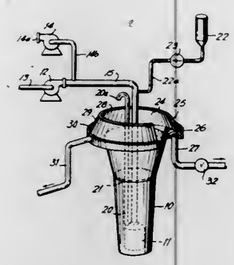


A compact pure water supply device automatically retains a constant predetermined level in the storage tank and renders a visual indication of the requirement for ion regeneration by means of a transistorized control circuit.

3,799,345
APPARATUS FOR EFFECTING PURIFICATION OF LIQUIDS BY FLOTATION
Sven Elis Ake Svantesson, Bromma, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 3, 1972, Ser. No. 223,197
Claims priority, application Sweden, Feb. 9, 1971, 1584/71
Int. Cl. B01d *43/00*
U.S. Cl. 210—109 **3 Claims**

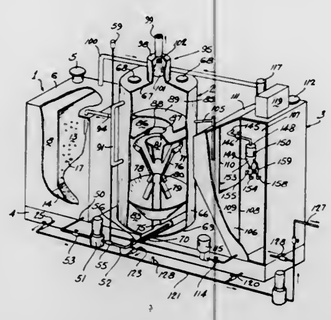
In the purification of liquids by flotation, a mixture of gas and liquid is subjected to sufficient pressure for the gas to dissolve in the liquid and form a solution of the gas and the liquid. The solution of gas and liquid without any substantial change

in pressure is introduced at a low velocity to the body of polluted liquid in a flotation tank. Initially no gas bubbles are formed. As the solution rises slowly in the tank and it is subjected to a gradually lower pressure, gas bubbles are formed in



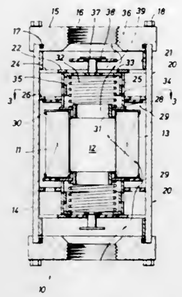
a gentle manner. Due to the slow rate at which this takes place the gas bubbles will be very small. Since a great quantity of gas is dissolved in the liquid, a large quantity of gas bubbles will be formed. All of these factors contribute to an effective purification of polluted liquids by flotation.

3,799,346
APPARATUS AND METHOD FOR TREATING SEWAGE
Ronald Freese, P.O. Box 4, Ayr, Ontario, Canada
Continuation-in-part of Ser. No. 821,719, May 5, 1969, abandoned. This application July 22, 1971, Ser. No. 165,207
Int. Cl. C02c *1/06, 5/06*
U.S. Cl. 210—124 **8 Claims**



An improved sewage treatment plant is described having a primary waste receiving and mixing vessel, an aeration vessel and a settling tank. Material from the primary mixing vessel is pumped into a bottom region of the aeration vessel by means of a pump and a venturi aerator is provided for introducing air into the stream of sewage being pumped into the aeration vessel. The aeration vessel is of unique design and contains a series of downwardly inclined baffles which are arranged to trap pockets of air and to circulate the sewage along a tortuous path across these air pockets. A recycling system is provided for recycling a portion of aerated sewage from a top region of the aeration vessel back into the primary mixing vessel for mixing with the raw, unaerated sewage and a second recycling system is provided for recycling a portion of aerated sewage from an upper region of the aeration vessel into the stream being pumped into the lower region of the aeration vessel.

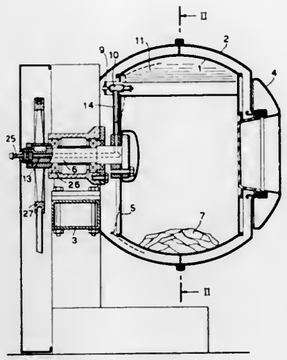
3,799,347
BIDIRECTIONAL CONTAINER FOR OIL FILTER
Thomas F. McDuffie, P.O. 11926 Taylorcrest, Houston, Tex.
Filed Sept. 27, 1971, Ser. No. 184,048
Int. Cl. B01d *27/08*
U.S. Cl. 210—134 **13 Claims**



In a first alternative embodiment, a bidirectional container for an oil filter is provided in which the container is symmetrically built with respect to both ends of a filter element and includes check valves directing the flow from the exterior of the filter element through the element and then to the central axial portion thereof. The central portion is drained from the filter through a check valve. The filter works with the flow reversed in the same manner.

An alternative embodiment is differently arranged, and functions in a similar manner.

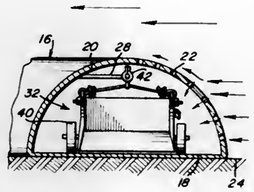
3,799,348
DEVICE FOR THE AUTOMATIC BALANCING OF WASHING AND DRYING MACHINES
Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy
Filed July 27, 1971, Ser. No. 166,502
Claims priority, application Italy, Aug. 1, 1970, 28196/70
Int. Cl. B01d *33/40*
U.S. Cl. 210—144 **5 Claims**



A device for rebalancing the rotary baskets of washing machines and the like, of the kind in which liquid masses are used for balancing the basket. The rear wall of the basket is elastically deformed (for example, it is a metal disc) and the deformations are transferred to a valve which feeds with liquid a number of peripheral chambers mounted on the basket.

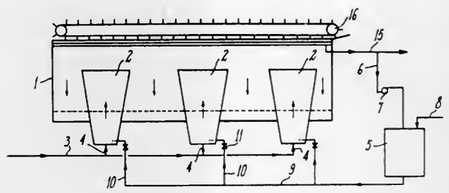
As rebalancing is achieved, the deformation of the disc ceases and the valve is closed. Water is spontaneously discharged in the usual suds tub.

3,799,349
APPARATUS FOR CLEANING MUDDY WATER
Felix I. Stewart, 1309 O'Shaughnessey Ave., Huntsville, Ala.
Filed July 3, 1972, Ser. No. 268,872
Int. Cl. B01d *35/28*
U.S. Cl. 210—154 **8 Claims**



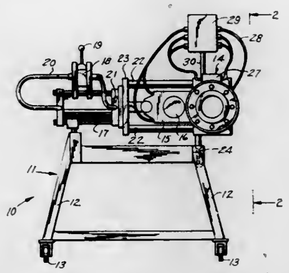
A conduit, channel or other passageway forming means is disposed in the bottom of a body of water with perforations in at least a portion of the passageway forming means to enable mud, sediment, silt and the like to collect in the conduit, channel or passageway forming means together with a structure moving through the conduit, channel or passageway forming means to remove the collected mud, sediment, silt and the like for depositing it on the bank of the body of water or in any other desired location thereby enabling continuous removal of mud, sedimentation, silt and the like from the body of water. The apparatus and the technique associated therewith may be employed in a stream, river, lake, pond or any body of water whether the water be moving or substantially still.

3,799,350
FLOTATION APPARATUS
Vincent Savall, Saint Cloud, and Pierre Treille, Velizy, both of France, assignors to Degremont Societe Generale D'Epuration & D'Assainissement, Rueil Malmaison, France
Filed Mar. 22, 1972, Ser. No. 237,004
Claims priority, application France, Apr. 5, 1971, 71.11875
Int. Cl. B03d *1/24*
U.S. Cl. 210—221 **3 Claims**



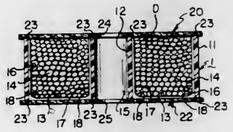
A flotation apparatus comprises essentially a parallelepipedic tank disposed horizontally and provided along its major axis with open-top, potlike injectors for the liquid to be treated with another liquid saturated with gas under pressure. The liquid to be treated is delivered through the bottom and preferably centrally of each injector, and the treatment liquid is supplied through a lateral, eccentric but non-tangential pipe. Siphonal means are provided along the major side walls of the tank and are adapted, in conjunction with the injectors, to create outward and downward fluid flow passing under the siphonal means, other means being provided for removing the top sludge from one end of the tank.

3,799,351
QUICK CHANGE FILTERING MACHINE
Alvin C. Tewes, and Fred A. Tewes, both of 179 N. Myrtle, Elmhurst, Ill.
Filed Dec. 13, 1972, Ser. No. 314,788
Int. Cl. B29f *1/14*
U.S. Cl. 210—232 **4 Claims**



A quick change filtering device for the plastics industry. This device consists primarily of a main body with seals and a hydraulically operated sliding member plate so as to change filters without interrupting production.

3,799,352
DESSICANT DEVICE
Ralph T. McClive, Buffalo, N.Y., assignor to Clecon Incorporated, Cleveland, Ohio
Filed Mar. 20, 1972, Ser. No. 236,057
Int. Cl. B01d *27/02*
U.S. Cl. 210—282 **13 Claims**

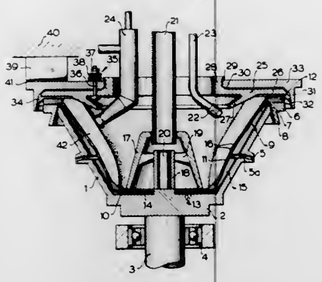


The application discloses a desiccant device with an integral, mechanical filter adapted for use in removing solid particles and moisture from the refrigerant fluid in refrigerant systems. The device comprises a body which receives the desiccant and is pervious to the passage of refrigerant fluid through it and at least one foraminous member sealed to the body to mechanically filter the fluid passing through the body. In one form, the foraminous member extends beyond the periphery of the body in a configuration and dimension sufficient to sealingly engage the walls of the housing of the refrigerant system within which it is disposed, thereby providing a filtering seal.

3,799,353
CONTINUOUS CENTRIFUGE
Kurt Pause, Zedernstr. 13, Grevenbroich, Germany
Filed Oct. 13, 1972, Ser. No. 297,440
Claims priority, application Germany, Oct. 15, 1971, 2151476
Int. Cl. B01d *33/02*
U.S. Cl. 210—369 **14 Claims**

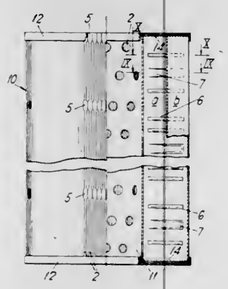
A continuous centrifuge for separating liquid and solid phases of a suspension has a centrifuge basket rotatable about an upright axis and having an upper open end, and a perforate liner in the basket conically diverging towards the upper open end. An annular baffle is mounted adjacent the upper open end and defines therewith a radially extending annular outlet

gap through which retained solid phase can pass in radially outward direction under centrifugal force. An annular flow-regulating member is mounted on and rotatable with the basket and has a cylindrical surface juxtaposed with spacing



from the outer end of the annular gap so that centrifugally ejected solid phase will contact this surface. The flow regulating member is mounted on the basket with slight freedom of axial movement relative thereto.

3,799,354
FLUID FILTER ELEMENTS
Kenneth Ernest Buckman, Winsor near Woodlans, and Kenneth Arthur Rogers, Eastleigh, both of England, assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 12, 1973, Ser. No. 331,570
Claims priority, application Great Britain, Mar. 11, 1972, 11463/72
Int. Cl. B01d *27/06*
U.S. Cl. 210—493 **6 Claims**



A liquid filter element is formed as a hollow tubular assembly of pleated filter paper or like material the pleats being of "W" form (viewed looking inwardly from the outer periphery of the element) with alternate wide and narrow pleats, at least the wide pleats having spacer formations impressed therein to space the two parts of each wide pleat from each other and from adjacent narrow pleats and to space the wide pleats from each other at the inner periphery of the element, and the pleat fold lines being arranged so as to form creases of rectangular "U" section, with widened portions at the junctions between adjacent wide and narrow pleats at opposite ends of the element, and intermediate the ends, the abutment of the spacer formations and widened fold line portions ensuring uniform circumferential spacing and radial disposition of the pleats.

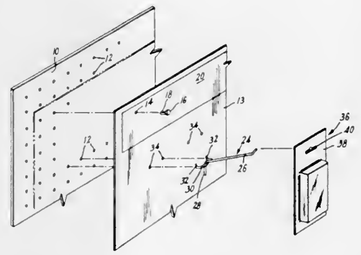
3,799,355
DIALYSIS MEMBRANES AND MANUFACTURE
Ival O. Salyer; Donald D. Bump, both of Dayton, Ohio, and William E. Weesner, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.
Filed Dec. 28, 1970, Ser. No. 102,092
Int. Cl. B01d *31/00*
U.S. Cl. 210—500 **5 Claims**

Non-thrombogenic hemodialysis flat membranes useful in artificial kidneys are prepared from quaternized membranes of polymers made from monomeric substances of which at least a sufficient amount of a vinylpyridine is included to provide membranes which on heparinization are non-thrombogenic particularly polymers made from monomeric substances of which from 2 to 10 percent by weight of the total monomer is a vinylpyridine and at least 80 percent by weight is acrylonitrile. Both copolymers and blends of polymers can be used. A novel process is described for making the quaternized membranes.

3,799,356
DIALYSIS HOLLOW FIBER MEMBRANES AND MANUFACTURE
Ival O. Salyer, Dayton, Ohio; James S. Tapp, Decatur, Ala.; William E. Weesner, Alexandria, Va., and Richard L. Leonard, Cary, N.C., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare, Washington, D.C.
Filed Dec. 28, 1970, Ser. No. 102,132
Int. Cl. B01d *31/00*
U.S. Cl. 210—500 **17 Claims**

Non-thrombogenic hemodialysis hollow fiber membranes useful in artificial kidneys are prepared from quaternized hollow fiber membranes of polymers made from monomeric substances of which at least a sufficient amount of a vinylpyridine is included to provide membranes which on heparinization are non-thrombogenic, particularly polymers made from monomeric substances of which from 2 to 10 percent by weight of the total monomer is a vinylpyridine and at least 80 percent by weight is acrylonitrile. Both copolymers and blends of polymers can be used. A novel process is described for making the quaternized hollow fiber membranes and preserving the porosity of the membranes.

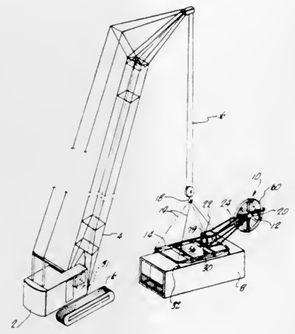
3,799,357
MERCHANDISING DISPLAY ASSEMBLY
James A. Govang, Clinton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed June 12, 1972, Ser. No. 261,800
Int. Cl. A47f *7/00*
U.S. Cl. 211—59 **7 Claims**



A merchandising display assembly comprises a pegboard and a display card disengageably secured upon one surface thereof. The display card has a plurality of apertures which register with holes of the pegboard, and merchandise hangers have engagement portions which pass through the apertures

and seat in the holes aligned therewith. Most desirably, the display card is printed with an advertising message and/or bears indicia for arangement of the merchandise on specific hangers associated therewith.

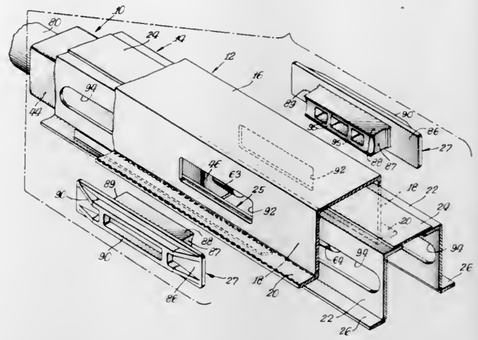
3,799,358
HELICOPTER TAIL ROTOR DEVICE
Alvin A. Putnam, San Antonio, Tex., assignor to H. B. Zachry Company, San Antonio, Tex.
Continuation of Ser. No. 55,223, July 15, 1970, abandoned, which is a division of Ser. No. 756,981, Sept. 3, 1968. This application June 12, 1972, Ser. No. 261,583
Int. Cl. B66c *23/06, 1/00*
U.S. Cl. 212—59 R **14 Claims**



A helicopter tail rotor disposed on a crane for stabilizing a load suspended from the crane boom during a hoisting operation. The tail rotor is secured to a hoisting platform suspended from the upper end of the boom, the rotor blades being manually or automatically adjusted for turning the load horizontally in either direction such that the load is both stabilized during hoisting and easily directed to its assigned location. Alternately, the tail rotor is directly secured to the upper end of the boom such that the boom and crane body can be easily rotated about a fixed base, thereby avoiding the need for ring and pinion gears at the base of the crane, or reducing the load on such gears if they are used.

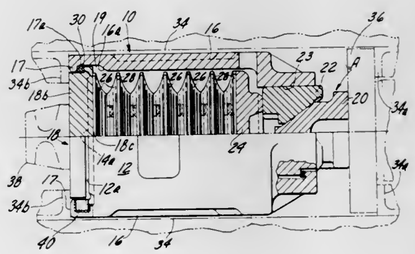
3,799,359
STOP MEANS FOR A RAILWAY IMPACT ABSORBING DEVICE
Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.
Filed Oct. 14, 1971, Ser. No. 189,433
Int. Cl. B61g *9/16*
U.S. Cl. 213—8 **14 Claims**

Stop means for a railway impact absorbing device includes a stop member adapted to be secured to a portion of the sill structure of a railway car. The stop member has a base portion which is secured to the outside wall of the fixed sill structure of the car and horizontal inwardly extending portion which extends through a slot in the fixed sill to co-act with the cushioning device of the railway car. When used in a railway car with a sliding sill, the stop member also extends through a slot in the sliding sill of the railway car, and other stop members are secured to the sliding sill above and below the first stop



member. The second stop members also co-act with the impact absorbing device.

3,799,360
RAILWAY DRAFT GEAR
George E. Huml, Chagrin Falls, and Donald Willison, Lyndhurst, both of Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio
Filed Jan. 15, 1973, Ser. No. 323,962
Int. Cl. B61g *9/08, 9/00*
U.S. Cl. 213—22 **10 Claims**

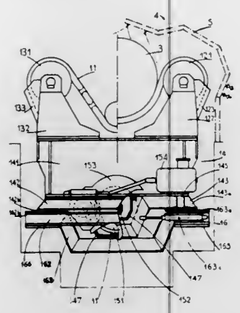


A railway draft gear has a housing of box-like shape that is open at its rearward end and is provided with a detachable rear wall for closing the open end. The rear wall is keyed to the housing to anchor the wall against movement rearwardly of the housing. Key stop means is provided on the housing to maintain the keys in place.

3,799,361
APPARATUS FOR ROTATABLY SUPPORTING A WORKPIECE DURING TEMPERING
Michel Rey, Chateau Montcenis (Saone et Loire), France, assignor to Creusot-Loire, Paris, France
Filed Aug. 17, 1972, Ser. No. 281,483
Claims priority, application France, Sept. 3, 1971, 71.31951
Int. Cl. B65g *7/00*
U.S. Cl. 214—1 QC **2 Claims**

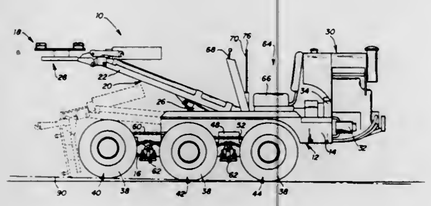
An installation or rotatably spporting a workpiece for example during Tempering, the support comprising two endless belts or chains each of which has an upper run passing around a pair of pulleys whose axes are horizontally spaced and situated at the same level, a drive for a belt or chain, and a

return device for each belt or chain below the pulleys, the chains or belts being adjustably spaced from one another and



their upper runs serving to rotatably support a workpiece, one of them serving to effect that rotation.

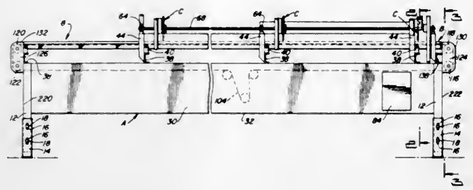
3,799,362
SIX WHEEL MATERIAL HANDLING VEHICLE
Norman Dean Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Incorporated, Dallas, Tex.
Filed Jan. 22, 1973, Ser. No. 325,310
Int. Cl. B66c *23/56*
U.S. Cl. 214—1 D **13 Claims**



A six wheel material handling vehicle comprises an engine and a hydrostatic drive which functions both to propel the vehicle and to manipulate the vehicle by means of skid steering. The engine is mounted at one end of a frame, and apparatus is provided for receiving and vertically manipulating a load at the opposite end of the frame. The wheels are arranged in three pairs, with the center pair extending below a plane extending tangent to the bottoms of the wheels at the ends of the vehicle. During operation over adverse terrain, the vehicle is supported on all six wheels. During operation on a hard, smooth surface, the vehicle is supported either on the forward and center pairs of wheels or on the center and rearward pairs of wheels, depending on weight distribution.

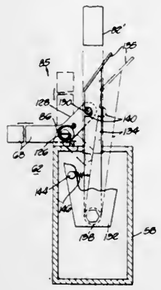
3,799,363
BAR FEEDER
Thomas A. Ross, Mayfield Heights, Ohio, assignor to Mayfran Incorporated, Village of Mayfield, Ohio
Filed Jan. 10, 1973, Ser. No. 322,478
Int. Cl. B23q *5/22*
U.S. Cl. 214—1.2 **19 Claims**

A bar feeder includes an elongated rectangular box having an open top. An elongated trough is mounted on the top of the box. A bar push rod is slidably positioned in the trough. Drive means is mounted within the box for moving the push rod along the trough. A feed device feeds elongated cylindrical bars into the trough ahead of the push rod. The push rod forces the bars along the trough into another machine. The



drive means is a variable speed, limited torque eddy current clutch.

3,799,364
AUTOMATIC RACKER BOARD FINGER PIVOT SYSTEM
Robert R. Kelly, Hoffman Estates, and James R. Tomashek, Wood Dale, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.
Continuation-in-part of Ser. No. 232,376, March 7, 1972, abandoned. This application Jan. 5, 1973, Ser. No. 321,488
Int. Cl. E21b *19/00*
U.S. Cl. 214—2.5 **26 Claims**

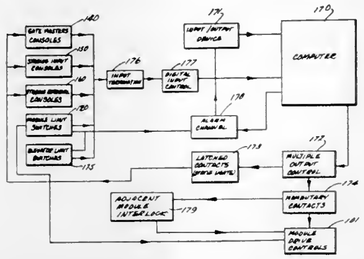


Pipe racker apparatus for a well drilling unit including a pipe racking finger board having finger latch mechanisms which are locally operative to pivot individual latches in response to an actuator extending in discrete movements from a pipe racker head; the finger latch mechanisms may be automatically cycled in association with the actuator as the racker head engages and disengages pipe.

3,799,365
CARGO HANDLING SYSTEM
Norman M. Sullivan, and Francis J. Fitzgerald, Jr., both of Grand Rapids, Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.
Division of Ser. No. 703,514, Jan. 23, 1968, Pat. No. 3,592,333. This application Feb. 2, 1970, Ser. No. 60,969
Int. Cl. B65g *47/34*
U.S. Cl. 214—11 R **3 Claims**

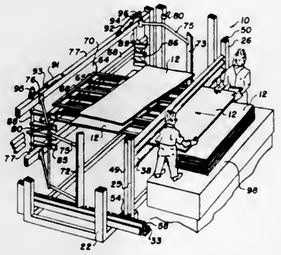
An article transporting system made up of a large number of individual modules, each of which is a complete and independent conveyor within itself. Each module provides a low-friction article supporting bed and powered means for forcibly moving the articles over this bed. Articles are moved from module to module in "start-stop" fashion. The functioning of the entire system is integrated by a control system which selectively regulates the operation of the individual modules to function in cooperation with one module at one time and other modules at other times. The modules have a minimum

operating capability of two opposite directions and in many cases have a four directional operating capability. The entire



system is capable of reorganization and expansion by the addition, deletion, or relocation of modules.

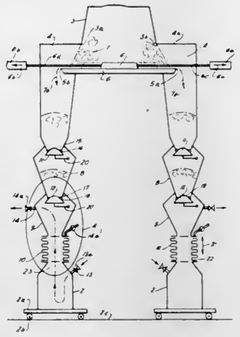
3,799,366
HOT PRESS LOADER APPARATUS AND METHOD
John Omelchuk, Coquitlam, British Columbia, Canada, assignor to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
Filed Feb. 21, 1973, Ser. No. 334,647
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.6 **11 Claims**



Apparatus for receiving assembled panels, such as assembled veneers for plywood, and which is operable to align the assembled panels, shift these panels into the vertically arranged openings of a hot press, and retaining the panels in the press as the apparatus is withdrawn therefrom.

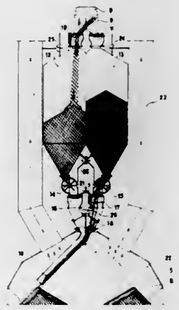
3,799,367
DISCHARGE SYSTEM FOR A SHAFT-TYPE FURNACE
Rudolf Grewer, Oberhausen, and Ulrich Pohl, Mulheim-Ruhr, both of Germany, assignors to Thyssen-Niederrhein AG Hutten-und Walzwerke, Oberhausen, Germany
Filed Feb. 20, 1973, Ser. No. 333,728
Claims priority, application Germany, Feb. 23, 1973, 2208382
Int. Cl. F27b *1/20*
U.S. Cl. 214—23 **12 Claims**

A discharge system for a shaft-type furnace comprising a table supporting a column of furnace charge at the base of the shaft-type furnace for the direct reduction of iron ore to produce sponge iron, a discharge device on this table being horizontally reciprocable to carry hot sponge iron alternately to one side and the opposite side of the table and expells the sponge iron into discharge openings provided at the opposite sides of the table. The sponge iron cascades through downwardly extending shafts or chutes of each opening, which, in turn, open downwardly into respective intermediate bins, the latter opening into dispensing hoppers which communicate via compensating connectors (e.g. bellows), with transport vessels or the like for the storage or further treatment of the sponge-iron. The transport vessel is provided with a system for flushing the interior with a nonoxidizing gas and the discharge hopper or bellows, is provided an outlet for the



flushing gas. Between the bin and the hopper and between the discharge shaft and the bin, flap-type closures are provided to hermetically seal the respective openings.

3,799,368
LOADING SYSTEM FOR BLAST-FURNACE
Julien Wieczorek, Les Fougeres A2-36, Avon, France
Filed Dec. 2, 1971, Ser. No. 203,996
Claims priority, application France, Dec. 4, 1970, 70.43833
Int. Cl. F27b *5/12*
U.S. Cl. 214—35 R **9 Claims**



A loading system for a blast-furnace having a very high counter-pressure, characterized by a rotary distributor, a throat member and a ring member mounted between the said distributor and throat member, the said ring member being gas sealed at high pressure and temperature, the said distributor comprises a conical spout adapted to rotate with the ring member, a weir pipe connected to said spout at an angle of approximately 40° to 50° from the vertical, a liquid tubing located along the axis of rotation of the said distributor and ring member, the said tubing adapted to receive a cooled liquid for cooling the spout, the said spout being adapted to spread materials such as coke, sintered ores, and various additions inside a blast-furnace to give the said materials an M profile.

3,799,369

DOUBLE CHAMBER CHARGING DEVICE FOR A SHAFT

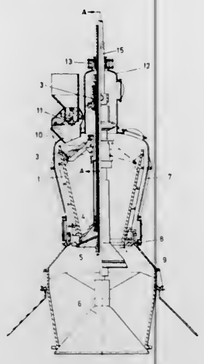
Rene Mahr, Luxembourg, Luxembourg, assignor to Societe Anonyme des Anciens Etablissements Paul Wurth, Luxembourg, Luxembourg

Filed May 27, 1971, Ser. No. 147,593

Claims priority, application Luxembourg, May 27, 1970, 60997

Int. Cl. F27b *11/12*

U.S. Cl. 214—37 **3 Claims**



A lower chamber is defined between two charging bells suspended on longitudinally movable shafts. The upper chamber contains a rotatable hopper. The means for rotating the hopper are mounted wholly within the upper chamber.

3,799,370

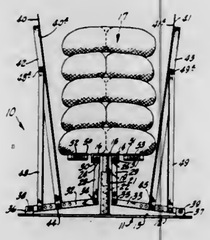
LOAD TRANSFERRING APPARATUS

Melvin E. Shell, P.O. Box 280, Dublin, Tex.

Filed Feb. 24, 1972, Ser. No. 228,860

Int. Cl. B65q *67/02*

U.S. Cl. 214—38 CC **16 Claims**



A device for temporarily supporting a stack of materials handled by fork lift trucks while a fork member thereof is momentarily lowered beneath the load and supporting sleeves or the like are installed on or removed from the fork prongs, or for transfer from one fork lift truck to another. The device has a pair of stabilizers which operate by gravity, the weight of the load, or power to automatically engage the stack of materials placed on the device to support the same in stacked condition or against overturning.

3,799,371

APPARATUS FOR UNLOADING SUGARCANE

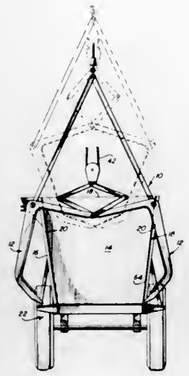
Moise J. Hymel, P.O. Box H, Gramercy, La.

Filed Jan. 7, 1972, Ser. No. 216,058

Int. Cl. B65g *67/02*

U.S. Cl. 214—44 R **6 Claims**

Sugarcane is removed from the load-containing enclosure of a vehicle, such as a cart provided with enclosed sides and an open top, by arranging fingers of a grab outside of and surrounding the load-containing enclosure, and engaging the load through openings provided in the walls of the load-containing enclosure and removing the load by lifting same through the open top of the load-containing enclosure. The openings in the walls extend from the open top to the bottom of a load-holding enclosure. The grab has a single head, a first shaft, at



least two pairs of fingers pivotally mounted on the first shaft for forming jaws, longitudinally extending members pivotally connected to the fingers and the head, a second shaft, at least two linkages connecting the second shaft to the first shaft for movement toward and away from one another, and pulley block and tackle for moving the second shaft toward and away from the first shaft for opening and closing, respectively, the jaws.

3,799,372

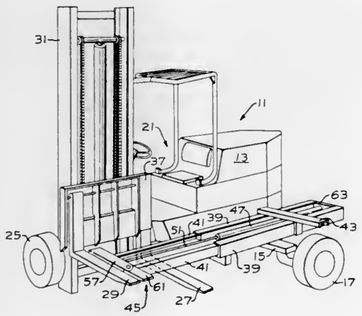
LONG LOAD-NARROW AISLE TRUCK

Walter M. Shaffer, Chesterland, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio

Division of Ser. No. 759,323, Oct. 12, 1968, abandoned. This application June 22, 1970, Ser. No. 59,826

Int. Cl. B60p *1/44*

U.S. Cl. 214—75 G **5 Claims**



A lift truck having a pivotable mast and fork assembly for lifting and stacking loads upon an extensible load carrying system on the side of the vehicle.

3,799,373

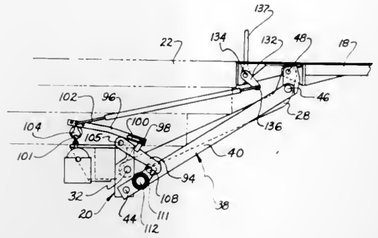
VALVE ACTUATOR & SAFETY HOOK MECHANISM FOR VERTICAL CLOSING TAILGATE

Francis R. Randall, Mount Gilead, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

Filed Dec. 29, 1971, Ser. No. 213,471

Int. Cl. B60p *1/48*

U.S. Cl. 214—77 P **2 Claims**



A tailgate loading apparatus for trucks or the like that comprises an improved safety latch means operative between the frame of the tailgate and its movable lift platform so as to form a positive lock for the operating linkage when the platform is in both a raised and folded position.

3,799,374

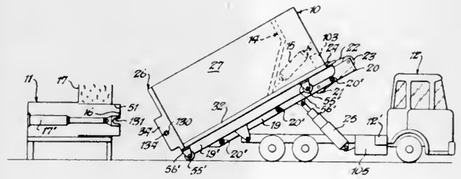
TRASH COMPACTOR CONTAINER

Sheldon H. Weaver, 58 Wilshire, Cheektowaga, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,701

Int. Cl. B60p *1/00*

U.S. Cl. 214—82 **7 Claims**



A compactor container comprising a box-like structure having a bottom wall, top wall and a pair of side walls, hollow rib means welded to the outsides of said walls to rigidize said walls and therefore permit said walls to be fabricated of relatively light gauge material, a push-out blade mounted within the container on track means welded to the side walls, and a hydraulic circuit for driving the push-out blade in a first direction during a trash ejection cycle and for resisting movement of the blade in the opposite direction during a trash compaction cycle, said hydraulic circuit including a conduit for effecting communication between a driving motor for the push-out blade and a reservoir mounted on the container, and pressure relief valve means in said conduit for permitting said push-out blade to yield against the force produced by a compaction ram on trash being compacted against said blade when said pressure in said conduit means is exceeded. The pressurized hydraulic fluid for driving said motor means during a trash ejection cycle is provided by a pump mounted on the truck which transports the container to the dumping site.

3,799,375

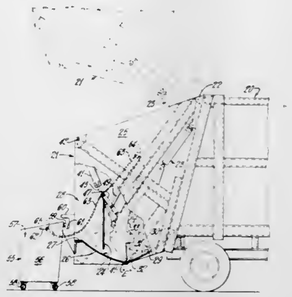
SAFETY SHIELD FOR A REAR LOADING REFUSE VEHICLE

William A. Herpich, Galion; Francis H. Pittenger, Shelby, and John A. Keller, Bucyrus, all of Ohio, assignors to Peabody Galion Corporation, Galion, Ohio

Filed Dec. 29, 1972, Ser. No. 319,513

Int. Cl. B65f *3/00*

U.S. Cl. 214—83.3 **5 Claims**



A tailgate for a rear loading refuse vehicle having a safety shield to prevent operators from being injured by the mechanism which moves refuse from the tailgate into the vehicle body. The tailgate has a rear opening through which operators dump refuse from containers into the hopper bottom of the tailgate. A heavy sill forms the bottom horizontal edge of the opening. A packer blade is power driven through a path which moves its lower edge downwardly across the opening passing close to the sill and into the hopper and then forwardly to move refuse out of the hopper into the body. A safety shield supported on the packer blade and actuated by motion multiplying linkage, connected in part to the packer blade, is moved to close the rear opening before the packer blade moves across the opening. This prevents an operator from inserting his hand or arm into the opening while the packer blade is moving across the opening and past the sill. The linkage or parts of it also actuates a container dumping mechanism when connected.

3,799,376

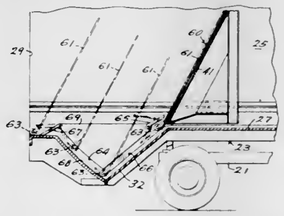
REFUSE COLLECTING VEHICLE

William A. Herpich; Glenn S. Park, both of Galion, Ohio, and George W. Palmer, Durant, Okla., assignors to Peabody Galion Corporation, Galion, Ohio

Division of Ser. No. 213,627, Dec. 29, 1971, Pat. No. 3,734,317. This application Feb. 22, 1973, Ser. No. 334,863

Int. Cl. B65f *3/00*

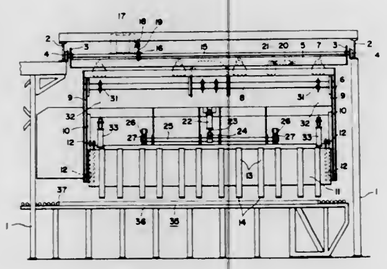
U.S. Cl. 214—83.3 **2 Claims**



This invention relates to a rear end loader type of refuse collecting vehicle. There is no tailgate and the loading hopper, rather than being in the tailgate, is in the rear of the vehicle body. A packing blade moves refuse from the hopper into the forward portion of the body and in one embodiment may be reversed to sweep refuse from the hopper to a point exterior of

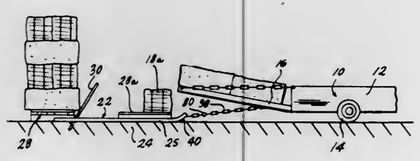
the vehicle. A longitudinally movable ejector panel is mounted transversely of the body. During the discharging of refuse from the open rear end of the body the packer blade is in an elevated position and the refuse is discharged by the ejector panel between the elevated packer blade and the hopper. In some embodiments an auxiliary floor is provided in the hopper.

3,799,377
STACKING CRANE
Dairi Suizu, Sajima-gun, Japan, assignor to Okura Yusoki Kabushiki Kaisha, Kakogawa City, Hyogo Prefecture, Japan
Continuation of Ser. No. 133,621, April 13, 1971, abandoned. This application May 18, 1973, Ser. No. 361,446
Int. Cl. B66f *9/20*
U.S. Cl. 214—89 **2 Claims**



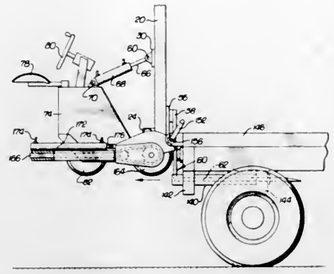
A loading apparatus comprising a fixed frame, a forwardly and backwardly moving frame mounted on said frame for forward and backward movements in reciprocating motion, an upwardly and downwardly moving frame mounted on said forwardly and backwardly moving frame for upward and downward movements in reciprocating motion, and a plurality of forks provided on said upwardly and downwardly moving frame for operation as said frames are actuated.

3,799,378
METHOD FOR HARVESTING BALED CROPS
Dwight F. Kampe, 1310 Sherwood Rd., Williamston, Mich.
Division of Ser. No. 100,096, Dec. 21, 1970, Pat. No. 3,690,691. This application Apr. 5, 1972, Ser. No. 241,474
Int. Cl. B65g *57/32*
U.S. Cl. 214—152 **1 Claim**



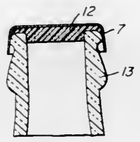
An improved method and improved apparatus for harvesting baled crops wherein a trailing bale stacker is provided which is adapted to be pulled over the ground by a baling machine, the bale stacker including pallet support means and platform means, and enabling the manual stacking of baled crops onto pallets for subsequent haulage to and storage in a storage area.

3,799,379
FORK LIFT
Tobias H. A. Grether, 5417 San Clara Ave., and William J. Kelton, 177 Nellara, both of Camarillo, Calif.
Filed Jan. 26, 1973, Ser. No. 326,745
Int. Cl. B60p *1/64*
U.S. Cl. 214—515 **12 Claims**



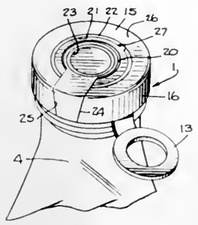
A fork lift vehicle having a vertically movable fork powered upwardly and downwardly and adapted to be mounted on the rear of a truck provided with spaced longitudinal sockets for receiving the fork tines, the fork lift vehicle being capable of elevation and support by the truck by downward force applied on the fork after the tines are positioned in the sockets on the truck; the fork lift vehicle having a pair of forward wheels disposed laterally outwardly from the fork tines and being independently displaceable rearwardly to a point adjacent the rear of the fork prior to location of the tines in the sockets on the truck.

3,799,380
SCREW LIDS OR CROWN CAPS FOR BOTTLES HAVING IMPROVED SEALING GASKETS
Rikichi Hashimoto, Tokyo; Harunori Kamada, Toyonaka; Kazuo Fujimoto, Takatsuki; Tsutomu Kanaiwa, Takatsuki, and Kiyoshi Iwasa, Takatsuki, all of Japan, assignors to Sumitomo Chemical Company Ltd., Osaka and Hashimoto Kogyo Co., Ltd., Tokyo, both of, Japan
Continuation-in-part of Ser. No. 850,699, Aug. 14, 1969, abandoned. This application Dec. 27, 1971, Ser. No. 212,602
Claims priority, application Japan, Aug. 18, 1968, 43-58689; Dec. 26, 1968, 43-96265
Int. Cl. B65d *23/02, 53/04*
U.S. Cl. 215—40 **4 Claims**



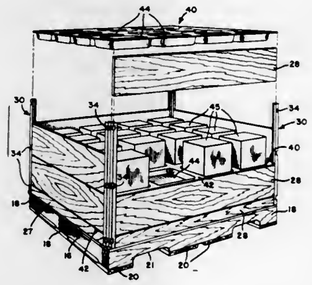
A gasket is prepared in a bottle cap by reacting in the bottle cap a first component containing a polyol having 2 or 3 hydroxyl functional groups in one molecule and a second component containing a polymethylene polyphenylisocyanate, preferably a quasi-prepolymer of a polymethylene polyphenylisocyanate having an isocyanate equivalent of not more than 300 until a cured substantially non-porous polyurethane gasket is obtained. The thus obtained seaing gasket undergoes neither deformation, color change nor weight loss over a prolonged period of time and has no tackiness on its surface.

3,799,381
COMPOSITE CLOSURE
Daniel D. Acton, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Apr. 17, 1972, Ser. No. 244,361
Int. Cl. B65d *51/18*
U.S. Cl. 215—254 **6 Claims**



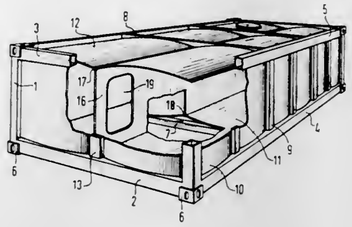
A closure is described for sealing beverage bottles and other containers. The closure has an inner plastic cap which seals the containers and has an outer metal shell which overlies the inner cap and which holds the inner cap in its sealed position. The outer metal shell is removed by a tear-off means permitting the plastic cap to be lifted off and reapplied to reseal the container. The tear-off means includes a ring grip formed from the cover metal of the outer metal shell.

3,799,382
DEMOUNTABLE PALLET AND CONTAINER ASSEMBLY
Thomas Munroe, c/o Moraine Box Company, P.O. Box 538, Dayton, Ohio
Filed Oct. 15, 1971, Ser. No. 189,640
Int. Cl. B65d *9/12*
U.S. Cl. 217—12 R **4 Claims**



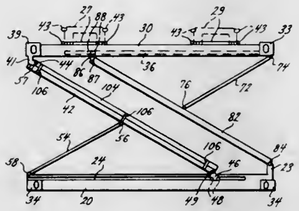
A pallet supports a demountable box-like container. In one embodiment, the container has side and end walls each including a plurality of vertically aligned wall panels, and a plurality of vertically spaced horizontal tray members are positioned within the container. Each tray member includes a plurality of article receiving cavities and a peripheral lip portion which projects outwardly between the edges of the wall panels for retaining the tray member. Corner posts connect the side wall panels to the end wall panels and have notches for receiving locking bands which surround the container and engage the ends of the wall panels through the notches. In another embodiment, the side and end wall panels of the containers are removably secured to the pallet by hook members mounted on the wall panels and which engage cross pins attached to the upper deck portion of the pallet.

3,799,383
TRANSCONTAINER FOR FLOWABLE MATERIAL
Helmut Gerhard, Weitefeld Sieg, Germany, assignor to Westerwalder Eisenwerk Dr. Paul Gerhard KG, Weitefeld/Sieg, Germany
Filed Feb. 12, 1971, Ser. No. 114,756
Int. Cl. B65d *7/04, 7/44*
U.S. Cl. 220—1.5 **33 Claims**



A transcontainer for flowable material comprising a liquid-tight tank formed together with an external frame. The tank including at least partially outwardly convex outer wall elements and an intermediate internal wall connected to the adjoining outer wall elements at an obtuse angle.

3,799,384
COLLAPSIBLE SHIPPING CONTAINER
Charles H. Hurkamp, 1 Baynard Cove Rd., Hilton Head Island, S.C.
Filed Feb. 28, 1972, Ser. No. 229,706
Int. Cl. B65d *7/24*
U.S. Cl. 220—6 **35 Claims**

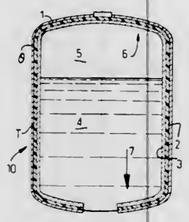


A collapsible shipping container has the lower edge of one side wall thereof pivoted to one side of the base and has the upper edge of that side wall secured to the top by one set of rollers; and has the upper edge of the other side wall thereof pivoted to the other side of the top and has the lower edge of that other side wall secured to the base by another set of rollers. The one set of rollers permits the upper edge of the one side wall to move laterally of the top in one direction; and the other set of rollers permits the lower edge of the other side wall to move laterally of the base in the opposite direction. The oppositely-directed movements of the upper edge of the one side wall and of the lower edge of the other side wall permit the top to move downwardly toward the base as the collapsible shipping container is being collapsed.

3,799,385
LIQUID-GAS BOTTLE

Michel Maree, Chilly-Mazarin; Michele Sabatie, La Garenne Colombes, and Micheline Lebel, Paris, all of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Apr. 24, 1972, Ser. No. 246,719
Claims priority, application France, Mar. 24, 1971, 71.10354
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG 3 Claims

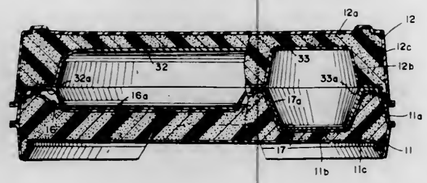


A plastic liquid-gas bottle including an inner liner made of wetting fabric which closely hugs the bottle walls and dips continuously in the liquid as the same is consumed, whereby to maintain over the entire inner bottle surface in the gaseous zone a moist film that assists heat transfers and thereby enables the output of gas from the bottle to remain constant through time and independent of the level of liquid remaining in the bottle.

3,799,386
INSULATED COVERED SERVING TRAY

William A. Madalin, Franklin, Mich., and Cecilia A. Follis, Deerfield, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Dec. 30, 1971, Ser. No. 213,987
Int. Cl. B65d *25/18*
U.S. Cl. 220—16 15 Claims

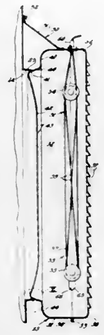


A tray assembly for the delivery and service of food, such assembly including a pair of insulated base and cover sections with a plurality of dishes retained therebetween. Handle recesses at opposite ends of the tray section facilitate the carrying and handling of the assembly and indicia means in the form of a folded card is clamped between the upper and lower sections with a portion of the card exposed externally to provide appropriate information concerning the menu, recipient, etc.

3,799,387
ELECTRIC HEATING UNIT FOR CLOTHES DRYERS

Fred J. Zenz, Berrien Springs, Mich., assignor to Whirlpool Corporation, Bonton Harbor, Mich.

Division of Ser. No. 29,388, April 17, 1970, Pat. No. 3,670,143. This application Nov. 18, 1971, Ser. No. 199,994
Int. Cl. B65d *25/24*
U.S. Cl. 220—18 2 Claims

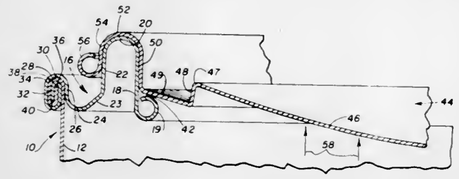


A heater box assembly for an electrically heated clothes dryer has a pair of spaced insulators with a wire heating element wound around the two insulators and with adjacent turns spaced apart. The support for the heating unit includes at least one spring acting on at least one insulator to apply a tension on the wire heating element to compensate for the change in length of the wire element due to thermal expansion. The box-like support is snugly received in a flanged opening of a wall of the dryer to form the heated air inlet for the dryer and mounting means including one or more tabs on the box for insertion into one or more corresponding slots in the flanged opening and a single fastener for securing the box at a side removed from the position of the slot or slots.

3,799,388
CAN OR CONTAINER AND THE LID THEREFOR

Elmer J. Knize, Chicago, Ill., assignor to Lippy Can Co., Ltd., Chicago, Ill.

Filed Oct. 4, 1972, Ser. No. 294,937
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 C 2 Claims



A can or container having a rim with an inner vertical wall at the top thereof and a lid applied to the rim for closing and sealing the can, wherein the lid has a main concave or central dish-shaped surface with a peripheral annular downwardly and generally vertically extending portion merging into a annular upwardly and outwardly inclined sloping planar surface portion which merges into an annular vertical wall, the upwardly and outwardly inclined sloping surface portion being intermediate the peripheral annular downwardly extending portion and the vertical wall. As pressure inside the can increases the concave central dish-shaped portion of the lid will tend to straighten and then continue upwardly to assume an upward curvature which simultaneously moves the outwardly inclined intermediate surface to decrease the angle of the slope in the direction of a horizontal plane which then causes the vertical wall of the lid to apply an outwardly lateral or radial pressure against the inner vertical wall of the rim to more firmly retain the lid on the rim. This takes place during shipment and handling of the can and its contents. As additional pressure continues to build up in the can, due to continued handling, the central portion of the lid will assume its ultimate convex shape, with the intermediate outwardly sloping surface changing its slope to an inward upwardly sloping surface, thereby increasing the lateral outward or radial pressure of the vertical wall of the lid against the vertical wall of the rim to its maximum extent so that the lid cannot be blown off the rim by any foreseeable internal pressure, thus making this structure the ultimate in safety by the retention of the lid on the container irrespective of the internal pressure that is normally built up.

3,799,389
PACKAGING CONTAINER WITH TEAR-OPEN THREAD

Siegfried Bloeck, Kreuzlingen, Switzerland, assignor to Swiss Aluminum Ltd., Chippis, Switzerland

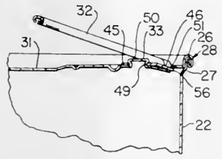
Filed Nov. 14, 1972, Ser. No. 306,451
Claims priority, application Switzerland, Nov. 19, 1971, 16842/71
Int. Cl. B65d *17/20*
U.S. Cl. 220—49 6 Claims

A container comprising a body and lid heat-sealed together by means of a thermoplastic resin coating. In order to open the container, the seal is broken by means of a tear-open thread placed inwardly of the sealing area, the ends of which thread emerge from the container traversing the seal and are impregnated with an oil, e.g. mineral, vegetable or animal oil, moistening the sealing layers, in order to prevent bacteria from infiltrating the inside of the container along the tear-open thread thus contaminating the contents of the container.

3,799,390
EASY OPEN END CLOSURE

Daniel F. Cudzik, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 21, 1971, Ser. No. 210,504
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 15 Claims

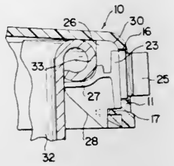


An easy open end closure is provided with a roughly circular full-size tear-out panel which is easily severed by initially severing a chordal portion having a comparatively large area and which extends over an arcuate length of at least 45° whereu ɔon the remainder of the panel is severed with ease.

3,799,391
RECEPTACLE TOP ADAPTOR CONSTRUCTION

Anthony J. Brescia, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.

Filed Nov. 22, 1972, Ser. No. 308,691
Int. Cl. A47j *36/10*; B65d *43/10*; E05c *7/00*
U.S. Cl. 220—55 K 2 Claims

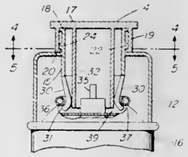


A waste receptable top preferably having a self-closing door and a rim flange for normally telescopically fitting over a mating receptacle body, said flange adapted to receive snap-on clips for fitting onto the rim of an open-top standard steel drum to mount the top thereon.

3,799,392
LOCKING CAP FOR A CONTAINER

Warren Richards, Baltimore, Md., assignor to Pharma Plastics, Incorporated, Baltimore, Md.

Filed Mar. 1, 1972, Ser. No. 230,579
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 6 Claims



A positive type protective locking closure or cap is provided for a container, preferably of the aerosol type but not limited thereto. This protective closure or cap consists basically of two parts, namely a basic cap and a plunger. The cap is provided with a plurality of inwardly and downwardly extending fingers with hooks for engaging in and under the curl in a standard aerosol can valve cup. The plunger is provided with an inner depending skirt so arranged that when the plunger is depressed, the fingers are forced radially outwardly thus forming a secure lock under the curl of the standard valve cup. When the plunger is retracted, the fingers become relaxed, thus freeing the hooks from under the curl of the valve cup, and the cap is easily removed from the container.

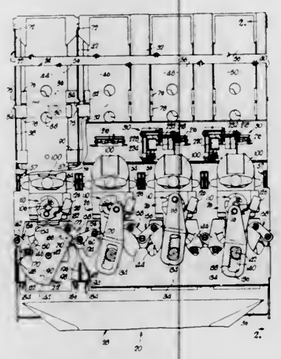
3,799,393
STAGGERED STACK VENDING MACHINE

John W. Baxendale, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed Mar. 30, 1973, Ser. No. 346,692
Int. Cl. B65g *59/06*
U.S. Cl. 221—67 22 Claims

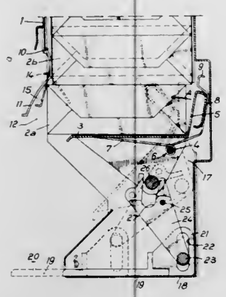
Internal product storing and dispensing apparatus is provided for a selective vending machine adapted to handle products of various types and sizes in either single or double depth staggered stacks thereof. With longer products such as certain bottled beverages, the products are stored and successively dispensed from the bottom of a single staggered stack for each selection; while, with shorter products such as certain canned beverages, the products for each selection are stored in a double depth pair of staggered stacks and effectively

dispensed alternately from the bottoms thereof. The dispensing mechanism for each selection includes a pair of alternately operable members for supporting the stack (or stacks) for that selection through engagement with the lowermost product(s) thereof, depending upon which column of the stack(s) contains such lowermost product(s), and a pair of alternately operable escrowing assemblies below the supporting



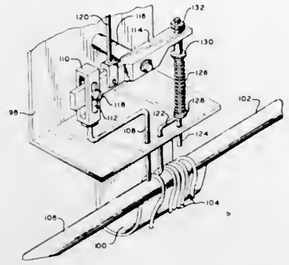
members for receiving the lowermost product(s) released from the stack(s) upon release of a supporting member and for subsequently discharging such escrowed product(s) successively as the mechanism is cycled. Each mechanism is also preferably provided with its won separate and controllable source of driving power, so that sold-out or jammed conditions involving individual selections can be appropriately provided for without disabling the entire machine.

3,799,394
DEVICES FOR DISPENSING ARTICLES FROM A STACK OF ARTICLES
Jean Hemard, Paris, France, assignor to Ste Pernod, Maisons-Alfort, France
Filed Jan. 31, 1973, Ser. No. 328,492
Claims priority, application France, Feb. 18, 1972, 72.05622
Int. Cl. B65g *59/06*
U.S. Cl. 221—251 **4 Claims**



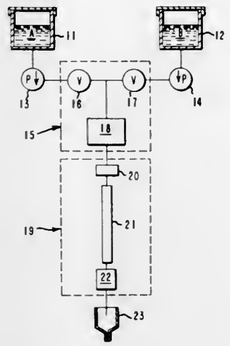
A device for dispensing articles comprises a vertical chute for a stack of articles. The chute is closed from below by a pivotal element which supports the stack. A spring pivotal with the element has a portion extending over the front of the element to engage and support the penultimate article in the stack when the element is pivoted to discharge the lowermost article of the stack. A second spring mounted in the chute at the rear of the element also serves to support the penultimate article.

3,799,395
GARMENT HANGER FEEDER APPARATUS
Charles C. Vanderpool, Rd. No. 1, Waverly, Waverly, N.Y.
Filed Apr. 10, 1972, Ser. No. 242,695
Int. Cl. B65h *3/00*
U.S. Cl. 221—289 **3 Claims**



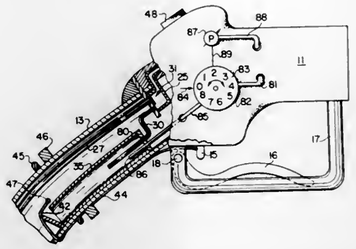
Apparatus for sequentially feeding garment hangers individually from a supply position to a discharge position. The hangers are arranged side-by-side with their hooked ends over a fixed pole which slopes downwardly to the discharge position. Stop means are arranged to obstruct the path of the hangers until relative movement of the first hanger and the stop means allows only the first hanger to slide down the pole while retaining the other hangers. The invention is disclosed in embodiments wherein the first hanger is lifted over a fixed stop, and wherein movable stop means are positioned alternately in obstructing and unobstructing positions relative to the hangers.

3,799,396
METHOD FOR PRODUCING A GRADIENT ELUTION
Howard L. Ashmead; Sydnor H. Byrne, Jr., both of Newark, and John P. Wolf, III, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 36,633, May 12, 1970, Pat. No. 3,712,513. This application June 26, 1972, Ser. No. 265,995
Int. Cl. B01d *15/08*
U.S. Cl. 222—1 **3 Claims**



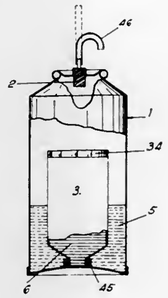
The method of proportioning two liquids comprising periodically controlling the operation of a valving means to control the amount of each liquid supplied to a mixing region during each period of valve operation to produce a supply of eluent having a precisely controlled time varying concentration of each liquid.

3,799,397
DISPENSING NOZZLE WITH SELECTABLE AUTOMATIC CUT-OFF
William H. Mariner, South Park Dr. Ext. Rt. 4, Salisbury, Md.
Filed Sept. 5, 1972, Ser. No. 286,321
Int. Cl. B67d *5/30*
U.S. Cl. 222—21 **16 Claims**



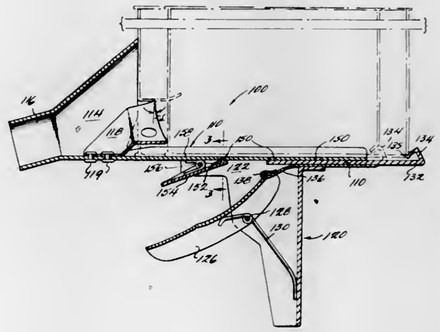
A liquid dispensing nozzle of the type which automatically cuts off when the liquid level reaches a predetermined level is modified to cut off the liquid flow after a predetermined amount of liquid has been dispensed regardless of the liquid level. A closed bottom storage tube is placed into the spout, positioned to receive a proportion of the total liquid flow through the spout. When the liquid level in the storage tube reaches a predetermined level, it closes off the end of a selector tube which in turn creates a suction in the automatic cut-off mechanism to terminate the main liquid flow. The nozzle may also include a conventional liquid level cut-off. The storage tube can be wide open at its upper end to receive a proportion of the main flow, and the position of the bottom of the selector tube within the storage tube can be positioned either manually or by means of a coin operated mechanism. Alternatively, the selector tube can be stationary and the liquid can be metered through a valve into the storage tube in an amount proportional to the main flow.

3,799,398
METHOD AND APPARATUS FOR PACKAGING PRODUCTS WHICH ARE TO BE STORED SEPARATELY BUT DISPENSED SIMULTANEOUSLY
Bruno Morane, Paris; Charles Paoletti, Aulnay S/Bois; Louis Merrien, Fontenay Sous Bois; Manlio Maurelli, Vaujours, and Robert Sathicq, Villepinte, all of France, assignors to L'Oreal, Paris, France
Division of Ser. No. 844,841, July 25, 1969. This application Nov. 23, 1971, Ser. No. 201,412
Int. Cl. B67d *5/56*
U.S. Cl. 222—39 **4 Claims**



A dispenser for packaging two products which must be stored separately but mixed when dispensed, said dispenser comprising an outer container and an inner container within said outer container, said inner container being provided with closure means which opens in response to a difference between the pressure in said outer container and that in said inner container, and means for creating such a pressure difference.

3,799,399
DISPENSING DEVICE
Giuseppe DiBattista, 46-Martin St. 2, Stamford, Conn.
Filed Feb. 11, 1972, Ser. No. 225,553
Int. Cl. B67b *7/28*
U.S. Cl. 222—83.5 **10 Claims**

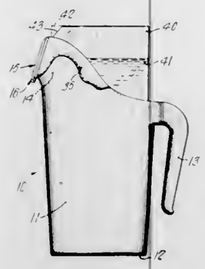


Apparatus is described for enabling the contents of a container to be dispensed. The apparatus is portable and comprises a base member that has a cone-shaped nose section which forms a discharge spout at one end thereof, a handle assembly that includes a mounting section and a handle section, and a retaining bar that is slidably supported on the base member and is adapted to engage one end of the container from which the contents are to be dispensed. The retaining bar is operably connected to a gripping lever that is pivotally supported on the handle assembly, such retaining bar being slidably movable by actuation of the gripping lever. A cutter element is disposed ahead of the discharge spout and coacts with cutting means provided on the end of the retaining bar that engages the container. Actuating the gripping lever causes the cutting means and cutter element to perforate opposite ends of the container which enables rapid dispensing of the contents. The retaining bar and gripping lever can be interconnected in several ways, for example, by a rack and segmental pinion gear arrangement, a connecting strip of spring metal, a pin and slot arrangement, or the like. Preferably, the retaining bar and handle assembly are adjustably positionable so as to accommodate containers of various sizes.

3,799,400
PITCHER FOR DISPENSING LIQUIDS CONTAINED IN BAGS
Camille G. Fleury, 198 Adam St., Richmond, Quebec, Canada
Filed Oct. 24, 1972, Ser. No. 299,801
Int. Cl. B67b *7/24*
U.S. Cl. 222—83.5 **10 Claims**

A dispenser comprising an elongated hollow body having a bottom end and an upper open end. Actuable cutting means secured in the edge of the upper open end. At least a portion of the body is formed of flexible material whereby to permit actuation of the cutting means by flexing portions of the body on each side of the cutting means. A dispenser sleeve is also provided for securement to the open end edge of an ordinary pitcher and consists of a body of flexible material having a raised upper edge and a lower edge. Means are provided to

releasably secure the body adjacent its lower edge to the pitcher open end edge. Actuable cutting means are secured in

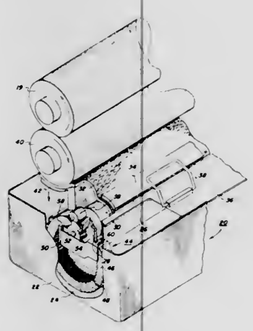


the upper edge of the body and actuated by flexing portions of the body on each side of the cutting means.

3,799,401
SILICONE OIL CAPACITY CONTROL USING POLYURETHANE BELT

Oskar J. Braun, Williamson, and Frank V. Onorati, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1972, Ser. No. 312,399
Int. Cl. G03g *13/10*
U.S. Cl. 222—109 **2 Claims**



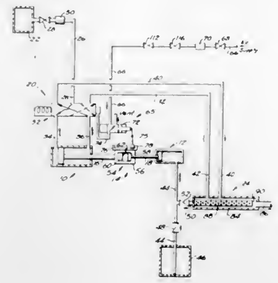
Lubricant is conveyed from a supply reservoir to an opening in a dispensing reservoir by an annular absorbant member, and at a rate which will maintain a desired predetermined volume of lubricant within the latter. The dispensing reservoir has a roller partially immersed in the lubricant for dispensing the latter. An overflow permits lubricant conveyed in excess of the desired predetermined volume to flow back into the supply reservoir.

3,799,402
LIQUID PROPORTIONING SYSTEM

Harry M. Meister, 7640 Carmen Dr., N.W., Canton, Ohio; James B. Kelley, Cleveland Heights, and Gordon E. Holmes, Chagrin Falls, both of Ohio, assignors to said Meister, by said Kelley and Holmes

Filed Oct. 16, 1972, Ser. No. 298,004
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.2 **13 Claims**

The specification and drawings disclose embodiments of a liquid proportioning apparatus which provides an exactly proportioned mixture of two liquids. The disclosed apparatus uses a pair of pistons which are interconnected such that one serves to drive the other. The driving piston is actuated by one of the

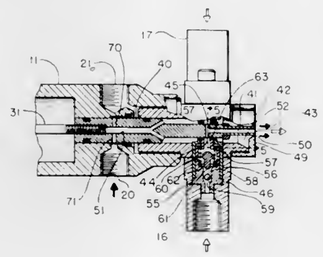


liquids under pressure. The other piston acts to pump the second liquid. An adjustable lost motion connection between the two pistons allows the relative length of stroke of the two pistons to be varied.

3,799,403
PLURAL COMPONENT DISPENSING DEVICE AND METHOD

Richard O. Probst, and Albert H. Moos, Indianapolis, both of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 150,366, June 7, 1971. This application Apr. 26, 1973, Ser. No. 354,527
Int. Cl. B67d *5/54*
U.S. Cl. 222—135 **23 Claims**



A plural component dispensing device and method wherein the mixing chamber of the device is movable with respect to the housing of such device so that a gas can be used to purge the mixing chamber of the residue of plural component material upon termination of the dispensing operation.

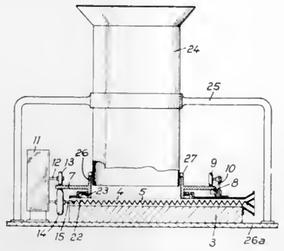
3,799,404
DEVICES FOR FEEDING PARTICULATE PRODUCTS SUCH AS POWDERED OR GRANULAR MATERIALS FROM A CONTAINER

Andre Taupin, Urzy, France, assignor to Ste' Transitube Plan de Campagne, Cabries, France

Filed June 20, 1972, Ser. No. 264,692
Claims priority, application France, June 29, 1971, 71.23792
Int. Cl. B67d *5/00*
U.S. Cl. 222—168 **10 Claims**

This invention relates to devices for feeding particulate products such as powdered or granular materials from a container, and the object of the invention is to prevent or minimize any tendency for the product to become packed to

form bridges that considerably hamper their removal. In the invention, at least one part of the container is mounted for rotation on a smooth surface of a fixed pedestal. This pedestal

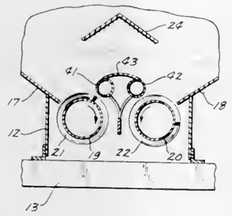


has a discharge vessel for the product extending substantially diametrically to the container. Conveniently this discharge channel is trough-shaped.

3,799,405
DISCHARGE ROLLERS FOR A HOPPER BOTTOM

Joseph E. Wallace, Creston, Iowa, assignor to Vanmark Corporation, Creston, Iowa

Filed Aug. 12, 1971, Ser. No. 171,054
Int. Cl. B65g *33/08*; **G01f** *11/00*
U.S. Cl. 222—238 **2 Claims**



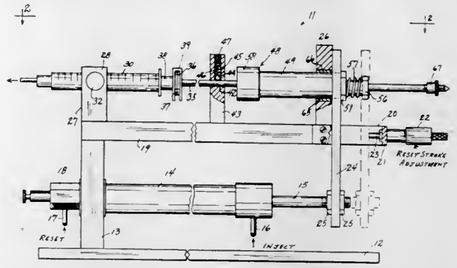
A hopper for receiving, conveying and discharging material such as whole vegetables in which the material is conveyed by a pair of rotating discharge rollers having helical projections about their outer surfaces. The discharge rollers have a double winding of the helical projections at the receiving end, and a third winding at the discharge end to facilitate smooth discharge. Pinch-preventing means are provided to prevent material from being pinched between the discharge rollers, and may comprise a stationary bar or baffle, or may include secondary rollers with or without a baffle.

3,799,406
LIQUID INJECTION APPARATUS FOR SUCCESSIVE INJECTION OF EQUAL METERED VOLUMES

Peter A. St. John, Adelphi, and Paul Priarone, Hyattsville, both of Md., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Feb. 16, 1973, Ser. No. 332,798
Int. Cl. G01f *11/06*
U.S. Cl. 222—309 **15 Claims**

An apparatus for operating a liquid dispensing syringe in successive discrete equal forward strokes to thereby dispense corresponding equal successive amounts of liquid. The apparatus consists of a support in which the syringe is clamped in alignment with an actuating rod. The end of the rod is connected to the syringe plunger. The rod is connected through a unidirectional ball and cone coupling assembly and a coupling bar to the piston rod of an air-operated cylinder assembly arranged parallel to the actuating rod. The coupling bar extends through a yoke on which is mounted a micrometer for accu-

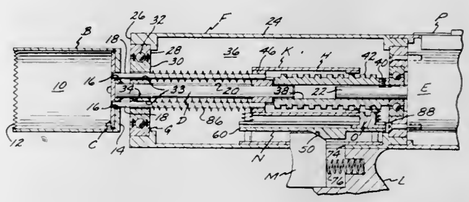


rately establishing the reset position of the coupling bar, and thereby setting the length of the dispensing stroke of the syringe plunger.

3,799,407
SEMI-SOLID MATERIAL DISPENSING INCLUDING A POWER OPERATED SCOOP

Walter Victor Loethen; Jack H. Boekhoff, both of 5111 Cumberland, Westminster, Calif., and Clifford L. Huggins, 4234 S. Produce Plaza, Los Angeles, Calif.

Filed Apr. 27, 1973, Ser. No. 355,036
Int. Cl. G01f *11/00*
U.S. Cl. 222—333 **5 Claims**



A movable, power-driven semi-solid material dispensing device that includes a prime mover for rotating a cylindrical scoop to fill the latter with the semi-solid material when the scoop is brought into rotatable pressure contact therewith. The scoop has a longitudinally movable ejector plate therein, that occupies a position adjacent the rear of the scoop when the latter is being rotated and filled with the semi-solid material.

The device includes control means to permit a prime mover forming a part thereof to rotate the scoop for filling purposes, and after the filling operation is completed the prime mover serves to provide the power to actuate the ejector plate to discharge semi-solid material from the scoop. The control means is of such structure and so operates that the scoop remains stationary during the time the semi-solid material is being discharged therefrom.

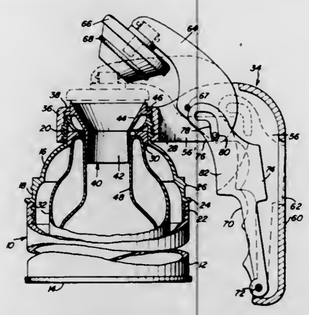
3,799,408
SQUEEZE GRIP CLOSURE AND HANDLE ASSEMBLY FOR VACUUM BOTTLE

David L. Palmer, Rt. 2, Box 395B, Portland, Oreg.

Filed Oct. 31, 1972, Ser. No. 302,498
Int. Cl. A47g *19/14*
U.S. Cl. 222—474 **6 Claims**

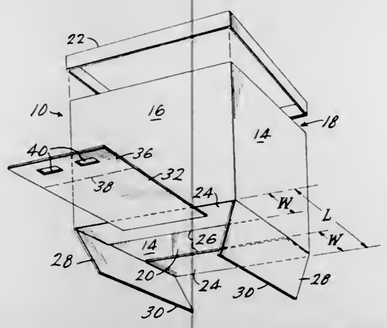
An internally threaded mounting ring including a laterally outwardly displaced and axially extending handle. The mounting ring is engageable with the externally threaded neck of a vacuum bottle and includes an outer end radially inwardly

projecting retaining flange for overlying the end edge of the neck of the associated vacuum bottle. A sleeve is also provided and includes a small diameter end for tight telescopic engagement within the neck of the associated vacuum bottle and the opposite larger diameter end of the sleeve is provided with a radially outwardly extending circumferential flange to be held captive against the outer end edge of the neck of the vacuum bottle behind the retaining flange of the mounting ring. The outer large diameter end of the sleeve defines an outwardly facing annular seat and a support arm has one end thereof pivotally supported from the handle of the mounting



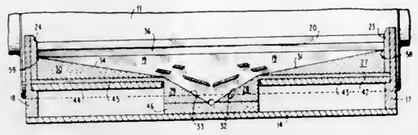
ring for oscillation about an axis disposed outwardly of the ring and normal to its center axis. The other end of the arm has a tapered stopper-type closure mounted thereon for swinging movement with the arm into and out of seated engagement with the outer end of the sleeve retained in position by the mounting ring. In addition, the handle includes an oscillatable actuator operatively connected with the arm upon which the stopper-type closure is mounted whereby the actuator may be manipulated at the handle to swing the stopper-type closure into and out of position closing the opening of the vacuum bottle.

3,799,409
SHIPPABLE DISPENSING CONTAINER
Ariste W. Goerke, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio
Filed Oct. 11, 1972, Ser. No. 296,689
Int. Cl. B65d *5/72*
U.S. Cl. 222—561 **14 Claims**



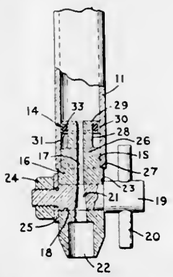
A shippable container of corrugated board for handling and dispensing flowable material. The container includes a closure arrangement for its bottom comprising a pair of opposing flaps turned inwardly in their closed positions. The flaps are dimensioned such that their opposing inner margins are spaced apart to define an opening for discharge of flowable material. A cover member is held on the container for movement effective to open and close the discharge opening.

3,799,410
FEED TIP FOR CONTINUOUS CASTING MACHINE
Robert G. Blossey, Coraopolis, Pa., and Edward J. Ostrowski, Steubenville, Ohio, assignors to National Steel Corporation, Pittsburgh, Pa.
Filed May 25, 1972, Ser. No. 256,671
Int. Cl. B22d *37/00*
U.S. Cl. 222—566 **1[illegible] Claims**



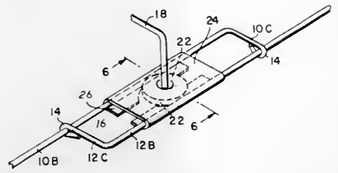
Tip for feeding molten metal such as aluminum, zinc, copper, or stainless steel to a continuous casting machine of the type employing movable members between which the metal is cast, including refractory material forming a cavity to which molten metal is fed and which communicates with a nozzle from which the molten metal is discharged to between the movable members. Baffles are located in the cavity between the molten metal inlet and the nozzle in specific relation to each other, to the flow of molten metal into the cavity and to the contour of the wall of the cavity facing the nozzle for controlling the direction of flow of molten metal through the cavity to uniformly supply molten metal to the nozzle throughout its length.

3,799,411
RESILIENT SEALING MEANS FOR JOINT BETWEEN ELEMENTS HAVING DIFFERENT COEFFICIENTS OF EXPANSION
Robert E. Carpenter, Nutley, N.J., assignor to Chemplast, Inc., Wayne, N.J.
Division of Ser. No. 888,572, Dec. 29, 1969. This application Oct. 20, 1971, Ser. No. 190,826
Int. Cl. B65d *25/42*
U.S. Cl. 222—567 **8 Claims**



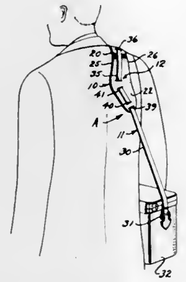
A resilient static and dynamic sealing assembly for maintaining a fluid tight joint or connection between operatively associated elements where the elements are made of materials having different coefficients of expansion and one element of a relatively stronger material acts to confine the other material in the operative position. The sealing assembly includes on the confined element an elastomeric means which coacts with an annular wall in engagement with the confining element and acts with the annular wall to maintain the seal within conventionally anticipated temperature ranges at least between 32°F and 212°F. The sealing assembly can be provided with means for adjusting the force exerted to form the seal between the operatively associated elements. Further, the sealing assembly will provide an improved laboratory Burette, disposable hypodermic syringes and other devices adapted to utilize the same.

3,799,412
ADJUSTABLE HANGER FOR CLOTHING
Ilmari Ahlgren, Los Angeles, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Mar. 5, 1973, Ser. No. 338,035
Int. Cl. A47j *51/11*
U.S. Cl. 223—88 **1 Claim**



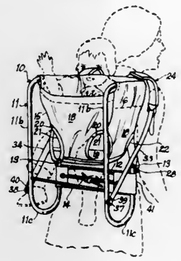
A hanger for clothing comprising: frame members slidable between maximum overall extension to minimum overall extension; and means to lock said members together.

3,799,413
STRAP SUPPORT MEANS
Donald McBain, 4853 Cordell Ave., Apt. 1515, Bethesda, Md.
Filed Mar. 1, 1971, Ser. No. 119,615
Int. Cl. A45c *13/00*; **A45f** *5/00*
U.S. Cl. 224—5 P **12 Claims**



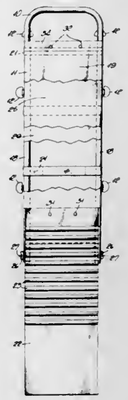
A strap support means which distributes the weight of strap carried articles to inhibit slipping of the strap off of such as a person's shoulder when the strap is disposed over the shoulder and inhibits the strap from riding up and about the neck of a person when disposed about the base of the neck.

3,799,414
BACK CARRIER WITH ADJUSTABLE SUPPORT
William L. Fiffer, Evanston, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Filed Nov. 30, 1971, Ser. No. 203,409
Int. Cl. A47d *13/02*
U.S. Cl. 224—6 **3 Claims**



A back carrier adapted for carrying a child including a tubular frame, a hammock suspended from the frame in which the child is supported, a shoulder harness by which the frame can be carried on the back of the wearer with the load partially supported on the shoulders and a flexible web adjsutably mounted on the frame so as to adjustably contact the lower back of the wearer to support a portion of the weight of the carrier and of the load being carried thereby. One or more strengthening members are provided to maintain the side and bottom portions of the frame in spacial relationship. The shoulder harness is attached to the frame by means of stud members on the frame. The flexible back engaging web is slidably mounted on the frame and is limited in movement in at least one direction by abutment with one of the pairs of stud members to which the harness is attached.

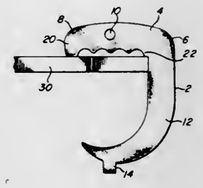
3,799,415
SLUICE PACK
Donald M. Tidd, Vallejo, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed July 12, 1972, Ser. No. 271,028
Int. Cl. A45f *4/00*
U.S. Cl. 224—25 A **2 Claims**



A combination back pack and sluice box, which is equipped with straps for fastening to the back, and when removed, slides apart so as to be in the shape of a sluice box used for placer mining.

The basic frame of the device is a U-shaped section of tubing to which webbing, a screen and mat tray and a riffle tray are fastened, together with D rings to which the fastening straps may be attached.

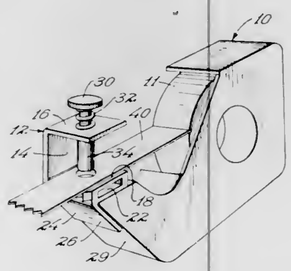
3,799,416
HAND GRIP CLOTHES CARRIER
Leo Schmältz, 1224 Siena Rd., Prescott, Ariz.
Filed May 10, 1971, Ser. No. 141,783
Int. Cl. B44c *7/00*
U.S. Cl. 224—45 T **1 Claim**



A device for carrying garment bags and the like which has a handle and a support member integrally formed with the han-

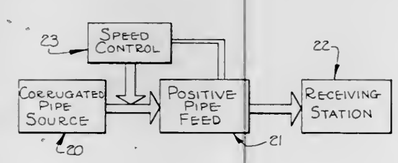
dle. The handle portion serves two functions: the first is as a handgrip for conveniently carrying the device with one or more garment bags or garments on hangers attached to the support member; a second function of the handle is to provide means for alternatively suspending the device and its burden from a clothes pole or a clothes hook. In an alternative embodiment, the device may be conveniently used for the support of such garment bags by a horizontal shelf.

3,799,417
TAPE DISPENSER ATTACHMENT
Bruno R. Williams, 1339 S. Robert, Apt. 208, West St. Paul, Minn.
Filed July 25, 1972, Ser. No. 275,135
Int. Cl. B26f *1/14, 3/02*
U.S. Cl. 225—7 **8 Claims**



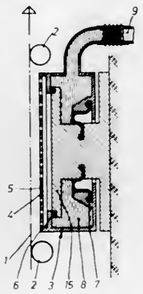
A detachable member shaped and adapted to slide onto a conventional tape dispenser and retained thereon by a friction fit. The member incorporates a spring loaded die or punch adapted to punch holes in the tape being drawn therethrough from the tape dispenser. The tape may then be drawn down across a serrated edge in a conventional fashion and used to reinforce binder ring holes in paper.

3,799,418
APPARATUS AND METHOD FOR POSITIVELY FEEDING CORRUGATED PIPE
Ernest J. Maroschak, Roseboro, N.C., assignor to Plastic Tubing, Inc., Roseboro, N.C.
Filed June 13, 1972, Ser. No. 262,193
Int. Cl. B65h *17/38*
U.S. Cl. 226—6 **13 Claims**



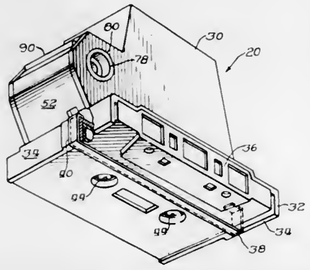
An apparatus and method for feeding a molded corrugated plastic pipe having annular corrugations of alternating ribs and valleys thereon, and wherein the pipe is positively fed or conveyed forwardly in engagement with a pair of rotating feed members. At least one of the feed members is driven under control of a pipe tension sensing means and has a plurality of peripheral teeth thereon which successively enter successive valleys in the pipe and push forwardly against respective ribs of the pipe.

3,799,419
APPARATUS FOR SLOWING DOWN AND STOPPING MOVING WEBS OR FOIL
Peter Herzhoff, Leverkusen; Hans Gref, Cologne; Wolfgang Schweicher; Karl Voss, Leverkusen; Oscar Peckhaus, Leverkusen; Hans Frenken, Leverkusen, and Heinrich Bussmann, Opladen, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Jan. 8, 1973, Ser. No. 321,977
Claims priority, application Germany, Jan. 13, 1972, 2201446
Int. Cl. B65h *25/00*
U.S. Cl. 226—11 **11 Claims**



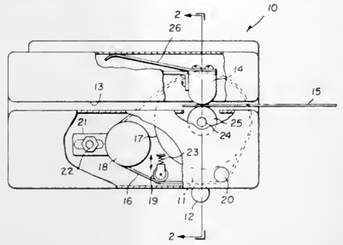
Apparatus for controlling the movement of a web comprising a suction table, linkage means connected to said suction table and detector means which actuates said linkage means, said suction table being provided with a normally sealed vacuum reservoir which is opened by operation of said linkage means on actuation of said detector on detection of a fault in said web whereby said vacuum is applied to said web to apply a braking force thereto.

3,799,420
FILMSTRIP PROJECTOR WITH SYNCHRONIZED SOUND
Frank C. Badalich, Chicago, and Roy H. Watterlohn, Morton Grove, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Division of Ser. No. 97,859, Dec. 14, 1970, Pat. No. 3,675,994. This application Jan. 13, 1972, Ser. No. 221,463
Int. Cl. G03b *31/04*
U.S. Cl. 226—102 **10 Claims**



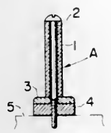
A filmstrip projector provided with synchronized audio accompaniment. The filmstrip is framed with respect to a projection aperture by a manually operable framing means. Once framed, the filmstrip is advanced frame-by-frame by a motor driven film advance mechanism. The audio accompaniment is carried on a dual track audio tape one track of which carries the audio accompaniment. The remaining track carries control signals which serve to actuate the film advance mechanism to maintain synchronization between the audio track and the filmstrip.

3,799,421
BELT DRIVE FOR LINEAR PLAY ADAPTER FOR CASSETTE TAPE RECORDER
Donald F. McPherson, 98 W. Beach Dr., Hilton, N.Y., and Albert F Wild, 107 Council Rock Ave., Rochester, N.Y.
Filed May 23, 1973, Ser. No. 362,943
Int. Cl. B65h *17/22*
U.S. Cl. 226—181 **8 Claims**



An adapter for converting a cassette tape recorder to linear play has an endless belt passing between the capstan and the pinch roller of the recorder and driving a pulley within the adapter. Guide rollers guide the belt over the capstan, an idler pulley tensions the belt, and a friction roller turns coaxially with the driven pulley. The friction roller is approximately tangent to a linear drive slot, and resilient means presses a linear recording element against the friction roller for traversing the slot.

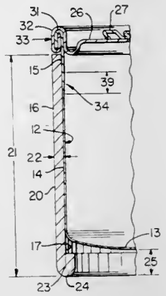
3,799,422
ELECTRIC CONDUCTIVE CERAMIC GUIDE
Ryoso Matsumoto, Kyoto, Japan, assignor to Oda Gosen Kogyo Kabushiki Kaisha, Komatsu-shi, Ishikawa-ken, Japan
Filed Jan. 8, 1973, Ser. No. 321,979
Claims priority, application Japan, July 7, 1972, 47-67569
Int. Cl. B65h *23/04*
U.S. Cl. 226—196 **3 Claims**



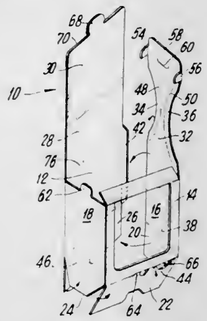
An electro-conductive ceramic guide made by the use of a mixture of a metallic titanium and metallic titanium dioxide prepared at a mol ratio of 1 : 0.06 – 1.22, molding this mixture into an element of desired shape, and sintering the shaped element at 1,200° – 1,450° C in vacuum or in an inert atmosphere to cause the crystal particles of the element to have a face-centered cubic crystal structure. The resulting element is mounted at a site where it is brought into a running tape or like article. This guide is of a very small friction coefficient and imparts a stable low tension to the running tape, and has a high electro-conductivity thereby being capable of removing static charge of the tape and is highly suitable for guiding video tapes and computer tapes.

3,799,423
CONTAINER CONSTRUCTION
Daniel S. Cvacho, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Mar. 20, 1972, Ser. No. 236,258
Int. Cl. B65d *25/14*
U.S. Cl. 229—14 B **14 Claims**

A composite container construction is provided defined by an inner container made of a minimum amount of fluid-impervious material and such inner container has a cup-like bottom portion adjoined by a cylindrical portion. An outer structural tubular housing is provided made of a comparatively inexpensive non-metallic material with the housing having an inside surface bonded against the cylindrical portion and serving as the main load-carrying structure for the construction.



3,799,424
PAPERBOARD CONTAINER HAVING A THREE-DIMENSIONAL CURVED HANDLE
Lawrence E. Mayea, New York, N.Y., assignor to Arkay Packaging Corporation, New York, N.Y.
Filed Dec. 22, 1971, Ser. No. 210,787
Int. Cl. B65d *5/46*
U.S. Cl. 229—16 R **9 Claims**

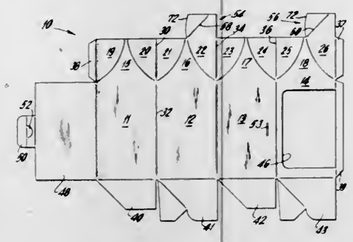


A container is formed from a paperboard blank divided by fold lines into a plurality of panels. It includes a front panel, a back panel, two end panels, one or more bottom panels, a bowed main handle panel having two curved edges that extend from the top of one end panel to the top of the other end panel, and two handle side panels each of which extends downwardly from one curved edge of the main handle panel. An opening may be provided in the front panel through which the interior of the container is visible and accessible. A top panel extends from the back panel under the main handle panel, and a cover panel may extend downwardly from the top panel to cover the opening in the front panel.

3,799,425
BLANK FOR MAKING CONTAINERS AND CONTAINER WITH TOP FORMED BY CURVED SURFACES
Edward P. Fanter, Flushing, N.Y., assignor to Arkay Packaging Corporation, New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 214,857
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R **13 Claims**

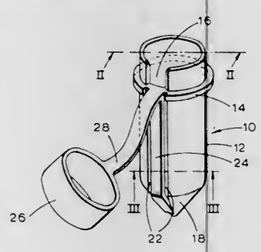
A container which can be formed from a single paperboard blank divided by fold lines, includes a plurality of side panels,

and a plurality of outer top panels each of which extends upwardly from one of the side panels and has two curved edges that converge to form a substantially pointed end. A plurality of inner top panels extend from the curved edges of the outer



top panels. The outer top panels can be bent inwardly to assume a curved orientation so that their respective pointed ends are brought together, and the inner top panels are folded downwardly toward the interior of the container. The top of the container thus made is formed by curved surfaces.

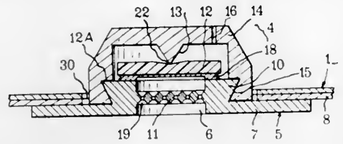
3,799,426
CONTAINER
Terence Pates, 6 Kenton Ave., Harrow-on-the-Hill HA1 2BN, and Dennis Lacy, 33 Reddons Rd., Beckenham, both of England
Filed Apr. 12, 1972, Ser. No. 243,162
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 R **5 Claims**



A tubular container, preferably of a plastic material has an end portion of reduced diameter terminating in a flat, rounded or pointed tip. The container is provided with a tear strip which is defined by a pair of spaced weakening lines within the material of the container extending for example lengthwise along the tubular body or around the tubular body either in a plane at right angles to the long axis of the container or at any angle so as to form a regular or irregular spiral or helix which may be either continuous or discontinous. Preferably the container has a cap attached to the tear strip.

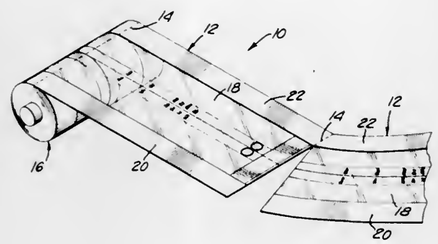
3,799,427
DEGASSING VALVE FOR HERMETICALLY SEALED FLEXIBLE CONTAINERS AND A CONTAINER PROVIDED WITH THE VALVE
Luigi Goglio, Via Solari 10, Milan, Italy
Filed Mar. 5, 1973, Ser. No. 337,870
Claims priority, application Italy, Dec. 4, 1972, 32439/72
Int. Cl. B65d *3/14*
U.S. Cl. 229—62.5 **14 Claims**

A unidirectional degassing valve for products in thermoweldable flexible containers, comprising a thermoplastic material moulded base member provided with at least one conduit; a resilient valve member normally closing said conduit and bearing on the base member through a viscous layer; and a cap connected with said base member, therewith defining a chamber wherein said resilient valve member is located,



and provided with at least one exhaust aperture, through which said chamber communicates with the external atmosphere.

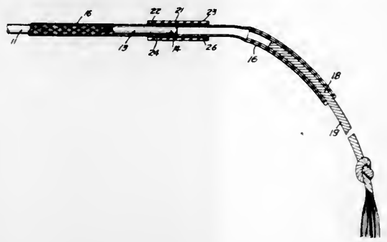
3,799,428
TRANSPARENT COIN WRAPPER
Ernest V. Lamming, 3619 20th Cres., Vernon, British Columbia, Canada
Filed Apr. 14, 1972, Ser. No. 244,141
Int. Cl. A45c *11/28;* **B65d** *65/04*
U.S. Cl. 229—87.2 **1 Claim**



A wrapper for rolls of coins, comprising an elongated strip of transparent sheet plastic having foil affixed to both edges thereof, said strip having transverse lines of weakness at longitudinally spaced intervals so that individual wrappers can be torn off as needed. A longitudinal line of weakness down the center allows the wrapped roll of coins to be broken at that point. Printed on the transparent center portion of the wrapper at longitudinally spaced intervals thereon are indicia showing various coin denominations and corresponding values of the roll for that denomination. Near the end of the wrapper which is on the outside of the roll are printed circles that overlie the denomination and value figures for the roll. The distance from the centers of the circles to each denomination and value figure is equal to the circumference of the coin of that denomination. The foil end portions of the roll can be folded down and pressed flat to close the ends. The transparent center portion of the wrapper allows for visual inspection of coins to verify contents of the roll.

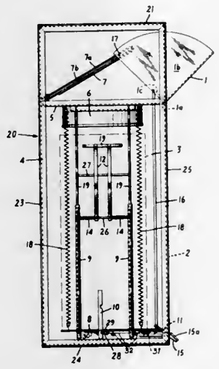
3,799,429
WHIP DEVICE
Gary G. Henry, 4415 Ravine Park Dr., Sioux City, Iowa
Filed Apr. 5, 1973, Ser. No. 348,035
Int. Cl. B68b *11/00*
U.S. Cl. 231—2 R **2 Claims**

The whip has a fiberglass shaft with a handle end and an outer end including a terminal end portion. The shaft is covered by a tubular braided polyethylene cover which extends beyond the shaft terminal end portion. A pre-expanded tubular member of a thermoplastic material is positioned about the cover at the shaft terminal end portion with a section thereof projected beyond the terminal end portion. The tubular member is radially shrunken by the application of



heated air thereto whereby the cover is clamped about the shaft terminal end portion and collapsed beyond the terminal end portion.

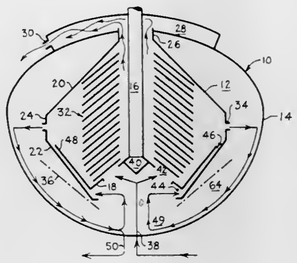
3,799,430
STORAGE RECEPTACLE
Jules Huguenin, 14, rue de L'Esplanade-57, Scy Chazelles, France
Filed Feb. 22, 1972, Ser. No. 228,004
Claims priority, application France, Apr. 7, 1971, 71.12631
Int. Cl. B65f *1/00*
U.S. Cl. 232—43.2 **10 Claims**



A receptacle particularly for household or industrial refuse comprises a cabinet having an upper door that swings downwardly and a larger lower door that swings outwardly. A platform in the cabinet at the level of the bottom of the upper door has a central hole surrounded by a downwardly projecting sleeve on which the mouth of a plastic bag can be fitted. A lower vertically movable platform and means for clamping the bag on the sleeve are interconnected so that the bag is clamped when the platform is raised to a position for supporting the bottom of the bag.

3,799,431
CENTRIFUGE APPARATUS
Andre G. Lavanchy, Devon, and John W. Caldwell, Glenside, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Jan. 17, 1973, Ser. No. 324,287
Int. Cl. B04b *11/06*
U.S. Cl. 233—3 **12 Claims**

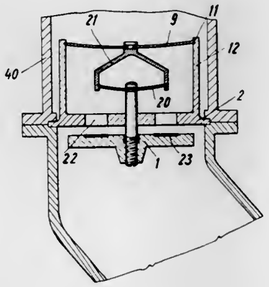
A top-driven centrifuge having an internal disk stack and peripheral nozzles is provided with a housing completely surrounding the centrifuge bowl for collecting centrifugally separated heavy phase material, e.g. sludge, discharged from the nozzles, whereby the heavy phase material flows downwardly along the inner surface of the housing to a sump in the bottom thereof. Heavy phase material is collected in an annular well disposed about a vertical feed pipe. The feed pipe delivers fresh feed to the bowl through one inlet at the bottom of the bowl. An impeller carried by the bowl and rotated therewith extends into the annular well and contacts the heavy



phase material in order to propell heavy phase material into a separate inlet at the bottom of bowl for material being recycled through the bowl.

This invention relates to centrifuge apparatus, especially top-driven solid bowl centrifuges having an internal disk stack, with provision for peripheral nozzles and means for recycling sludge or other heavy phase material to a bottom inlet of the bowl after discharge from the nozzles, while fresh feed is delivered to a separate inlet at the bottom of the bowl.

3,799,432
TEMPERATURE RESPONSIVE VALVES
Friedrich Schneider, Pforzheim, Germany, assignor to G. Rau, Pforzheim, Germany
Filed Mar. 2, 1972, Ser. No. 231,146
Claims priority, application Germany, Mar. 11, 1971, 2111667
Int. Cl. G05d *23/10*
U.S. Cl. 236—48 R **2 Claims**

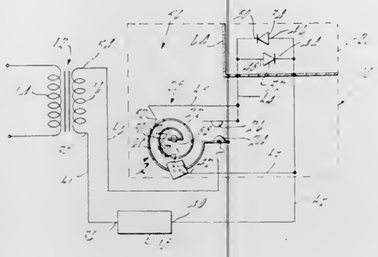


The invention is concerned with a temperature-responsive valve in which a valve part movable between open and closed positions controls the flow of a medium through the valve and in which such opening and closing movement of the valve part is effected by means of at least one plate-like bimetal snap-action element responsive to the temperature of the medium. The element is clamped at its periphery and as a whole is substantially uniformly domed or dished.

3,799,433
SPACE THERMOSTAT WITH AUTOMATIC SOLID STATE ANTICIPATOR

Frederick T. Bauer; Anthony C. Cairo, and Ronald E. Holkeboer, all of Holland, Mich., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Mar. 7, 1973, Ser. No. 338,987
Int. Cl. G05d *23/30*
U.S. Cl. 236—68 B 14 Claims

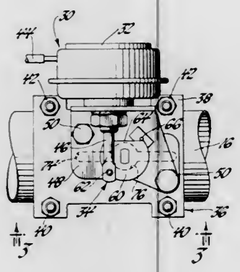


A space thermostat embodying an automatic solid state anticipator, the anticipator including a parallel diode circuit connected across a heater resistor with the diodes poled in opposite directions and effective to clip the peaks of an A.C. signal applied to the resistor thereby enabling the anticipator to function with diverse power sources having different output voltage and/or current values.

3,799,434
EXHAUST PIPE MOUNTED RISER VALVE

Walter C. Heidacker, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 2, 1973, Ser. No. 337,674
Int. Cl. G05d *23/08*
U.S. Cl. 236—101 1 Claim

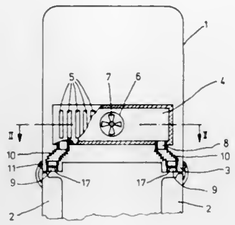


A heat riser valve for an internal combustion engine is carried on a saddle and U-bolt clamp which is conformable to and directly mounted at a readily accessible location on the thin wall exhaust pipe leading from the engine. The saddle and the exhaust pipe include coinciding valve receiving slots for admitting the valve plate of the heat riser valve. The clamp trues the exhaust pipe diameter to permit minimum diametral clearance between the valve plate and the inner diameter of the exhaust pipe.

3,799,435
HEATING AND VENTILATING PLANT FOR MOTOR VEHICLES

Paul Mohr, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Aug. 22, 1972, Ser. No. 282,845
Claims priority, application Germany, Sept. 1, 1972, 2142732
Int. Cl. B60h *1/02*
U.S. Cl. 237—12.3 A 5 Claims



A heating and ventilating system for vehicles with a connection from the intake air receiving area to the outer surface of the vehicle. The area on the outer surface of the vehicle to which the connection is made is subject to a pressure which, being less than atmospheric pressure as a result of the vehicle movement, varies inversely as the speed of the vehicle.

3,799,436
LOW SPEED LINEAR INDUCTION MOTOR REACTION RAIL

James W. Frasure, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.

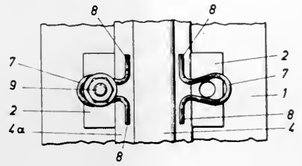
Filed Mar. 9, 1972, Ser. No. 233,099
Int. Cl. E01b *25/00*
U.S. Cl. 238—122 14 Claims

A linear electric induction motor reaction rail with a ferromagnetic rotor member and electrically and thermally conductive nonmagnetic head and support members attached to the rotor member at opposite ends thereof. The reaction rail is suitable for use in a monorail mass transit system.

3,799,437
ASSEMBLY FOR SECURING A RAIL TO A RAIL CARRIER

Helmut Scherbaum, Linz, Austria, assignor to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed July 19, 1972, Ser. No. 273,141
Claims priority, application Austria, Aug. 11, 1971, 7005/71
Int. Cl. E01b *9/28*
U.S. Cl. 238—349 3 Claims

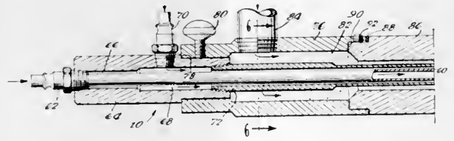


A baseplate is adapted to be secured to a rail carrier and formed with a groovelike recess adapted to receive a rail foot of said rail and to hold said rail foot against a lateral movement. Two resilient clamping members are disposed on opposite sides of said recess. Each of said clamping members has two downwardly facing, sharp, pressure-exerting edge portions spaced apart in the longitudinal direction of said recess and overlying the same. Pivotal mounting means connect each of said clamping members to said baseplate for pivotal movement about a predetermined axis in response to a predetermined force acting on said pressure-exerting edge portions in the longitudinal direction of said recess. Said pivotal mounting means for each of said clamping members comprise a threaded fastener, which is centered on said axis and extends through said clamping member into said baseplate and retains said clamping member on said baseplate. The rail foot is as wide as said recess and has downwardly and laterally outwardly inclined top surfaces on opposite sides. The threaded fasteners force said pressure-exerting edge portions against said inclined top surfaces so that the latter can exert said force on said pressure-exerting edge portions.

3,799,438
DISPENSING AND SPRAYING APPARATUS AND METHOD

William E. Shockley, Eaton, Ohio, assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Dec. 1, 1972, Ser. No. 311,059
Int. Cl. B05b *7/00, 13/02*
U.S. Cl. 239—8 10 Claims

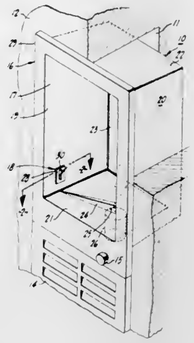


A method and apparatus for air stream dispensing and spraying of pulverulent material with less noise is described using means for developing two separate outward air flows from a dispensing gun. One flow is of a high velocity and the second flow is of a lower velocity. After both flows leave the gun, the lower velocity flow surrounds the high velocity flow (e.g., as concentric annular flow about a columnar flow). Pulverulent material is fed to the lower velocity flow to be entrained therewith and transferred, at least in part, downstream from the gun to the higher velocity flow and thus finely dispensed over a desired area or product.

3,799,439
RECESSED DRINKING FOUNTAIN AND BUBBLER THEREFOR

Allen C. Wright, Moraga, Calif., assignor to Haws Drinking Fountain Company, Berkeley, Calif.

Filed Aug. 25, 1972, Ser. No. 283,930
Int. Cl. E03b *9/20*
U.S. Cl. 239—29 9 Claims

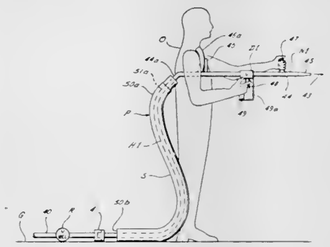


A drinking fountain and bubbler or nozzle structure therefor. The drinking fountain is fully recessed into an opening provided therefor in a building wall, and it has a drinking chamber closed by rearwardly converging sidewalls, top and bottom walls, and rear wall but open along its front wall or face to provide access into its interior. A bubbler structure is mounted in one of the sidewalls and has a face substantially contiguous therewith. The bubbler structure has a nozzle chamber open along its face and equipped along the base with a nozzle through which a stream of water is directed for oral interception within the drinking chamber. The nozzle chamber, nozzle, and base wall of the chamber have specialized orientations and dispositions that cause the water trajectory to be upwardly, inwardly, and rearwardly directed with respect to the drinking chamber, and that also cause the drinking fountain and bubbler structure to be substantially squirt proof by finger manipulation of children and the like. The fountain and bubbler structure also have vandal resistive features and characteristics.

3,799,440
SAFETY APPARATUS

John B. Goss, and John E. Stachowiak, both of Houston, Tex., assignors to American Aero Industries, Inc., Houston, Tex.

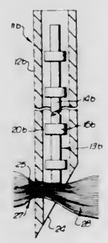
Filed Mar. 2, 1972, Ser. No. 231,208
Int. Cl. B05b *1/28*
U.S. Cl. 239—120 8 Claims



A safety shroud assembly for safely conducting a high pressure fluid including a flexible fluid conductor and a rigid han-

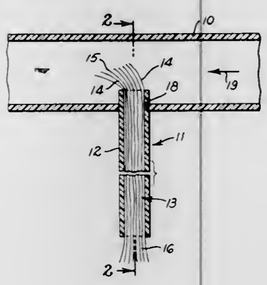
dle and nozzle assembly, the flexible conductor having a flexible shroud positioned thereabout whereby high pressure leaks from the conductor are confined to the shroud to prevent injury to a person in the immediate area.

3,799,441
SOLID PELLET AND SELF CLEANING IRRIGATION DEVICE
William A. Delmer, 16901 Bedford Ln., Huntington Beach, Calif.
Filed Apr. 5, 1973, Ser. No. 348,007
Int. Cl. B05b *1/30*
U.S. Cl. 239—145 8 Claims



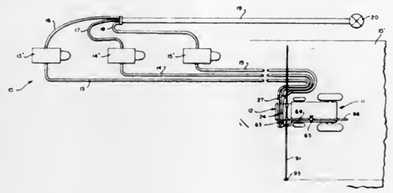
An irrigation device including a conduit having a plurality of emitters spaced therealong, each emitter being a tubing of relatively small internal diameter relative to that of the conduit, and having a flow interruptive and flow controlling device therein consisting of a flexible longitudinal rib or string having spaced therealong a plurality of transverse baffles.

3,799,442
FIBROUS SELF CLEANING IRRIGATION DEVICE
William A. Delmer, 16901 Bedford Ln., Huntington Beach, Calif.
Filed Mar. 26, 1973, Ser. No. 344,875
Int. Cl. B05b *1/30*
U.S. Cl. 239—145 3 Claims



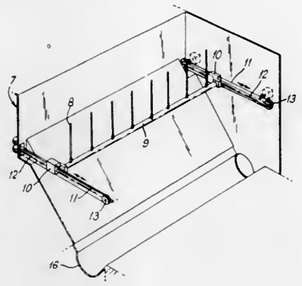
An irrigation device including a conduit having a plurality of emitters spaced therealong, each emitter being a tubing of relatively small internal diameter relative to that of the conduit, extending a substantial distance into and out of the conduit and having a fibrous wick therein, the frayed ends of the wick extending out of each end of the tubing.

3,799,443
HIGH PRESSURE JET CLEANING DEVICE
Willard F. Foster, Alden, and Robert W. Wild, South Wales, both of N.Y., assignors to C. H. Heist Corporation, Buffalo, N.Y.
Division of Ser. No. 104,276, Jan. 6, 1971, Pat. No. 3,726,481.
This application Jan. 19, 1973, Ser. No. 325,141
Int. Cl. E01h *3/00*
U.S. Cl. 239—163 4 Claims



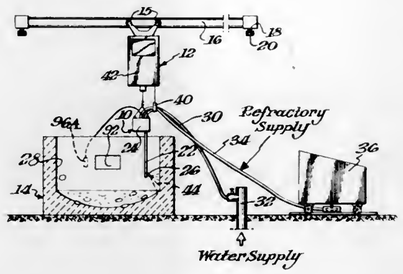
A machine for cleaning a surface by means of high pressure jets of liquid comprising a frame for mounting on a vehicle, a manifold on the frame, a plurality of lances in communication with said manifold, a plurality of nozzles in said lances for supplying fan-shaped jets of liquid for impingement on said surface to be cleaned, said nozzles being oriented to cause the jets to be inclined at an acute angle to the direction of motion of said vehicle and being proximate each other so as to clean a swath on said surface as said vehicle traverses said surface, and adjustment means for adjusting the inclination of the lances relative to the vertical and for adjusting the orientation of said nozzles relative to the direction of travel of said vehicle, and a plurality of pump units for supplying high pressure liquid to the manifold. The foregoing machine is used in a system which includes a source of water and a plurality of motor-pump units placed in parallel across the machine and the source for producing a sufficient quantity of water at a sufficiently high pressure for supplying the above described machine.

3,799,444
SWARF REMOVAL
Alois Walter Harry Read, London, England, assignor to Molins Machine Company Limited, London, England
Filed Aug. 10, 1970, Ser. No. 62,524
Claims priority, application Great Britain, Aug. 13, 1969, 40435/69
Int. Cl. B05b *3/18*
U.S. Cl. 239—186 1 Claim



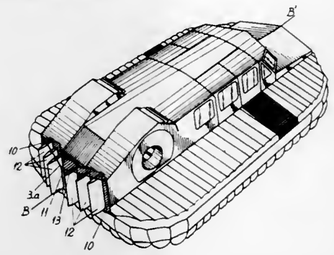
An arrangement for cleaning swarf from a workpiece after machining. A number of flexible rubber tubes supplied with compressed air from a manifold are passed over the workpiece. The tubes have open ends and the air issuing therefrom causes the tubes to perform random movements to direct cleaning air jets over the workpiece from all angles.

3,799,445
VERTICAL REMOTE-CONTROLLED REFRACTORY GUNNING APPARATUS
Joseph J. Marino, Ridgefield, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed Apr. 30, 1973, Ser. No. 355,752
Int. Cl. B05b *3/14*
U.S. Cl. 239—242 10 Claims



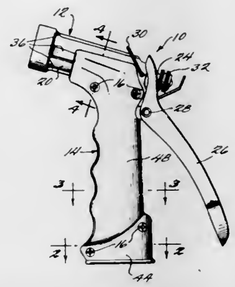
A vertical gunning conduit having a horizontal nozzle at its lower end is supported from a hoist above and extends into the open top of a refractory-lined vessel, such as an electric steel-making furnace, with the nozzle positioned within the vessel. Refractory materials and water are supplied to the top of the conduit through a mixing head, which is connected by a swivel coupling to the lower portion of the conduit which is rotatable about its axis. An oscillating drive provided by a crank and slotted lever, is connected to the rotatable conduit through a magnetic clutch which is actuable to engage at a variable angle to control the position of the nozzle, either motionless for filling large holes, or in an oscillating path for gunning a selected portion of the vessel wall.

3,799,446
TWO-SECTION RUDDER FOR A VEHICLE WITH HYDRODYNAMIC OR AERODYNAMIC PROPULSION
Andrei Gheorghe E. Rado, Bucharest, Romania, assignor to Institutul Pentru Creatie Stiintifica Si Tehnica, Bucharest, Romania
Filed May 24, 1972, Ser. No. 256,332
Claims priority, application Romania, May 26, 1971, 67019
Int. Cl. B63h *25/46*
U.S. Cl. 239—265.19 2 Claims



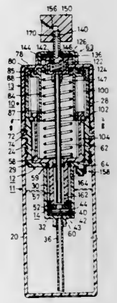
An engine for inducing the flow of fluid through a duct is provided ahead of a pair of sets of rudder vanes disposed at the discharge side of the duct which is of V-configuration having the apex of the V turned in the direction of fluid flow. Each set of vanes comprises a plurality of generally flat but aerodynamically shaped vanes swingable about respective vertical axes by independent controls for the vehicle direction so that either set may completely block or only deflect the fluid stream traversing the window of the outlet spanned by the set of vanes.

3,799,447
HOSE NOZZLE WITH IMPROVED INSULATING PROTECTOR STRUCTURE
Glenn I. Beal, Somerset, Pa., assignor to R. M. Smith, Inc., Somerset, Pa.
Filed Apr. 19, 1973, Ser. No. 352,703
Int. Cl. B05b *11/00*
U.S. Cl. 239—288.5 11 Claims



A hose nozzle assembly comprising a hollow metal body including an elongated hand grip portion having socket means on one end thereof constituting a water inlet for connection with a hose end and an elongated flow control element mounted in the hollow metal body for movement into different positions for controlling the flow of water from a water outlet in the body, a pair of insulating hand grip protector parts disposable with respect to each other in cooperating surrounding relation to the hand grip portion of the nozzle body and fasteners for operatively fixedly securing the parts in such surrounding relation, the parts in such surrounding relation including (1) interior surfaces cooperating with surrounding exterior surfaces of the hand grip portion of the body to define a plurality of flow channels open to the atmosphere for the dissipation of heat or cold by flow therethrough and (2) exterior surfaces for manual engagement by an operator during use so as to prevent manual contact with the hollow metal body when an extremely hot or cold liquid is flowing therethrough.

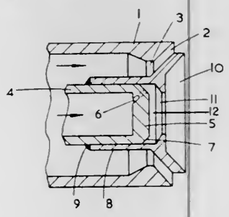
3,799,448
LIQUID SPRAYING DEVICE
Takamitsu Nozawa, and Takao Kishi, both of Tokyo, Japan, assignors to Yoshino Kagyosho Co., Ltd, Tokyo, Japan
Filed Apr. 10, 1973, Ser. No. 349,687
Claims priority, application Japan, Apr. 15, 1972, 47-44552; Apr. 17, 1972, 47-45339; Apr. 17, 1972, 47-45340; Feb. 17, 1973, 48-19483; Feb. 19, 48-20430
Int. Cl. B05b *1/32, 11/00*
U.S. Cl. 239—321 16 Claims



A refillable hand-operated liquid sprayer of the type which requires no container pressurizing gas nor other foreign propellant. It operates to pump a small quantity of liquid to be

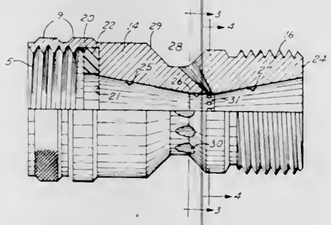
sprayed from a container to a small cylindrical chamber wherein the liquid is pressurized by the force of a coiled spring which is stressed during "cocking" stroke preparatory to spraying the liquid from the device. A cover unit is removably mounted on the open end of the container, and a spray head is rotatably mounted on the cover unit, the rotation of the head relative to the unit causing the spring to be compressed and simultaneously sucking liquid up from the container into the chamber. A valve mechanism is provided for cutting off the spray by letting the pressure out of the cylindrical chamber or by blocking the communication between the chamber and a discharge valve immediately before the pressurized quantity of liquid is exhausted. With this arrangement, a high quality, very fine mist is maintained during spraying as well as a sharp cut-off of the spray is effected.

3,799,449
LIQUID ATOMIZING DEVICES
Stanley Frank Gardner, Burnley, England, assignor to Lucas Aerospace Limited, Birmingham, England
Filed Nov. 2, 1972, Ser. No. 303,118
Claims priority, application Great Britain, Nov. 13, 1971, 52819/71
Int. Cl. B05b *7/06*
U.S. Cl. 239—403 **3 Claims**



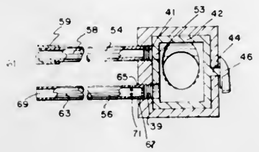
A liquid atomizing device which can be inserted into an air tube within a ring of air swirler blade includes a first tubular body having an outwardly flared open end. A second tubular body is located in the first tubular body so as to form an intermediate air passage. A shell member attached to the second tubular body is disposed within the outwardly flared end and has an outwardly flared frusto-conical portion. The shell member has an inwardly directed annular lip upstream of the frusto-conical portion. An end wall of the second tubular body has a series of inclined nozzle openings therein to direct liquid passing therethrough onto the shell member. The liquid passes around the annular lip and mixes with air from the air passage downstream of the frusto-conical portion.

3,799,450
AERATOR FOR HOSE TYPE IRRIGATION SYSTEM
Clarence A. Braukman, 7570 W. Amherst, Denver, Colo.
Filed Nov. 24, 1972, Ser. No. 309,434
Int. Cl. B05b *7/30*
U.S. Cl. 239—428.5 **3 Claims**



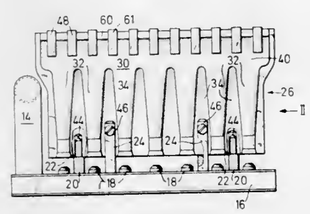
An aerator fitting adapted to be mounted between a pressurized water outlet such as a sillcock or hose cock, and an irrigation conduit such as a hose. The fitting is formed as a sleeve-shaped body having a central passageway therethrough and threaded at each end for engagement with the water outlet and irrigation conduit. The sleeve includes a central passageway into which tapered air jet inlet passages extend from the exterior of the sleeve. When water under pressure flows through the sleeve, jets of air are drawn through the air jet passages and squirt into the water to aerate the same, the air introduced thereby being dissolved and entrapped in said water as said aerated water flows through the irrigation conduit to the outlet thereof.

3,799,451
FLUID FLOW WAND ASSEMBLY
Klaus E. Kollmai, 211 S. Main Ave., Haysville, Kans.
Filed Dec. 13, 1972, Ser. No. 314,690
Int. Cl. A62c *31/00*
U.S. Cl. 239—444 **4 Claims**



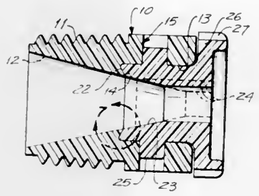
This invention relates to a fluid flow wand assembly normally used with a high pressure car wash system operable alternately at the operator's choice to discharge fluids therefrom being 1) a rinse solution, 2) a detergent solution, or 3) a combination fluid and detergent foam solution. More particularly, this invention relates to a fluid flow wand assembly having a handle assembly; a head assembly secured to the handle assembly; and a discharge assembly secured to the head assembly whereupon the head assembly is operable to direct through alternate portions of the discharge assembly to achieve a high pressure or foam discharge. The discharge assembly includes a pressure discharge rod member adapted to discharge high pressure fluids therefrom through a small orifice and a foamer discharge rod member which is operable to discharge a combination of fluid detergent and air therefrom to produce a foam type material.

3,799,452
PREMIXING GAS BURNER
Georg Hein, Huckeswagen, Germany, assignor to Joh Vaillant K.G., Remscheid, Germany
Filed June 22, 1972, Ser. No. 265,314
Int. Cl. B05b *1/14*
U.S. Cl. 239—553.3 **11 Claims**



Two interconnected shell members of sheet metal are formed with impressions which combine to form a plurality of mixing tubes disposed one beside the other and having upper ends. The shell members have chamber portions defining between them a distributing chamber, which extends over said mixing tubes and with which said mixing tubes communicate at their upper ends. A plurality of parallel burner tubes extend transversely to and communicate with said distributing chamber and are formed with burner ports.

3,799,453
QUICK DISCONNECT NOZZLE
Dennis L. Hart, Hacienda Heights, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Aug. 18, 1972, Ser. No. 281,638
Int. Cl. B05b *1/00*
U.S. Cl. 239—600 **4 Claims**



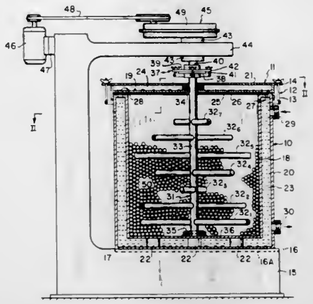
A quick disconnect nozzle intended primarily for irrigation sprinklers, comprising a fitting screwthreaded for connection to a sprinkler outlet and having diametrically disposed L-slots each having a yieldable wall provided with a retainer projection, and a nozzle member having diametrially diametrically pins received in the L-slots and interlocking with the fitting but capable of ready removal manually, the fitting and nozzle member having mating sealing surfaces, and the nozzle members having bores of different diameter or closed off to provide a cap in substitute for a nozzle.

3,799,454
PREPARATION OF ARYLENE SULFIDE POLYMER COATING DISPERSION CONTAINING FLUOROCARBON POLYMER
Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Dec. 21, 1972, Ser. No. 317,158
Int. Cl. B02c *19/00*
U.S. Cl. 241—16 **10 Claims**

A coating composition is produced by first milling particulate arylene sulfide in a liquid such as water with a non-ionic surface active agent to produce a dispersion and thereafter mixing this dispersion with a fluorocarbon polymer dispersion comprising particulate fluorocarbon polymer charged particles in a liquid such as water.

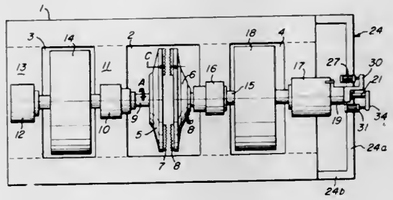
3,799,455
METHOD FOR REACTING MATERIALS
Andrew Szegvari, 201 Casette Blvd., Akron, Ohio
Continuation-in-part of Ser. No. 81,811, Oct. 19, 1970, Pat. No. 3,670,970. This application June 19, 1972, Ser. No. 264,362
Int. Cl. B02c *19/00*
U.S. Cl. 241—27 **4 Claims**

Inorganic materials with unique chemical and/or physicochemical properties are obtained by subjecting mixtures of reactants such as metal and ceramic powders and other particulate materials to attritive action. The reactants are activated by mechanical means by highly energized attritive action and reacted either simultaneously or in substantial part thereafter. In some embodiments a liquid continuum may be present, while in other embodiments the absence of a liquid continuum is preferred. The attritive action is preferably continued for a substantial time after a minimum particle size is



attained. Further, means are provided in the attritor apparatus to decrease or prevent caking of solid materials in the bottom of the apparatus.

3,799,456
REFINER PLATE CLEARANCE CONTROL SYSTEM
Jack D. Jewell, and Lawrence E. Skeen, both of Springfield, Ohio, assignors to The Bauer Bros. Co., Springfield, Ohio
Filed June 14, 1972, Ser. No. 262,536
Int. Cl. B02c *7/14*
U.S. Cl. 241—37 **16 Claims**

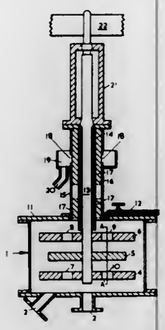


An automatic control system for maintaining a constant preset distance between the operating surfaces of reduction equipment such as a disc refiner including means for moving one of opposed refining surfaces to and from the other. The control system comprises a first feed-back device which produces a voltage related to the position of one refining surface and a second feed-back device producing a voltage related to the position of the opposed surface. Means are provided to combine these voltages and produce a composite signal representing the distance between the refining surfaces at any one instant during a refining operation. This composite signal is referenced to a pre-set signal having a value corresponding to the desired spacing between the refining surfaces. Means are provided whereby a difference in these signals produces an appropriately controlled movement of the one refining surface toward or from the other until the combined feed-back signal corresponds to the pre-set signal.

3,799,457
MILLING APPARATUS
James Laurence Ward, and Eric Street, both of Teesside, England, assignors to British Titan Limited, Teesside, England
Filed Sept. 21, 1972, Ser. No. 291,032
Claims priority, application Great Britain, Nov. 16, 1971, 53044/71
Int. Cl. B02c *21/00*
U.S. Cl. 241—46.17 **12 Claims**

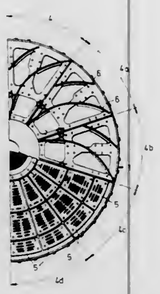
An apparatus and process for sand milling in which at least three impeller discs are used, at least one of which is of smaller

diameter than the impellers discs above and below it and wherein a settling zone of smaller diameter than the milling



chamber is provided, there being means to reduce turbulence to the settling zone before recovering milled particulate solid substantially free from milling medium.

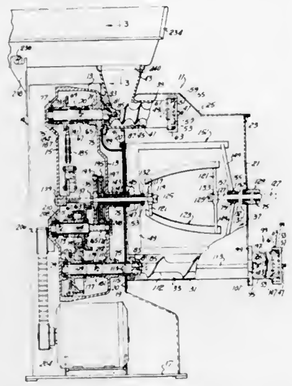
3,799,458
LIFTING WALL CONSTRUCTION FOR A TUBE MILL OR THE LIKE
Theodor Lutke-Cossmann, Vorhelm, Germany, assignor to Polysius AG, Neubeckum, Germany
Filed June 29, 1972, Ser. No. 267,552
Claims priority, application Germany, July 5, 1971, 2133431
Int. Cl. B02c *17/02*
U.S. Cl. 241—70 **8 Claims**



A tube mill material lifting wall comprises a pair of spaced apart discs each of which is composed of individual, apertured segments, confronting segments being joined at their outer ends and having lifting blades therebetween for delivering material to a conical transfer opening at the center of one of the discs. The segments of the disc having the transfer opening are radially longer than those of the other disc and are gripped at their radially inner ends by clamping rings which permit relative radial movement of the segments.

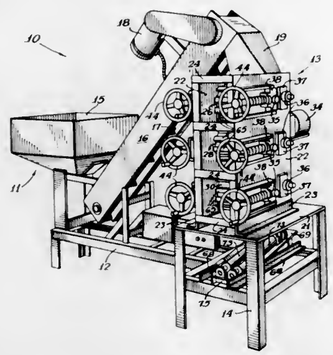
3,799,459
POWER GRINDER AND MIXER FOR FOODS
Sidney Bakewell, 5945 Martin Ave., Dearborn, Mich.
Filed Oct. 20, 1972, Ser. No. 300,822
Int. Cl. B02c *18/30*
U.S. Cl. 241—101.5 **14 Claims**

A power operated food grinder and mixer has a base, a tank, and a gear box. An upper grinder head is mounted on the gear box for coarse grind and includes a hopper and a feed worm. An inner mixing paddle is mounted within the tank connected to a drive shaft for rotation in one direction, and an outer mixing paddle is mounted and journalled within said tank and secured to a power rotated sleeve, for rotation in the opposite direction. A feed channel at the bottom of the tank includes a feed worm, and a lower grinder head is mounted on the tank receiving said worm. The gear box includes a series of power



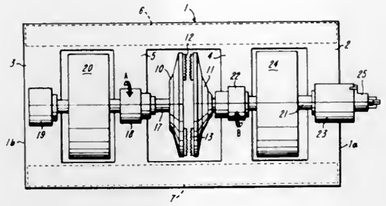
rotatable shafts adapted for driving the feed worms, the drive shaft and sleeve. A series of independently operable clutches are provided for each of the said shafts in conjunction with a series of interconnected power driven gears, together with independent manual controls for each clutch for selective activation of the corresponding worms and mixing paddles for operation singly or in unison.

3,799,460
DEGATING MACHINE
Theodore Virgil Medelberg, Sikeston, Mo., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Aug. 10, 1972, Ser. No. 279,655
Int. Cl. B02c *17/20*
U.S. Cl. 241—102 **13 Claims**



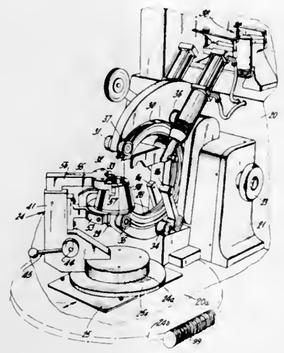
A degating machine to remove the gate from cast articles where the articles having their gates thereon are loaded into a hopper and are fed therefrom onto a sectional conveyor leading to the top of a series of rollers in a wringer arrangement, so that the articles in passing through the rollers are tumbled and degated without damage. The articles and separated gates drop from the rollers onto the top of a pair of metal shafts angled toward the floor and spaced apart sufficiently to allow the gates to drop therethrough; the degated articles riding on the shafts to the ends where they drop into a collection pan.

3,799,461
REFINER BASE
Lawrence Skeen; Jack Jewell; Franklin F. Landis, and William M. McNeil, all of Springfield, Ohio, assignors to The Bauer Bros. Co., Springfield, Ohio
Filed May 24, 1972, Ser. No. 256,548
Int. Cl. B24b *41/02;* **B02c** *7/14*
U.S. Cl. 241—251 **13 Claims**



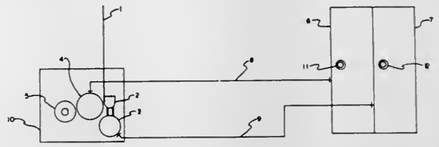
A base for a pulp refiner of the type wherein the refining surfaces are supported at substantially the longitudinal axial center of the base. The base comprises a pair of end members the facing portions of which are in parallel spaced relationship with the refining surfaces supported therebetween. The end members are joined by a pair of rails in parallel spaced relationship and affixed to the end members along their upper longitudinal edges. Means are provided for mounting the refiner base on a supporting foundation. The mounting means are such that one of the end members of the base is fixedly secured to the foundation at two points lying in a plane extending transversely of that end member and the refiner base. The remainder of the refiner base is capable of longitudinal shifting with respect to the foundation toward and away from the above mentioned plane when subjected to thermal contraction and expansion due to heat generated by the refining operation, whereby to prevent bowing and distortion of the refiner base and to maintain parallelism of the refining surfaces.

3,799,462
TOROIDAL COIL-WINDING MACHINE
Rudolf Fahrbach, Branchville, N.J., assignor to Universal Manufacturing Company, Inc., Irvington, N.J.
Filed Aug. 23, 1971, Ser. No. 174,104
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 B **9 Claims**



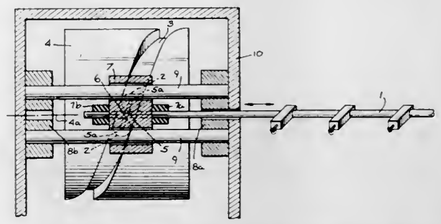
A machine for the winding of toroidal coils enables each turn of the windings to be accurately laid on the core. The machine is controlled by a numerical control system which reads punched tape. The core is held by an adjustable clamp and the clamp is mounted on an indexing wheel which is progressed under control of the tape reader by means of a step motor and an adjustable worm gear.

3,799,463
RIBBON BREAKING FOR HIGH SPEED SURFACE DRIVEN WINDERS
Frank Lee Peckinpaugh, Colonial Heights, Va., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Apr. 18, 1972, Ser. No. 245,062
Int. Cl. B65h *54/38*
U.S. Cl. 242—18.1 **3 Claims**



A process for winding yarn into a cylindrical-bodied substantially flat-ended package by traverse winding layers of helical coils of yarn on a surface-driven package is improved by not only breaking ribbon formation by the known waveform (minor modulation of inverter output to the traverse motor) from a pre-set point, but also modulating the set point to create a major modulation having a minor modulation superimposed along or within the modulated set point waveform.

3,799,464
THREAD OR YARN WINDING CONTROL APPARATUS
Hermann Bosch, Ulisbach, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland
Filed Apr. 5, 1972, Ser. No. 241,259
Claims priority, application Switzerland, Apr. 21, 1971, 5782/71
Int. Cl. B65h *54/28*
U.S. Cl. 242—43 **3 Claims**

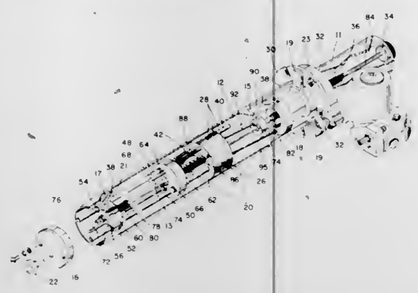


Yarn winding control apparatus for controlling reciprocating movement of a thread-guide bar of a windup device with follower means guided in a groove of a rotating drum for reciprocating the guide bar, the follower means comprising at least two guide elements mounted on a connecting rod and engaging the walls of the groove, the guide bar being connected to the connecting rod between the guide elements.

3,799,465
SELF-CENTERING PAPER ROLL HOLDER
Daniel Richard Erny, Boonton, N.J., assignor to Van Dyk Research Corporation, Whippany, N.J.
Filed Feb. 23, 1973, Ser. No. 335,051
Int. Cl. B65h *19/00*
U.S. Cl. 242—55.2 **5 Claims**

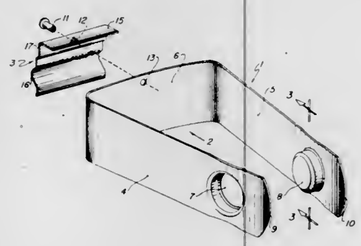
A self-centering holder for a roll of paper wound on a hollow core. The holder comprises a cantilevered mandrel on

which the core of the paper roll is mounted. The mandrel has slots at either end, with flanges extending through the slots at the supported end and slidable depressible latches extending through slots at the unsupported end. A coupling mechanism inside the mandrel insures that the flanges and the latches are always equally distant from the center of the mandrel. A paper



roll is mounted on the mandrel by sliding the core over the depressed latches and pushing the end of the core against the flanges. As the flanges slide toward the supported end of the mandrel, the latches move outward toward the unsupported end. When the latches reach the end of the core they pivot outward through the corresponding slots to engage the core and retain it in position on the mandrel.

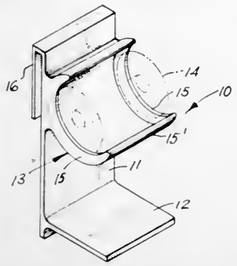
3,799,466
DISPENSER AND HOLDER BRACKET
Jerry Adams, 1443 Homestead Rd., La Grange, Ill.
Filed Oct. 11, 1972, Ser. No. 291,231
Int. Cl. B65h *19/00*
U.S. Cl. 242—55.2 **3 Claims**



A dispenser for coiled material stored in a roll and in which the dispenser is adapted for support by a holder bracket. The dispenser comprises a dispenser yoke including a pair of spaced and resiliently movable elongated sides integral with and joined by a relatively narrow back. A boss projects from each side toward the other side with both bosses being in alignment with one another to carry the material roll by resilient clamping between the elongated sides. The dispenser includes two different embodiments of attachment means for support on an elongated holder bracket or conventional pegboard.

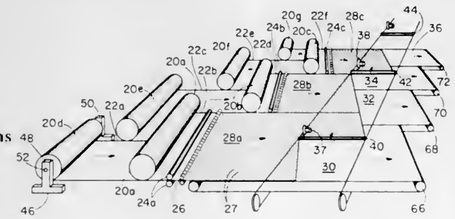
3,799,467
TOILET TISSUE HOLDER AND SHELF COMBINATION
Arthur E. Bauman, 764 Johnson St., Akron, Ohio
Continuation-in-part of Ser. No. 128,956, March 29, 1971, abandoned. This application Feb. 11, 1972, Ser. No. 225,547
Int. Cl. A47k *10/22*
U.S. Cl. 242—55.2 **1 Claim**

A toilet tissue holder and utility shelf device has a flat body portion removably attached by supporting means in a vertical position on the side wall of a flush tank or on another vertical support adjacent the bowl of a toilet with a holding means for



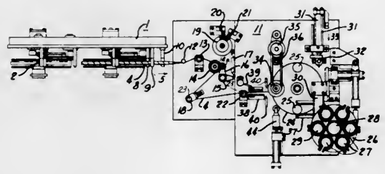
a roll of tissue and a utility shelf provided on the outer face of the body portion and suitably projecting therefrom.

3,799,468
DIAGONAL MANDREL TRANSVERSE WINDER
Ira Caple; Charles T. Banks, both of Neenah, Wis., and Jorg F. Voss, Koblenz-Rhinehafen, Germany, assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed May 17, 1971, Ser. No. 144,132
Int. Cl. B65h *17/24, 79/00*
U.S. Cl. 242—56 R **13 Claims**



Method and apparatus for winding rolls of sheet material parent as toilet tissue, towels, and the like. A number of parent rolls is selected such that the total width of the rolls is about equal to the desired sheet length in the rewound roll. The parent rolls are unwound simultaneously in abutting relationship so that the sheets are generally edge-to-edge or slightly overlapping. At the same time mandrels pass over the sheets building up rolls in an effective diagonal path. Variations include forming sheets having two or more plies.

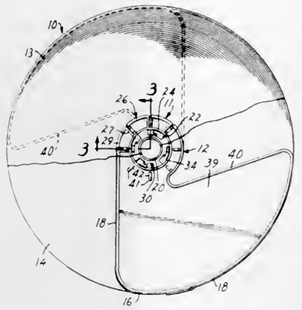
3,799,469
METHOD AND APPARATUS FOR REELING TAPE
Toshisaburo Oga; Kunio Yoshizuka; Yoshiharu Yoneda; Shigehisa Yanako; Yozo Ishii, and Seiji Watabe, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed May 21, 1971, Ser. No. 145,617
Int. Cl. B65h *19/26, 19/06, 27/00*
U.S. Cl. 242—56 A **9 Claims**



This invention relates to a method of reeling tape and apparatus therefor, particularly to reeling tape apparatus charac-

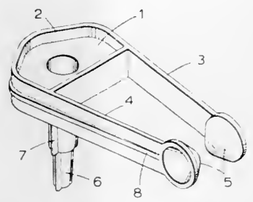
terized in that the reeling is done while the direction of the width of the tape at the time of travelling and reeling is maintained perpendicular to the floor surface or horizontal plane or base and the tape moves along the floor surface.

3,799,470
LONG YARDAGE TAPE CORE ASSEMBLY
Harold K. Gavere, Marine on St. Croix, and Robert C. Mix, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 11, 1972, Ser. No. 287,989
Int. Cl. B65h *75/02, 75/24*
U.S. Cl. 242—68.5 **5 Claims**



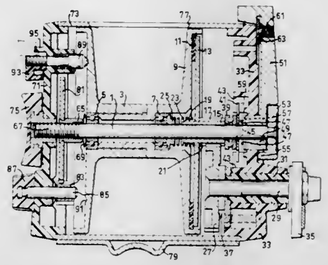
An assembly fabricated for supporting a plurality of rolls of tape spliced together to form a continuous usable long yardage tape supply package. The assembly comprises a plurality of cores and connecting support members. The cores are formed to be inserted within a radially wound roll of tape and expanded to securely engage the inner convolutions. A support member is coupled to the core in an axially aligned position. The support member has a surface extending generally tangential to the surface of the core supporting the roll of tape. Upon this surface may be placed a length of tape which joins the inner convolutions of a first roll of tape to an outer convolution of a second adjacent roll of tape.

3,799,471
FISHING LINE TRANSFER DEVICE
Terence Roy Morris, 32 Cromwell Rd., and Francis Rodd, 34 Cromwell Rd., both of Ware, Hertfordshire, England
Filed Aug. 31, 1971, Ser. No. 176,489
Claims priority, application Great Britain, Sept. 3, 1970, 42191/70
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.1 R **3 Claims**



A device is provided for enabling a fishing line to be unwound from a storage spool on to a reel of a fishing rod. The device is in the form of a storage spool-holder and includes a base or web portion and a pair of resilient arms extending from the base or web portion. Each of the arms has an element, preferably hemispherical in shape, adapted to engage the storage spool to permit rotation thereof. The base or web portion is provided with means for attaching it to a fishing rod, preferably in the form of a frusto-conical rod-attachment member.

3,799,472
DEEP SEA FISHING REEL
Hugo Ragnvald Svensson, Svangsta, Sweden, assignor to Abu Aktiebolag, Svangste, Sweden
Filed July 12, 1971, Ser. No. 161,547
Claims priority, application Sweden, July 14, 1970, 9757/70
Int. Cl. A01k *89/02*
U.S. Cl. 242—217 **4 Claims**



A fishing reel having a fixed spindle and an axially movable spool. A brake and clutch mechanism comprises a brake disk movable axially into engagement with the spool flange, the reaction forces thereby created being taken up by the spindle through screw elements on the spindle ends. The reel end plates are unloaded by the reaction forces and between them clamp a tubular casing carrying the reel seat and protecting the spool. One end plate is fastened to the spindle by means of a large central nut permitting fast disassembly of the entire reel. A brake force setting lever has a hub journalled on one end of the spool spindle. The inner end of the hub carries a cam surface engaging a cam element axially movable on the spindle to engage a gear wheel, driven by a crank-operated pinion and in turn engaging the brake disk to rotate this and move the brake disk axially into engagement with the spool flange. The braking force can be pre-set by means adjusting the axial position of the spool on the spindle.

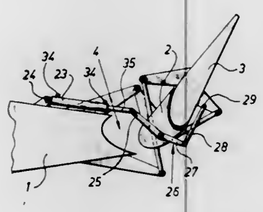
3,799,473
ROTARY WING AIRCRAFT AND DRIVE MEANS THEREFOR
Vance W. Bortel, 5011 N. 64th Dr., Glendale, Ariz.
Filed Apr. 21, 1972, Ser. No. 246,245
Int. Cl. B64c *27/14*
U.S. Cl. 244—17.19 **7 Claims**

Drive means for rotary wing aircraft wherein the torque and counter-torque developed in the aircraft's power unit are utilized to drive the aircraft.

3,799,474
BI-DIRECTIONAL DEFLECTIBLE CONTROL FLAP FOR AIRFOILS

Hans-Jurgen Scharzler, Munich, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed May 24, 1972, Ser. No. 256,382
Claims priority, application Germany, May 26, 1971, 2125971
Int. Cl. B64c *3/50*
U.S. Cl. 244—42 DA **9 Claims**

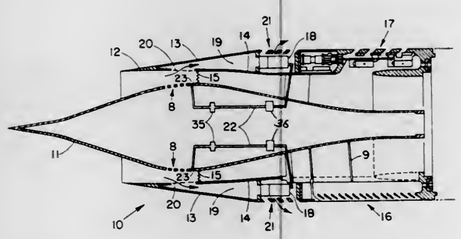


Control flap for aircraft mounted to the trailing end of an airfoil profile, wing or stabilizer and forming a profile-continuing part thereof in neutral position, and having a first flap and a second flap disposed one behind the other in direction of air flow. The second flap is hinged to the first flap and the first flap is hinged on the profile, so that only the second flap is deflected for deflection of the control flap in one direction, while for deflection in the opposite direction both flaps turn in unison. In each case different aerodynamically contoured gaps open for passage of air in opposite directions.

3,799,475
AIRFLOW CONTROL SYSTEM FOR SUPERSONIC INLETS

Glenn A. Mitchell, Berea, and Bobby W. Sanders, Brookpark, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 11, 1971, Ser. No. 152,328
Int. Cl. B64d *33/02*
U.S. Cl. 244—53 B **12 Claims**

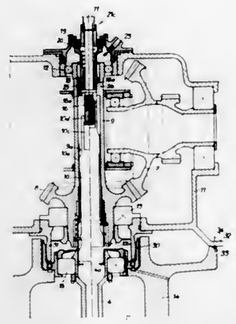


In addition to fixed and variable bleed devices provided for controlling the position of a terminal shock wave in a supersonic inlet, a plurality of free piston valves are disposed around the periphery of a cowling of a supersonic engine inlet. The free piston valves are disposed in dump passageways, each of which begins at a bleed port in the cowling that is located in the throat region of the inlet where the diameter of the centerbody is near maximum and terminates at an opening in the cowling adjacent a free piston valve. Each valve is controlled by a reference pressure.

3,799,476
MEANS FOR THE TRANSMISSION OF DRIVE TO AIRCRAFT ACCESSORIES

Jean Georges Bouiller, Brunoy, and Raymond Jean Maurice Joubert, Savigny-sur-Orge, both of France, assignors to Societe Nationale D'Etude Et De Construction de Moteurs D'Aviation, Paris, France

Filed Sept. 6, 1972, Ser. No. 286,826
Claims priority, application France, Sept. 7, 1971, 71.32301
Int. Cl. B64d *35/00*
U.S. Cl. 244—60 **7 Claims**

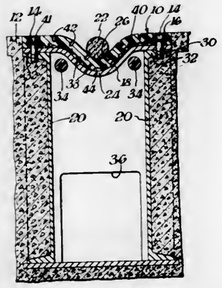


The engine main casing contains an accessory drive shaft, and the driven shaft for the accessory is contained within an accessory casing having a part-spherical annularly-shaped connecting part coaxial with the driven shaft and engageable slidingly within a cylindrical annularly-shaped connecting part of the engine casing, which is coaxial with the drive shaft, to form therewith a swivel-joint, and the casings further comprise bearing parts for keeping the shafts in alignment, whereupon the shafts are drivingly connected by means of a telescopable shaft section.

3,799,477
CROSS RUNWAY IMPACT PAD FOR AIRCRAFT ARRESTING SYSTEM

Umberto A. Carnevale, Wilmington, Del., assignor to All American Industries, Inc., Wilmington, Del.

Filed June 14, 1972, Ser. No. 262,619
Int. Cl. B64f *1/00*
U.S. Cl. 244—110 C **24 Claims**



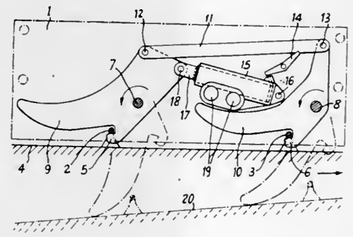
A strip across an airport runway under the cross runway pendant of an aircraft arresting system is protected by an impact pad secured to the runway. The pad comprises a slab of a strong durable abrasion resistant elastomeric material, such as polyurethane, having imbedded in it an elastic network of a relatively stiff material, such as expanded or fabricated mesh of metal or synthetic having a coefficient of thermal expansion

substantially matching that of the elastomer. The polyurethane has a low coefficient of restitution to damp vibrations and waves set up in the pendant or is resilient to suit the application. The pad is secured directly to the runway or on the removable lid of a covered channel installed under the cross runway pendant. The channel provides a depressed heated groove for receiving the pendant, drainage from equipment-containing pits to which it is connected, a conduit for electrical power supply and convenient access for maintenance. The impact pad is secured to the runway or lid by screws which engage the network at anchoring areas. The impact pad may include stress-absorbing cavities, such as slots on top and domed indentations below.

3,799,478
EJECTOR FOR JETTISONING LOADS FROM AIRCRAFTS

Bertrand Marie Dominique Costes; Pierre Fernand Coutin, both of Paris, and Jean Henri Marie Hasquenoph, Lagney, all of France, assignors to Etat Francais, represent par le Ministre de la Defense Nationale, Delegation Ministerielle pour l'Armentand R. Alkan & Cie, Paris, France

Filed Sept. 8, 1972, Ser. No. 287,355
Int. Cl. B64d *1/04*
U.S. Cl 244—137 R **4 Claims**



This ejector for jettisoning a load from an aircraft comprises a thrust mechanism responsive to the release control action exerted on the ejector and in the preferred embodiment a pair of cam extensions are associated with the thrust mechanism for exerting a kinematic and positioning action on points disposed longitudinally at spaced intervals on said load, so as to lower said points equally or differentially according to the desired nose-dive or tail-down position in which it is desired to jettison the load.

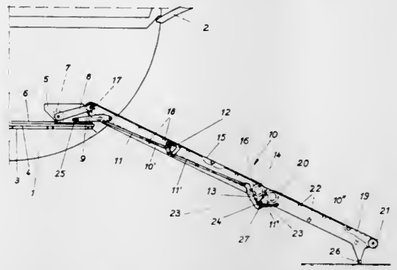
3,799,479
LOADING AND UNLOADING EQUIPMENT FOR AIRCRAFT

Jean Roeder, Munich, and Gerd Cerne, Bremen, both of Germany, assignors to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed May 31, 1973, Ser. No. 365,544
Claims priority, application Germany, June 10, 1972, 2228395
Int. Cl. B64d *9/00*
U.S. Cl. 244—137 R **9 Claims**

On-board loading and unloading equipment for aircraft, the aircraft being equipped for and with pallets movable in the craft along the longitudinal axis, a particular pallet is movably disposed in the cargo space of the craft and provided for being locked in position e.g. in front of the loading hatch in the aircraft; this pallet has a track extending transverse to said aircraft axis, and a carriage moves on the track, and away from the hatch;

a conveyor system is hinged to the carriage and comprised of two hingedly interconnected conveyor belt units, one can be folded under the other one, the latter being hinged to the

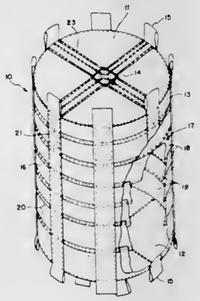


carriage. The unit which is folded under for storage will be pivoted into alignment in the first phase of protracting and lowering the conveyor system as a whole. The folding and unfolding is carried out as lever linkage follower action.

3,799,480
PARACHUTE DEPLOYMENT BAG

Viggo G. Dereng, 702 Juniper Dr., Newport News, Va.

Filed Aug. 23, 1972, Ser. No. 283,138
Int. Cl. B64d *17/40*
U.S. Cl. 244—147 **11 Claims**



A parachute deployment bag has a top wall portion closing the top end of the bag, a bottom wall portion closing the bottom end of the bag, and a side wall portion extending between the top and bottom wall portions. The side wall portion includes a foraminous outer wall and an inner wall made up of a plurality of segments. Each segment has a low friction inner surface, such as Teflon, and is secured at one edge only to the outer wall. Thus, each segment is a flap and, on removal of a parachute from an end of the bag, the flap segments flex or fold to admit ambient atmosphere through the foraminous outer wall to facilitate removal of the parachute. One edge of each flap segment overlaps, shingle fashion, the secured edge of each lower segment to form a continuous wall, sealed by the pressure exerted outward by the packed canopy. As the canopy is deployed, the flaps will successfully flex or fold open allowing entrance of ambient atmosphere.

3,799,481
SHOCK ABSORBER MOUNTING ASSEMBLY

Richard D. Anderson, 1650 Mulberry, Elgin, Ill.

Filed Jan. 18, 1973, Ser. No. 324,742
Int. Cl. F16f *15/00*
U.S. Cl. 248—15 **6 Claims**

A shock absorber mounting assembly in which the shock absorber includes a cylindrical knuckle the axis of which ex-

tends perpendicular to the shock absorber axis for mounting the shock absorber between the structures which are to be

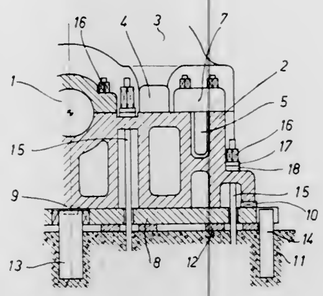
shock insulated from each other and an offset bar-pin is fitted to at least one of the cylindrical knuckles and mounts the cylindrical knuckle to at least one of the structures.

3,799,482

STABILIZED SUPPORT STRUCTURE FOR A TURBO-MACHINE

Hans Bellati, Wettingen, and Urs Ritter, Stusslingen, both of Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

Filed May 26, 1972, Ser. No. 257,174
Int. Cl. F01d *1/00*; **F16l** *15/00*
U.S. Cl. 248—19 **2 Claims**



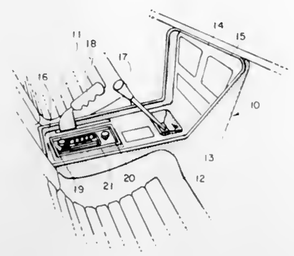
A turbo-machine of the type wherein the opposite ends of the rotor component are supported by bearing pedestals, and wherein the casing structure for the machine includes supporting feet which rest upon the bearing pedestals, is stabilized on its foundation by means of tie bolts which serve to anchor the bearing pedestals to the foundation and transmit the vertical forces acting on the bearing pedestals directly, and by the shortest route, to the foundation. The tie bolts which pass, with clearance, through corresponding aligned openings in the bearing pedestals and in an intermediate plate located between the lower face of the pedestals and foundation to permit sliding movement of the pedestal, have their lower ends anchored in the foundation, and tightening nuts are provided on the upper ends of the bolts. A pair of washers having matching spherical surfaces are applied to each tie bolt beneath the tightening nut so as to compensate for any misalignment of the tie bolt in the vertical direction.

3,799,483

RADIO MOUNTING COLLAR

Paul S. Chiappinelli, 400 W. 64th Pl., Inglewood, Calif.

Filed May 18, 1972, Ser. No. 254,509
Int. Cl. A47b *67/02*; **G12b** *9/00*
U.S. Cl. 248—27 **3 Claims**



An assembly for removably mounting a radio within an automobile console includes a special rectangular frame collar interposed between the radio and a rectangular framework secured within a well of the console.

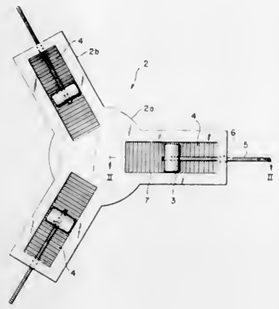
The collar is shaped to stably and snugly hold the radio and position it at some desired predetermined height relative to the console. Resilient clips attached to the radio and locking lips of the collar coact to releasably lock the radio in position.

3,799,484

ADJUSTABLE RESILIENT FLOOR LEVELING DEVICE

Ludwig Muller, Cologne, and Hans Schmitz, Weiden/Cologne, both of Germany, assignors to Kunststoffwerk Gebruder Anger GmbH & Co., Munich, Germany

Filed June 5, 1972, Ser. No. 259,580
Int. Cl. E04g *5/02*
U.S. Cl. 248—188.2 **10 Claims**



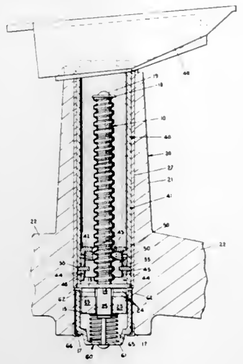
A prefabricated floor is supported upon a base surface by a plurality of intermediate elements each positioned upon the surface and under the corners of a plurality of abutting panels. Each intermediate element is in the form of a block which has a center portion from which radiate a plurality of arms. A wedge-shaped recess is formed in the underside of each arm with the deepest portion of the recess being away from the center of the block. A resilient tubular member is in each recess and has a rod attached thereto. The rod passes through end openings in the recesses outwardly of the block so that the tubular members can be displaced within their respective grooves exteriorly of the block.

3,799,485

HEIGHT ADJUSTING MECHANISM

Richard H. Wolters, Grand Rapids, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Aug. 31, 1972, Ser. No. 285,188
Int. Cl. F16m *13/00*
U.S. Cl. 248—406 **11 Claims**



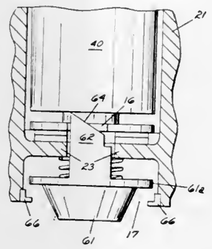
The height-adjusting mechanism includes a threaded spindle rotatably mounted in a chair base, a nut threaded on the spindle and a seat-supporting column telescopically mounted in the base and carried on a detent washer which in turn rests on top of the nut. A pin projecting from the nut and through elongated vertical slots at the base of the column allows vertical movement of the column with respect to the nut, but fixes the column against rotatable motion with respect to the nut. The detent washer includes a key projecting into a slot in the spindle and includes downwardly projecting detents engaging depressions in the top of the nut and normally preventing rotation of the washer and spindle with respect to the nut. A locking button at the base of the spindle can be depressed upwardly to hold the spindle against rotation such that when the chair is rotated, the column and the nut will rotate with respect to the detent washer and with respect to the threaded spindle and will thereby adjust upwardly or downwardly.

3,799,486

HEIGHT ADJUSTING MECHANISM

Robert G. Mohr, Grand Rapids, and Adrian R. Olree, Caledonia, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Aug. 31, 1972, Ser. No. 285,527
Int. Cl. F16m *13/00*
U.S. Cl. 248—406 **16 Claims**



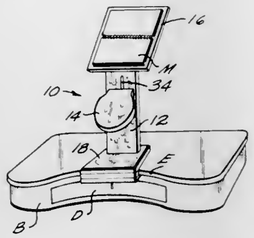
The height adjusting mechanism includes a threaded spindle rotatably mounted in a chair base and a seat supporting column telescopically mounted in the base and operably threadably mounted on the spindle. To lock the spindle against rotation with respect to the base and thereby allow one to adjust the chair height by rotating the seat supporting column, one depresses upwardly a button at the bottom of the base. The button includes a pair of fingers which engage slots in a shoulder plate which is attached to the spindle. As the column is threaded downwardly and approaches its lowermost position, the bottom thereof engages the tops of the fingers and forces them out of engagement with the slots in the shoulder plate.

3,799,487

REWEAVER'S BENCH FIXTURE

Norman J. Durrant, 5360 Bushnell Ave., Riverside, Calif.

Filed July 17, 1972, Ser. No. 272,292
Int. Cl. A47b *97/00*
U.S. Cl. 248—441 **4 Claims**



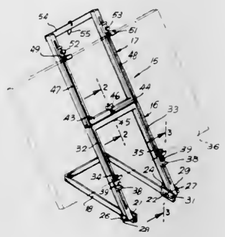
A fixture for assisting a reweaver in repairing damaged fabric has a base with an upstanding post on which a sloping plate is mounted for vertical and angular adjustment to support the fabric at a convenient, comfortable angle. Detachably mounted at the top of the post is a second sloping plate at a steeper angle, which serves as an easel and supports instructions, notes, and the like to assist the reweaver in his task. The easel can be replaced by a pin cushion. The base can have a sliding drawer or be formed with a pair of vertically spaced plates, between which is received a bench edge.

3,799,488

ARTIST'S COLLAPSIBLE WALL AND TABLE MOUNTABLE EASEL

Joseph Sena, 36-27 12th St., Long Island City, N.Y.

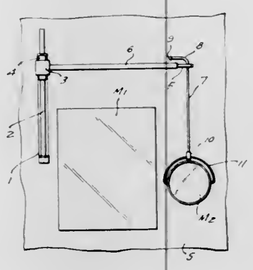
Filed July 13, 1972, Ser. No. 271,217
Int. Cl. A47b *97/08*
U.S. Cl. 248—452 **6 Claims**



An artist's collapsible easel has been provided which can be mounted either on a table or upon a wall and wherein the frames of the same can be angled and rigidly held in the angled positions against collapse upon one another by slide plates having lateral projectons that can adjustably engage between the side edges of the frames close to the point of the pivot bolt connection between the frames and thereby eliminate the need for the usual links or easel brackets at remote positions from their pivot connections with one another and thereby provide for an artist's easel of the collapsible type which is

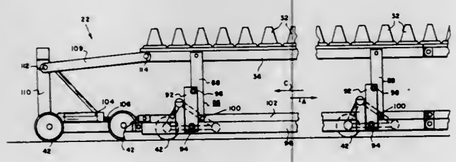
more compact and without so many parts. U-shaped base and canvas supporting frames are formed of regular tubular or bar stock and brackets for engagment with the upper and lower edges of the artist's canvas frame are connected in an adjustable manner upon the legs of the canvas supporting frame, while the free ends of the frame legs are joined together by the pivot bolt connections and held against collapse by the lateral projections of slide plates held in common with leg ends and the same pivot bolts.

3,799,489
MIRROR ARRANGEMENT
Hans Goerditz, 156 Little Tor Rd. South, New City, N.Y.
Filed Sept. 27, 1972, Ser. No. 292,627
Int. Cl. A47g *1/24*
U.S. Cl. 248—480 **6 Claims**



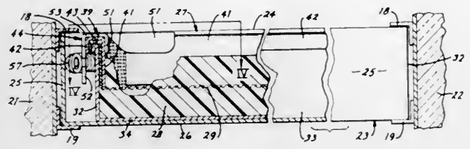
A bracket is mountable on a support adjacent a mirror provided thereon and has an upright rod over which a mounting block which is provided on one end of a boom and which has a passage dimensioned to accommodate the rod, can be slipped. The free end of the boom has a hole extending transversely to the elongation of the latter, and an elongated arm is shiftably received in this hole, so as to depend from the boom downwardly in parallelism with the rod. The lower end of the arm carries the pivoted mirror.

3,799,490
PORTABLE SLATTED ANIMAL PEN FLOOR FORMING APPARATUS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz.
Filed Oct. 30, 1972, Ser. No. 301,990
Int. Cl. E04g *11/00*
U.S. Cl. 249—18 **8 Claims**



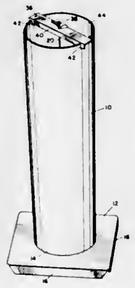
A portable form for casting in place suspended slatted monolithic-type floor panels or sections of uniform size for animal pens. This same inventive concept may be used to precast monolithic slatted floor panels at a spot near or at the erection site.

3,799,491
APPARATUS FOR MAKING A CUSHION
Wayne Warfield, Kalamazoo Township, Kalamazoo County, and John E. Barnett, Kalamazoo, both of Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed Nov. 8, 1971, Ser. No. 196,534
Int. Cl. B22d *19/00*
U.S. Cl. 249—83 **10 Claims**



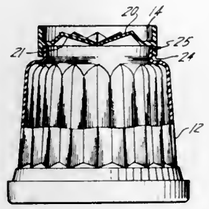
A method and apparatus for making a cushion constructed of a gel-like substance and having a flexible mesh-like sheet embedded therein. The mesh is placed within a tray so that the edges of the mesh drape over the upper edges of the side-walls of the tray where they are held by elongated channel-shaped clamping members. Each clamping member has an inner leg which projects downwardly into the tray to position the mesh at a desired level within the tray. Corner clips overlap adjacent ends of the channel members to hold same tightly in position. A liquid substance is poured into the tray and it passes through the mesh to fill the tray to the desired depth. The tray is placed in an oven and heated at a predetermined temperature for a predetermined time whereby the liquid substance becomes a gel-like cushion with the mesh embedded therein. After the cushion has cooled, it is removed from the tray and the edges of the mesh are trimmed. The gel-like cushion can then be covered by a suitable casing.

3,799,492
CANDLE MOLD
Joseph F. O'Laughlin, Gavilan Rd., Fallbrook, Calif.
Filed June 21, 1971, Ser. No. 154,892
Int. Cl. B22d *5/00*
U.S. Cl. 249—94 **2 Claims**



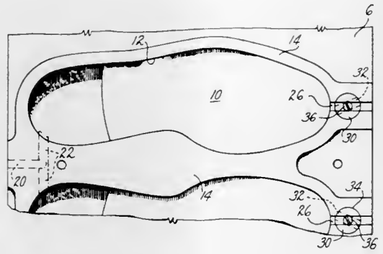
A candle mold for quantity production of candles, the mold itself being very inexpensive to produce by reason of its simplicity, the upper wick-holding element being formed of sheet metal with a downwardly turned flange which engages slits in the upper end of the main shell of the mold to locate the wick accurately, and the lower wick-holding element being a slotted inflexible clip fitted with a split washer or pad of resilient material, the latter sealing the lower end of the mold and the inflexible clip presenting undue deformation and failure of the washer as a sealing element.

3,799,493
MOLD FOR CONGEALABLE FOODSTUFFS AND THE LIKE
Harold R. Beck, Woodland Hills, Calif., and James B. Swett, Barrington, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Division of Ser. No. 659,735, Aug. 10, 1967, Pat. No. 3,533,593. This application Nov. 24, 1969, Ser. No. 877,597
Int. Cl. B28b *7/34*
U.S. Cl. 249—104 **1 Claim**



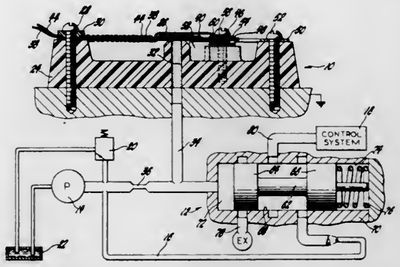
An individual serving sized plastic salad mold particularly well adapted for use with gelatin and having a reversible decorative impression forming closure.

3,799,494
MULTI-CAVITY MOLDS
George F. McLean, Jr., Middleton, Mass., assignor to USM Corporation, Boston, Mass.
Filed May 11, 1972, Ser. No. 252,420
Int. Cl. B29f *1/00*; **B29c** *1/00*
U.S. Cl. 249—119 **7 Claims**



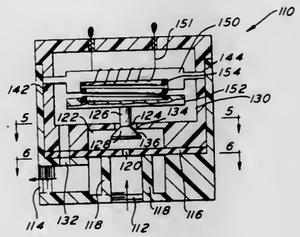
A mold having a plurality of cavities for forming articles having complex shapes such as the unitary sole and heel tread member of a shoe wherein the article cast is of a foamed material such as polyurethane, specific charges of which are injected into the cavities in a liquid form, and expanded therein, each of the articles being expanded to a predetermined size, shape and density standard, the mold for such articles being formed of first and second mold members defining the molding cavities therein. When the mmebers are operatively assembled together for molding, at least one of the mold members is adapted with a sprue connected to a runner system communicating with each molding cavity for partially filling each cavity with the material. Venting means adapted with variable adjustment means extends from within each cavity through the mold member to the outside thereof, said sprue and runner system which leads to each cavity being of predetermined symmetry.

3,799,495
FLUID CONTROL HAVING A BI-METAL ACTUATING MEMBER
Quinby E. Wonn, Plymouth, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Apr. 2, 1973, Ser. No. 347,129
Int. Cl. G05d *15/01*
U.S. Cl. 251—11 **3 Claims**



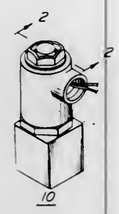
A fluid control device for controlling fluid flow through a passage. The passage opening is controlled by deflection of a bi-metal strip which is heated by a rapid heating element for quick opening response and a slow heating element for maintaining the passage open. A compensating bi-metal strip provides ambient temperature compensation for the bi-metal strip and cooperates therewith to provide an electric switch to discontinue operation of the rapid heating element when the passage is opened. The flow of fluid through the passage provides a pressure signal for operating a fluid control valve.

3,799,496
PILOT OPERATED CONTROL VALVE
Harold Esten, 73 Messenger La., Willingboro, N.J.
Filed Apr. 22, 1971, Ser. No. 136,432
Int. Cl. F16k *31/385*, *31/40*
U.S. Cl. 251—30 **2 Claims**



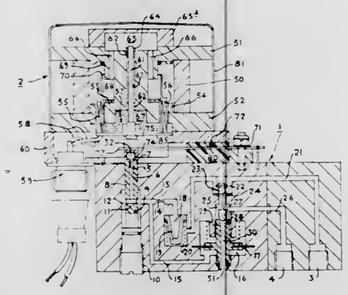
A pilot operated control valve for limiting flow in a main line, a diaphragm positioned adjacent said main line, said diaphragm having an orifice leading into a poppet chamber having an opening, a poppet passing through said opening, and projecting into said poppet chamber whereby the effective area of said opening is changed by the movement of said poppet, said opening leading to a control chamber and outlet means connecting with the main flow. A small portion of the main flow is diverted through the diaphragm orifice, through the poppet opening and then into the control chamber to return to the main flow through the outlet. The main flow can be varied in accordance with the effective opening into the control chamber as defined by the position of the poppet in order to achieve an electrohydraulic servo valve, a pressure regulator or a pressure balance valve.

3,799,497
TWO STAGE SOLENOID OPERATED VALVE
Kenneth W. Zeuner, Newtown, Pa., assignor to Control concepts, Inc., Newtown, Pa.
Filed Apr. 20, 1972, Ser. No. 245,929
Int. Cl. F16k *31/383, 31/40*
U.S. Cl. 251—30 5 Claims



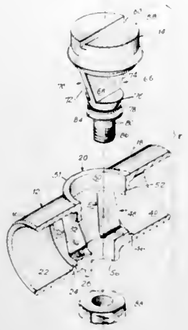
A two stage solenoid operated valve assembly having a first stage poppet movable for seating in a first stage orifice to control fluid flow in a second stage. A second stage poppet is movable for seating in a second stage orifice to control the main flow of fluid. Flow from the first stage orifice to the outlet is through a flow passage which is received within a longitudinal opening extending over the length of the second stage poppet. The second stage poppet moves longitudinally with respect to the flow passage.

3,799,498
VALVE MEANS
David John Wickham, and John Lewis Hall, both of London, England, assignors to Westinghouse Brake and Signal Company Limited, London, England
Filed Feb. 7, 1972, Ser. No. 224,057
Claims priority, application Great Britain, Mar. 5, 1971, 6098/71
Int. Cl. G05d *16/00*; F15b *5/00*; F16k *31/10*
U.S. Cl. 251—129 11 Claims



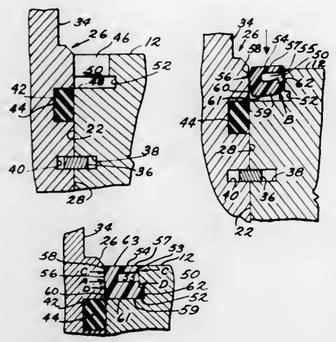
An electro-pneumatic converter of the type in which the pneumatic output signal is derived from the back-pressure at a throttled exhaust port variation of throttling of which is effected by varying the value of the electrical signal applied to an electromagnetic system. In such a converter movement of the electro-magnetic system is damped and the system is coupled to the throttling element via a spring.

3,799,499
FLUID FLOW ISOLATION/REGULATION VALVE
Ira Shur, Rockville, N.Y., assignor to Flair Manufacturing Corp., Houppauge, L.I., N.Y.
Filed Aug. 31, 1972, Ser. No. 285,462
Int. Cl. F16k *31/60*
U.S. Cl. 251—290 8 Claims



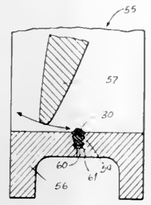
An isolation/regulating valve including a valve body having a hollow interior and a frustoconical valve seat. A valve stem is rotatable in said valve body and includes a liquid flow control element rotatable in said valve seat. Said flow control element has opposed parallel flat surfaces which are trapezoidally shaped.

3,799,500
ROTARY VALVE WITH ANTI-CORROSION AND TORQUE CONTROLLING MEANS
Wilbur R. Leopold, Jr., Decatur, Ill., assignor to Mueller Co., Decatur, Ill.
Filed July 6, 1972, Ser. No. 269,293
Int. Cl. F16k *31/00*
U.S. Cl. 251—297 6 Claims



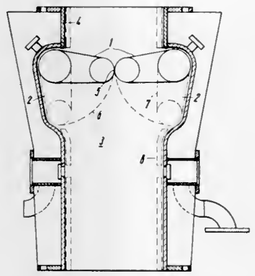
A rotary valve assembly of the "soft seat" type for use in fluid distribution systems such as gas or water. The valve assembly includes a valve housing having a fluid passage therethrough and a rotary valve structure including a valve operating member or stem extending exteriorly of the housing and a valve member for cooperating with valve seat means in the flow passage. Means are provided between the valve stem and the wall of the bore through which the valve stem extends for applying a controlled torque sufficient to render the valve structure inoperative by hand. Additionally, the torque controlling means prevents ingress of fluid or abrasive material to the interior of the valve assembly and also prevents corrosion between the valve stem and valve housing.

3,799,501
ELASTOMERS IN SHEAR FORCE TRANSFER SYSTEMS
Thomas A. Hartman, 700 Capac Ct., St. Louis, Mo.
Continuation of Ser. No. 32,838, April 29, 1970, abandoned. This application Dec. 27, 1971, Ser. No. 212,604
Int. Cl. F16k *1/22, 3/00, 5/06*
U.S. Cl. 251—306 5 Claims



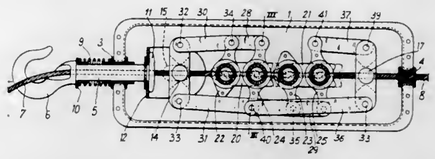
This is an elastomer seal having spring and centering support characteristics and employing the shear properties of elastomers. The present structure in an important adaptation is an improved seal for valves, as butterfly, ball, gate, and others. Also involved is the use of elastomers in shear in force transfer systems to seal, position, retain, or actuate and the novel methods thus involved.

3,799,502
ADJUSTABLE VENTURI THROAT FOR THE PURIFICATION OF BLAST FURNACE GASES
Jorg Peter Baum, Essen, Germany, assignor to Verfahrenstechnik Dr.-Ing. Kurt Baum, Essen, Germany
Filed July 10, 1972, Ser. No. 269,924
Claims priority, application Germany, July 17, 1971, 2135840
Int. Cl. F16k *47/00*
U.S. Cl. 251—124 6 Claims



This disclosure teaches an adjustable venturi throat for dust purification of blast furnace gases, operating at up to sonic velocities with a substantially constant pressure drop, adjusted by dampers having a length of approximately one half the width of the throat. In a preferred embodiment the dampers are streamlined in shape, with the narrower ends swinging in mirror images to form a nozzle curve. The ends may be adapted to form a roller-type closure when the dampers are fully closed.

3,799,503
TWIN CLAMP TRACTION APPARATUS FOR CABLES OR RODS
Andre Desplats, Boulogne-Billancourt, France, assignor to Tractel S.A., Paris, France
Filed Feb. 7, 1972, Ser. No. 223,972
Claims priority, application France, Feb. 12, 1971, 71.04823
Int. Cl. B66d *1/00*; B66f *3/00*
U.S. Cl. 254—73 4 Claims



The apparatus comprises tandem clamps the movement and the clamping of which are controlled through pairs of links having a cam effect on the clamp jaws. The cam surfaces of the clamping links of each clamp are disposed, in each clamp, symmetrically in reference to a transverse plane perpendicular to the cable axis, so that these clamps are actuated by a system comprising links and a reverse motion crankshaft, this system being constructed similarly to the one comprising links and forward motion crankshaft. The axis of these two crankshafts is disposed in a common fixed plane containing the cable axis and the pivot axis of the clamping links.

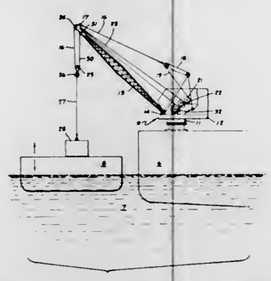
3,799,504
PNEUMATICALLY OPERATED LIFT DEVICE
Jack F. Vaughen, 807 Spring Creek Rd., Palos Verdes Peninsula, Calif.
Continuation-in-part of Ser. No. 183,554, Sept. 24, 1971, abandoned. This application May 2, 1972, Ser. No. 249,652
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 HP 28 Claims

A lifting device comprising an upper platform to support a load; a lower base platform and an inflatable envelope interposed between the two platforms for inflation to lift the load, the envelope being of a configuration to stabilize the upper platform. The envelope may be of generally toroidal configuration to form a central compartment which may or may not be pressurized to cooperate in the support of the upper platform. In some practices of the invention, the upper platform is flexible to conform to loads that have non-planar bottom surfaces. In such practices of the invention, the central compartment may be vented to the atmosphere to favor central downward bowing of the flexible platform for a greater area of pressure contact with a downwardly bulging load.

3,799,505
CRANE AIDING MECHANISM
Anthony Bruce Duncan, Piedmont, Calif., assignor to The Rucker Company, Oakland, Calif.
Filed Nov. 23, 1971, Ser. No. 201,416
Int. Cl. B66d *1/48*
U.S. Cl. 254—173 3 Claims

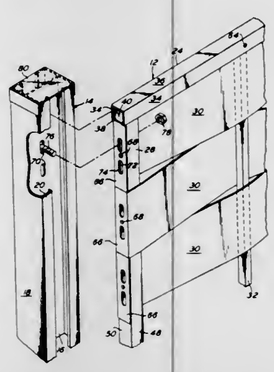
A crane aiding mechanism is for use with a crane having a two-part line. A hoist part of the line is engaged with a regular

hoist and an aid part of the line is engaged with an aid winch. Coupled to the aid winch is a hydraulic motor-pump connected between a high pressure hydraulic fluid source and a low pressure hydraulic fluid source. The hyraulic motor-pump



either drives the winch or is driven by the winch in maintaining the aid part of the line taut. An interconnected, hydraulically actuated brake on the aid winch is operated to stall the aid winch when the regular hoist is operated.

3,799,506
FENCE
Gerald L. Schwartz, 3682 Sipler Ln., Huntingdon Valley, Pa.
Filed Apr. 14, 1972, Ser. No. 244,012
Int. Cl. E04h *17/14*
U.S. Cl. 256—24 **6 Claims**



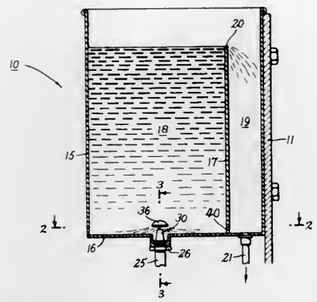
A fence comprising a pair of spaced posts having a plurality of aligned panels passing therebetween. The panels are woven around a plurality of vertically extending bars. The panels and posts are preferably formed from aluminum. The panels are maintained between a top rail and a bottom rail, and are secured to end rails that are slidably mounted within the top and bottom rails. Tension is applied to the panels by securing the end rails to the posts. The top and bottom rails are vertically slidable within the posts, and accordingly variations in the land contour can be accommodated by varying the vertical position of the rails in the posts.

3,799,507
ROADWAY BARRIER
Rudolph R. Rizzo, 55 W. Main St., Frostburg, Md.
Filed Mar. 22, 1972, Ser. No. 236,728
Int. Cl. E01f *13/00*
U.S. Cl. 256—64 **10 Claims**

A trestle-type roadway barrier has a horizontally elongated main body formed of a pair of back-to-back sheets of plastic which are provided with reinforcing ribs. Visibility of the device is enhanced by incorporating fluorescent, phosphorescent and/or reflective materials in the polymer; by providing a faceted surface; and/or by locating a light source inside the translucent barricade. The main body is supported by a plurality of legs, each of which has an upper section pivotally attached to the main body and a lower section which is angularly adjustable with respect to the upper section.

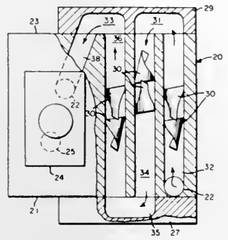
When the barricade is in its erect position, the upper portion of each leg is generally vertical and retained in place by projections on the horizontal main body. These projections are displacable inwardly under force to permit rotation of the upper portion of the legs to a collapsed position where they lie generally parallel to the main body. The lower portion of each leg includes a concentric helical spring which minimizes damage thereto when the barrier is struck by a vehicle.

3,799,508
MIXING APPARATUS
Orlan M. Arnold, Norwalk, and Carlo A. Vancini, Stamford, both of Conn., assignors to Peabody Engineering Corporation, New York, N.Y.
Filed July 10, 1972, Ser. No. 270,215
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **5 Claims**



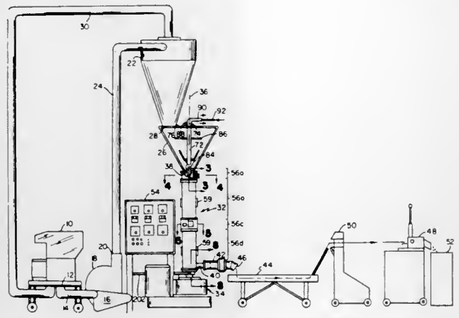
A mixing tank for mixing a powder or liquid in a carrier liquid having a mixing compartment and a discharge compartment separated by a weir into which the mixed liquid overflows. The mixing compartment contains a nozzle adapted to project a film of liquid around its entire periphery. The nozzle is mounted near the bottom of the compartment and below the liquid level and directs the liquid film outwardly and downwardly to agitate the liquid in the compartment and to prevent deposition of the powder or precipitate onto the bottom.

3,799,509
MIXER FOR A MELT SPINNING APPARATUS
Bruce A. Bydal, Martinsville, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Mar. 2, 1972, Ser. No. 231,170
Int. Cl. B01f *5/00*
U.S. Cl. 259—4 **1 Claim**



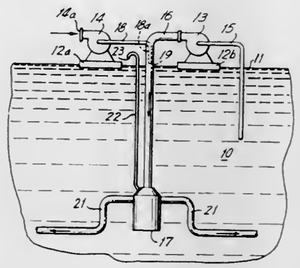
A modification of a spinning pump wear plate that enables it to be used as a means to distribute polymer to spinning packs and as a mixing device directly upstream of the spinning pump. The inlet passage is formed of a plurality of channels through opposite sides of the wear plate with each channel containing a plurality of stationary mixing elements. Caps enclose the opposite sides and provide the means to connect successive channels to form a continuous folded enclosed inlet passage connecting the polymer source and the spinning pump.

3,799,510
EXTRUSION OF PLASTIC AND THE LIKE
Charles M. Schott, Jr., Gloucester, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.
Continuation-in-part of Ser. No. 806,861, March 13, 1969, Pat. No. 3,605,654. This application Jan. 18, 1971, Ser. No. 107,083. The portion of the term of this patent subsequent to Feb. 27, 1989, has been disclaimed.
Int. Cl. B01f *7/24*
U.S. Cl. 259—191 **35 Claims**



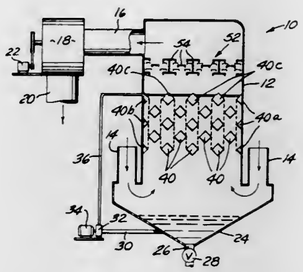
Extruder, especially a vertically arranged extruder, and a system useful for recovery of scrap plastic film. An extruder feeder section comprising an initial portion of the extruder barrel has rotation retarding formation, preferably axially extending grooves, and forced feed fluid cooling. A vented section between first and second conveying sections of the extruder barrel has a relieved area including a guiding surface to cause plastic to gradually reconverge to the confines of the main barrel surface. A screw shank extending beyond the extruder outlet has a multi-piece seal which is anchored from rotation with the shaft.

3,799,511
METHOD OF FORMING A SOLUTION OF GAS AND LIQUID INTRODUCING SUCH SOLUTION INTO A BODY OF LIQUID
Sven Elis Ake Svantesson, Bromma, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 3, 1972, Ser. No. 223,347
Claims priority, application Sweden, Feb. 9, 1971, 1585/71
Int. Cl. B01f *3/04*
U.S. Cl. 261—29 **1 Claim**



For efficiently dissolving a gas in liquid and introducing the solution of gas and liquid in a body of liquid, the gas initially is mixed with liquid. The mixture of gas and liquid is then subjected for an adequate length of time to a pressure sufficiently greater than that prevailing at the liquid surface of the liquid body for the gas to dissolve in the liquid to form a solution of the gas and liquid. Without any significant change in pressure, the solution of gas and liquid is then introduced free of turbulence into the body of liquid below the liquid surface level thereof.

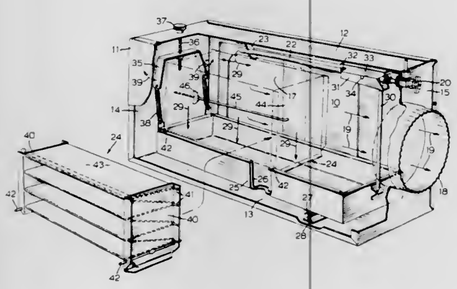
3,799,512
GAS-LIQUID MIXING APPARATUS
Charles L. Raybon, Riverside, Calif., assignor to Bruce E. Echols, Riverside, Calif.
Filed Jan. 10, 1972, Ser. No. 216,469
Int. Cl. B01d *47/06*
U.S. Cl. 261—29 **8 Claims**



An enclosed chamber having a plurality of horizontally extending, parallel baffles arranged in rows of vertically spaced and vertically aligned baffles. The baffles of one row are offset midway between the corresponding baffles of the next adjacent rows on either side. The tops of the baffles slope downwardly on opposite sides and terminate in lateral extremities which lie in substantially the same vertical plane as the lateral extremities on the near side of the next adjacent row. Vertical screens extend downwardly between rows of baffles, touching the adjacent lateral extremities of the baffles on both sides. Liquid is cascaded down through the chamber,

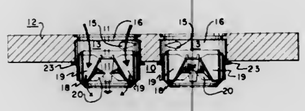
falling from one baffle in one row onto the next lower baffles of adjoining rows, and passing alternately through the screens first in one direction and then the other. At the same time, gas is blown upwardly through the chamber, traveling in a serpentine path around the baffles and through the spaces between them, passing back and forth from one row to the other and back again, picking up droplets of liquid cascading from the baffles and down the screen, and churning them around in a vigorous rolling and tumbling action. At the top of the chamber, any entrained droplets of liquid are separated out from the gas in a de-misting section.

3,799,513
HUMIDIFIER
Gordon R. Winton, 369 Broadway, Tillsonburg, Ontario, Canada
Filed Oct. 26, 1971, Ser. No. 192,427
Int. Cl. B01f *3/04*
U.S. Cl. 261—39 **7 Claims**



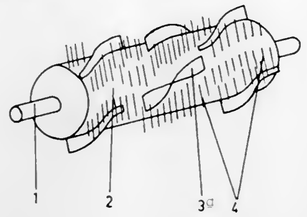
In a humidifier the water flows in a water flow path over a humidifier element into a pivoted tray which controls the opening and closing of the water supply valve through a mechanical connection. One end of the tray is suspended by a thermal motor, specifically a bimetallic element, from the humidifier casing, the motor being operative when hot air flows in the casing to lift the tray end and thereby quickly cause opening of the valve and supply of water to the element.

3,799,514
ANTIPOLLUTION DEVICE
Walter P. Braden, P.O. Box 1037, Portola, Calif.
Filed Oct. 16, 1972, Ser. No. 298,105
Int. Cl. F02m *19/10*
U.S. Cl. 261—78 R **7 Claims**



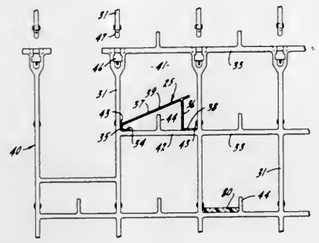
The antipollution device in a carburetor comprises a plate including suitable fuel ducts supplied with liquid fuel under pressure and nozzles operable to receive fuel from the ducts of the plate, the nozzles including suitable baffle veins operable to circulate and mix liquid fuel and air.

3,799,515
APPARATUS FOR SUPPLYING A GAS, ESPECIALLY AN OXYGEN INTO A LIQUID
Antonius Hubertus Geerlings, Heidestraat 5, Susteren, Netherlands
Continuation of Ser. No. 93,240, Nov. 27, 1970, abandoned. This application May 3, 1973, Ser. No. 356,997
Claims priority, application Netherlands, Dec. 3, 1969, 6918125
Int. Cl. B01f *3/04*
U.S. Cl. 261—92 **4 Claims**



A device for introducing a gas into a liquid, as for de-pollution of a stream or pond. A rotatable shaft, journalled in floating or fixed bearings, has radial extensions formed both by propelling plates and brush parts. The propelling plates and brushes may be secured to a hollow core, which is fastened to the shaft, and the weight of the whole device may be lower than the lifting power of the liquid on the device. The propelling plates may be helically arranged around the shaft, so that a continuous rotation of the shaft is obtained by the stream of the liquid, and the propelling plates may be prolonged in tangential direction to increase the propelling force thereof. The brushes may rotate relatively to the shaft. A guiding gutter may be provided at the area of the propelling plates, water being pushed through the gutter for causing the shaft to rotate, and the gutter may have a venturi-like section.

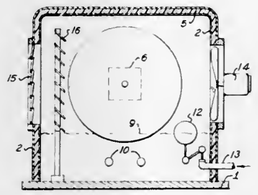
3,799,516
FILL HANGER
Donn B. Furlong, and Samuel Luzaich, both of Santa Rosa, Calif., assignors to Ecodyne Corporation, Chicago, Ill.
Division of Ser. No. 63,150, Aug. 12, 1970. This application Mar. 16, 1973, Ser. No. 341,006
Int. Cl. B01f *3/04*
U.S. Cl. 261—111 **5 Claims**



A fill assembly for a cooling tower comprising a plurality of fill strips positioned within the fill area, a plurality of spaced apart vertically suspended fill hangers positioned transversely with respect to said fill strips within said fill area, said fill hangers having a plurality of substantially horizontally and generally vertically extending members which intersect one another to form a plurality of parallelogram grids, each of said fill strips being supported by a horizontal portion of one of

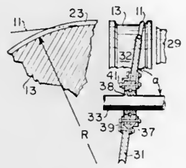
said parallelogram grids of at least two of said fill hangers, and each of said parallelogram grids including means associated with said vertically extending members to retain said fill strips in a predetermined position relative to said horizontal portion. Also provided are unique snap-lock joints to attach adjacent fill hanger sections and horizontal and transverse stabilizers to increase the stability of the fill assembly.

3,799,517
METHOD FOR AIR MOISTENING
Walther Johann Tamm, Georgenstrasse 38 B.R.D., Munich, Germany
Filed Mar. 12, 1971, Ser. No. 123,747
Claims priority, application Germany, Mar. 14, 1970, 2012373
Int. Cl. B01f *3/04*
U.S. Cl. 261—128 **8 Claims**



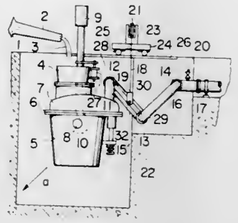
Method of humidifying a cold air stream in which movable surfaces of low heat conductivity mounted in a housing of low heat conductivity are continuously wet by a thin cohesive film of water obtained by dipping the moving surfaces in a water bath maintained in constant level at a constant temperature above the temperature of the air then the wet moving surfaces being exposed to the air stream to be humidified.

3,799,518
WIRE DRAWING ANNEALERS
Angelo P. Barone, De Kalb, Ill., assignor to The Anaconda Company, New York, N.Y.
Filed Jan. 4, 1973, Ser. No. 321,062
Int. Cl. C21d *9/62*
U.S. Cl. 266—3 R **3 Claims**



In a wire drawing resistance annealer a guide sheave is obliquely mounted on a horizontal axis upstream of the first contact pulley so that essentially all points of the pulley surface are contacted by the wire.

3,799,519
PIPING SYSTEM IN A VACUUM DEGASSING APPARATUS FOR MOLTEN METAL
Masao Yamazoe, Kobe, Japan, assignor to Kabushiki Kaisha Osaka Shinkuukiki Seisakusho, Osaki-shi, Osaka-fu, Japan
Filed Apr. 27, 1972, Ser. No. 248,155
Claims priority, application Japan, May 14, 1971, 46-32709
Int. Cl. C21c *7/10*
U.S. Cl. 266—13 **6 Claims**

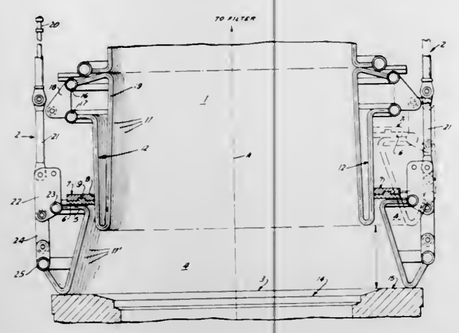


A piping system in a vacuum degassing apparatus for molten metal is described, which apparatus includes a ladle body suspended from movable suspension means disposed thereabove for receiving the molten metal poured from a lower end of an outlet trough of a furnace and adapted to be moved within a given vertical plane by said movable suspension means in accordance with the displacement of the lower end of said outlet trough which follows the process of pouring the molten metal; which piping system is characterized in that it comprises a mounting pipe fixedly secured onto an upper cover plate of said ladle body so as to communicate with an opening in said upper cover plate, a fixed pipe connected to evacuating means, and a plurality of movable pipes connected with each other and with said mounting pipe and said fixed pipe, respectively, via a plurality of pairs of vacuum-tightly coupled flanges disposed in parallel to said given vertical plane and rotationally slidable about the axes of said respective flange pairs so that said pipes may form a bendable vacuum tight piping system capable of extending and contracting within a plane in parallel to said given vertical plane. Further, an additional suspension means for suspending one of said movable pipes in such manner that the weight of the movable pipes and the flange pairs therebetween may not affect upon the weight balance of said ladle body, means for flexibly supporting an end portion near to said fixed pipe of said coupled movable pipes, means for quickly coupling said mounting pipe and the adjacent movable pipe, a favorable structure of the vacuum-tightly coupled slidable flanges, and automatically controlled movable truck means from which said one movable pipe is suspended via a wire rope, are described.

3,799,520
TWO-PART GAS-COLLECTING HOOD FOR CONVERTER
Karl-Rudolf Hegemann, Essen; Gunther Finger, Wesel, and Munir Pasambegovic, Essen, all of Germany, assignors to Gottfried Bischoff Bau kompl. Gosreinigungs-und Wasserruckkuhlanlagen Kommandirgesellschaft, Essen, Germany
Filed Apr. 16, 1973, Ser. No. 351,529
Int. Cl. C21c *5/38*
U.S. Cl. 266—19 **9 Claims**

A gas-collecting hood for a steel-making converter has a fixed upper ring formed by an array of heat-exchanger tubes

and a similarly formed lower ring which surrounds and telescopes with the upper ring and may be dropped down around the mouth of the converter. A chain seal is provided which rests on a ledge formed by an outwardly bent flange at



the top of the lower ring and which engages the exterior of the inner ring. This chain is formed of a plurality of rigid links which are fitted and pivoted together by means of integrally formed pins and holes as in a sprocket chain.

3,799,521

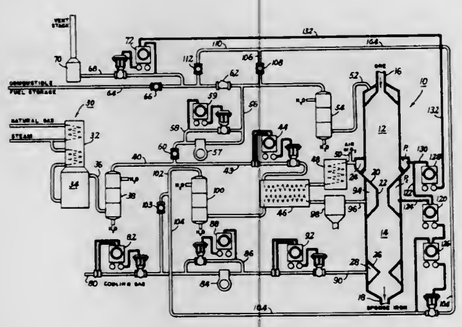
METHOD AND APPARATUS FOR THE GASEOUS REDUCTION OF IRON ORE TO SPONGE IRON

Juan Celada; David Villarreal, and Patrick W. MacKay, all of Monterrey, Mexico, assignors to Fierro Esponja S.A., Monterrey, N. L., Mexico

Division of Ser. No. 98,612, Dec. 16, 1970, Pat. No. 3,765,872, which is a continuation-in-part of Ser. No. 55,161, July 15, 1970, abandoned. This application Feb. 1, 1973, Ser. No. 328,712

Int. Cl. C21b *13/02*

U.S. Cl. 266—29 **8 Claims**



Method and apparatus for reducing particulate metal ore, e.g., iron ore, to metal particles, e.g., sponge iron, in a vertical shaft, moving bed reactor having a reduction zone and a cooling zone wherein separate streams of reducing gas and cooling gas are used in the reduction and cooling zones, respectively, and means are provided for minimizing commingling of the two gas streams. In one embodiment a differential pressure controller is used to maintain substantially equal the gas pressure at the bottom of the reduction zone and the gas pressure at the top of the cooling zone. In another embodiment the flows of inlet gas to and outlet gas from the cooling zone are controlled to maintain these two flows substantially equal. Either or both of the reducing gas and cooling gas may be recycled in a closed loop.

3,799,522

APPARATUS FOR INTRODUCING GAS INTO LIQUID METAL

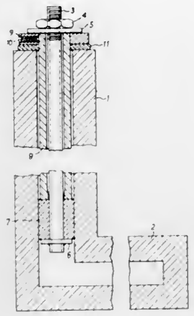
Malcolm Victor Brant, Bucks, and Michael Edwards, Waltham near Maidenhead, Berks, both of England, assignors to The British Aluminum Company Limited, London, England

Filed Oct. 6, 1972, Ser. No. 295,534

Claims priority, application Great Britain, Oct. 8, 1971, 46974/71

Int. Cl. C22b *21/06*

U.S. Cl. 266—34 PP **8 Claims**



The invention concerns apparatus for introducing a gas into liquid metal and provides a member formed of silicon carbide or alumina bonded with a binding material comprising the oxides and silicates of zirconium, titanium or aluminium, the member having a tubular stem portion and a diffusing portion at an angle thereto between 45° and 135° and preferably 90°, the stem portion being made gas impermeable preferably by insertion of a gas feed tube coaxially sealed therein.

3,799,523

MOLTEN METAL STIRRING DEVICE WITH CLAMPING MEANS

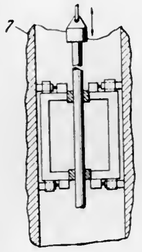
Masahiko Seki, Kitakyushu, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 316,018

Claims priority, application Japan, Dec. 21, 1971, 46-120948

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 A **3 Claims**



In a molten metal stirring device comprising molten metal receptacle and an impeller supported on a frame moving up and down along a lifting guide by means of a rotating shaft, improvements that a clamping means having a movable portion contactable to the frame guide is attached to the frame.

3,799,524

COOLING ARRANGEMENT FOR A CONVERTER VESSEL WALL

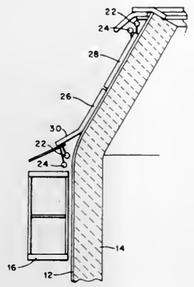
Edouard Menu, Versailles, France, assignor to Fives-Lille-Cail, Paris, France

Filed July 3, 1972, Ser. No. 268,470

Claims priority, application France, July 5, 1971, 71.24409

Int. Cl. C21c *5/46*

U.S. Cl. 266—35 **6 Claims**



A metallic converter vessel wall is cooled by panels disposed side-by-side on the wall and in direct contact therewith. Each panel is individually fixed to the wall in a manner which does not impede the expansion of the wall.

3,799,525

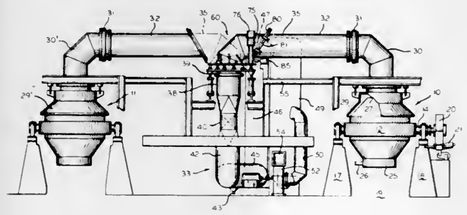
GAS HANDLING SYSTEM FOR METALLURGICAL VESSELS

Alexander T. Dortenzo, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Jan. 31, 1972, Ser. No. 222,100

Int. Cl. C21c *5/38*

U.S. Cl. 266—35 **14 Claims**



A gas coupling means is supported for rotational movement for selectively coupling and uncoupling the gas exhaust systems of one of a pair of metallurgical vessels whose smoke and evolved gases are collected during operation. The coupling means normally couples one active vessel with gas cleaning apparatus. When the one vessel is taken out of service for rebuilding or maintenance, the coupling means is rotated so that it couples the other vessel with the same gas cleaning apparatus. The arrangement reduces the probability of noxious gases from the active vessel reaching the vicinity of the inactive vessel at which workmen may be present.

3,799,526

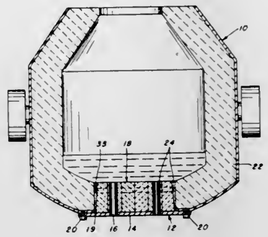
METHOD OF MAKING A REMOVABLE BOTTOM FOR A STEELMAKING FURNACE FROM PREFORMED REFRACTORY SHAPES AND RESULTING PRODUCT

David H. Hubble, Export, and John A. Lamont, Delmont, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 25, 1972, Ser. No. 256,689

Int. Cl. C21c *5/48*

U.S. Cl. 266—35 **63 Claims**



A method of making a removable bottom for a steelmaking furnace from preformed basic refractory shapes, said bottom having tuyeres for injecting gas or other material into a bottom blown steelmaking vessel and the product of the method.

3,799,527

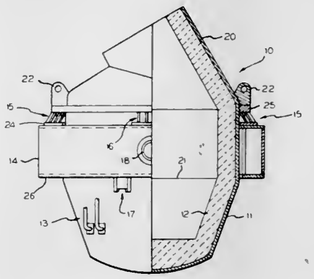
SUSPENSION ASSEMBLY FOR METAL TREATING VESSEL

Howard M. Fisher, New Castle, Pa., assignor to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed May 1, 1972, Ser. No. 249,347

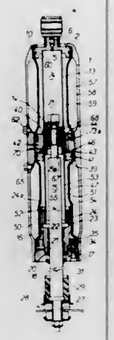
Int. Cl. C21c *5/50*

U.S. Cl. 266—36 P **19 Claims**



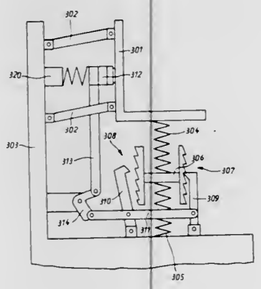
An open topped vessel for treating molten steel is supported on a trunnion ring for pivotal movement about a horizontal axis. Tuyeres are provided in the vessel for feeding gases upwardly through the molten metal. A quick release assembly permits the rapid detachment of the vessel from the trunnion ring and supports the vessel in a centralized position relative to the ring regardless of thermal expansion.

3,799,528
VEHICLES SELF-PUMPING SUSPENSION STRUT
Fernand Michel Allinquant, 53, Avenue Le Notre, and Jacques Gabriel Allinquant, 12, Avenue Arouet, both of 92 Sceaux, France
Filed June 2, 1972, Ser. No. 259,205
Claims priority, application France, June 8, 1971, 71.20673; Feb. 21, 1972, 72.05727; May 16, 1972, 72.17428
Int. Cl. B60g *15/12*
U.S. Cl. 267—64 R **15 Claims**



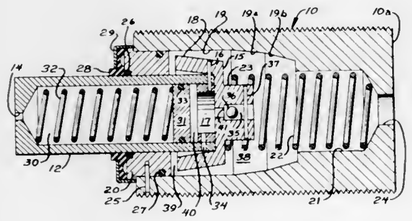
A suspension strut comprising an oleopneumatic suspension chamber carrying a load and separated by a piston from an oleopneumatic reservoir, and an automatic level-control device including a pumping device operated by the reciprocation of the piston in order to pump hydraulic liquid from the suspension chamber into the reservoir, and means for returning the fluid which are actuated by the piston in order to connect the reservoir to the suspension chamber when the suspension strut is extended to less than a given length, so that the suspension level can be higher when the vehicle is stopped than when the vehicle is running.

3,799,529
SUSPENSION SYSTEM, IN PARTICULAR FOR VEHICLES CAPABLE OF CROSS-COUNTRY TRAVEL
Harald Kauer, Ettlingen, Germany, assignor to Dr. Ludwig Pietzsch, Karlsruhe, Germany
Filed Nov. 10, 1972, Ser. No. 305,515
Claims priority, application Germany, Nov. 11, 1971, 2155975
Int. Cl. B60g *11/26*
U.S. Cl. 267—64 R **3 Claims**



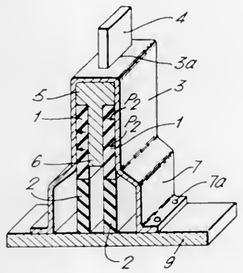
A suspension system, in particular for vehicles capable of cross-country travel, such as tractors or caterpillar vehicles, includes springs connected in series to support the mass to be sprung, in particular the body mass of the vehicle, a coupler mass disposed between said springs, and a locking device operable by a control means to release the coupler mass approximately at one of the oscillation reversal or dead points of the mass to be sprung, in particular the vehicle body mass and to lock it again approximately after half the oscillation of the coupler mass, the springs being designed as hydropneumatic or gas/liquid spring elements, the hydraulic components of which are in fluid connection, the coupler mass being constituted by the liquid column of the hydraulic connection and the locking device comprising a valve arrangement connected in the hydraulic connection to block or open the same.

3,799,530
HYDRAULIC CUSHION MECHANISM
Harold E. Stembridge, 600 E. Greenwood Ave., Mt. Prospect, Ill.
Filed Oct. 16, 1972, Ser. No. 297,591
Int. Cl. F16f *7/00*
U.S. Cl. 267—130 **2 Claims**



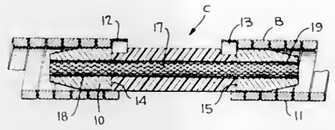
A hydraulic cushion mechanism embodying a piston adapted to receive an impact moving within a bore wherein a decreasing clearance between the cylinder and bore is provided, the piston being equipped with an accumulator to maintain separation between air and oil.

3,799,531
BUFFERING DEVICE
Harumichi Yamazaki, Tokyo; Kihei Nakamura, Yokohama, and Yoshikazu Kondo, Tokyo, all of Japan, assignors to Bridgestone Fire Company Limited, Tokyo, Japan
Filed July 18, 1972, Ser. No. 272,877
Claims priority, application Japan, Sept. 8, 1971, 46-68852
Int. Cl. F16f *7/08*
U.S. Cl. 267—140 **9 Claims**



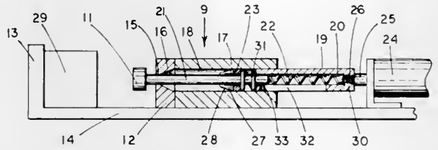
A buffering device comprising a resilient buffer member, a resilient friction member abutting the buffer member at one end thereof, the resilient friction member being expansible in a direction perpendicular to compressive forces applied in use thereto. The restrictor restricting expansion of the friction member and an impact-receiving member is adapted, to receive an external impact load and to transmit the impact load to the resilient member through the friction member while causing the friction member to move against friction between the friction member and the restrictor.

3,799,532
ARTICULATED COIL SPRING CONNECTOR
William L. Schlegel, Stanhope, N.J., assignor to Komline-Sanderson Engineering Corporation, Peapack, N.J.
Filed Mar. 16, 1973, Ser. No. 341,910
Int. Cl. F16f *1/12*
U.S. Cl. 267—148 **6 Claims**



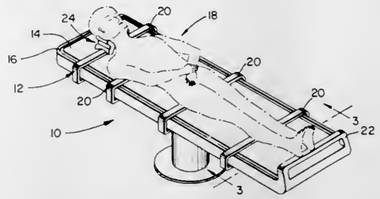
A connector for coil springs, including a pair of relatively aligned and spaced plugs of generally cylindrical shape for reception within the adjacent ends of the spring sections to be connected, said plugs having relatively opposed radial end faces adapted for abutting engagement with radially inwardly extending portions of the respective spring ends whereby to retain the springs on the plugs. The said plugs are interconnected by a braided flexible metal cable received in sockets within the respective plugs, the plugs being fixedly and permanently compression fitted onto the cable, whereby the cable transmits tensional forces between the plugs while being freely flexible and twistable to permit relative rotation of the plugs within limits about the longitudinal axis of the cable and relative angular movement of the plugs in planes parallel to the length of the cable. In the preferred embodiment, the space between the plugs is substantial in order to provide an ample range of flexibility and twistability. In order to prevent the passage of unfiltered material through such space, the said space is occupied by a sleeve of a resiliently deformable material, such as natural or artificial rubber which surrounds the braided cable.

3,799,533
RESISTANCE LOCKING MECHANISM
Richard C. Malott, 321 N. Jackson, Spring Lake, Mich.
Filed Oct. 18, 1971, Ser. No. 190,186
Int. Cl. B23q *3/08*; **B25b** *1/02, 1/14*
U.S. Cl. 269—32 **12 Claims**



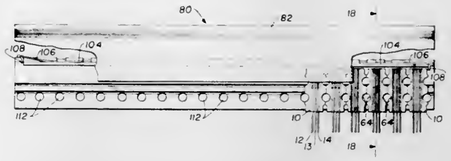
A resistance locking mechanism having a work contacting push rod for holding a work piece against movement so that the work piece can be removed and reinserted without movement of the push rod. A strong force holds the push rod against movement while the push rod bears against the work piece with a moderate force. A housing has a bore in which a plunger slides between a locked and unlocked position. The push rod slides within the plunger with means biasing the push rod outwardly with respect to the plunger. A locking element having wedging fingers is carried by the push rod and is wedged against the push rod for locking the same at the front end of the housing when the plunger moves into the locked position.

3,799,534
MORTICIAN'S TABLE
Leander M. Coles, 1923 Lawrence St., N.E., Washington, D.C.
Filed Nov. 5, 1971, Ser. No. 195,966
Int. Cl. A61g *13/00*
U.S. Cl. 269—32 B **3 Claims**



A table, suitable for use by morticians, is disclosed which is provided with horizontally disposed upstanding body support members which extend transversely of the table. The support members are selectively adjustable longitudinally of the table whereby a corpse being embalmed can be properly supported during the procedure.

3,799,535
CARRIER BLOCK AND TRAY FOR USE IN ENCAPSULATION OF SEMICONDUCTOR DEVICES
Albert C. Baumann, Dallas, Tex.
Division of Ser. No. 15,862, March 3, 1970, abandoned, which is a continuation of Ser. No. 562,239, July 1, 1966, abandoned. This application Apr. 24, 1972, Ser. No. 247,063
Int. Cl. B23q *3/18*
U.S. Cl. 269—309 **3 Claims**

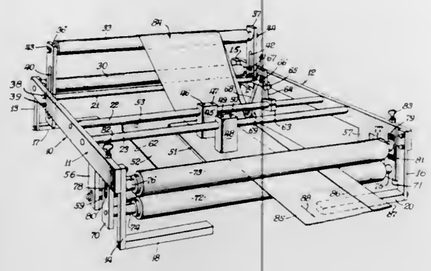


Disclosed is a process for manufacturing semiconductor devices and the devices produced by the process, wherein a carrier block is employed for supporting lead wires in a fixed position cantilevered outwardly therefrom for assembly with a semiconductor chip, such as a transistor wafer, for subsequent plastic encapsulation thereof with the leads retained by the carrier block being disposed outwardly of the plastic encapsulated semiconductor device upon completion of the process. The carrier block is provided with elongated grooves in a surface thereof for reception of the lead wires and frictional engagement therewith to retain the lead wires in a fixed supported position in the carrier block during the assembly of the semiconductor chip thereto and the subsequent plastic encapsulation procedure. A plurality of such carrier blocks are supported by a tray in side-by-side relationship, the tray including a rib which extends into respective grooves formed in adjacent carrier blocks supported thereby for retaining the carrier blocks in place.

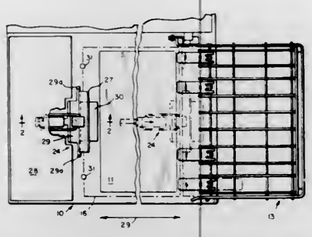
3,799,536
PAPER FOLDER
Clyde G. Gregoire, 4N194 Brian Ln., Bensenville, Ill.
Filed Apr. 21, 1972, Ser. No. 246,391
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 R **2 Claims**

A paper folder as used in the printing industry, usually done after printing has been applied to both sides of the paper. The

folding is accomplished by bringing a strip of paper from an outwardly spaced position into a plane carrying paper folding mechanisms. The paper is folded over a straight side edge of a thin flat sheet. The side edge is disposed at a position offset from the side edge of the paper to be folded. A small diameter freely journalled roller is arranged to press a folded over portion of the paper against the flat sheet while the remaining or unfolded portion of the paper runs on the other side of the flat sheet. A pair of cooperative driven rolls pulls the paper through the folding operation. In addition to folding the paper the invention provides for the optional cutting of the folded over portion from the unfolded portion.

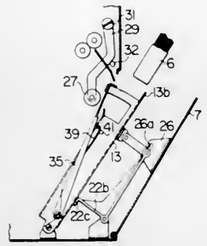


3,799,537
DOCUMENT FEEDING MECHANISM
Harold W. Cobb, Acton, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.
Filed June 11, 1971, Ser. No. 152,165
Int. Cl. B65h *3/16*
U.S. Cl. 271—3 **26 Claims**



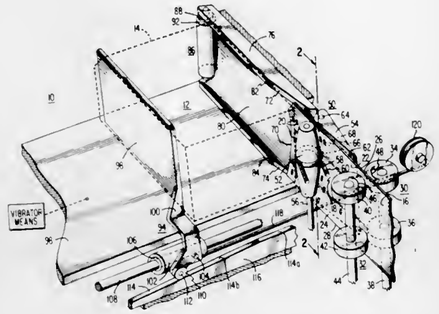
A mechanism for feeding originals to a copier apparatus so that the apparatus in one mode of operation automatically makes copies of related documents and delivers such copies in a predetermined collated arrangement and in another mode of operation makes copies of a plurality of unrelated documents, each of which may require a different number of copies, and automatically delivers the desired number of copies of each unrelated original. Each original is placed in a semi-rigid carrier device and the carriers are appropriately stacked near the copier apparatus. A reciprocating pick-up arm removes the carriers from the stack, one by one, delivers them to the copier apparatus exposure window and returns them to the stack in order for recirculation, if desired, in the first mode of operation. In the second mode of operation, each carrier has an encoding device for indicating the numbers of copies desired and the reciprocating pick-up arm removes each carrier from the stack for delivery to the exposure window, one at a time, at which location a decoding device decodes the encoded information and permits the copier apparatus to make the desired number of copies before removing that original and delivering the next original for copying.

3,799,538
COPY SHEET CASSETTE MOUNTING DEVICE FOR COPYING APPARATUS
Shigeru Suzuki, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Feb. 23, 1973, Ser. No. 335,017
Claims priority, application Japan, Mar. 10, 1972, 47-25027
Int. Cl. B65h *1/26, 3/06*
U.S. Cl. 271—162 **4 Claims**



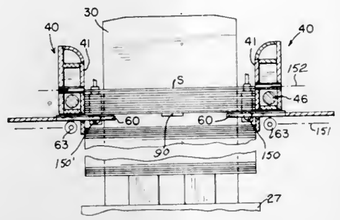
A device for mounting a copy sheet cassette on a copy sheet feed tray pivotally supported at its lower end by the copying apparatus for movement between a copy sheet feed position and a cassette mounting position. The device is effective to move, when the copy sheet feed tray is in the cassette mounting position, the copy sheet feed roller and corner separator means in positions in which they do not interfere with the mounting of the cassette on the copy sheet feed tray.

3,799,539
CARD STACKER HAVING ROTATABLE BUMPER TO STOP CARD TRAVEL
Eddy Humberto Del Rio, Palm Beach Gardens, Fla., assignor to RCA Corporation, New York, N.Y.
Filed Nov. 16, 1972, Ser. No. 307,015
Int. Cl. B65h *29/22, 29/70, 31/06*
U.S. Cl. 271—188 **6 Claims**



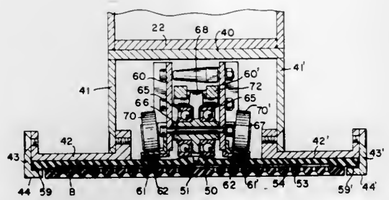
A document stacker receives incoming cards and slides them along rails into a stacking area. The cards are stopped by a resilient cylindrical bumper protruding above the slide surface of the rails and located at the end of the stacking area. The bumper is free to rotate in the direction of card motion. As additional cards enter the stacker, they wedge between the last previously received card, which is forced against the rails by a card retaining assembly, and the rails, to become part of the card stacker. The card retaining assembly ensures that each incoming card is subjected to essentially the same pressure as every other incoming card as it wedges between the card stack and the rails. A barrel shaped roller and an adjacent guide member having a surface which conforms to the countour of the barrel-shaped roller located at the entrance of the card stacker uniformly bows the central portion of the incoming card away from the last previously stacked document as it slides into place.

3,799,540
SHEET PILER
Velio S. Buccicone, Gary, Ind., assignor to Bucciconi Engineering Co., Inc., Gary, Ind.
Filed Sept. 15, 1971, Ser. No. 180,642
Int. Cl. B65h *29/30*
U.S. Cl. 271—189 **3 Claims**



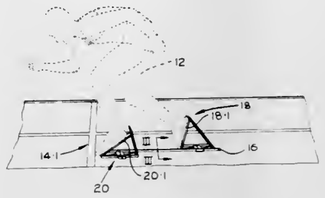
A two station piling machine for metal sheets which comprises an upright frame on which there are supported laterally spaced, overhead belt conveyors having magnets for holding the sheets on the belts while they are advanced over and then released for deposit on one of two inline hoist tables, or passed through the machine as determined by the operator, each piling area having associated back stop and end stop mechanisms together with laterally adjustable side guides and finger mechanisms for temporarily supporting the sheets while a previously formed pile of the sheets is removed from beneath the same, and the finger mechanisms being mounted on the adjustable side guide mechanisms and also on the end stop and back stop mechanisms so as to provide support about the entire periphery of the sheets which are accumulated on the finger mechanisms.

3,799,541
VACUUM BELT-TYPE CONVEYOR
Darlo Buccicone, Gary, Ind., assignor to Bucciconi Engineering Co. Inc., Gary, Ind.
Filed Oct. 10, 1972, Ser. No. 296,325
Int. Cl. B65h *29/32*
U.S. Cl. 271—197 **20 Claims**



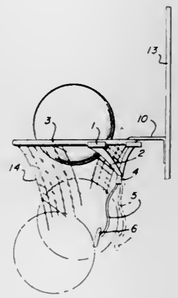
A conveyor designed for piling sheets or similar articles which comprises an elongate rail-like frame which is supported at its end on opposite sides of a piling area, the frame having mounted therein a vacuum box with a relatively flat belt supported for travel on spaced pulleys so that the lower run of the belt advances along the open bottom face of the vacuum box, the belt having normally closed apertures and the frame having means for opening the apertures, as the forward edge of a sheet is fed into engagement with the bottom surface of the belt, so as to hold the sheet on the belt by suction for advance to the piling area where the suction is discontinued and the sheet dropped onto a pile.

3,799,542
STARTING BLOCKS FOR ATHLETES
Jacobus Daniel Potgieter, 948 Crots, Rietfontein, Pretoria, South Africa
Filed July 9, 1971, Ser. No. 128,622
Int. Cl. A63b *69/00*
U.S. Cl. 272—59 A **12 Claims**



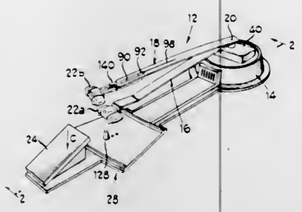
Starting block apparatus for track runners, including a spine member and blocks having adjustable sloping foot support members, the blocks being laterally adjustable on arms projecting laterally on either side of the spine member. The arms are themselves longitudinally adjustable in position along the spine member. The foot support members provide support to the whole length of the foot of a track runner.

3,799,543
BASKET BALL DEFLECTOR
Joseph R. Steele, Jr., 50 Hillside Rd., Strafford, Pa.
Filed Nov. 24, 1971, Ser. No. 201,808
Int. Cl. A63b *63/02, 69/40*
U.S. Cl. 273—1.5 A **6 Claims**



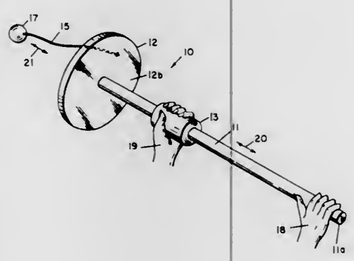
A suspendable deflector which can be readily attached and detached from a basketball goal rim and which is designed to deflect a successful "shot" back to the shooter. In a preferred embodiment the deflector is magnetically attached to the basketball rim and is designed so that as a ball passes through the net of the goal the deflector intercepts the path of the ball as the ball passes out of the bottom of the net.

3,799,544
VEHICLE ACTION TOY
Marvin I. Glass, Chicago; Jeffrey Dale Breslow, Highland Park, and Robert Snyder McKay, Morton Grove, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 27, 1972, Ser. No. 318,776
Int. Cl. A63f *9/14*; **A63h** *13/20*
U.S. Cl. 273—86 H **15 Claims**



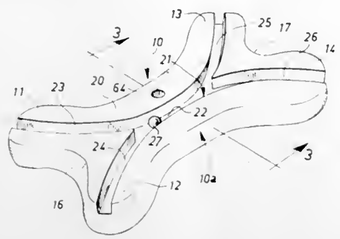
An amusement device in the form of a moving, manipulatable toy having a plurality of simulated vehicles each mounted on the outer free end of its own independent support arm, with the support arms pivotally mounted at their opposite ends to a standard for pivotal movement about a common vertical axis to rotate the vehicles in an orbital pattern about the standard. One of the arms has a constant length and is rotated by driving means at a constant speed. The other arm is controlled by an operator of the device so as to rotate the arm at varying speeds, from said constant speed of the one arm to a faster speed. The other arm is formed of two portions mounted for relative radial movement so that the arm becomes extended under centrifugal force at the faster speed to permit the vehicle carried thereby to pass the other vehicle on the one arm as they travel in orbital paths about the standard. An obstacle is placed in the path of the vehicle on the other arm when the arm is in its extended position rotating at its faster speed.

3,799,545
PADDLE MOUNTED FOR RECIPROCATING MOTION AND BALL TETHERED THERETO
Victor Petrusek, 18511 Gottschalk, Homewood, Ill.
Filed July 9, 1973, Ser. No. 377,404
Int. Cl. A63b *63/08*
U.S. Cl. 273—97 R **5 Claims**



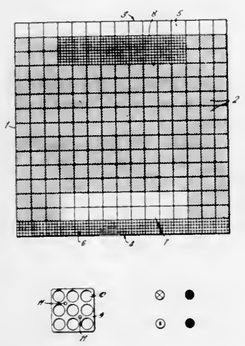
A relatively slender shaft is provided with a ball bouncing plate fixed at one end thereof and a slidable cylindrical sleeve positioned so as to be reciprocable on the intermediate portion of the shaft. A ball is secured at one end of an elastic tethering cord or the like, and the other end of the tethering cord is secured to the front face of the plate. By grasping the sleeve with one hand and reciprocating the shaft therein with the other hand, the ball may be bounced against the plate repeatedly if proper coordination is used.

3,799,546
AMUSEMENT DEVICE
Christopher David Gower-Rees, and John Noel Walton, both of Toronto, Ontario, Canada, assignors to Beverly Ann Walton, Toronto, Canada
Filed Mar. 29, 1972, Ser. No. 239,247
Claims priority, application Canada, Jan. 26, 1972, 133200
Int. Cl. A63b *67/00*
U.S. Cl. 273—109 **10 Claims**



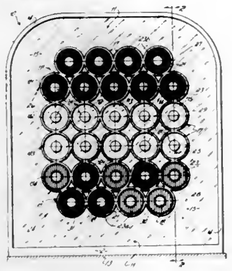
An amusement device is formed as a unitary moulded body of plastics material and is designed so that it can be gripped generally between the knees of a player while he walks or otherwise ambulates and attempts to prevent a ball rolling out of an open-ended groove formed in the top surface of the device. An alternative embodiment of the device is adapted to be held between the knees of two players.

3,799,547
BOARD GAME APPARATUS
Ronald William Hills, 3 Angeline Close, Marydale, Highcliffe, Christchurch BH23 5BF, Hampshire, England
Filed May 8, 1972, Ser. No. 250,918
Claims priority, application Great Britain, May 11, 1971, 14332/71
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 B **7 Claims**



A playing board is divided up into a number of discrete areas or squares. On each of two opposite sides a fortress area is provided. Each of two players has a set of playing pieces one of which is a standard to be defended in the fortress. Each player has three strongpoints movable about the board and capable of enhancing the strength of the areas of the board which they cover each of said strongpoints consisting of a flat, square member having nine through openings, each of a size to fit over any one of said playing pieces, whereby said member can be placed over any selected group of board areas, irrespective of whether or not there are playing pieces on one or more of said areas. By movement of playing pieces and strongpoints the tactics employed in the besieging and defence of fortresses is simulated.

3,799,548
MAGNETIC GAME
Jack L. Lemkin, 5900 Mohican Ln., Cincinnati, Ohio
Filed Dec. 11, 1972, Ser. No. 313,823
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 AD **5 Claims**



A magnetic game that includes a planar game board of non-magnetic material adapted to stand vertically during use. The game board is provided with a plurality of posts extending outwardly from each side thereof. The posts are arranged in coaxial pairs with one post of each pair projecting outwardly from each side of the game board, a first player making use of the posts on one side and a second player making use of the posts on the other side. A plurality of ring-shaped game pieces are adapted to slide over the game board's posts on each side of the game board. Each game piece is magnetized and color coded with its opposite faces being of opposite polarity and different color, the faces of the same polarity on all pieces being of the same color, e.g., north pole/red and south pole/black. The game board is transparent so that the first player can tell the location thereon of the second player's game pieces, but is tinted so that the first player cannot tell the face color of the second player's game pieces; in the instance of red and black faces on the game pieces, the game board is tinted green so that both faces of each piece appear black when viewed through the tinted game board. The objective of the game is for the first player to force all the second player's game pieces off the second player's posts (through repulsive forces achieved by proper orientation of the first player's magnetized game pieces on his posts vis-a-vis the second player's magnetized game pieces on his posts) before the second player forces all the first player's game pieces off the first player's posts. The two players take alternate turns in moving the game pieces one at a time from one post to another on their respective game board sides in attempting to achieve this objective.

3,799,549
BOARD GAME APPARATUS
Michael A. Laker, 1366 Ward's Creek Rd., Rogue River, Oreg.
Filed Mar. 5, 1973, Ser. No. 338,395
Int. Cl. A63f *3/00*
U.S. Cl. 273—131 AB **7 Claims**

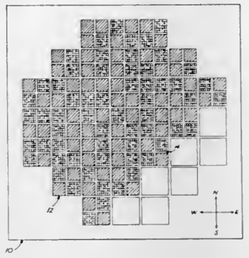
Novel equipment for playing a competitive game of the type in which playing pieces are moved from space to space on a playing board, includes

1. two identical, color differentiated opposing sets of movable playing pieces, the playing pieces of each set including pieces and classes of pieces distinguished in appearance from one another, and having varied, arbitrarily assigned capabilities and limitations; and

2. means for producing for each match a playing board for the movable pieces of unplanned and uncontrolled random design, composed of

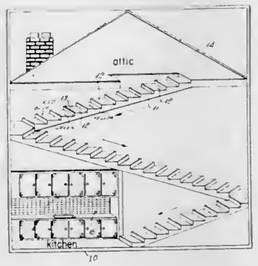
a. a foundation board having a playing area divided into many equal major squares by raised ribs, and

b. a sufficient number of equal square tiles, of varied design but of identical size and shape, to fit and fill all the rib bounded squares of the foundation board, each tile having its face sub-divided into color differentiated playing squares. In the preferred arrangement some of the tiles have three squares of a first color and one square of a second color; some have three squares of the second color and one square of the first color; and some have two



squares of each color. The last mentioned group is further subdivided into two sub-groups, one having squares of like color in diagonally opposite corners, and the other having squares of like color arranged side by side.

3,799,550
EDUCATIONAL BOARD GAME APPARATUS
Rosalyn B. Milana, 3 Knolls Dr., and Carol A. Glasser, 3 Woodland Rd., both of Old Westbury, N.Y.
Filed June 1, 1972, Ser. No. 258,497
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AD **3 Claims**

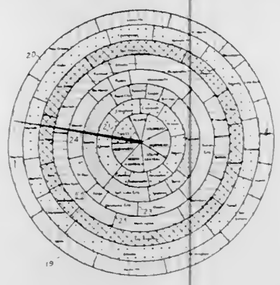


An educational game having a playing board on which a zigzag path is shown as a representation of a staircase from the attic of a house to the lower floor kitchen, with playing pieces which are moved on the individually marked steps of the staircase in response to the rules of the game and the determination of a random spinner. Steps of the staircase are marked with individual ingredients of recipes. Each player has a recipe card which lists all the ingredients of a particular recipe, with the object of the game being for a player to move his playing piece on those marked steps which list the ingredients corresponding to those of his recipe card.

3,799,551
TRAVEL BOARD GAME APPARATUS
Robert S. Erickson, 2207 N. Victoria, Santa Ana, Calif.
Filed Apr. 13, 1972, Ser. No. 243,693
Int. Cl. A64f *3/04*
U.S. Cl. 273—134 AC **5 Claims**

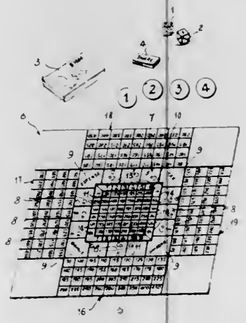
A competitive travel game including a playing board depicting a map with interconnecting sets of linear continuums, hereafter referred to as "lines", each set of lines being a readily distinguishable entity; including ownership cards, each of the latter being in a one-to-one correspondence with a prespective set of lines, and each said ownership card imprinted with a reduced-scale configuration identical to its corresponding set of lines on the playing board; including a move selection device exemplified by a distinctive destination spinner which randomly selects specifically identified points on the lines and points of intersection of the lines on the play-

ing board, said points of intersection hereafter referred to as cities, in accordance with predetermined odds that any particular point will be selected; and including a pay-off chart list-



ing the various reimbursements to players for "traveling" between any two of the said cities or specifically identified points.

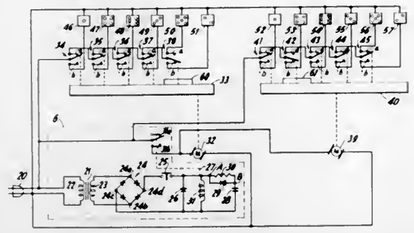
3,799,552
BOARD GAME APPARATUS
Andre Lefevre, and Rosemary Loweth Lefevre, both of 4, rue Albert Malet, 75 Paris 12e, France
Filed May 4, 1972, Ser. No. 250,360
Claims priority, application France, May 5, 1971, 71.16188
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AF **8 Claims**



A parlor game designed to acquaint the players with the functioning of the securities market. The game comprises a board, having imprinted thereon a track, game pieces including tokens movable about the track, simulated currency, simulated stock certificates and dice. The track is bordered by a color-coded frame, which includes numerical indicia and which encompasses a numerical tabulation at the center of the board, and the dice are similarly coded whereby data in the tabulation is keyed to the numerical indicia appearing on the dice. The game board has imprinted thereon numerical data in tabular form surrounding said track; the track having segments which carry indicia corresponding to the companies represented by the simulated stock certificates.

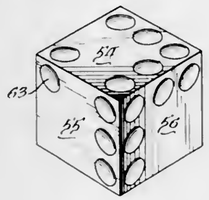
3,799,553
PLAYER ACTIVATED ELECTRICAL RANDOM SELECTION DEVICE
Frederick A. Hurley, 1204 Ali Baba Ave., Opa Locka, Fla.
Filed Aug. 4, 1970, Ser. No. 60,890
Int. Cl. A63f *5/04*
U.S. Cl. 273—141 A **6 Claims**

An amusement device for duplicating the random selection inherent in a game of chance and visually displaying the same. A capacitive timing circuit is charged by the momentary depression of a player actuated switch. The level of charge placed upon the capacitive timing circuit is randomly varied



according to the random variation in the player actuation time which in turn is translated into a variable running time interval for a motor coupled to actuate interlocked switches to achieve a random display.

3,799,554
CUBE SHAPED PLAYING DEVICE WITH ADJACENT FACES DISPLAYING ADJACENT COUNTABLE INDICIA
Leonard B. Simons, 516 S. Austin Blvd., Oak Park, Ill.
Filed June 14, 1973, Ser. No. 369,788
Int. Cl. A63f *9/04*
U.S. Cl. 273—146 **9 Claims**

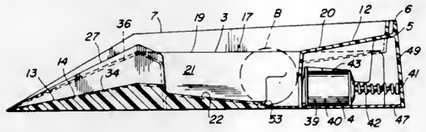


A playing device and, more particularly, a die having a body shaped as a cube having six faces and a plurality of countable indicia totalling from one to six on each face and with the total indicia on one face being different from the total indicia on any other face and with each of said countable indicia on a face having an adjacent countable indicia on an adjacent face. Such countable indicia in the form of eight spheres may be embedded in the body adjacent the cube faces with each sphere adjacent at least two cube faces and so arranged that, with the body being sufficiently transparent, said spheres are visibly adjacent certain of the cube faces to provide countable indicia totalling any count from one through six.

3,799,555
GOLF PUTTING PRACTICE DEVICE
John R. Brandell, Glencoe, Ill., assignor to Brandell Products Corporation, Rosemont, Ill.
Continuation of Ser. No. 173,794, Aug. 23, 1971, Pat. No. 3,697,079. This application June 5, 1972, Ser. No. 259,537. The portion of the term of this patent subsequent to Oct. 10, 1989, has been disclaimed.
Int. Cl. A63b *57/00*
U.S. Cl. 273—179 A **7 Claims**

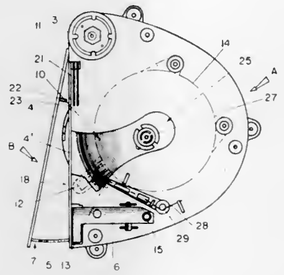
A golf putting practice device embodying a ball receiving pocket simulating an actual putting cup and operable to kick a ball received in the device back to the person making a putt. The device includes an upwardly and rearwardly inclined front ramp, with a pocket which simulates a putting cup disposed therebehind. A ball putted into the pocket comes to rest against the rear wall of the pocket, remote from the front ramp, and resting on an inclined supporting surface in position to be struck by the solenoid actuated plunger of a kicker unit.

The inclination of the supporting surface is such that when the ball is struck by the plunger of the kicker unit, the ball is



bounced upwardly and forwardly out of the pocket for return across the front ramp to the person making the putt.

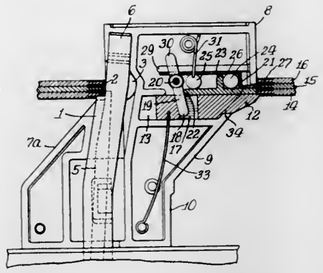
3,799,556
TOY PHONOGRAPH
Katsumi Watanabe, No. 371, Ozenji, Kawasaki-shi, Kanagawa-ken, Japan
Filed June 28, 1971, Ser. No. 157,241
Claims priority, application Japan, Apr. 26, 1971, 46-26679
Int. Cl. G11b *1/00, 25/04*
U.S. Cl. 274—2 **6 Claims**



A toy phonograph arranged in a semi-cylindrical housing which is divided into upper and lower compartments. The motor is disposed at a corner of the casing. A turntable is mounted for rotation by the motor on a platform of corresponding semi-cylindrical shape which is supported by one corner on a shaft concentric with the shaft of the motor for movement into and out of the lower compartment. The sound reproducing mechanism is disposed in the upper compartment. The phonograph is provided with automatically acting means for immobilizing the platform when disposed within the lower compartment; the means being manually releasable to permit withdrawal of the platform from the lower compartment.

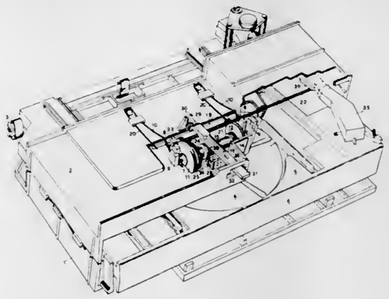
3,799,557
45 RPM ADAPTER
Russell L. Clark, Baroda, Mich., assignor to Avnet, Inc., New York, N.Y.
Filed Mar. 13, 1972, Ser. No. 234,038
Int. Cl. G11b *17/18*
U.S. Cl. 274—10 S **12 Claims**

The present invention provides a 45 rpm record stacking and dispensing adapter for stacking 45 rpm records and feeding them by operation of a 78 rpm spindle, the adapter being readily applied by slipping it over the top of the 78 rpm spindle down to a position to reveal the shoulder of the 78 rpm spindle. The adapter contains a horizontally disposed sliding bolt which normally projects from the rear of the adapter—that is, from the side opposite the location of the 78 rpm pushoff lever. When the pushoff lever is automatically actuated in the normal record dropping stage of the record player-changer cycle, the upper end of the spindle lever engages the interior wall of the hole of the lowermost 45 rpm record and pushes it towards and off the edge of the shoulder on the spindle. The bodily horizontal movement of the record, operating as a mechanical link, pulls against the short arm of a second class lever pivoted at its upper end in the adapter and having its lower end, which represents the long arm of the second class lever, engaging the retractable sliding bolt to pull it from beneath the adjacent edge of the lowermost record of the stack; thereby the 45 rpm record is pushed off the edge of the spindle shoulder and at the same time is used as an operating link to withdraw the bolt from beneath the rear edge of the



lowermost record. The second class lever which is operated by the movement of the record being pushed off of the spindle shoulder permits withdrawal movement of the bolt in releasing the rear edge of the record itself. Thereby the record is released at the two diametrical points where it was supported at the bottom of the stack. The invention provides an adapter for a 78 rpm record player to permit the stacking and automatic playing of 45 rpm records without alteration other than the application of the present adapter to the standard or any preferred record player.

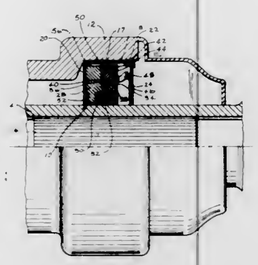
3,799,558
POSITIONING DEVICE FOR THE PICK-UP ARM OF A RECORD PLAYER
Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy
Filed Jan. 10, 1972, Ser. No. 216,662
Claims priority, application Italy, Jan. 16, 1971, 20512/71
Int. Cl. G11b *21/12*
U.S. Cl. 274—13 R **5 Claims**



A pick-up arm positioning mechanism for a record player in which a shaft is placed diametrically over the record to be played, with two wheels being idly rotatable on opposite ends of the shaft with respect to the center of the record and rest thereon. A screw-threaded arbor engages a surface of a portion of the pick-up arm between a position of engagement and a disengaged position, with means being provided for transferring the rotary drive alternatively from either wheel to the screw-threaded arbor. An advantageus connection between

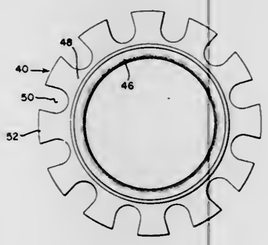
the screw-threaded arbor and the pick-up arm is a deformable surface, such as a velvet-like fabric.

3,799,559
SEAL ASSEMBLY FOR ROTATABLE AND AXIALLY MOVABLE SHAFT
Allan J. Kayser, 345 S. Race St., Denver, Colo.
Filed Nov. 22, 1971, Ser. No. 200,977
Int. Cl. F16j *15/40*
U.S. Cl. 277—41 **11 Claims**



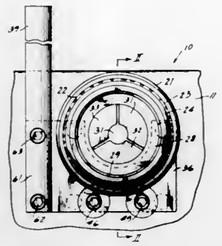
An oil seal assembly disposed between an axially and rotatably movable shaft and a stationary housing includes one or more carbon sealing rings in combination with rubber seal elements in a common seal housing, and the sealing ring or rings are spring-loaded to establish rotational sealing interfaces within the housing so as to effectively seal against the loss of oil through the housing while minimizing the friction and wear between the relatively moving members.

3,799,560
FIREARM CHAMBER SEAL
Burdett K. Stearns, Williston; David A. Graham, Underhill; James M. Seemauo, South Burlington, and George Zink, Burlington, all of Vt., assignors to General Electric Company, Burlington, Vt.
Division of Ser. No. 121,048, March 4, 1971, Pat. No. 3,748,458. This application Sept. 1, 1972, Ser. No. 285,598
Int. Cl. F16j *15/34*; **F41f** *11/00*
U.S. Cl. 277—21? **12 Claims**



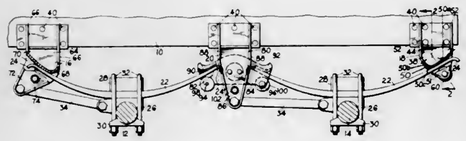
The provision of a lightweight, strong, arched seal with a substantially conical face and a plurality of spring fingers to insure full seating before ignition along the innermost annular junction of the seal with the chamber.

3,799,561
VALVE HOLDING AND ALIGNING DEVICE
Marvin H. Humbert, Cedar Rapids, Iowa, assignor to Cedar Rapids Engineering Company, Cedar Rapids, Iowa
Filed May 2, 1972, Ser. No. 249,498
Int. Cl. B23b *31/20*
U.S. Cl. 279—51 **5 Claims**



A holding and aligning device for a valve which utilizes a rubber collet retained by a chuck shaft and in which the collet is mounted in a tapered socket and is biased by springs so as to clamp on the valve stem. A handle and lever is provided for releasing the collet by pivoting the handle. A plurality of springs normally bias the collet closed on the valve stem and the tension of the collet on the valve stem is adjustable by means for adjusting the total spring tension exerted on the collet.

3,799,562
SPRING HANGER BRACKET FOR VEHICLES
Richard W. Hinchliff, Portland, Oreg., assignor to Merritt Equipment Co., Portland, Oreg.
Filed June 21, 1972, Ser. No. 264,772
Int. Cl. B60g *5/04*
U.S. Cl. 280—104.5 B **1 Claim**

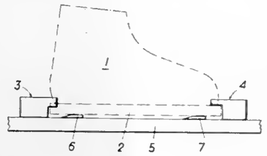


A spring hanger bracket for vehicles having an upper curved spring seat and a lower cushioning member. This cushioning member is spaced below the curved spring seat a selected amount such as to allow proper working of a spring end on the seat but at the same time to prevent unnecessary clatter or slapping of the spring on the seat when the vehicle bounces up and down on a road surface.

3,799,563
SOLE SUPPORT APPARATUS
Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schwelzer, Wien, both of Austria, assignors to Gertsch AG, Zurich, Switzerland
Filed Aug. 13, 1971, Ser. No. 171,552
Claims priority, application Austria, Aug. 28, 1970, 7837/70
Int. Cl. A63c *9/08, 11/00*
U.S. Cl. 280—11.35 C **4 Claims**

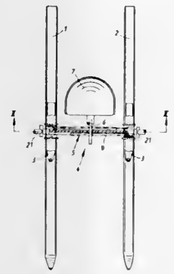
A device for facilitating the emergency release of a ski boot from a ski by minimizing friction between the ski boot and the ski. The device broadly consists of a rotatable, normally circular, member rotatably mountable on the ski and arranged to lie between the boot and the ski in the normal position of use.

The rotatable member is arranged so that only a portion thereof which is moveable substantially across the ski contacts the boot, said limited contact being effected by any mechanically convenient means including either suitable tilting of the



rotatable member or masking the portion not to be contacted by the boot. Antifriction means, as ball or roller bearings, may be used between the rotatable member and either the boot or ski.

3,799,564
ARRANGEMENT FOR SLEDDING BY MEANS OF SKIS
Ludwig Eisenschmid, Gihnhard Strasse 35, 1000 Munich 19, Germany
Filed June 30, 1972, Ser. No. 268,208
Claims priority, application Germany, July 2, 1971, 2133046
Int. Cl. B62b *13/04*
U.S. Cl. 280—12 F **5 Claims**

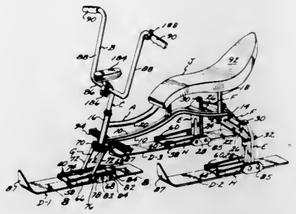


An arrangement for sledding by means of skis comprising a channel-shaped support assembly supporting a seat thereon therein legs of said assembly may be secured to a pair of skis. The arrangement further including a steering lever pivotally secured to each said seat supporting legs through a gearing assembly whereby each of said skis may be individually turned by its respective lever to effect steering of said arrangement.

3,799,565
RECREATION VEHICLE
Wilson A. Burtis, 5011 Harvard Ave., Westminster, Calif., and Thomas T. Omori, 1601 Parway Dr., Glendale, Calif.
Filed May 23, 1972, Ser. No. 256,088
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **6 Claims**

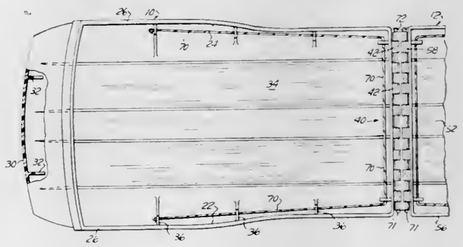
A recreation vehicle that may be selectively modified for use on land, water, or on a snow or ice-covered ground surface. The vehicle is adapted to have power means removably attached thereto as a source of motive power. The vehicle may be used on downwardly sloping land or snow or ice-covered surfaces without power means.

The vehicle includes a seat-supporting frame assembly that is so operatively associated with a pivotally movable, forwardly disposed first means for movably engaging the supporting surface and laterally spaced second and third means that serve the same function, that as the vehicle is guided into a curved course the first, second and third means are moved in unison to tilted positions to obtain maximum tractive engagement with the supporting surface. When the vehicle is pursuing a straight course the first, second and third means are maintained in parallel relationship with one another. The power means used in driving the vehicle on a snow or ice-covered surface includes an externally cleated, endless, surface-engaging belt that extends longitudinally relative to the frame assembly, and is so supported from the frame assembly as to not tilt laterally thereto with said first, second and third



means when the vehicle traverses a curved path. The first, second and third means when the vehicle is used on a snow or ice-covered surface are skis. When it is desired to use the invention on a body of water, the skis are replaced with pontoons. The vehicle may be used on land by replacing the skis with rotatably supported wheels. A power-operated pump may be removably attached to the vehicle when it is supported on pontoons to propel it over a body of water.

3,799,566
SECTIONAL TOBOGGAN
McKinley Thompson, Detroit, Mich., assignor to Meadowbrook Manufacturing Corporation, Dearborn, Mich.
Filed Oct. 17, 1972, Ser. No. 298,295
Int. Cl. B62b *15/00*
U.S. Cl. 280—18 **4 Claims**

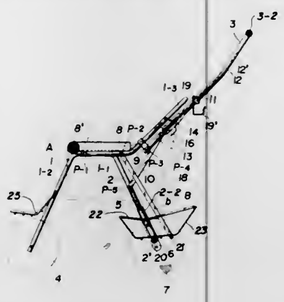


A toboggan comprising several sections which may be folded for transportation and storage. The toboggan includes an improved coupling between the sections which permits the toboggan to be folded and take up no more space than if the toboggan were completely disassembled for storage. Furthermore, no adjustments are necessary upon unfolding the toboggan for use.

3,799,567
COLLAPSIBLE BABY CART
Tokuzo Toda, Tokyo, Japan, assignor to Tokyo Baby Inc., Tokyo, Japan
Filed June 21, 1972, Ser. No. 264,850
Claims priority, application Japan, Dec. 29, 1971, 47-4894
Int. Cl. B62b *11/00*
U.S. Cl. 280—36 B **9 Claims**

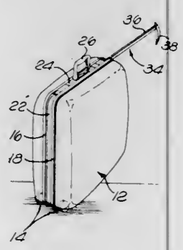
A collapsible baby cart has a substantially U-shaped tubular hammock supporting frame defining a pair of substantially horizontal arms, a pair of front legs each extending donwwardly from the forward end of a respective arm and a back rest extending upwardly from the rear ends of the arms. A sub-

stantially U-shaped rear leg member is pivotally secured to the arms of the frame to project rearwardly and downwardly therefrom, and a U-shaped control handle is pivotally secured to the back rest to project upwardly substantially parallel thereto and therebeyond. Links connect the control handle to



the rear leg member, and releasable latch means connect the control handle to the back rest to retain the baby cart in erected position. The lower ends of the legs rotatably support wheels, and a wire basket is rockably mounted on the rear leg member and connected by links to the arms, the basket being permanently connected to the baby cart.

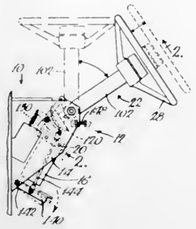
3,799,568
LUGGAGE TRANSPORT STRUCTURE
Robert G. Hager, 219 Aderno Way, Pacific Palisades, Calif.
Filed July 14, 1972, Ser. No. 271,966
Int. Cl. B62b *1/12*
U.S. Cl. 280—37 **6 Claims**



A luggage transport structure for use with a suitcase having wheels mounted thereon for supporting said suitcase. A channel is formed on the outer periphery of the suitcase and a housing positioned on the interior of the suitcase adjacent a portion of the channel. A handle is positioned in the housing which is retractable and extendable out of the housing. When the handle is extended from the suitcase it can be used to roll the suitcase along a floor. In its retracted position the handle is positioned within the channel and is flush with the outer dimensions of the suitcase.

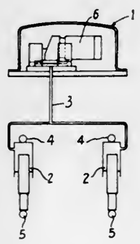
3,799,569
TILT AND TELESCOPING STEERING SYSTEM
Charles G. Baker, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.
Filed June 21, 1972, Ser. No. 264,896
Int. Cl. B62d *1/18*
U.S. Cl. 280—87 A **16 Claims**

This disclosure relates to a steering system for a vehicle in which a steering column can be telescoped relative to the vehicle as well as tilted with respect to a fixed axis. The steering system includes a steering column consisting of inner and outer telescoping members that have locking means consisting of first and second keyways defined on adjacent surfaces of the respective members with the keyways defining openings that receive elongated keys. An elastomeric element is located at one end of each of the openings and retained therein by a



retaining ring. The locking means also includes drive means for moving the key axially within the openings defined by keyways to deform the elastomeric elements and frictionally grip the members to hold them in telescopically adjusted position.

3,799,570
TRIM CORRECTORS FOR MOTOR VEHICLES
Jean Louis Giordano, and Jacques Touchard, both of Billancourt, France, assignors to Regie Nationalees Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France
Filed Mar. 2, 1972, Ser. No. 231,127
Claims priority, application France, Mar. 4, 1971, 71.07435; Feb. 8, 1972, 72.04188
Int. Cl. B60g *17/00*
U.S. Cl. 280—124 F **5 Claims**



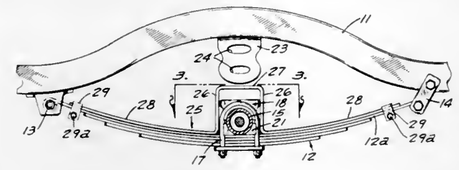
This trim corrector comprises a vessel for the storage of gas under pressure and pneumatic actuators controlling the trim of the vehicle, the gas circulation in the various elements being provided by only one single-acting compressor having a low compression ratio, housed in the vessel under pressure and started automatically when a gas transfer is necessary.

This gas transfer is caused by the actuation of the compressor under the control of a signal from a detector of the trim, level or height of the vehicle body and through a time-lag device of a type known per se and a two-position pressure-responsive differential switch responsive to the pressure prevailing in the vessel.

3,799,571
OVERLOAD SPRING
Ellis P. Sudberry, 11038 Holmes Ave., Mira Loma, Calif.
Filed June 23, 1972, Ser. No. 265,860
Int. Cl. B60g *11/38*
U.S. Cl. 280—124 R **7 Claims**

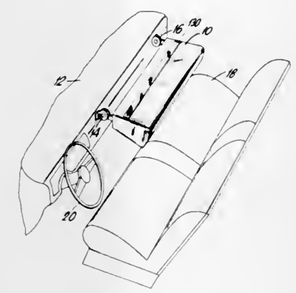
An overload spring, in the form of a leaf spring is described, which is used in combination with a multi-leaf semi-elliptical spring designed to carry the axle's load above the spring. The overload spring is also substantially semi-elliptical with a bight

formed midway between the ends to allow the elliptical portion to coextend with the main leaf of the multi-leaf spring and



to allow the bight to extend over the axle. Means are provided on the axle to prevent the bight from closing as the leaves bend and flex.

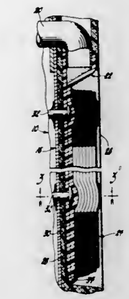
3,799,572
ASSEMBLY FOR PROTECTING A PASSENGER OF A VEHICLE
Jesse R. Hollins, 1 Chester Dr., Great Neck, N.Y.
Filed Oct. 7, 1971, Ser. No. 187,286
Int. Cl. B60r *21/00*
U.S. Cl. 280—150 B **5 Claims**



This is an assembly for protecting a passenger of a vehicle. The assembly includes a padded cushion and means coupled to said cushion for moving the cushion between the horizontal and vertical position. The moving means is hinged fastened to an abutment in front of passenger's seat. The cushion is moved to the vertical position when the passenger is entering or exiting the seat, and is moved toward the horizontal position after the passenger is seated so that the end of the cushion is adjacent to the passenger's body when he is seated. Means are provided for allowing the passenger to adjust the horizontal position of the cushion for his own comfort.

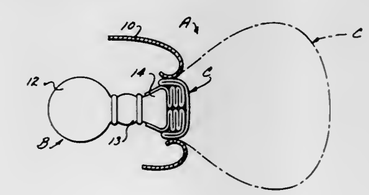
3,799,573
VEHICLE BODY OCCUPANT RESTRAINT CUSHION SYSTEM
Patrick G. McDonald, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 70,320, Sept. 8, 1970, abandoned. This application Dec. 13, 1971, Ser. No. 207,061
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **2 Claims**

A vehicle body includes an instrument panel, a source of pressure fluid releasable upon the body receiving an acceleration pulse of predetermined amplitude and time, an occupant restraint cushion secured to the instrument panel within a recess thereof in a deflated folded condition, and a releasable covering over the folded cushion. A normally collapsed diffuser tube fits within the cushion and between the folded portion of the cushion and the instrument panel. The tube is connected to the pressure fluid source. The wall of the diffuser tube includes either a plurality of slits normally closed in the collapsed condition of the tube, or a plurality of openings. Upon release of the pressure fluid, the diffuser tube expands



and forces the folded portion of the cushion as a unit away from the instrument panel to forcibly release the covering. The slits, which open when the tube expands, or the openings, then inflate the cushion from the pressure fluid source.

3,799,574
VEHICLE SAFETY DEVICE
Clifford Bonn, Buffalo, N.Y., and Kenneth R. A. Wilson, Redondo Beach, Calif., assignors to Irvin Industries Inc., Greenwich, Conn.
Division of Ser. No. 101,253, Dec. 24, 1970, and a continuation-in-part of Ser. No. 22,429, March 25, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,308
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **1 Claim**

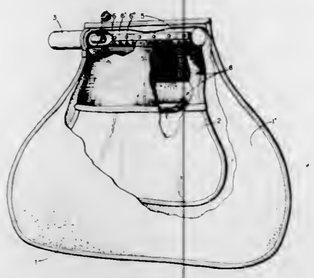


A vehicle safety device including an inflatable occupant restraint bag which is comprised at least in part of a woven stretch fabric which is permeable to fluid used to inflate the bag, the bag having a variable porosity which increases and decreases in relation to the fluid pressure within the bag.

3,799,575
PROTECTIVE DEVICE FOR VEHICULAR PASSENGERS INCORPORATING SILENCING APPARATUS
Ulrich Kurze, West Roxbury, and Hubert Arthur Wright, Jr., Lexington, both of Mass., assignors to Allied Chemical Corporation, New York, N.Y.
Filed Feb. 29, 1972, Ser. No. 230,394
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **7 Claims**

This disclosure deals with improved pressurized fluid-expandable bag-like protective devices for vehicular passengers, incorporating novel critically positioned screen devices and the like for silencing the noise otherwise produced by the fluid expanding through manifold jet opening(s) within the bag,

while restructuring the fluid flow so as to more uniformly inflate the bag and in some instances, simultaneously shielding



the bag(s) from the heat generated during such expansion and catching particles carried in the fluid.

3,799,576

SAFETY DEVICE FOR VEHICLE OCCUPANTS

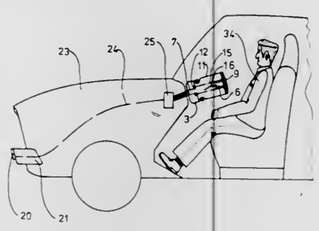
Ernst Fiala, Braunschweig-Querum, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Apr. 20, 1972, Ser. No. 245,941

Claims priority, application Germany, Apr. 24, 1971, 2120173

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **9 Claims**



A safety device is disclosed for use in a vehicle for protecting an occupant from being thrown against the structure of the vehicle in the event of a collision. The device comprises an impact member which is movable, upon the occurrence of a collision, from a retracted rest position to an extended position at which it is adapted to absorb the impact of the occupant. Movement of the member is effected by a pressure source coupled to a piston-cylinder assembly associated with the member. A collision sensor actuates the pressure source. The impact member may be secured to a relatively gas-tight envelope, also pressurized, to afford enhanced protection. In a preferred form, the envelope includes a peripheral groove for engaging a coacting frame member to restrain the impact member at the extended position.

3,799,577

SAFETY BELT HAVING THREE FASTENING POINTS FOR THE SEAT OF A MOTOR CAR

Ivo Colucci, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

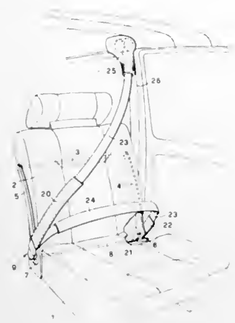
Filed May 4, 1972, Ser. No. 250,171

Claims priority, application Italy, May 6, 1971, 24188/71

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 SB **12 Claims**

A safety seat belt for motor cars is disclosed, in which an abdominal strap is connected to a swinging frame consisting of two arms parallelly placed with respect to the seat sidewalls, the connection taking place with the intermediary of a detent hook mechanism. A diagonal strap is also provided for completing the wrap of the wearer's body, recoiling means being provided to vary the length of the diagonal strap. Warn-



ing-signal emitting appliances can be provided to warn the wearer that he has not worn the belt or he has worn it incorrectly.

3,799,578

VEHICLE SAFETY DEVICE

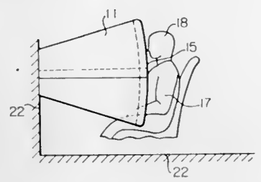
Masafumi Hamasaki, Nobeoka, and Takashi Haruna, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sept. 23, 1971, Ser. No. 183,175

Claims priority, application Japan, Sept. 24, 1970, 45-82992

Int. Cl. B60r *1/08*

U.S. Cl. 280—150 AB **1 Claim**



A safety device for protecting an occupant of a vehicle during a collision comprises an inflatable confinement mounted in the vehicle. The confinement, when inflated, take the shape of a frustum of a cone having the base surface thereof being engageable with at least the upper portion of the occupant's body including his head. The fact that the confinement is formed frustoconically rather than cylindrically enables the use of a fluid source having a relatively small capacity and also serves to minimize pressure buildup in the vehicle compartment resulting from the inflation of the confinement during the collision.

3,799,579

REAR SHIELD FOR ROTARY LAWNMOWER

Einar S. Dahl, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

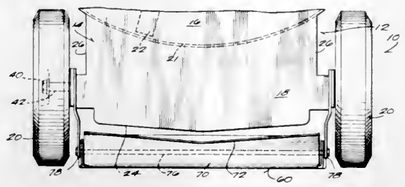
Filed Nov. 6, 1972, Ser. No. 304,067

Int. Cl. B60r *27/00*

U.S. Cl. 280—150 R **10 Claims**

Disclosed herein is a rotary lawnmower including a blade housing having a downwardly depending rear wall which extends transversely of the direction of intended mower travel and one or more rear ground engaging wheels which are rotatably supported on the blade housing by a cutting height adjustment means. The cutting height adjustment means can

be selectively adjusted to vary the vertical relationship between the wheel axis and the blade housing so as to vary the height of cut. A protective shield extending substantially across the entire width of the blade housing rear wall is supported for pivotal movement about a transversely extending axis by a link which carries the shield rearwardly of the rear wall with the bottom edge of the shield spaced a small distance above the ground. The link is connected to the cutting height



adjustment means so that, when adjustments are made in the cutting height, the shield pivot axis is moved a corresponding amount and a predetermined vertical distance between the shield pivot axis and the ground is maintained constant at all cutting heights. The shield, which is preferably a one-piece, box-like construction, effectively acts as a trap for objects which may be hurled from beneath the rear wall of the blade housing.

3,799,580

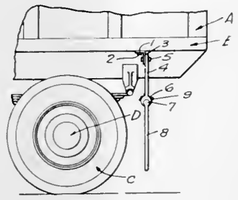
GRAVEL GUARD FOR VEHICLES

Pendleton R. McGuire, Wylliesburg, Va.

Filed Oct. 12, 1971, Ser. No. 188,039

Int. Cl. B62d *25/16*

U.S. Cl. 280—154.5 R **1 Claim**



A truck gravel guard for attachment to a vehicle such as a truck-trailer or the like behind the rear wheels thereof to stop mud or gravel thrown rearwardly by said wheels from splashing upwardly onto following vehicles and which guard has two detachable sections with one section attachable to the truck and the second section to normally hang below said first section, but can be detached therefrom and replaced.

3,799,581

WHEEL HUB WITH IMPROVED ADJUSTABLE ECCENTRIC MOUNTING

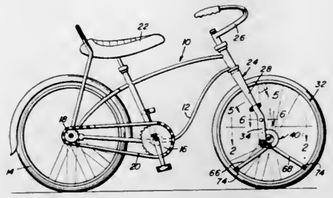
John M. Munn, 1633 Cottonwood, Grand Prairie, Tex.

Continuation-in-part of Ser. No. 97,846, Dec. 14, 1970, abandoned. This application Apr. 19, 1972, Ser. No. 245,342

Int. Cl. B62m *1/00*

U.S. Cl. 280—229 **15 Claims**

A double disc assembly including an outer disc and an inner disc is provided at each side of the associated wheel and the inner and outer discs of each assembly are secured together for adjustable angular displacement about a center axis. A substitute axle assembly is secured through the center hub of the associated wheel and the substitute axle assembly is rigidly secured to the wheel hub and to the inner discs of the disc assemblies at corresponding points spaced radially outwardly of the axes of relative rotation of the discs or disc members of each disc assembly. In addition, each outer disc is journalled from the associated bicycle fork arm for rotation about an axis spaced the same radial distance from the axis of relative rotation of the disc members. In this manner, the substitute axle, which is stationarily secured through the center hub of the associated wheel, may be swung into alignment with the axes of



rotation of the outer disc members relative to the bicycle fork arms or swung about the axes of relative rotation of the disc members relative to the axes of rotation of the outer discs relative to the fork arms whereby the axis of rotation of the entire wheel assembly may be eccentrically disposed relative to the center hub of the wheel.

3,799,582

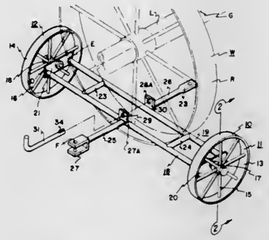
WHEELED CRADLE STRUCTURE FOR USE WITH AGRICULTURAL WHEEL LINES

Burr Courtright, La Grande, Oreg., assignor to CH_2O, Inc., La Grande, Oreg.

Filed Nov. 22, 1972, Ser. No. 308,803

Int. Cl. B60d *1/14*

U.S. Cl. 280—408 **10 Claims**



A wheeled cradle useful in transporting agricultural wheel lines to new irrigation locations. The cradle includes spaced means for supporting the wheels of agricultural irrigation lines or "wheel lines," as they are called. The cradle structure depends from the rotation axis of the wheels so that the cradle structure is properly disposed downwardly and in a horizontal plane. Linkage arms extend laterally from the cradle structure and are constructed for coupling to similar units. A keeper member and associated structure are provided to lock the wheel of a wheel line within the supporting cradle.

3,799,583

HITCHING ASSEMBLY

Jack K. Vassar, P.O. Box 460, and Boby J. Henigman, P.O. Box 452, both of Perkins, Okla.

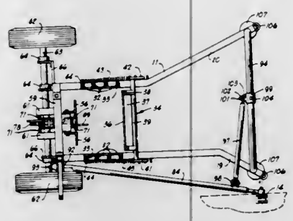
Division of Ser. No. 11,669, Feb. 16, 1970, Pat. No. 3,650,365. This application Mar. 20, 1972, Ser. No. 236,088

Int. Cl. B65g *65/06;* **B60d** *1/14*

U.S. Cl. 280—473 **12 Claims**

The present invention relates to apparatus for hitching a movable frame to a vehicle and is primarily useful in combination with a bale loader. When used with a bale loader, the present invention may comprise a tension member which bears the primary pulling tension and which is secured at one

of its ends to a towing vehicle, such as the side of a truck, while the other of its ends is pivotally secured to the rear portion of the bale loader. At the point of contact between the tension member and the vehicle there is provided a universal type coupling to allow limited, relatively free motion between the tension member and the towing vehicle. Near the front of the frame which carries the bale loader there is provided an elongated guide means which in a preferred embodiment is shaped in the form of an inverted "U" with the downwardly pointing arms of the "U" being rigidly secured to opposite sides of the bale loader frame. Connecting means are provided between the upper portion of the guide means and a point on



the tension member immediately behind the point at which the tension member is secured to a vehicle. The point of connection between the connecting means and guide means may be varied and for this purpose there may be provided a sleeve which is slidably mounted upon the guide means and which carries an outwardly projecting connecting stub which fits into an aperture formed in the connecting means. Means, such as a threaded bolt, is provided in combination with the sleeve to allow the sleeve to be securely locked into place at a given point upon the guide means and thereafter, upon loosening the bolt, moved to another point thereon without removing the sleeve therefrom.

3,799,584

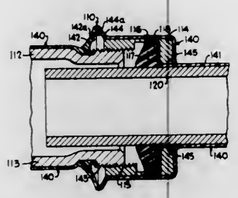
CORROSION RESISTANT SEAL FOR COMPRESSION COUPLINGS

Fred H. Slocum, Pittsburgh, Pa., assignor to Robroy Industries, Verona, Pa.

Continuation-in-part of Ser. No. 176,203, Aug. 30, 1971, abandoned. This application Oct. 5, 1972, Ser. No. 295,227

Int. Cl. F16l *9/14, 19/06, 55/00*

U.S. Cl. 285—45 **7 Claims**



An improved corrosion resistant seal for compression coupling devices includes threadably engageable male and female coupling members. Each of said respective coupling members has an insulating, moisture resistant, resilient, polymeric coating, such as a polyvinylchloride coating bonded to the metal substrate. Both male and female coupling member coatings terminate in respective annular resilient flange portions. Each of the annular flange portions extends radially of its respective coupling member in a manner whereby threadably engaging and advancing male and female members results in contact of the respective flange portions providing an effective moisture seal therebetween and an effective insulating coupling that prevents galvanic and chemical corrosion thereof. A further embodiment of the improved corrosion resistant seal for compression couplings includes a male coupling member coating continued beyond the adjacent resilient flange portion and terminating in a threaded portion adjacent the matching threads of the male coupling member. The male coupling member completely engages the female coupling member when all the threads of the female coupling extend over all the threads of the male coupling member and engage the threaded portion of the male coupling member coating. An effective moisture seal is first provided by the contact of the respective resilient flanges of the male and female coupling members when the threaded portion of the female member initially engages the threaded portion of the male member.

3,799,585

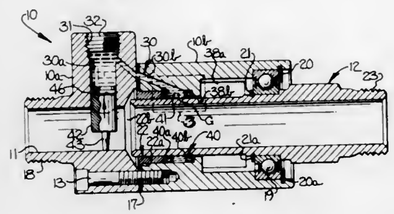
ROTARY FLUID JOINT

Frank E. Frost, Charlotte, N.C., assignor to Reed Tool Company, Houston, Tex.

Filed Nov. 17, 1972, Ser. No. 307,453

Int. Cl. F16l *27/00*

U.S. Cl. 285—93 **10 Claims**



In a rotary fluid joint, an improved sealing means for effecting a leakproof seal between a housing and a conduit rotably mounted therein, and comprising at least one pressure responsive seal carried by the housing in surrounding sealing relation to the conduit, a supply of a substantially non-compressible fluid communicating with the seal for transmitting a sealing pressure thereto for maintaining the desired sealing relation between the seal and the conduit, and pressurizing means communicating with the supply of pressure transmitting fluid and a bore in the housing and, responsive to the pressure of the fluid flowing through the bore, for applying a proportionally corresponding pressure to the pressure responsive seal through the supply of the pressure transmitting fluid.

3,799,586

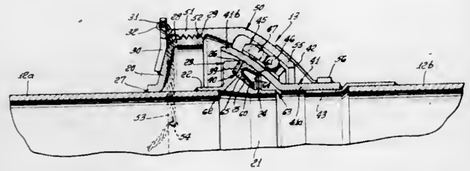
DUCT JOINT

Peter Caras, Tujunga, and Walter E. Pike, Glendale, both of Calif., assignors to SSP Industries, Burbank, Calif.

Filed Apr. 14, 1972, Ser. No. 244,032

Int. Cl. F16l *27/06*

U.S. Cl. 285—98 **6 Claims**



Flexible gastight fluid joints are disclosed arranged to accommodate rotation, angulation and axial movement. An annular seal member having inner and outer sealing lips which define a slanted gas pocket is mounted between the joint parts which rotate and angulate with respect to each other. A seal is

also provided between joint parts which move axially with respect to each other and a guide surface may be included to prevent angulation of the axially movable joint parts.

3,799,587

COUPLINGS OF REDUCED SIZE AND CAPABLE OF TRANSMITTING HIGH MECHANICAL STRESSES BETWEEN AN ARMOURED FLEXIBLE MEMBER AND A RIGID ELEMENT

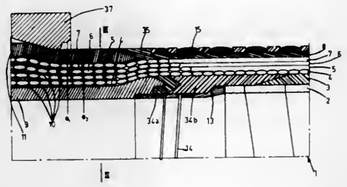
Andre Chevalier, Pantin; Pierre Grolet, Viroflay, and Remi Reynard, Montesson, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

Division of Ser. No. 25,118, April 2, 1970, Pat. No. 3,667,112. This application Sept. 16, 1971, Ser. No. 181,186

Claims priority, application France, Apr. 3, 1969, 69.10365

Int. Cl. F16l *39/00*

U.S. Cl. 285—137 R **2 Claims**



A device for making a rigid connecting element, made of a hard material and having a jagged external wall, integral with one end of a flexible member having at least one armouring formed of the metallic wires, the device including at least one anchoring ring surrounding the connecting element and on which lays the armouring, the anchoring ring being made of a material of lower hardness than that of the materials of which the armouring and the connecting element are formed, and a wire-drawn compression ring compressing the assembly of the armouring and the anchoring ring against the connecting element.

3,799,588

ADAPTOR ASSEMBLIES FOR CONNECTING COMPLEMENTARY MEMBERS

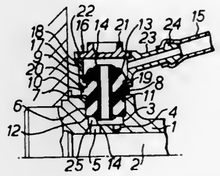
Martin Green, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Jan. 31, 1972, Ser. No. 221,970

Claims priority, application Great Britain, Feb. 5, 1971, 4099/71; Mar. 4, 1971, 6073/71; July 10, 1971, 32483/71

Int. Cl. F16l *5/02*

U.S. Cl. 285—158 **7 Claims**



In an adaptor assembly for providing a fluid-tight sealed connection between a pair of complementary members of which at least one of the members is provided with a recess, the adaptor assembly comprises a bush of resilient material for sealing engagement in the recess at least at one end, a tubular member for providing fluid-flow communication between the complementary members received within a through bore in the bush, and an enlarged head at one end of the tubular member located adjacent to the said one end of the bush to prevent restriction of the tubular member by the material of the bush.

3,799,589

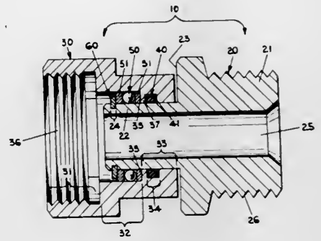
SWIVEL COUPLING FOR FLUID CONDUITS

Wallace G. Boelkins, Grand Rapids, Mich., assignor to Uni-Mist, Inc., Grand Rapids, Mich.

Filed Jan. 21, 1972, Ser. No. 219,695

Int. Cl. F16l *27/00*

U.S. Cl. 285—281 **7 Claims**



A swivel coupling having a male member with a stem inserted through a closely fitting mating passage of a female member includes an annular channel in the female member, interrupting the surface of the mating passage. An O-ring seal is disposed within the annular channel. The mating passage also has an interior enlargement into which the stem projects. Bearings and bearing washers are disposed around the stem within the interior enlargement. The bearings and bearing washers are held in place by a snap ring which snaps into an indexing groove on the stem of the male member. The stem of the male member projects forwardly from a shoulder which limits the extent to which the stem can be inserted into the female member.

3,799,590

ANTI-CLOGGING MEANS FOR AUTOMATIC THREAD-KNOTTING DEVICES

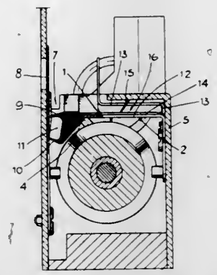
Pietro Messa, via Gasparo da Salo 126, Salo, Brescia, Italy

Filed Sept. 15, 1972, Ser. No. 289,616

Claims priority, application Italy, Oct. 6, 1971, 5213/71

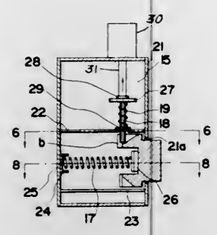
Int. Cl. D03j *3/00*

U.S. Cl. 289—3 **6 Claims**



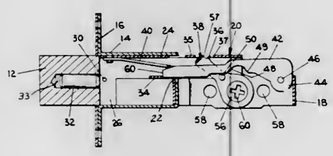
The anticlogging means for automatic thread-knotting devices comprises a member, made of pre-stamped plastic material or rubber, closely adhering to the upper wall of the knotting device. Longitudinal and inclined wings, juxtaposed with the slots existing in the knotting device's upper wall, provide seals against the penetration of dust and lint inside the body of the knotting device. These wings are so positioned as to form therebetween collection chambers for the dust which has filtered through the first seal.

3,799,591
LATCH LOCK
Mitsumasa Taniyama, Osaka, Japan, assignor to Goal Lock Company, Osaka, Japan
Filed May 9, 1972, Ser. No. 251,759
Int. Cl. E05c *5/02*
U.S. Cl. 292—71 **1 Claim**



A latch lock which makes possible, when opening a door, to release the latch by a simple operation without the necessity of turning a knob or the like. The lock has a latch head with a grooved boss fitting into a case. The latch head is urged outwardly of the case by a spring, and has a shape which enables it to be turned and also advanced and withdrawn freely. A stop is provided which is engageable with the grooved boss to prevent the latch head from turning when the stop is engaged.

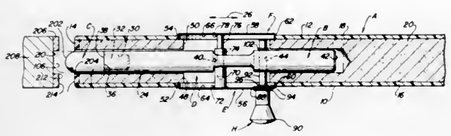
3,799,592
DEAD BOLT AUXILIARY LATCH
John H. Babb, Jr., and Orville C. Maurits, both of Grand Rapids, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.
Filed Apr. 28, 1972, Ser. No. 248,425
Int. Cl. E05c *1/06*
U.S. Cl. 292—140 **7 Claims**



A dead bolt lock mechanism having a locking bolt extendable by a rotary drive arm and locked into extended position by a special latching means. Spring biasing means acting on the latch holds it in position to thereby allow the mechanism to be mounted in virtually any orientation within a panel. A double latch of the bolt is achieved with a combination of the noted latching means with an over-center latch provided by the rotary drive arm.

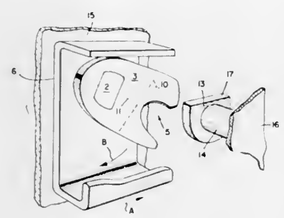
3,799,593
DOOR LATCH
Harold J. Dielman, Lyndhurst, Ohio, assignor to The Sanymetal Products Co., Inc., Cleveland, Ohio
Filed Aug. 9, 1972, Ser. No. 279,269
Int. Cl. E05c *1/04*
U.S. Cl. 292—145 **11 Claims**

A door latch includes a reciprocating bolt having an elongated bolt opening therethrough. A pair of escutcheon plates close an opening through a door in which the bolt is mounted. The escutcheon plates have cooperating connecting means extending through the elongated bolt opening for connecting the two escutcheon plates together and to the door. The bolt reciprocates relative to the connecting means. A knob has an



elongated shank extending through an elongated opening in one escutcheon plate. The shank is connected with the bolt.

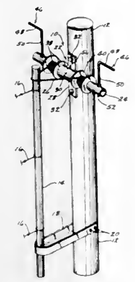
3,799,594
VEHICLE DOOR LATCH
Hans-Dieter Watermann, Metzkausen, Germany, assignor to Arn. Kiekert Sohne, Heiligenhaus, Germany
Filed July 26, 1971, Ser. No. 166,234
Int. Cl. E05c *3/26*
U.S. Cl. 292—213 **3 Claims**



A motor-vehicle-door latch has a pin which is engageable with a lock pawl mounted on the end of a rotatable shaft controlled by the lock mechanism. The pawl is formed with a step ledge subdividing it into a body portion formed with a hole receiving the end of the shaft and a fork portion formed with a recess receiving the lock pin. The body portion is about twice as thick as the fork portion and the step lies at an angle to the median plane of the pawl, an angle between 100° and 105° being preferred. The hole in the body portion has a height in the direction of the median plane substantially equal to the thickness of the body portion and a width orthogonal to this axis which is twice as great. The pawl is made by positioning an elongated metal bar formed with a step ledge under a punch and die having a pawl configuration with a median plane inclined to the longitudinal axis and the direction of rolling of the bar.

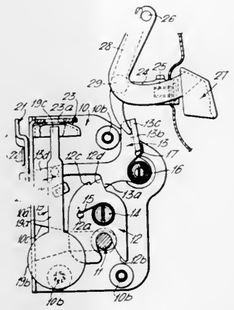
3,799,595
GATE TIGHTENER
Franklyn G. Wahlert, R.R. No. 3, Exira, Iowa
Filed Dec. 13, 1972, Ser. No. 314,823
Int. Cl. E05c *19/10*
U.S. Cl. 292—246 **10 Claims**

A gate tightener comprises a shaft which is rotatably mounted within a tube or sleeve. The tube or sleeve is welded to a vertical plate which in turn is adapted to be secured to a gatepost. The shaft has handles on its opposite ends so that it may be rotated within the sleeve. A cable element has its opposite ends secured to the shaft so as to form a loop for the reception of a vertical member of a gate, and locking means



are provided for selectively locking the shaft against rotation within the sleeve.

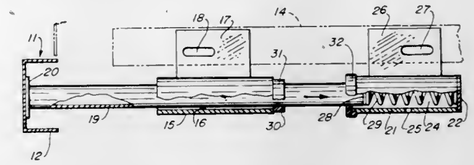
3,799,596
SAFETY APPARATUS FOR VEHICLE DOOR LATCHES
Torii Nozomu, Hekinan, and Kuki Nobuyuki, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Japan
Filed Feb. 16, 1973, Ser. No. 333,324
Claims priority, application Japan, Feb. 21, 1972, 47-17867
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **11 Claims**



A safety apparatus for a vehicle door latch comprising a weight element swingably assembled within the door latch for converting external force given to the door latch into displacements of the weight element, and a blocking element installed within the door latch, the blocking element being engaged with the weight element for holding the locking condition of the door latch when the weight element is displaced.

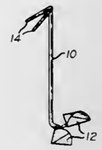
3,799,597
BUMPER SYSTEM FOR AUTOMOTIVE VEHICLES
Maurice J. Thompson, 221 Cambridge Ave., San Leandro, Calif.
Filed Dec. 29, 1971, Ser. No. 213,642
Int. Cl. B60r *19/08*
U.S. Cl. 293—86 **3 Claims**

A bumper system for automotive vehicles such as trucks, campers, and the like. The bumper system constitutes an impact-absorbing mechanism operative to protect the vehicle against low velocity impacts both at the rear and front ends thereof. The bumper system includes at each end of the vehicle a pair of elongated plungers fixedly secured to the associated bumper and supported by guide structure so as to be reciprocably displaceable with respect thereto. The guide structure is fixedly secured to the chassis of the vehicle, an energy-absorbing structure similarly affixed thereto is provided with a compression spring operatively associated with each plunger and engageable therewith to yieldably resist inward displacements thereof while dissipating kinetic energy associated with any such displacement. Stop means having



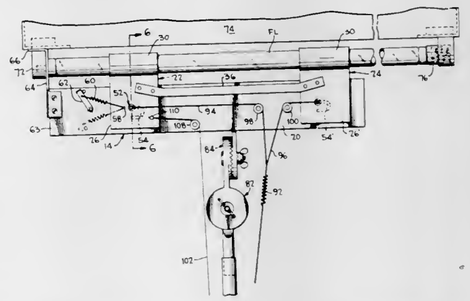
cooperable components respectively defined by the plungers and guide structures associated therewith positively limit the permissible outward displacement of the plungers and bumper to positionally define the location thereof in the inactive state of the bumper system.

3,799,598
APPARATUS FOR REMOVING FECES OF ANIMALS AND METHOD OF MANUFACTURE OF SAID APPARATUS
Robert Lavaggi, R.D. 1 - 300A Glassco Tpk., Woodstock, N.Y.
Filed Mar. 29, 1972, Ser. No. 239,018
Int. Cl. A47f *13/08*
U.S. Cl. 294—19 R **6 Claims**



A disposable device for removing animal feces which is usable with a grass trimmer or other apparatus having a pair of relatively movable blades and means for moving said blades toward and away from each other. The device is cup-like preferably with a flat base and with means for releasably attaching it to one of the blades. Two devices are used together to function as a closable disposable container.

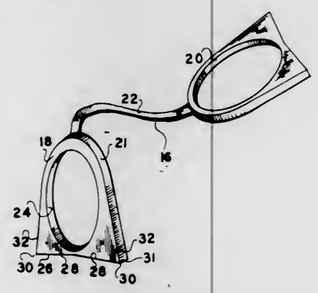
3,799,599
FLUORESCENT LAMP HANDLING DEVICE
Bill C. Jordan, 5014 8th St., Alexandria, Va.
Filed Jan. 26, 1973, Ser. No. 326,743
Int. Cl. H01k *3/32*
U.S. Cl. 294—20 **14 Claims**



A fluorescent lamp handling device for installing and removing fluorescent lamps on a fixture including a clamping

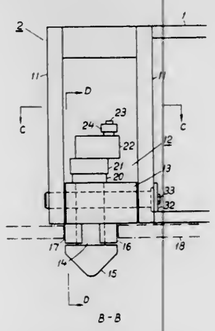
assembly for gripping a fluorescent lamp and a cam mechanism for controlling the position of the clamping assembly relative to a support such that by aligning the support, the cam mechanism can be actuated to move a fluorescent lamp gripped by the clamping assembly in transverse directions to depress a movable, spring biased socket of a fixture receiving one end of the fluorescent lamp and move the other end of the fluorescent lamp relative to a stationary socket of the fixture to permit installation or removal of the fluorescent lamp.

3,799,600
HOLDER FOR A VACUUM BOTTLE
Gilmore H. Chappell, 1513 E. Cliveden St., Philadelphia, Pa.
Filed Dec. 6, 1971, Ser. No. 205,002
Int. Cl. A47j *45/00*
U.S. Cl. 294—31.2 **1 Claim**



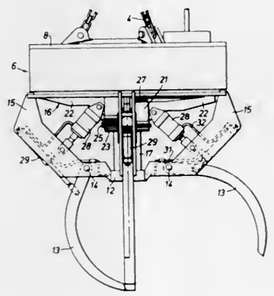
A holder for a vacuum bottle which comprises two collars and a sling connected therebetween. A portion of the periphery of each of the collars is comprised of a generally non-rotating surface so that the collar and vacuum bottle cannot roll. The collar is comprised of a resilient material so that should the vacuum bottle fall, the fall will be cushioned.

3,799,601
SPREADER FOR CARGO CONTAINERS
Lennart Johansson, Viken, and Josef Horvath, Raa, both of Sweden, assignors to Allmanna Svenska Elektrisha Aktiebolaget, Vasteras, Sweden
Filed Apr. 28, 1972, Ser. No. 248,602
Claims priority, application Sweden, May 4, 1971, 5743/71
Int. Cl. B66c *1/66*
U.S. Cl. 294—81 SF **6 Claims**



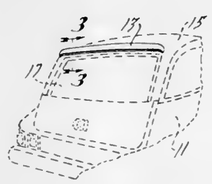
A spreader for handling unit containers includes a frame with recesses in the corners, and an exchangeable unit secured within each of the recesses with a pivotable, vertical lifting latch for insertion into a hole in a corner fitting in a container. The pivotable latch is turnable in a block which is adjustable in both horizontal directions with respect to the recess. The latch has a cross piece at its bottom for engagement beneath the top wall of the container after passing through an opening therein.

3,799,602
APPARATUS FOR HANDLING MATERIAL
William Robert Laws, Worcester Park, and Eric Ambrose Hyde, Hayes, both of England, assignors to The British Iron and Steel Research Association, London, England
Filed Feb. 6, 1973, Ser. No. 329,984
Claims priority, application Great Britain, Feb. 23, 1972, 8379/72
Int. Cl. B66c *1/06, 3/16*
U.S. Cl. 294—88 **6 Claims**



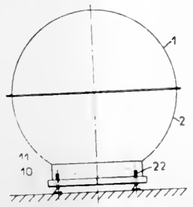
An apparatus is described for use in converting an electromagnetic grab to function as a mechanical grab. The apparatus includes a frame within which the magnet block of a conventional electro-magetic grab is locatible and a two part core assembly of magnetic material hydraulically coupled to the grab arms of the apparatus. Energisation of the magnet block causes progressive movement of the core assembly towards the block actuating closing movement of the arms, whilst a hydraulic reservoir assists in procuring movement of the arms after de-energisation of the magnet block.

3,799,603
AUTOMOBILE WIND DEFLECTOR ASSEMBLY
John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich.
Filed Aug. 28, 1972, Ser. No. 284,285
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 S **5 Claims**



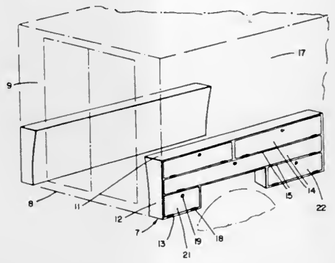
An automobile wind deflector assembly incorporating an extruded aluminum blade. The blade is mounted on an automobile body by a pair of brackets. The brackets are provided with flanges fitted within slots on the inner side of the blade. The arrangement eliminates the necessity of using screws exposed to the outer surface of the blade for connecting the blade to its supports.

3,799,604
WHEELED STALL FOR ITINERANT SALE
Yvon Letourneux, 1 rue du Chene Lasse 44, Saint Herblain, France
Filed June 1, 1972, Ser. No. 258,909
Claims priority, application France, June 2, 1971, 7121160
Int. Cl. B60p *3/02*
U.S. Cl. 296—21 **12 Claims**



The invention is a stall mounted on wheels for an itinerant merchant. It has a hollow spherical body made up of an upper and a lower shell, the upper one acting as a roof and the lower one as a store and sales counter. The upper shell is movable between two positions, a closed position wherein it is sealed against the lower shell along merging edges and a service position wherein it stands away and above the lower shell to act as a roof.

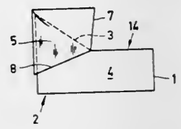
3,799,605
STORAGE UNIT FOR PICKUP TRUCKS
Melvin W. Silva, 30000 Kasson Rd., Tracy, Calif.
Filed Sept. 25, 1972, Ser. No. 292,074
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 MC **5 Claims**



An auxiliary storage unit for a pickup truck or the like is secured to the rear side walls of the truck. Particularly suited to a pickup truck carrying a camper, the storage unit provides additional storage volume which is exteriorly accessible without increasing the overall width of the vehicle to greater than the legal maximum. The unit is constructed of fiberglass with exterior lockable doors, and is bolted or otherwise secured to the rear outer panel of the pickup truck.

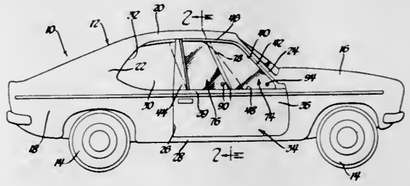
3,799,606
BABY CARRIAGE
Georg Gesslein, 8621) Mannsgereuth, Krs. Lichtenfels, Germany
Filed Oct. 13, 1971, Ser. No. 188,846
Claims priority, application Germany, Oct. 14, 1970, 7037990[U]; July 14, 1971, 2135185
Int. Cl. B62b *9/12*
U.S. Cl. 296—28 B **2 Claims**

A baby carriage body is provided with see-through means and means for selectively covering said see-through means. Such covering may be accomplished, for example, by a tiltable



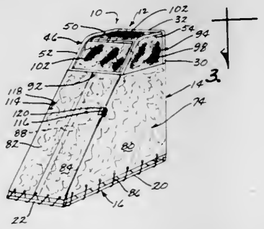
hood of opague material. The wall of the carriage body may be hollow and inflatable.

3,799,607
VEHICLE BODY CONSTRUCTION
Horacio Shakespear, West Bloomfield, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1972, Ser. No. 309,195
Int. Cl. B60j *1/16*
U.S. Cl. 296—155 **2 Claims**



A vehicle body construction and particularly a vehicle door construction incorporating a pair of sliding glass panels in a window opening defined by the door, the window opening having an oblique front portion and a vertical rear portion and the rear portion having an elongated aperture therethrough which permits passage of a portion of one of the panels beyond the confines of the door opening when that panel is in an open position thereby to maximize exposed area of the window opening.

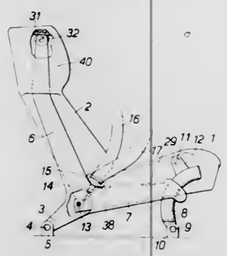
3,799,608
PORTABLE BLIND
Frank D. Smutny, 206 S. Wainswright, and Maurice M. Hassenplug, 1723 N. Park, both of Grand Island, Nebr.
Filed Aug. 30, 1972, Ser. No. 285,028
Int. Cl. A45f *1/00;* **A47c** *29/00*
U.S. Cl. 297—184 **10 Claims**



A portable blind is disclosed generally comprising a collapsible frame means having a folding seat provided therein to accommodate the hunter in a sitting position. The lower portion of the frame means is covered with a camouflage material while the upper portion of the frame means is covered with a net-like material which permits the hunter to see therethrough. The lower camouflage material comprises a pair of front flap members which have registering grommets. The net-like material includes a moveable top portion having

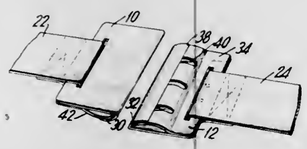
elastic means thereon for moving the top portion from a closed position to an open position to enable the hunter to stand up in the blind for shooting purposes. An arcuate hook element is mounted on the lower forward end of the top portion of the net-like material and is extended through the registering grommets for selectively maintaining the blind in a closed position. The hunter may open the blind by simply moving the hook out of engagement with the registering grommets which causes the front flap members to partially open and which permits the top portion to move to its open position. The frame means and the camouflage material thereon may be folded to a substantially flat position for carrying purposes.

3,799,609
SEATS FOR MOTOR VEHICLES
Douglas James Cunningham, W. Chichester, England, assignor to Wingard Limited, Chichester, Sussex, England
Filed Mar. 28, 1972, Ser. No. 238,790
Claims priority, application Great Britain, Apr. 16, 1971, 9612/71
Int. Cl. B60n *1/06*; **A47c** *1/032*
U.S. Cl. 297—340 **5 Claims**



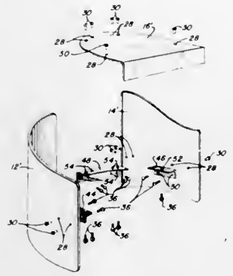
A safety seat for vehicles capable of taking the inertia forces on the seat and its occupant in the event of an accident has the seat cushion and back squab supported between rigid side members pivotally connected at their rear ends to fixed anchorages on the floor of the vehicle and in slidable and lockable engagement at their front ends with upstanding leg members pivoted at their lower ends on other fixed floor anchorages.

3,799,610
SEAT BELT BUCKLE
Jesse R. Hollins, 1 Chester Dr., Great Neck, N.Y.
Filed Oct. 7, 1971, Ser. No. 187,429
Int. Cl. A44b *17/00*
U.S. Cl. 297—385 **1 Claim**



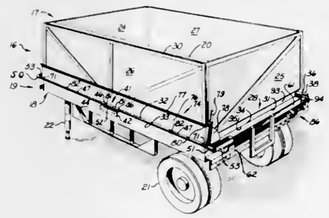
A seat belt buckle for use by occupants of vehicles including first and second metal members, and first and second belts respectively attached to said first and second members, said buckle being the fastening member of a seat belt assembly. The first member has a lip bent under the main portion of the first member and the second member has a lip bent over the main portion of the second member. Magnetic or spring means are provided to hold the respective lips of said first and second members together when there is a lack of tension on the respective belts, and the mating engagement of the lips of the first and second members insures that the seat belt buckle will remain linked together when the respective belts are placed under tension.

3,799,611
KNOCK-DOWN UPHOLSTERED FURNITURE
Manfred Steinfeld, Skokie, Ill., assignor to Shelby Williams Industries, Inc., Chicago, Ill.
Filed Feb. 10, 1972, Ser. No. 225,162
Int. Cl. A47c *7/00, 1/12*
U.S. Cl. 297—440 **1 Claim**



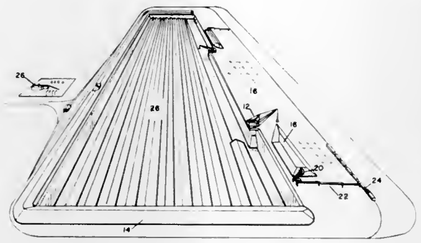
A knock-down, three-piece, upholstered article of seating furniture including a pair of unitary side arm, back rest and leg pieces, and a separable seat piece. Each of the three upholstered pieces is provided with a plurality of pre-installed, concealed T-shaped nuts adapted to matingly engage bolts. Brackets are mounted for retaining the three pieces in assembled condition with the side arm pieces abutting along a common edge thereof and the seat piece positioned between the side arm pieces transverse thereof such that the upholstered furniture article may be purchased in knocked-down condition and easily assembled by the purchaser by securing the three pieces together using the brackets and bolts provided.

3,799,612
BOX HOLD DOWN SYSTEM
Morrison Kai Norton, and Lawrence Raymond Timko, both of Woodland, Calif., assignors to Titan Trailer Corp.
Filed Sept. 22, 1972, Ser. No. 291,328
Int. Cl. B60p *1/04*
U.S. Cl. 298—18 **14 Claims**



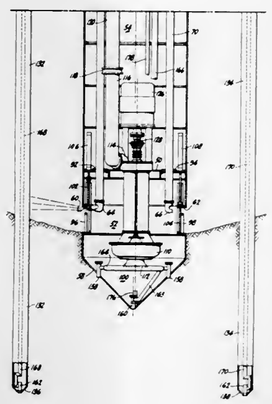
A lateral edge of a bulk bin is pivotally mounted on the subjacent side edge of a flat bed trailer, thereby enabling the bin contents to be dumped laterally as the nether side of the bin is elevated. The pivot pin extends the entire length of the bin and projects fore and aft therefrom. The pin is journaled in a sleeve mounted centrally on the side edge of the flat bed, whereas the bin is hinged to the pin along substantially the entire length of the bin. The "floating" fore and aft extensions of the pin and adjacent corners of the bin are constrained in their vertical motion by snubbing means mounted on the ends of the flat bed and attached to the pin extensions. Selectively operable latch means hold down the nether corners of the bin.

3,799,613
TAR SANDS MINING PROCESS
Robert D. Hendry, Edmonton, Alberta, Canada, assignor to Canada-Cities Service Ltd.; Imperial Oil Limited; Atlantic Richfield Canada Ltd. and Gulf Oil Canada Limited, part interest to each
Filed Feb. 18, 1972, Ser. No. 227,396
Int. Cl. E21c *41/10*
U.S. Cl. 299—7 **6 Claims**



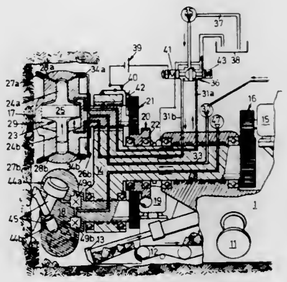
A process wherein tar sands are mined through optimum utilization of solids movement for the ecological control of land reclamation during and for optimum tar sands mining operations.

3,799,614
METHOD AND APPARATUS FOR EXCAVATING SETTLED BODY OF SOLIDS
John A. Miscovich, Orange, and John J. Gilbert, San Francisco, both of Calif., assignors to Marcona Corporation, San Francisco, Calif.
Filed Aug. 24, 1972, Ser. No. 283,309
Int. Cl. E21c *45/00*
U.S. Cl. 299—17 **24 Claims**



Method and apparatus for excavating and removing a settled body of discrete mineral solids (e.g., a tailings pond from a mining operation) by procedures which progress downwardly from the surface of the body. High pressure streams of liquid are traversed along a path in a pulping zone lowermost in first region of the body. The liquid forms a pumpable slurry with the mineral solids in the zone, and the slurry is then pumped from the zone leaving an undercut cavity sufficient to cause collapse of the overburden of solids. The collapsed overburden is then formed into additional pumpable slurry which is removed by pumping. Successive stages of excavation are carried out by moving the streams of liquid downwardly to a second region where the foregoing steps are repeated. In the apparatus a caisson is disposed vertically in the body and stabilized by means of a plurality of circumferentially positioned pilings. A plurality of high velocity nozzles are mounted in the caisson to direct liquid streams into a pulping zone surrounding the caisson. The slurry which is formed in the pulping zone flows through portals in the caisson into a slurry sump in the lower end of the caisson where a pump removes the slurry through a discharge line leading from the caisson. In one embodiment the caisson is fixedly secured to the caisson and jets are provided to direct liquid streams into regions below the lower ends of the caisson and pilings to sink the apparatus downwardly to the next lower region for additional stages of excavation. In another embodiment, the caisson is mounted for relative vertical movement with respect to stationary pilings.

3,799,615
TUNNELING MACHINE HAVING GENERATOR MEANS FOR LIQUID JETS CARRIED ON CUTTER HEADS
Nicholas Simon Hall Taylor, Saltsjobaden; Hakon Olavi Hilden, and Carl Anders Noren, both of Saltsjo-Boo, all of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed June 29, 1972, Ser. No. 266,599
Int. Cl. E01g *3/04*
U.S. Cl. 299—59 **9 Claims**

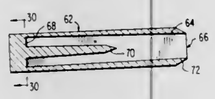


A machine for making tunnels through rock by slitting the tunnel front wall by means of high speed liquid jets which machine comprises a main frame, a carrier movably mounted thereupon, a cutter unit movably mounted on the carrier, whereby the cutter unit is able to cover the tunnel front wall with slots. The cutter unit consists of high speed jet generators which are powered by a non-movable low pressure driving fluid source on the main frame. Impacting devices are provided for breaking down of the remaining parts of the rock intermediate the slots.

3,799,616
BRUSH MACHINERY AND INSTANT BRUSH CONSTRUCTION

John C. Lewis, Jr., Middlebury, Vt., assignor to Tucel Industries, Inc., Middlebury, Vt.

Continuation-in-part of Ser. No. 10,475, Feb. 11, 1970, Pat. No. 3,641,610, and a continuation-in-part of Ser. No. 800,330, Jan. 24, 1969, Pat. No. 3,604,043, said Ser. No. 10,475, is a continuation-in-part of Ser. No. 841,160, Oct. 25, 1968, Pat. No. 3,596,999, is a division of Ser. No. 578,840, Sept. 12, 1966, Pat. No. 3,471,202. This application Oct. 5, 1971, Ser. No. 186,659. The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.
Int. Cl. A46d *1/08*
U.S. Cl. 300—2 7 Claims

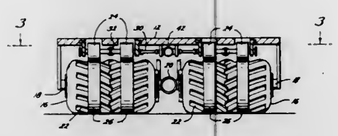


This invention relates to new and useful brush making apparatus which allows the manufacture of a wide variety of different types of constructions having pretrimmed synthetic filament tufts. The apparatus is capable of picking and trimming all tufts required in a single tufted construction simultaneously, and simultaneously assembling said tufts in said construction. The apparatus comprises a filament stock box for dispensing cut-to-length synthetic filament, a picking unit containing tuft-forming pickers which when inserted into the stock box will pick and trim the desired tuft, and means for fusing the end of the picked tuft and for mounting the prefused end thereof to form a tufted construction.

3,799,617
AXIAL SUPPORTING VEHICLE WHEELS ENGAGEABLE WITH LOAD BEARING ROLLERS

John G. Holland, Sr., Houston, Tex., assignor to Rolligon Corporation, Houston, Tex.

Division of Ser. No. 148,585, June 1, 1971, Pat. No. 3,744,585. This application Mar. 8, 1973, Ser. No. 339,409
Int. Cl. B60b *19/00*; B60c *11/06*
U.S. Cl. 301—5 P 8 Claims

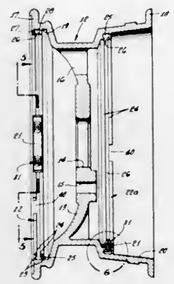


Elongated, flexible-walled wheels for vehicles carrying a load on their axles and having one or more load supporting rollers engageable with the outer periphery of the wheel. The vehicle being axially driven and/or roller driven. The wheels including a plurality of cleats for providing a gripping relationship with the ground and the outer periphery also including one or more pad portions free of cleats extending circumferentially around the wheel for engaging one or more supporting and/or driving rollers. The axial extent of said pad portions being at least as great as the axial extent of a coacting roller for preventing the roller from contacting the wheel periphery. The smooth portion on the wheel including a plurality of continuously circumferentially wrapped layers of material whose outer edges decrease inwardly to the wheel.

3,799,618
WHEEL BALANCING SYSTEMS

Sante Tino Martinoli, 6524 Santa Monica Blvd., Hollywood, Calif.

Filed Sept. 14, 1971, Ser. No. 180,428
Int. Cl. B60b *13/00*
U.S. Cl. 301—5 B 8 Claims

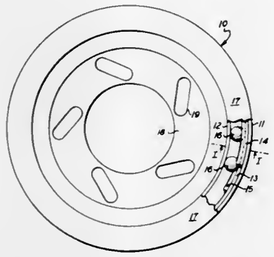


A vehicle wheel balancing system in which one or more balance weights are secured to a circumferential rib disposed laterally inwardly from the inner face or inner perimeter of the wheel rim, each weight being readily positioned at a desired circumferential location on the rib and being easily mounted on and secured to the rib and easily removable from the rib.

3,799,619
VIBRATION DAMPENING ASSEMBLY

Joseph A. LaBarber, Kern City, Calif., assignor to Kurt J. Wagner, Sherman Oaks, Calif., a part interest

Filed May 18, 1972, Ser. No. 254,706
Int. Cl. B60b *13/00*
U.S. Cl. 301—5 BA 8 Claims

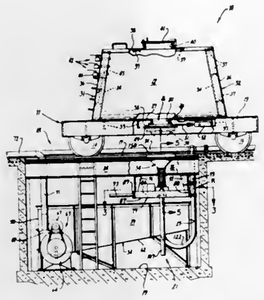


The vibration dampening assembly effectuates an automatic dynamic balancing technique for rotating masses operating at all circumferential speeds and maintains the weight members in their balance position when the assembly is not rotating. The vibration dampening assembly includes an annular retaining means adapted for attachment to a rotating mass. Weight means are movably disposed in the retaining means. Biasing means are located in the retaining means to provide a sufficient amount of force to hold the weight means in place against the pull of gravity within and with respect to the retaining means. However, the force of the biasing means is not effective to overcome the movement of the weight means within and with respect to the retaining means upon rotation of the assembly. Various features of the invention are directed to the specific type of biasing means and weight members used within the retaining means.

3,799,620
APPARATUS FOR TRANSPORTING AND HANDLING BULK MATERIAL

Charles W. Robinson, San Francisco; Wilbert N. Sims, Alamo, and William R. Archibald, San Anselmo, all of Calif., assignors to Marcona Corporation, San Francisco, Calif.

Filed Sept. 5, 1972, Ser. No. 286,102
Int. Cl. B65g *53/30*
U.S. Cl. 302—15 6 Claims



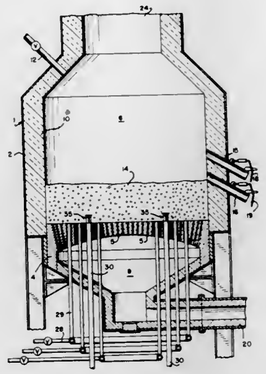
Apparatus for transporting and handling bulk material such as a settled mass of particulate matter characterized by being dispersible with a liquid into a pumpable mixture or slurry. The apparatus includes railroad tank cars carrying vessels adapted to contain the settled mass for movement as a train along a railroad right of way. At an unloading zone an unloading and slurrifying unit is provided which includes a nozzle and slurry receiving sump adapted for movement along the right of way for accurate positioning with respect to an overlying vehicle. Elevating means is provided to move the nozzle upwardly through an opened discharge outlet provided in a flat bottom of the vessel. The sump is carried upwardly with the nozzle for yieldable contact with a flat sealing plate around the discharge outlet. A hollow, fluid containing annulus carried at the upper end of the sump both forms a seal with the vessel sealing plate and senses contact therewith for actuating means to direct a high pressure stream of liquid to the nozzle. The nozzle is moved upwardly into the vessel with the liquid stream impinging upon and slurrifying the particulate matter as the nozzle is rotated about a vertical axis to progressively remove the particulate matter from within the vessel. The slurrified material flows by gravity into the sump and into a collection tank from which it is pumped into a discharge line for subsequent handling and processing.

3,799,621
APPARATUS FOR DISPERSING PNEUMATICALLY CONVEYED MATERIAL

Walter W. Kramer, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed Aug. 26, 1971, Ser. No. 175,300
Int. Cl. B65g *53/04*
U.S. Cl. 302—17 5 Claims

Apparatus for dispersing pneumatically conveyed pulverulent material particularly adapted for use in dispersing pulverulent material throughout the fluid bed of a fluidized bed reactor. The apparatus includes plates which are formed in an X shape with other plates mounted at an angle to the longitudinal axis of the first plates between the branches of the X shape. The apparatus extends into the open end of the conveying pipes and into the material chamber of a fluid bed reactor.

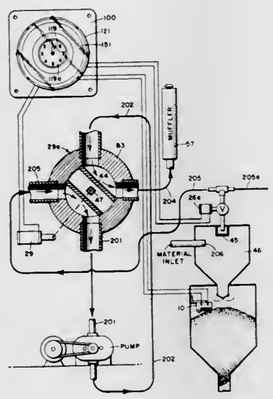


The apparatus serves to disperse the particulate material in the fluid bed.

3,799,622
MULTI-STATION LOADER FOR PARTICULATE MATERIAL

Homer C. Hek, Alexandria, Va., assignor to Universal Dynamics Corporation, Woodbridge, Va.

Filed Dec. 28, 1971, Ser. No. 213,076
Int. Cl. B65g *53/04*
U.S. Cl. 302—28 10 Claims



A multi-station loader useful in the loading of particular solids entrained in a gaseous fluid is disclosed. During loading, a vacuum is drawn on a chamber which is connected to a source of material thus drawing the material into the chamber. During the blow back operation the direction of the air circuit which during the loading operation was drawing a vacuum on the chamber, is reversed thus cleaning the filter and chamber and allowing material to be discharged from its bottom into a material hopper. Loading is only allowed to occur when a

level switch attached to the chamber indicates a need for material. The entire operation is controlled by a cylindrical array of switches and by a cam driven at two different speeds, dependent upon whether the loader is searching for a chamber calling for material or actually loading a chamber. Alternatively, the cam may be driven at the higher of the two speeds and stopped by magnetic braking.

3,799,623

CONTROLLING RAILWAY VEHICLE BRAKES

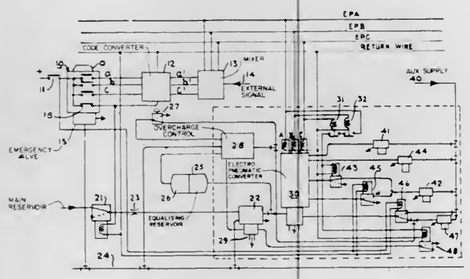
David John Wickham, and John Dale Coleman, both of London, England, assignors to Westinghouse Brake and Signal Company, Limited, London, England

Filed Oct. 8, 1971, Ser. No. 187,779

Claims priority, application Great Britain, Oct. 26, 1970, 50799/70

Int. Cl. B60t *13/68*

U.S. Cl. 303—20 **18 Claims**



Railway vehicle brake control arrangement for a power car or locomotive which in operation is one of at least two similar cars or locomotives in a train of vehicles having a continuous brake pipe the pressure in which is controlled by the combined action of apparatus in each power car or locomotive in response to a signal supplied by one of the power cars or locomotives which controls both over an electrical feed-path extending between them through the train. The pressure in the brake pipe controls brake applying apparatus on all vehicles in the train. The brake pipe is charged only at one of the cars or locomotives but vented at both by the action of the apparatus thereon. The apparatus also maintains a small pressure gradient in the brake pipe rising from the charging point to restrain anomalous braking due to charging surges or pressure waves. Overcharge, emergency braking, trackside control and one on two-pipe operation may be included in the arrangement.

3,799,624

MANUALLY OPERABLE APPARATUS FOR CUT-OUT OF BRAKE PIPE PRESSURE MAINTAINING

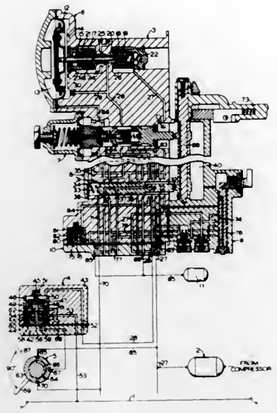
Harry M. Linhart, East McKeesport, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Nov. 30, 1972, Ser. No. 310,775

Int. Cl. B60t *15/36*

U.S. Cl. 303—66 **7 Claims**

This invention relates to a locomotive brake control apparatus that includes a manually operative self-lapping type of engineer's brake valve device having a relay valve device for controlling variations of the pressure in a train brake pipe that extends from the locomotive through each car in the train and manually operable means selectively operable to cut in or out maintaining of the pressure in the train brake pipe, not-



withstanding leakage therefrom, by the self-lapping relay valve device of the engineer's brake valve device.

3,799,625

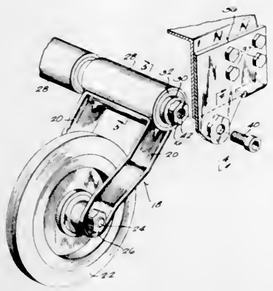
SUSPENSION SYSTEM FOR SNOW VEHICLE

Robert G. Statz, 2478 N. 66 St., Milwaukee, Wis.

Filed June 12, 1972, Ser. No. 261,918

Int. Cl. B62m *27/02*; **B62d** *55/16*

U.S. Cl. 305—24 **10 Claims**



A track suspension system for a snow vehicle including a plurality of longitudinally spaced suspension assemblies mounted on the snow vehicle frame. Each of the suspension assemblies is comprised of a shaft member having a plurality of bogie wheel units independently and resiliently mounted thereon. Each of the bogie wheel units includes an arm having a bogie wheel rotatably mounted thereon with the arm fastened to an outer collar member. An inner collar member is resiliently mounted inside the outer collar by means of a rubber sleeve bonded to the two collars. The inner collar is mounted on the shaft in a non-rotatable relationship. The shaft of each suspension assembly is mounted on the snow vehicle frame in fixed relationship thereto. Forces exerted on the system through the track will be absorbed by the resilient material bonded between the inner and outer collars. Since each bogie wheel unit is independently mounted on the respective shafts, a shock force received on one bogie wheel unit will not cause a reaction at some other part of the suspension system.

3,799,626

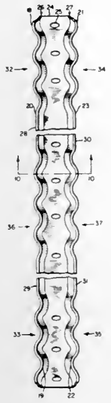
TRACTION CLEAT AND DRIVE BELT WITH SUCH ATTACHED

James Anthony Kilbane, Jr., Excelsior, Minn., assignor to Norman W. Lund, Excelsior, Minn., a part interest

Filed Dec. 2, 1970, Ser. No. 94,396

Int. Cl. B62d *55/24*

U.S. Cl. 305—35 EB **10 Claims**



A traction cleat for a snowmobile drive belt which provides for resistance to slippage in both the longitudinal and transverse direction relative to the snowmobile and which comprises a base with longitudinal, latitudinal, and vertical dimensions, and a plurality of projections which (1) are integral with said base, (2) all extend in the same and vertical direction from said base, and (3) are spaced along the longitudinal dimension of said base, said projections being aligned longitudinally relative to said base such that there are at least two longitudinal alignments of projections with the projections of at least one of said alignments being at an angle of less than 90° relative to the longitudinal-latitudinal plane of said base; and a drive belt with said cleats attached thereto.

3,799,627

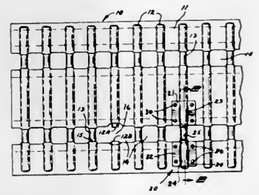
CROSS ROD REPAIR FOR SNOWMOBILE TRACKS

Arvin E. Zwieg, Rt. No. 1, Maple Plain, Minn.

Filed July 14, 1972, Ser. No. 271,778

Int. Cl. B62d *55/24*

U.S. Cl. 305—38 **5 Claims**



A repair device for repairing broken cross rods or cleats on snowmobile drive belts or tracks where the cross rods or bars are molded into the track. The cleats are reinforcing and traction devices for the track, and also provide lugs against which the drive sprockets for the snowmobile track will run. The rods used are subject to breakage, and once broken, it is usually necessary to throw away the entire track or belt because the rods cannot be welded satisfactorily. The present device presents a repair unit for repairing the broken cross bars.

3,799,628

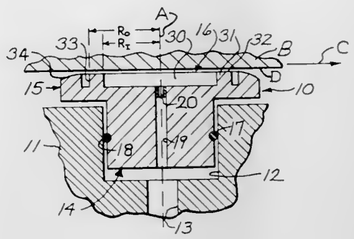
HYDROSTATIC BUTTON BEARING WITH ATTITUDE CONTROL

Peter Hakkenberg Van Gaasbeek, Dunlap, and Theodore J. Hebner, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 21, 1972, Ser. No. 264,962

Int. Cl. F16c *17/00*

U.S. Cl. 308—5 R **4 Claims**



A circular hydrostatic button bearing which is supported by its skirt loosely received in associated pressurized pocket, achieves attitude stability by a chamfered circular edge on a substantially flat bearing pad area having several sills that oppose the thrust forces induced by a runner surface that is supported by the button bearing. The inner sill has a configuration to achieve a proper geometric balance.

3,799,629

BEARINGS WITH COMPOSITE SURFACES

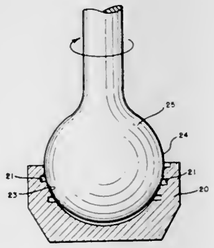
Nikolads Laing, Hofener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

Filed June 25, 1971, Ser. No. 156,896

Claims priority, application Australia, July 1, 1970, 5900/70

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 **7 Claims**



The present invention is concerned with plain bearings, i.e. those bearings which have complementary running surfaces. It is deemed to be applicable with special advantage to spherical bearings or others having concave/convex or conical surfaces, such as are particularly useful with magnetically sustained rotating bodies.

3,799,630

TEXTILE SPINNING MACHINES

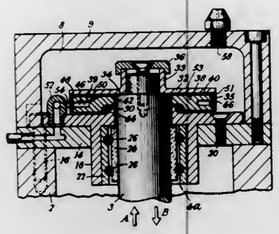
Andrew Alexander Chisholm, Clitheroe, England, assignor to Platt International Limited, Oldham, Lancashire, England

Filed Nov. 14, 1972, Ser. No. 306,209

Claims priority, application Great Britain, Nov. 16, 1971, 53191/71

Int. Cl. F16c *17/16*

U.S. Cl. 308—9 **18 Claims**



An open end spinning unit having a spinning rotor carried on one end of a driven shaft, which shaft is mounted for rotation in at least one flexibly mounted gas bearing, includes a double acting thrust bearing for limiting axial movement of the shaft in either direction. The thrust bearing comprises a first thrust element which is fixed on and rotates with the shaft and presents a first thrust surface, and a second thrust element presenting a second thrust surface opposite to and for cooperation with the first thrust surface, the second thrust element being resiliently mounted. Means are provided for introducing a gas between the said thrust surfaces, the said thrust elements being arranged in a chamber so that gas escaping from between the thrust surfaces enters the chamber and acts on that face of the first thrust element opposite to the face presenting the first thrust surface.

3,799,631

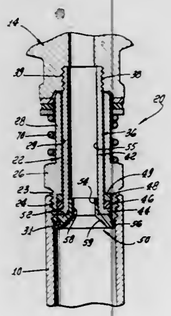
SHIELDED BEARING CONSTRUCTION

Jack A. Martina, Fresno, Calif., assignor to Weather Tec Corp., Fresno, Calif.

Filed Feb. 21, 1973, Ser. No. 334,229

Int. Cl. F16c *33/74*

U.S. Cl. 308—36.1 **6 Claims**



A bearing assembly particularly for a rotatable head in a sprinkler system, in which the bearing assembly is encased or shielded, so that impurities such as dirt and the like in the water flow or from the outside are prevented from reaching the mutually rotatable parts. The assembly comprises an upstanding sleeve bearing, typically made of brass and having an inner downwardly directed annular shoulder, against which an annular bearing seal is mounted and held in position by frictional contact with the wall of the bearing; a tubular metal spindle rotatably mounted within the bearing in clearance fit with the bearing and the seal, and provided at its lower end with a flange on which an annular washer is mounted, also in clearance fit with the bearing; and, at the lower end of the bearing, an annular retainer cap of a material having at least slight resilience, and including an upwardly extending skirt in interference frictional fit with the lower inner diameter of the sleeve bearing, whereby to rotatably support the spindle flange and permit the spindle a slight vertical play within the bearing. The cap also includes an upwardly projecting tubular extension within the spindle, terminating downwardly in an outwardly flared portion constituting in effect a funnel for guiding incoming water upwardly through the spindle, inwardly of the bearing seal and spindle washer.

3,799,632

BEARINGS FOR RAILWAY VEHICLES

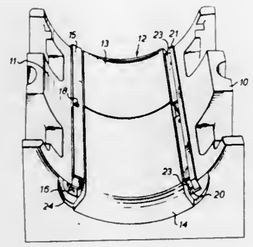
Joseph Henry Hill, Greenford; Robert Edwin Walmsley, Marlow, and Derrick Douglas Parker, Maidenhead, all of England, assignors to Vandorvell Products Limited, Maidenhead, England

Filed Sept. 5, 1972, Ser. No. 286,106

Claims priority, application Great Britain, Sept. 9, 1971, 42199/71

Int. Cl. F16c *33/04*

U.S. Cl. 308—56 **7 Claims**



A railway bearing consisting of an aluminium alloy bearing block having a part-cylindrical recess in which two flexible bearing liners are seated. The liners have pre-formed bearing surfaces and are pressed against the surface of the recess to ensure good heat transfer from the liners to the block.

3,799,633

ROLLING BEARING OF SMALL AXIAL BULK ADAPTED FOR SUPPORTING RADIAL FORCES AND MOMENTS

Ugo Pizzotti; Domenico Camosso, and Giovanni Pollastro, all of Torino, Italy, assignors to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed Feb. 22, 1973, Ser. No. 334,811

Claims priority, application Italy, Mar. 16, 1972, 67834/72

Int. Cl. F16c *19/00*

U.S. Cl. 308—183 **10 Claims**

A rolling bearing having two coaxial elements rotatable one with respect to the other by way of two rings of rolling bodies which roll on races in these elements is described. The two rings are of different diameters and the rolling bodies of one ring are situated at an axial distance from the rolling bodies of the other ring of not greater than 20 percent of the diameter of a rolling body of the ring which comprises rolling bodies of small dimensions.

3,799,634

BEARING ARRANGEMENT

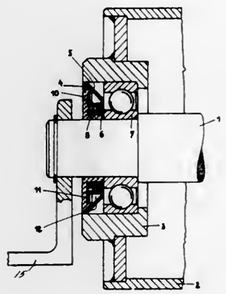
Heinz Sernetz, Jaingberg 3, A-8200 Gleisdorf, and Josef Hirschler, Johann-Sebastian-Bach-Gasse 27, A-8010 Graz, both of Austria

Filed July 10, 1972, Ser. No. 270,471

Claims priority, application Austria, July 16, 1971, 624471

Int. Cl. F16c *33/80*

U.S. Cl. 308—187.1 **8 Claims**



An antifriction bearing in an annular gap between respective coaxial faces of a rotating body and a stationary body is sealed in an axial direction against loss of lubricant and contamination by foreign matter by means of a seal mainly constitutued by two sealing rings. The first ring, fastened to the rotating body has a frustoconical face portion obliquely directed toward the axis, a second substantially cylindrical face portion axially coextensive with the first face portion and of smaller diameter than the smaller base of the first face portion. It is directed radially outward and is connected with the smaller base of the first face portion by a third, substantially radial face portion. The second sealing ring has a frustoconical face closely adjacent the first face portion and bounds therewith a narrow passage extending obliquely from an inner orifice near the afore-mentioned smaller base to an outer orifice adjacent the larger base of the first face portion. The two sealing rings are fastened to the two bodies so that they rotate relative to each other during operation of the bearing.

3,799,635

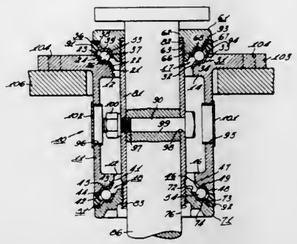
UNIVERSAL BEARING ASSEMBLY

Matthew L. Worrix, Sheridan, Oreg., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 26, 1973, Ser. No. 335,765

Int. Cl. F16c *19/14*

U.S. Cl. 308—189 **7 Claims**



A universal bearing assembly comprising an outer tubular housing provided at each axial end with an internal bearing seat which receives antifriction bearings. An axially disposed tubular core is disclosed within the housing. At each end of the tubular core retaining members are provided which operate to maintain the assembly in operative relationship and also to preload the bearings.

3,799,636

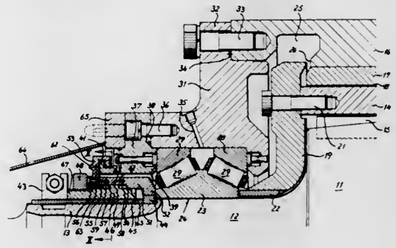
BEARING ASSEMBLY FOR A ROLLER

Emil Friedrich Kersting, Dusseldorf-Rath, and Frank Delmann, Dusseldorf-Holthausen, both of Germany, assignors to Maschinenfabrik Sack GmbH, Dusseldorf-Rath, Germany

Continuation of Ser. No. 114,574, Feb. 11, 1971, abandoned. This application June 20, 1972, Ser. No. 264,435

Int. Cl. F16c *43/04*

U.S. Cl. 308—207 R **21 Claims**



A bearing assembly for a roller of, for example, a steel rolling mill, comprises an inner bush with a conical bore to receive tightly a conical pin projecting from the roller, an outer bearing bush rotatably surrounding the inner bush but axially captive, and a holder to which the outer bush is fixed. The bearing assembly further includes a hydraulic jacking arrangement for forcing the bearing assembly over the conical pin of the roller and withdrawing it again.

In one example the fluid pressure operable means is a double acting cylinder arrangement comprising an inner cylinder surrounding an extension of the roll pin and arranged to abut against a stop at the end of the extension, a collar surrounding the inner cylinder and sliding within an outer cylinder which has an external flange at its axially outer end arranged to engage a flange of a part rigid with the bearing holder. The spaces on either side of the collar between the two cylinders form pressure chambers and are closed at the axially outer ends by an L-shaped bush and at the axially inner end by a

reduced diameter portion of the outer cylinder. Fluid pressure connections lead to the two pressure chambers.

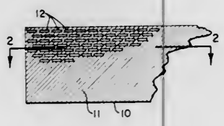
Two other examples are described in which separate cylinders are used for mounting and withdrawing the bearing rather than a double acting cylinder as in the first example. The various parts have discontinuous flanges in the form of a series of radially projecting lugs which can be engaged together by giving one part a part-turn relative to the other in the manner of a bayonet catch.

3,799,637

FLEXIBLE BEARING MATERIAL

Edward E. McCullough, Brigham City, Utah, and Stanley P. Desjardins, Scottsdale, Ariz., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Apr. 3, 1972, Ser. No. 240,497
Int. Cl. F16c *27/00*
U.S. Cl. 308—238 **8 Claims**



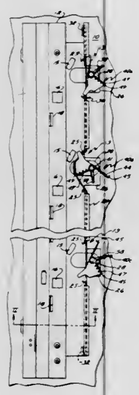
A material for flexible bearings that resists compressive loads along one axis but permits lateral or shear motion along axes perpendicular thereto is made of an elastomer densely filled with rigid, uniformly oriented platelets.

3,799,638

DRAWER INTERLOCK

Frederick S. Faiks, Comstock Park, Mich., assignor to Steelcase, Inc., Grand Rapids, Mich.

Filed Aug. 17, 1972, Ser. No. 281,421
Int. Cl. E05b *65/46*
U.S. Cl. 312—216 **26 Claims**



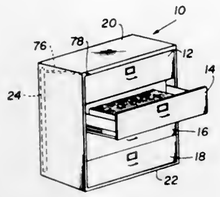
A drawer interlock employs a ribbon stop member positioned on the inside of a cabinet and extending along the cabinet in a slack fashion adjacent a plurality of cam members positioned on the cabinet to be actuated by an associated catch member positioned on each of a plurality of drawers. As a drawer is extended from the cabinet, the camming member associated with the drawer is rotated to allow the passage of the catch thereby, while simultaneously engaging the ribbon to take up the slack in the ribbon such that no additional cams can fully rotate to allow the opening of associated drawers. When the drawer is closed, the drawer catch rotates the cam as it passes returning the stop member to the slack condition so that another or the same drawer can be opened.

3,799,639

FILING CABINET

Irvin Friend, 1427 Waterloo Pl., Far Rockaway, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,346
Int. Cl. E05c *7/06*
U.S. Cl. 312—221 **1 Claim**



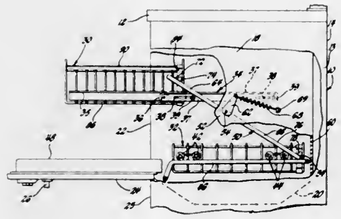
A multi-drawer file cabinet of the type vulnerable to pitching or tipping forward if subjected to the weight shift occasioned by the opening of more than one drawer at a time, in which the opening of the drawers is regulated to one at a time by a pivotal lever, the pivotal traverse of which is produced initially by the opening movement of the drawer and thereafter by spring urgency. The control is thus not significantly dependent on spring urgency which is vulnerable to malfunction over prolonged periods of use.

3,799,640

RACK APPARATUS TO PREVENT TIPPING OF A MOBILE DISHWASHER

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 4, 1972, Ser. No. 311,957
Int. Cl. A47b *88/02*
U.S. Cl. 312—273 **3 Claims**



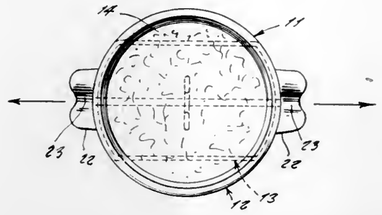
This invention relates to a dishwasher cabinet construction to prevent tipping by insuring that only one dish supporting rack may be fully extended at a time. A rack positioning double-crank lever limit bar is pivotally supported on one side wall of the tub at its center and spring-biased in a dead-center position such that cam surfaces on the limit bar upper and lower arms engage cam following actuator members at the rear of the upper and lower racks, respectively, such that the pivoting of the bar in a first direction, for example, prevents outward movement of the upper rack when the lower rack has been moved to its full outward position.

3,799,641

COMBINED ASH TRAY AND COASTER

Tom E. Buck, 3700 Cherry St., Bluffton, Ind.

Filed Dec. 27, 1971, Ser. No. 212,117
Int. Cl. A47b *81/00*
U.S. Cl. 312—286 **3 Claims**



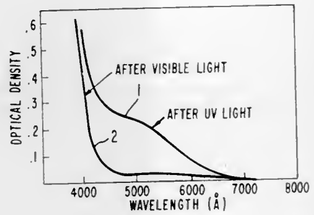
A novelty device consisting of a combination ash tray and coaster for a drinking glass, so that it is ideal for use in places where people are relaxing while smoking and drinking; the device consisting of a thin case containing a drawer slidable outwardly of the case from either side, and the top of the case having a shallow circular depression upon which the drinking glass may be rested.

3,799,642

HOLOGRAPHIC RECORDING ON PHOTOCHROMIC LITHIUM NIOBATE

William Phillips, Princeton, and David Lloyd Staebler, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,323
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**



Photochromic lithium niobate crystals containing iron and either manganese or copper are useful for recording phase holograms in the photosensitive state of the crystals, which holograms can be permanently fixed and read out without loss in the quality of the image obtained therefrom over extended periods.

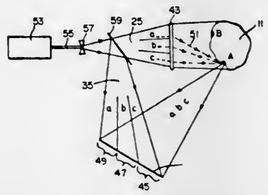
3,799,643

LASER SPATIAL COHERENCE COMPENSATION IN HOLOGRAPHY

Hugh Mailer, Columbus, Ohio, assignor to Holotron Corporation, Wilmington, Del.

Filed Sept. 9, 1968, Ser. No. 758,564
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **19 Claims**

A compensating technique for use with a high-powered laser light source having an output with a plurality of transverse modes is disclosed which utilizes a diffusive medium



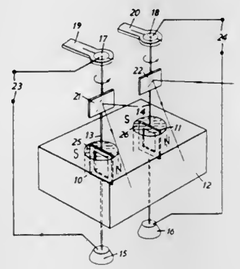
placed between the laser and an object scene for constructing a hologram in an otherwise conventional manner.

3,799,644

LIGHT-BEAM STEERING APPARATUS

Graham Stewart Brandon Street, 115 Perse Way, Cambridge, England

Filed June 6, 1972, Ser. No. 260,285
Claims priority, application Great Britain, June 9, 1971, 19573/71
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 **13 Claims**



A light-beam steering apparatus using two suspended mirrors deflectable about parallel axes by passage of currents through respective coils disposed in a magnetic field and an optical system between the mirrors whereby the plane of deflection of the beam is rotated so that the beam can be controlled in position in two preferably perpendicular directions.

3,799,645

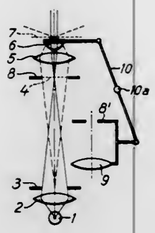
ILLUMINATION EQUIPMENT FOR MICROSCOPES

Hans-Werner Stankewitz, Steindorf, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Mar. 30, 1972, Ser. No. 239,671
Claims priority, application Germany, Apr. 5, 1971, 2116625
Int. Cl. G02b *21/08*
U.S. Cl. 350—87 **2 Claims**

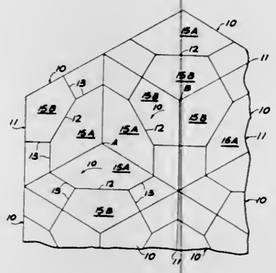
In an illumination equipment for microscopes comprising among other elements a lamp, a lamp aperture and an auxiliary condenser lens which may interpositioned into the light path in addition to a stationary main condenser for varying the aperture of the equipment the improvement comprises a lens element which is inserted into and/or withdrawn from the light path upon interpositioning the auxiliary condenser lens. It is thereby achieved that the position of the image of both the

lamp and the lamp aperture remains stationary when the aperture of the equipment is varied, thus eliminating the necessity



for refocusing the image of the lamp aperture into the object plane and the image of the lamp into infinity.

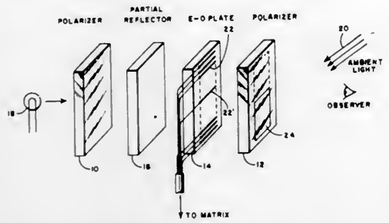
3,799,646
REFLECTOR
Theodore Footchkar, 5815 Market St., Youngstown, Ohio
Filed Sept. 18, 1972, Ser. No. 290,132
Int. Cl. G02b *5/12*
U.S. Cl. 350—97 **7 Claims**



A reflector such as may be used in the creation of road signs and warning signals and the like comprises the formation of a myraid of rhombic parallelograms each of which in turn has a raised surface consisting of a plurality of flat facets arranged at desirable angles with respect to one another. Three of the faceted rhombic parallelograms are grouped about a common center so as to form a six-sided hexagon. A plurality of such hexagons sufficient to cover a desired area results in a reflector of unusual light reflective capabilities.

3,799,647
CONSTANT VISIBILITY ELECTRO-OPTIC DISPLAY
Victor Luft, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 24, 1972, Ser. No. 256,518
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **7 Claims**

A display utilizing electro-optic (EO) material and having two coincident modes of operation, reflective and emissive. A partially silvered mirror reflects external ambient light and also passes light emitted from an internal source of backlighting. The combined effects of the reflected and emitted light cause the contrast, and therefore the visibility, of the dis-

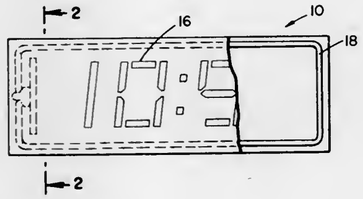


play to be relatively constant even though the ambient light conditions may be varying.

3,799,648
FERROELASTIC CRYSTALS SWITCHED BY MOTION OF A DOMAIN WALL HAVING A ZIGZAG CONFIGURATION
Richard B. Flippen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 26, 1972, Ser. No. 318,502
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **10 Claims**

Described are devices employing a ferroelastic crystal having two spontaneous strain states separated by a zigzag domain wall which can be switched to increase one strain state at the expense of the other by motion of the zigzag wall as a whole. Zigzag walls can be created by applying high stress to ferroelastic crystals under conditions which inhibit formation of normal planar walls. Once formed the zigzag walls are stable in the absence of applied stress and can be moved through the crystal by conventional means. The use of such a device in an optical shutter is also described.

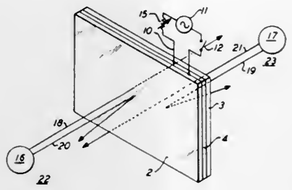
3,799,649
HAZE BARRIER FOR LIQUID CRYSTAL DISPLAY
James S. Carlyle, Santa Clara, Calif., assignor to American Micro-Systems Incorporated, Santa Clara, Calif.
Filed Mar. 6, 1973, Ser. No. 338,590
Int. Cl. G02s *1/16*
U.S. Cl. 350—160 LC **4 Claims**



A liquid crystal display device comprised of a pair of spaced apart glass plates joined together by a peripheral seal to form a

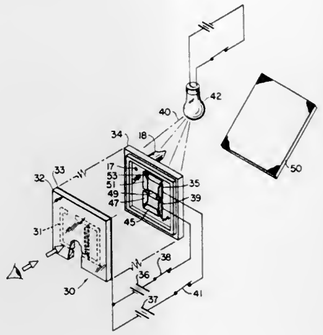
planar cavity for liquid crystal material utilizes an internal barrier spaced from one end of the seal having a plugged opening. The barrier helps to prevent the plug from being pushed out and also reduces the migration of haze forming impurities from the plug into the cavity.

3,799,650
ONE-WAY LIGHT VALVE
Robert L. Saxe, New York, N.Y., assignor to Research Frontiers Incorporated, Plainview, N.Y.
Filed Apr. 12, 1972, Ser. No. 225,499
Int. Cl. G02f *1/28, 1/36*
U.S. Cl. 350—160 R **4 Claims**



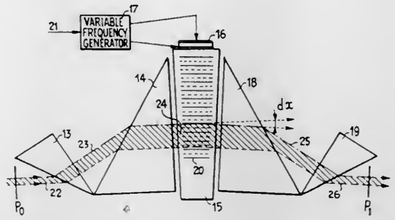
A light valve is disclosed in combination with a one-way mirror (a mirror which reflects light in one direction and transmits it in the other direction). The light valve is positioned on the viewing side (the transmitting direction) of the mirror so that the mirror can substantially attenuate the light that is generated on that side of the mirror. The light on the viewing side of the mirror can thus be increased substantially without significantly interfering with the operation of the mirror.

3,799,651
LIQUID CRYSTAL DISPLAY CELL AND METHOD OF MAKING SAME
John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed June 1, 1972, Ser. No. 258,910
Int. Cl. G02f *1/16*
U.S. Cl. 350—160 LC **10 Claims**



A liquid crystal display cell having a channel formed in one of the glass plates of the cell is disclosed. The channel facilitates the filling of the cell with a liquid crystal material. The other glass plate of the cell contains an aperture through which the cell is filled. The aperture is opposite a portion of the channel.

3,799,652
OPTICAL DEFLECTION SYSTEM WITH ACOUSTO OPTICAL CELL AND ASSOCIATED PRISMS
Roger Torguet, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Mar. 2, 1972, Ser. No. 231,189
Claims priority, application France, Mar. 5, 1971, 71.07611; July 13, 1971, 71.25715
Int. Cl. G02f *1/28*
U.S. Cl. 350—161 **23 Claims**

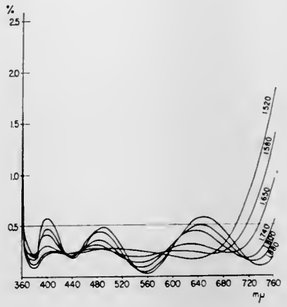


The present invention relates to acousto-optical systems capable of deflecting a substantially monochromatic radiant energy beam.

The acousto-optical system in accordance with the invention comprises an acousto-optical deflection cell surrounded by sets of prisms capable of producing anamorphosis of the transverse section of the radiant energy beam respectively ahead and beyond the deflection cell.

The invention can be applied to any angular scan optical system operating with substantially monochromatic light, this at very high scanning velocities.

3,799,653
MULTI-LAYER ANTI-REFLECTION COATING
Hideo Ikeda, Kamakura, Japan, assignor to Bippon Kogaku K.K., Tokyo, Japan
Filed Apr. 25, 1973, Ser. No. 354,433
Claims priority, application Japan, Apr. 26, 1972, 47-42031
Int. Cl. G02b *5/28*
U.S. Cl. 350—164 **4 Claims**



A non-absorbing, substantially colorless, multi-layer anti-reflection coating for use on a substrate having an index of refraction of 1.43 to 2.00 comprises a first layer of a low-index filming material deposited on the substrate and having a thickness less than λ/4, a second layer of a high-index filming material deposited on the first layer and having a thickness of less than λ/4, a third layer of a low-index filming material deposited on the second layer and having a thickness approximately between 5 λ/16 and 7λ/16, a fourth layer of a high-index filming material deposited on the third layer and having a thickness of less than λ/4, a fifth layer of a low-index filming

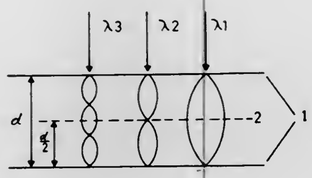
material deposited on the fourth layer and having a thickness of less than λ/4, a sixth layer of a high-index filming material deposited on the fifth layer and having a thickness of more than λ/2, and a seventh layer of a low-index filming material deposited on the sixth layer and having a thickness of λ/4, wherein λ is a selected wavelength of near ultraviolet range to near infrared range.

3,799,654

OPTICAL INTERFERENCE FILTER HAVING AN INTERMEDIATE ENERGY ABSORBING LAYER

Werner Donne, Alvsjo, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Feb. 17, 1972, Ser. No. 227,158
Claims priority, application Sweden, Mar. 2, 1971, 2636/71
Int. Cl. G02b *5/28*
U.S. Cl. 350—166 **1 Claim**



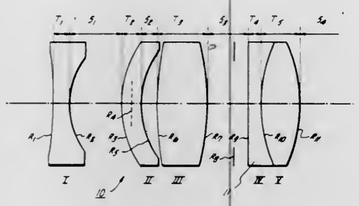
An optical interference filter, comprising two parallel transmitting and reflecting surfaces arranged at a distance from each other, which is a multiple of half the transmitted wavelength, at least one energy absorbing layer being located between the surfaces at a distance from the surfaces which is a multiple of half the transmitted wavelength.

3,799,655

HIGH RESOLUTION REVERSE TELEPHOTO LENS

Milton Laikin, Los Angeles, Calif., assignor to Photo-Sonics, Inc., Burbank, Calif.

Filed Sept. 15, 1972, Ser. No. 289,214
Int. Cl. G02b *9/34*
U.S. Cl. 350—220 **5 Claims**



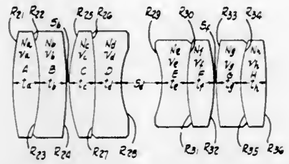
A high resolution reverse telephoto lens having a front biconcave element, a meniscus element, a biconvex element, and a rear cemented doublet element consisting of a front concave planar element and a rear biconvex element, in which the meniscus element controls spherical aberration by being positioned approximately concentric about the aperture stop and the lens has a long back focal length of 1.8 times the effective focal length with short overall dimensions by reason of the interrelationship between element radii, thicknesses, and spacing.

3,799,656

OPTICAL RELAY SYSTEM

Andor A. Fleischman, Northbrook, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed June 8, 1972, Ser. No. 260,961
Int. Cl. G02b *9/36, 9/62, 17/10*
U.S. Cl. 350—222 **9 Claims**



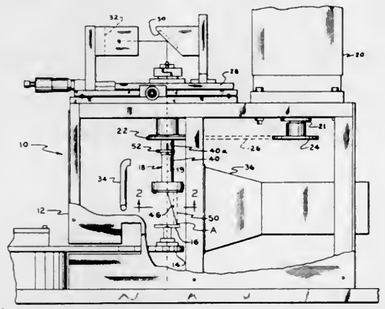
An optical relay system is disclosed for transferring an image from a master photographic film to a plurality of copy photographic films comprising a reduction lens, a beam splitter and a relay lens. The reduction lens is corrected to have reduced curvature of field whereas the relay lens is corrected to accommodate for a plurality of off-axis images. The optical relay system is folded to allow conveyance of the photographic films by a single driving assembly.

3,799,657

OPTICAL DRILLING HEAD FOR LASERS

William A. Dager, and William G. Fredrick, Jr., both of Ann Arbor, Mich., assignors to Photon Sources, Inc., Plymouth, Mass.

Filed June 5, 1972, Ser. No. 259,584
Int. Cl. G02b *7/02*
U.S. Cl. 350—247 **2 Claims**



Apparatus for drilling holes in a circular pattern in a workpiece or coring a hole in a workpiece by directing a laser beam onto the workpiece through an optical system. The optical system has an axis of rotation concurrent with the laser beam and an optical axis offset from the axis of rotation to define a radius. When the optical system is rotated, the laser beam is directed along the optical axis and traces a circle on the workpiece having a radius corresponding to the radius between the optical axis and the axis of rotation. The radius is readily variable for various sizes of cores and hole combinations.

3,799,658

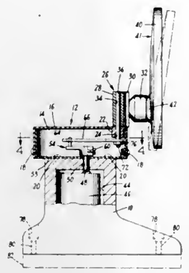
OSCILLATORY MIRROR DEVICE

Frank C. Pignatelli, 14 N. Meadow Rd., Old Saybrook, Conn.

Filed June 14, 1972, Ser. No. 262,506
Int. Cl. G02b *5/08*
U.S. Cl. 350—289 **4 Claims**

A device adapted for mounting upon the body of a vehicle has a mirror which is supported for oscillation about a

generally vertical axis. The mirror is motor driven to oscillate relatively slowly to provide a scanning action, thus broadening the field of vision beyond that afforded by a stationary mirror and thereby eliminating blind spots which would otherwise exist. The motor is disposed in the base with its drive shaft parallel to the axis of pivotal movement of a pivotable post supporting the mirror and a crank and link assembly interconnects the motor shaft and pivotable post to produce limited oscillatory movement of the mirror assembly to an arc of less than about 90 degrees on a continuous basis.

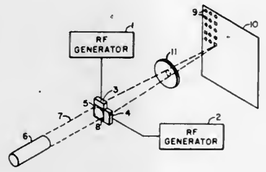


3,799,659

Tl_3AsS_4 CRYSTALS AND ACOUSTO-OPTICAL SYSTEMS

George W. Roland, Monroeville; John D. Feichtner, Murrysville, and Milton Gottlieb, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 11, 1972, Ser. No. 242,986
Int. Cl. G02f *1/16*
U.S. Cl. 350—321 **4 Claims**



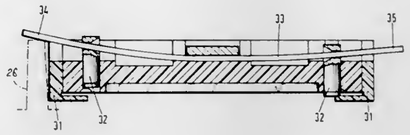
A crystal of Tl_3AsS_4 having parallel optical faces is used in acousto-optical systems. Sound waves are generated in the crystal by means of a transducer connected to an RF generator and light is directed through optical faces of the crystal where it interacts with the sound waves. The acousto-optical system may be in the form of a display device, a laser modulator, a tunable filter, or other devices. An acoustic delay line using a crystal of Tl_3AsS_4 is also disclosed.

3,799,660

CASSETTE ADAPTED TO BE EXTERNALLY ATTACHED TO A MOTION PICTURE CAMERA

Otto Blaschek, Munich/Dornach, Germany, assignor to Arnold & Richter KG, Munich, Germany

Filed Mar. 21, 1972, Ser. No. 236,402
Claims priority, application Germany, Mar. 25, 1971, 2114484
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 R **7 Claims**



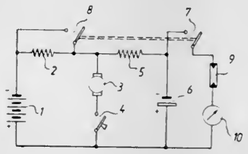
The cassette comprises film path means and a loop former detachably mounted on the film path means.

3,799,661

ARRANGEMENT FOR DECREASING THE READY TIME IN A MOTION PICTURE CAMERA

Helmut Mayr, Taufkirchen; Richard Pelte, and Theodor Huber, both of Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 20, 1972, Ser. No. 290,996
Claims priority, application Germany, Sept. 21, 1971, 2147074
Int. Cl. G03b *7/08*
U.S. Cl. 352—141 **4 Claims**



A stabilized cell is permanently connected to the voltage source through a high ohmic resistance. The high ohmic resistance is short-circuited when the exposure control circuit is connected to the stabilized cell. Sufficient forming current thus flows through the cell at all times to keep it in readiness for operation.

3,799,662

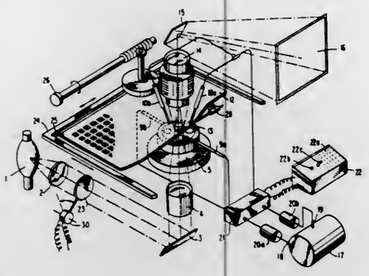
IMAGE PROJECTING DEVICE

Hiroyuki Ueda; Shingo Ohue, and Yukio Sawano, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Nov. 6, 1970, Ser. No. 87,555
Claims priority, application Japan, Nov. 6, 1969, 44-88890; Nov. 10, 1969, 44-89929; Nov. 13, 1969, 44-90896
Int. Cl. G03b *21/11, 1/52*
U.S. Cl. 353—23 **18 Claims**

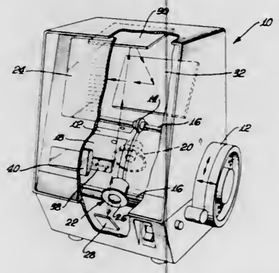
Apparatus for projecting images of a film onto a screen through a projection lens system, comprising a film support having perforations, a pump for applying a suction to the perforations to draw the film into contact with the support, a noz-

zle disposed on the side of the film opposite to the support for blowing air onto the film to urge it toward the support, and a



valve for controlling the suction and air flow to the support perforations and the nozzle.

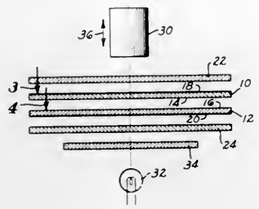
3,799,663
ULTRAMICROFICHE VIEWER HAVING IMAGE LOCATING SCALE SYSTEM
Sheridan F. Barre, Torrance; Tirey C. Abbott, Jr., Manhattan Beach, and Stephen P. Terry, Marina Del Rey, all of Calif., assignors to UMF Systems Incorporated, Los Angeles, Calif.
Filed May 22, 1972, Ser. No. 255,712
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **10 Claims**



An ultramicrofiche reader or viewer including an axially movable and rotatable transparent drum carrying a fiche having information thereon in perpendicular arrays one extending circumferentially of the drum and the other longitudinally thereof. The fiche is provided with an integral, primary scale thereon extending circumferentially of the drum and corresponding to the circumferentially extending information array. Superimposed on the drum and extending longitudinally thereof is an external, secondary scale corresponding to the longitudinally extending information array. The scales have cooperating indicia thereon for positioning desired information on the fiche in a predetermined location, in response to rotational and longitudinal movement of the drum. A light source within the drum at the predetermined location illuminates the desired information, and a projection system projects this information onto a screen for reading or viewing.

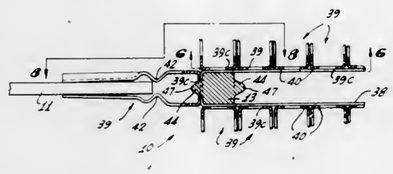
3,799,664
DUAL FOCUS MICROFICHE ASSEMBLY AND VIEWER
George H. Nicholson, La Crescenta, Calif., assignor to UMF Systems Incorporated, Los Angeles, Calif.
Filed June 19, 1972, Ser. No. 264,366
Int. Cl. G03b *21/11*
U.S. Cl. 353—27 **5 Claims**

A dual focus microfiche viewing system wherein spaced microimage bearing surfaces of superimposed microfiches are viewed slectively by focusing on the desired microimage bearing surface. The necessary spacing of the microimage bearing surfaces is maintained by the microfiches themselves. More particularly, the outer surfaces of two adjacent microfiches



are the microimage bearing surfaces thereof, whereby the microimage bearing surfaces are spaced apart by the total of the thicknesses of the two microfiches, without any necessity for separate spacers, or the like.

3,799,665
SLIDE PROJECTOR WITH NON-SLIPPING ENDLESS SLIDE HOLDER
Gerald J. Frey, 3887 State St., Suite 202, Santa Barbara, Calif.
Filed Dec. 27, 1971, Ser. No. 212,101
Int. Cl. G03b *23/08*
U.S. Cl. 353—109 **10 Claims**

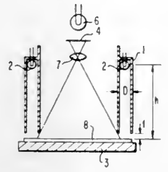


A slide projector with parallel supporting shafts for receiving an endless flexible slide holder around them and feeding the holder step by step to advance successive slides into a film gate. The slide holder is formed by an endless fabric belt having spring clips around its outer slide, and the clips have projecting end portions along one edge of the belt engageable as driving abutments with driving teeth on one of the shafts. In one form, the abutments are the projecting end portions of alternating clips longer than the intervening clips, and in another embodiment, the abutments are the edges of apertures formed in the projecting end portions of all of the clips, which are of the same length.

3,799,666
APPARATUS FOR FORMING WHITE FRAME IN ELECTROPHOTOGRAPHY
Osammu Fukushima; Seiji Matsumoto, and Masamichi Sato, all of No. 105, Oaza Mizonuma, Asaka, Japan
Division of Ser. No. 104,979, Jan. 8, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,748
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **5 Claims**

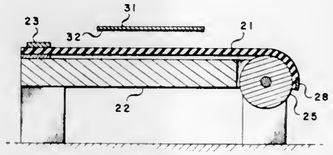
Electrophotographic apparatus having an exposure device for producing a white frame border about an electrostatic latent image. The apparatus comprises a plurality of internal channel members surrounding the exposure light source which open downwardly onto the copy sheet. The channel members contain a plurality of light sources for projecting light onto the perimetric portions of the copy sheet in partially

overlapping relation to the electrostatic latent image for completely dissipating the charge about the electrostatic



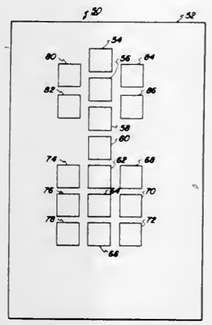
latent image so that no black border appears about the electrostatic latent image after toner development.

3,799,667
XEROGRAPHIC REPROPORTIONING METHOD AND APPARATUS
John M. Perez, San Jose, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.
Filed Oct. 10, 1972, Ser. No. 296,145
Int. Cl. G03g *15/14*
U.S. Cl. 355—3 **2 Claims**



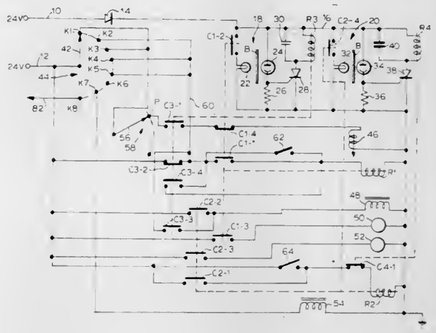
A method and apparatus is shown for reproportioning a xerographic powder image before transferring it from a photoconductive surface to a support material.

3,799,668
COLOR STANDARD AND METHOD OF CALIBRATING A MULTI-COLOR ELECTROPHOTOGRAPHIC PRINTING MACHINE
James H. McVeigh, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 12, 1973, Ser. No. 340,413
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **17 Claims**



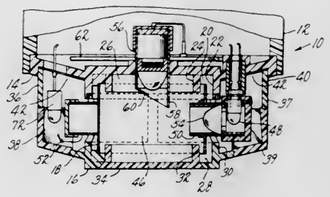
A color standard and method of use therefore in which a multi-color electrophotographic machine is calibrated for controlling the color balance and image density of a copy being reproduced therein.

3,799,669
METHOD AND SYSTEM FOR VARYING THE POSITIONS OF IMAGE-FORMING SURFACES ON AN ELONGATE FLEXIBLE ELECTROPHOTOGRAPHIC SUPPORT BELT FOR DIFFERENT RUNS THEREOF
Guy Paul Weber, Arques la Bataille, and Philippe Marie Deshayes, Neuvulle Les Dieppe, both of France, assignors to La Cellophane, Paris, France
Continuation of Ser. No. 238,130, March 27, 1972. This application July 16, 1973, Ser. No. 379,222
Int. Cl. G03g *13/22*
U.S. Cl. 355—17 **4 Claims**



Method and system for varying the positions of image-forming surfaces on an elongate flexible electrophotographic support belt for different runs thereof wherein the belt is marked during a run of substantially the entire length thereof from a supply station to a collection station past a charging station, an exposure station, a developing station and a transfer station, and during a following run the position of the belt relative to a reproduction commencement point is varied in accordance with the mark such that image-forming surfaces for the following run are positioned in areas between image-forming surfaces for the preceding run.

3,799,670
SMOKE DETECTOR
Horst Kohr, Sulzburg, Germany, assignor to Pyrotector Europe GmbH, Sulzburg/Baden, Switzerland
Filed Aug. 21, 1972, Ser. No. 282,335
Int. Cl. G01n *21/12, 21/26*
U.S. Cl. 356—207 **5 Claims**



A smoke detector assembly in which the components are designed for rapid assembly with a minimum amount of labor, in which a molded mounting plate and a molded retaining plate co-operate with a cylindrical labyrinth wall to form a dark chamber into which smoke can diffuse from either side. The molded components are provided with inter-engaging portions to eliminate any possibility of improper assembly.

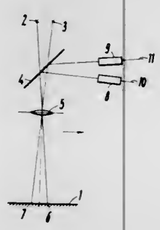
In one embodiment of the invention the photo-cell for detecting the presence of smoke is positioned to view the dark chamber through the mounting plate axially of the labyrinth wall, whereby the reflected light received by the photo-cell under conditions of no-smoke is a minimum.

In another embodiment of the invention the rear face of the mounting plate also serves as the support for various electronic components of the detector circuit, and is provided with rearwardly extending connectors for insertion into suitable sockets in a mounting box.

3,799,671
RECORDING HEAD FOR AN OPTICAL CORRELATION VELOCITY METER

John Schweizer, Wabbern, Switzerland, assignor to Hasler, AG, Bern, Switzerland

Filed Feb. 22, 1972, Ser. No. 227,936
Claims priority, application Switzerland, Feb. 26, 1971, 2701/71
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **5 Claims**

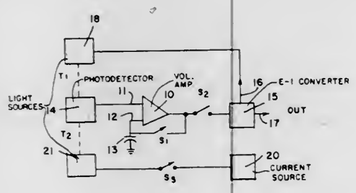


In a recording head for an optical correlation velocity meter there is provided means having a single lens for illuminating two points on the surface of an object moving relative to the recording head and means for transmitting light reflected from said two points to a pair of photo-electric devices which feed signals to an electronic evaluator which calculates the relative velocity of the object.

3,799,672
OXIMETER FOR MONITORING OXYGEN SATURATION IN BLOOD

Gerald G. Vurek, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 15, 1972, Ser. No. 289,287
Int. Cl. G01n *33/16;* **G01j** *3/42*
U.S. Cl. 356—41 **10 Claims**

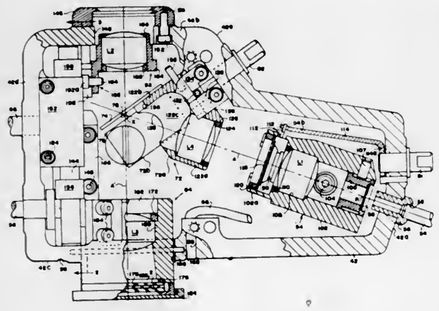


A device for monitoring blood oxygen saturation during extracorporeal bypass procedures comprises a dual wavelength oximeter utilizing an infrared (905 nm) light-emitting diode and a visible red (655nm) light emitting diode to alternately illuminate blood as it flows through a plastic cuvet. The ratio of the infrared signal to the red signal received by a phototransistor is computed by a simple electro-optical feedback circuit, the ratio being linearly related to blood oxygen saturation over the range extending from 100 percent to below 40 percent.

3,799,673
SCATTERPLATE INTERFEROMETER

George A. Random, Jr., Newbury, Mass., assignor to Sanders Associated, Inc., South Nashua, N.H.

Filed Apr. 17, 1972, Ser. No. 244,366
Int. Cl. G01b *9/02*
U.S. Cl. 356—109 **9 Claims**



The components of a scatterplate interferometer are mounted compactly within a rugged housing which is adjustable along Cartesian coordinates so that it can be aligned relative to the optical component under test. The illumination section of the instrument receives light by way of a fiber bundle attached to an external light source. This light is imaged by a lens system onto a spot mirror on a diagonal window and the reflected light is transmitted through a scatterplate and imaged onto the optical component under test. The scattered return light from the scatterplate is collimated and directed back through the diagonal window and imaged onto an exit pupil plane behind the window. The unscattered return light is observed by the mirror so that an eye in the plane can view the interference fringes formed at the scatterplate without seeing the bright spot at the center of the plate caused by unscattered light. To facilitate aligning the instrument, the diagonal window can be replaced by a beam splitter and the optical train modified so that the operator can view the scatterplate directly.

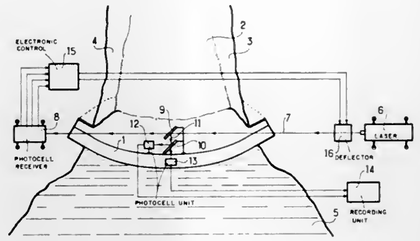
3,799,674
SYSTEM ENABLING THE DETECTING OF MOVEMENTS OF A FIRST ELEMENT IN RELATION TO ANOTHER

Hubert Guillet, Saint-Germain-les-Arpajon, and Jean Cornillault, Nozay, both of France, assignors to Compagnie General d'Electricite, Paris and Compagnie Industrielle des Lasers, Marcoussis, both of, France

Filed Apr. 7, 1972, Ser. No. 241,942
Claims priority, application France, Apr. 9, 1971, 71.12778
Int. Cl. G01b *11/26*
U.S. Cl. 356—138 **7 Claims**

System enabling the detecting of movements of a first element in relation to another, comprising a laser generator

emitting a light beam co-operating with a fixed reference on one of the two elements, the laser generator being fixed on the

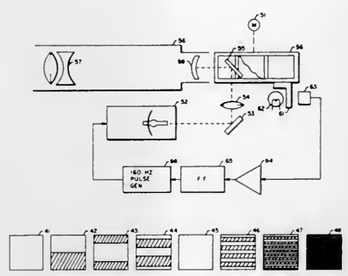


other element, its beam being pointed on a photo-sensitive element arranged on the same element as that on which the laser generator is fixed.

3,799,675
DIRECTION DETERMINING SYSTEM

Philip M. Johnson, Windham, and Wilfrid G. Dudevoir, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Dec. 7, 1972, Ser. No. 313,084
Int. Cl. G01b *11/26;* **H04b** *9/00*
U.S. Cl. 356—152 **12 Claims**



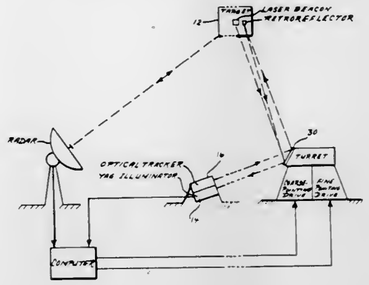
A direction determining system is described in which pulses of energy are transmitted in coded patterns to a sector of space so that an observer anywhere within this sector can determine his angular position with respect to a reference direction through the transmitter. A feature is the transmission of reference pulses of energy to the entire sector and their use in the receiver to establish an intensity reference for comparison with the intensity of the coded information pulses so that the adverse effects of atmospheric turbulence are minimized.

3,799,676
OPTICAL TRACKING SYSTEM

Edward J. Chatterton, Lexington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1972, Ser. No. 257,330
Int. Cl. G01b *11/26*
U.S. Cl. 356—152 **5 Claims**

An optical tracking apparatus incorporating a radar system to search, acquire and track a co-operating target. A YAG laser illuminator and a tracker which are mounted together at a ground installation cooperate with small retroreflectors mounted on the target to pinpoint its position. The optical

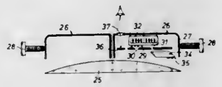


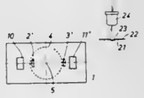
signals which are received from the target are processed in optical system detectors. The detectors provide target azimuth and elevation information.

3,799,677
PHOTOMETRIC HEAD FOR MEASURING THE DIAMETERS OF HARDNESS INDENTATIONS

Fernand Louis Lopez, Maurepas; Bela Scheffer, Domont; Huguette Nelly Vulmiere, and Jacques Claude Vulmiere, both of Paris, all of France, assignors to Establissement Public: Agence Nationale de Valorisation de la Recherche Anvar, Neuilly S/Seine; Regie dite: Regie Nationale des Usines Renault, Boulogne Billancourt and Societe Anonyme: Automobiles Peugeot, Paris, all of, France

Filed Sept. 22, 1972, Ser. No. 291,322
Claims priority, application France, Oct. 7, 1971, 71.36121
Int. Cl. G01b *11/00*
U.S. Cl. 356—156 **10 Claims**

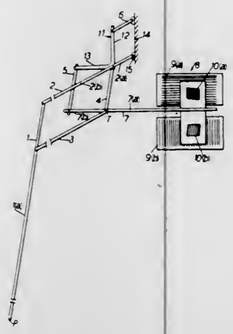




A photometric head for automatic measurement of the diameter of Brinnel hardness indentations.

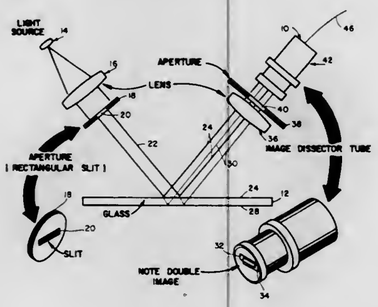
The photometric head comprises an optically opaque screen interrupted by at least two similar windows therethrough, one said window being at a distance to one side of said centre substantially equal to the tolerated minimum indentation image radius and another said window being at a distance to the other side of said centre substantially equal to the tolerated maximum indentation image radius; photoelectric means associated with each window and adapted to generate electrical signals which vary according to the luminous flux passing through each respective window; means for detecting the levels of said electrical signals; means coupled to said detection means and responsive to said levels for indicating the compliance of the metal sample with respect to the tolerated minimum and maximum indentation radius.

3,799,678
POSITION MEASURING DEVICE
Andrew Guy Kerr, Edinburgh, Scotland, assignor to Ferranti Limited, Hollinwood, Lancashire, England
Filed May 31, 1972, Ser. No. 258,264
Int. Cl. G01b *1/04*
U.S. Cl. 356—169 **6 Claims**



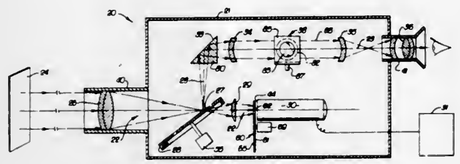
A position indicating device includes a pantograph linkage employed to reduce the scale of the displacement of a first point on the pantograph to a corresponding displacement of a second point on the pantograph. The displacement of the second point is measured with respect to two co-ordinate axes by accurate means such as interference fringes produced by relative movement between optical diffraction gratings to give an accurate indication of the large scale movement of the first point. Means is provided to maintain the relative orientation of the diffraction gratings to produce interference fringes for all movements of the second point.

3,799,679
GLASS DISTORTION SCANNING SYSTEM
Gabriel Simko, Springdale, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 27, 1972, Ser. No. 266,817
Int. Cl. G01n *21/32*
U.S. Cl. 356—200 **20 Claims**



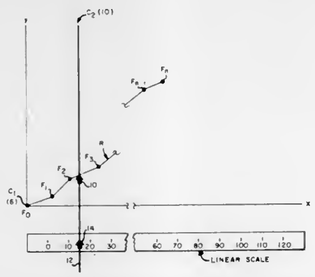
Disclosed are a method and apparatus for detecting distortion in glass, particularly glass ribbons, by scanning the glass with a light beam and photoelectrically measuring the rate of change of the widthwise, center-to-center spacing betweeen a reflected image of said beam from one surface of the glass and a reflected image of said beam from the opposite surface of the glass. The center-to-center spacing of the reflected beams varies as the distortion in the glass varies, and the rate of change of the spacing is a measure of the refractive power or distortion in the glass.

3,799,680
PHOTOMETER OPTICAL SYSTEM HAVING VIEWING MAGNIFICATION AND LIGHT ATTENUATION MEANS
Ralph M. Weisner, Canoga Park, Calif., assignor to Kollmorgen Corporation, Holyoke, Mass.
Filed Jan. 3, 1972, Ser. No. 214,587
Int. Cl. G01j *1/42*
U.S. Cl. 356—225 **5 Claims**



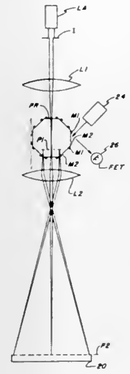
An optical instrument including means for selecting one of several magnifications of an image being viewed, the selective magnification means being positioned in a collimated light path between an objective lens and a viewing lens and without change of conjugate distances therebetween; also an aperture stop located at one conjugate plane of a relay lens, the other conjugate plane being the nodal plane of the objective lens, which serves as a light-attenuating means without interference with the viewing optical system or without affecting the field being measured.

3,799,681
VARIABLE COMPUTING RESISTOR
Ronald B. Smernoff, Belmont, Calif., assignor to Analytical Products, Inc., Belmont, Calif.
Filed May 19, 1972, Ser. No. 255,157
Int. Cl. G01j *1/42*; **H01c** *5/00*
U.S. Cl. 356—223 **6 Claims**



A variable computing resistor is disclosed for representing non-linear curves in null or bridge circuits. A flexible resistive rod is used or resistor components are placed in end-to-end sequential electrical communication. A first conducting terminal is connected to one end of the flexible resistive rod or to one end of the sequentially connected resistor components and a second conducting terminal is moveably attached to the resistive rod or the sequentially connected resistor components. The second conducting terminal serves as a center tap and is driven by a servo-mechanism to tap the resistive rod or sequentially connected resistor components to match the voltage from an external electrical source. The position of the second conductive terminal is associated with an indicator on a substantially linear scale. The external electrical source may, for example, be the voltage produced by a non-linear thermocouple or a photometer output from light transmitted through a sample solution. By selecting the resistances and orientations of the flexible resistive rod or the resistor components non-linear data can be translated into a readout on the substantially linear scale. Non-linear phenomena such as thermocouple response curves or sample radiation absorption curves can be translated into a linear readout of temperature or concentration.

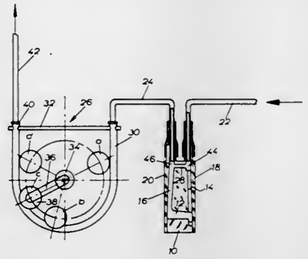
3,799,682
APPARATUS FOR FEEDING POLISHED MACHINE PARTS PAST OPTICAL SCANNING MEANS TO ENABLE INSPECTION OF THE POLISHED PARTS
Harry Elliott Colestock, Ann Arbor; Kenneth G. Hoadley, Westland, and Eugene J. Marcinkiewicz, Plymouth, all of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y., by said Harry Elliott Colestock and Kenneth G. Hoadley
Filed June 16, 1972, Ser. No. 263,697
Int. Cl. G01n *21/16, 21/32*
U.S. Cl. 356—237 **15 Claims**



A machine is disclosed which automatically orients, feeds, tests and sorts polished machine parts. Testing involves optical scanning and sensing. Optical scanning is accomplished by use of a laser beam, lenses and a rotating prism to produce a linear flying spot scan. The flying spot scan is directed over a surface under test, producing a reflected beam. The reflected beam is sensed by photo-electric means which produces test result signals indicating the presence and absence of flaws. A second light source is used, in conjunction with reflecting coatings on the rotating prism, a second photo-electric device and logic circuit to provide gating signals indicating the length of the test area. The gating signals and test result signals are supplied to a gate which excludes test result signals outside the test area. Memory means records the results of testing each machine part and provides signals to control the sorting of parts and the recording of results.

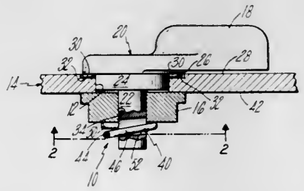
3,799,683
FLOW-THROUGH SAMPLE CELLS WHICH DETERMINE THEIR OWN FILL LEVEL
Winfried Gunner, Uberlingen, Germany, assignor to Bodenseewerk Perkin-Elmer & Co. GmbH, Uberlingen/Bodensee, Germany
Filed Oct. 16, 1972, Ser. No. 297,625
Claims priority, application Germany, Nov. 13, 1971, 2156466
Int. Cl. G01n *1/10*
U.S. Cl. 356—246 **4 Claims**

A sample cell for liquids includes an inlet channel, a main sample-holding bore and an outlet channel, so that the liquid sample may be introduced through the inlet channel for filling the cell and, subsequent to sample measurement, sucked out via the outlet channel. In order to fill the cell to the same predetermined liquid level with each discrete sample liquid (having a volume at least somewhat larger) an additional bypass path is provided between specific points of the inlet and outlet channels. Once the trailing end of the liquid sample column reaches the interconnection between the inlet channel



and the bypass path, sample flow through the cell ceases and the succeeding air passes through the short-circuit path, so that a specific volume of the sample is retained in the sample cell. Preferably the cell is filled by a relatively low vacuum (or pressure) and emptied subsequent to sample measurement by a relatively high vacuum (or pressure). Specifically the cell may be filled by a hose pump attached to the outlet channel and may be emptied by a high vacuum maintained in a waste bottle.

3,799,684
FASTENER AND ASSEMBLY
Henry A. Into, Farmington, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.
Filed Mar. 10, 1972, Ser. No. 233,558
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.07 **4 Claims**

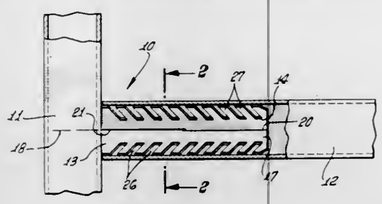


A fastener assembly featuring a spring clip having a U shaped bight with retaining arms integrally joined at opposite ends of the bight and reversely bent in opposite directions for quick and easy assembly and removal from a shanked fastener part, the bight being in a plane angularly offset from at least one of the arms to effect axial loading on the shanked fastener part relative to a support member.

3,799,685
FRAME CONNECTOR STRUCTURE
Edward A. Smith, 6641 W. 6th St., Los Angeles, Calif., and Robert L. Day, 1518 Grismer St., Burbank, Calif.
Filed July 6, 1971, Ser. No. 159,958
Int. Cl. F16b *7/00*
U.S. Cl. 403—298 **14 Claims**

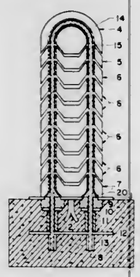
Apparatus for connecting a tubular frame element having a generally square or rectangular cross-section to another structural element comprising an elongated connector structure adapted to be connected to the structural element and to ex-

tend into the frame element. The connector structure includes a plurality of arms which diverge in mutually orthogonal directions to engage the inner surfaces of the frame element, preferably at the four corners thereof. Each of the arms includes or supports a compressible structure which is sufficiently flexible to facilitate the telescoping of the frame ele-



ment thereover and, thereafter, to rigidly grip the frame element to form an exceedingly strong connection. According to the preferred embodiments of the invention, the compressible structure comprises a plurality of teeth positioned at the radially outer end of each of the arms to increase the gripping action of the connector structure.

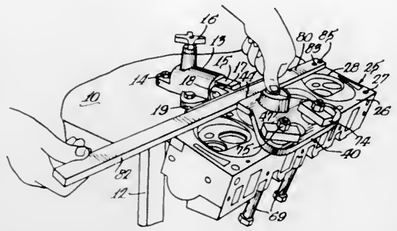
3,799,686
MARKER POSTS
Clarence Williams, 104 A.I.A. Bldg., Jalan Ampang, Kuala Lumpur, Malaysia, Malaysia
Filed Aug. 9, 1971, Ser. No. 170,033
Claims priority, application Great Britain, Aug. 18, 1970, 39787/70
Int. Cl. E01f *9/01*
U.S. Cl. 404—10 **3 Claims**



Road marker posts are known which are resiliently bendable on impact therewith by a vehicle, thereby minimising the effects of such collisions. In this invention the post member is constructed of a plurality of post portions united together by means of a steel cable, thereby providing a post member with great resilience and strength. Should the post be destroyed on being run over by a vehicle it separates into a plurality of post portions which present much less a hazard to vehicles and pedestrians than those known marker posts in which this feature is not incorporated. Two alternative design of base means are described which enable a post of this type to be attached to any kind of road surface by the use of either one or the other.

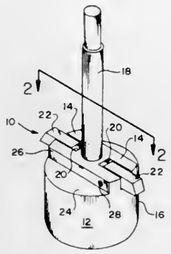
3,799,687
TOOLING FOR VALVE GUIDE RECONDITIONING
Richard T. Anderson, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.
Filed Feb. 9, 1972, Ser. No. 224,860
Int. Cl. B23b *49/00*
U.S. Cl. 408—75 **17 Claims**

Tooling for reconditioning a valve guide in a cylinder head for an internal combustion engine having a valve seat and a coaxial valve guide in the cylinder head on an axis either inclined or at a right angle to the combustion chamber surface of the cylinder head, including a guide plate having a flat bottom surface adapted to rest on the surface of the cylinder head over the valve seat and valve guide, a bore through the guide plate on an axis at an angle to the flat bottom surface of the guide plate and at the same angle as the valve guide, a tool guide in the bore in the guide plate having a conical lower end surface engageable with the bottom edge of a valve seat in the cylinder head for laterally locating the guide plate relative to



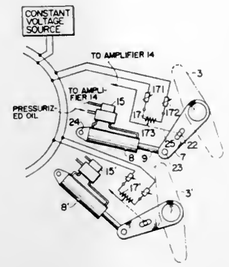
the valve seat, a flat edge along one side of the guide plate adapted to be positioned relative to the original hole machining pattern in the surface of the cylinder head to angularly locate the axis of the bore in a predetermined position relative the original machining pattern and coaxial with the valve guide, a guide bar mountable on the cylinder head adjacent one edge thereof and in relation to the original machining pattern and having a side surface coacting with the flat edge of the guide plate for angularly locating the guide plate, and means for securing the guide plate to a cylinder head in properly adjusted position.

3,799,688
APPARATUS FOR TRIMMING PLUMBING PIPES BELOW FLOOR LEVEL
Harold R. Lomax, 901 Cardinal Pl., Thomasville, N.C., and Bobby K. Potts, R.F.D. 2, High Point, N.C.
Filed Mar. 22, 1971, Ser. No. 236,901
Int. Cl. B23b *27/02*
U.S. Cl. 408—196 **2 Claims**



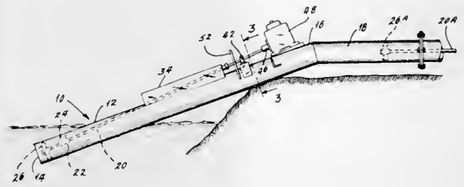
A plumbing pipe is initially rough cut to extend above the proposed floor level which is subsequently finished. A weighted cylindrical pilot member carries at least one cutting tool extending radially beyond the cylindrical wall a distance equal to or slightly greater than the wall thickness of the pipe. The pilot member includes a shank received by a hand drill or the like and is inserted into the opening in the pipe. The hand drill is then activated with the cutting tool in engagement with the pipe until the pipe is cut to a desired point below the finished floor level.

3,799,689
OPERATING APPARATUS FOR GUIDE VANES OF HYDRAULIC MACHINE
Kazuo Moriguti; Nobuyasu Yokoi, and Yukio Yamaguchi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 11, 1972, Ser. No. 252,402
Claims priority, application Japan, May 14, 1971, 46-38226; May 14, 1971, 46-38228; May 14, 1971, 46-38229
Int. Cl. F01b *25/00*
U.S. Cl. 415—26 **9 Claims**



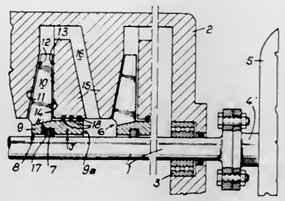
An operating apparatus for the guide vanes of fluid, preferably hydraulic, kinetic energy machines, particularly turbines or the like, employs a servomotor (including a servo valve) to operate each of a plurality of guide vanes controlling the supply of motive fluid to the wheel or runner of the machine. Each of the servomotors is selectively driven by a signal from a frequency detector, which generates a signal proportional to the rotary speed of the runner, or by a signal from a signal generating means that provides a signal independently of the speed of rotation. The movement of each guide vane is fed back as an electric signal by a potentiometer having its resistance varied according to the opening degree of the guide vane associated therewith, which feedback signal will detect the presence of foreign matter interrupting the normal movement of a guide vane, which will be present as a detecting voltage of servomotor operating or driving the particular vane.

3,799,690
PUMPING MEANS
Emil B. Klaas, Box 56, R.R. 1, Portage des Sioux, Mo.
Filed May 30, 1972, Ser. No. 258,184
Int. Cl. F01d *5/00*
U.S. Cl. 415—72 **9 Claims**



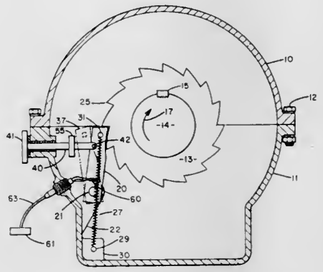
A pumping apparatus particularly suitable for efficiently pumping relatively large volumes of fluid such as water from one elevation to another including a propeller type blade mounted for rotation adjacent to the immersed open inlet end of a flow conduit of pipe, rotation of said blade establishing a head of water in the conduit, filling the conduit upstream thereof and forcing the fluid to flow through the conduit to be exhausted therefrom usually at a higher elevation. The subject pump is particularly well suited to be operated in tandem with other similar pumping means in the same conduit in situations where it is desired to move the fluid to a considerably higher elevation.

3,799,691
COUPLING DEVICE AND CENTRIFUGAL PUMP MAKING USE OF SAME
Louis E. Martin, Senlis, France, assignor to Societe Anonyme: Poclain, Le Plessie-Belleville, France
Filed Apr. 14, 1972, Ser. No. 243,960
Claims priority, application France, June 15, 1971, 71.21718
Int. Cl. F04d *17/12, 29/42*
U.S. Cl. 415—104 **6 Claims**



This invention relates to device for coupling a body with a drive shaft in rotation, constituted by an annular groove made in one of these elements, viz. body or drive shaft, and which receives an annular joint made of elastic material, whilst said annular joint has two axial faces which may be in contact with fluids at different pressures, and the radial expansion of said joint under the effect of the difference in pressure then ensures the seal between the body and the drive shaft, wherein said radial expansion ensures, in addition, the integration in rotation of the body and the drive shaft, the actions of the pressures of the fluids on said body having, as is known per se, a substantially zero resultant.

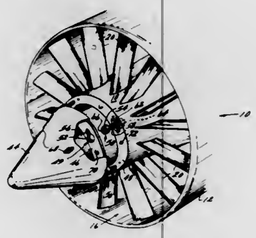
3,799,692
ANTI-REVERSE ROTATION STRUCTURE FOR ROTARY GAS COMPRESSORS
J. Rodger Shields, Pittsburgh, Pa., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Sept. 22, 1972, Ser. No. 291,423
Int. Cl. F04d *15/02*
U.S. Cl. 415—118 **4 Claims**



A toothed ratchet wheel is fixed to the rotor shaft of a rotary gas compressor. A pawl is mounted in the compressor casing for movement into and out of engagement with the teeth of the ratchet wheel. When the pawl is in engagement with the ratchet wheel, it serves to prevent reverse rotation of the compressor shaft. An over the center spring mechanism is as-

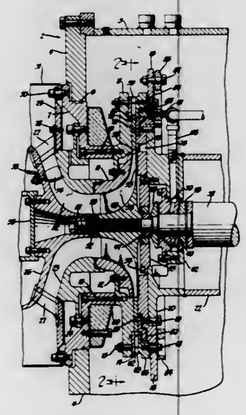
sociated with the pawl and is operable to yieldingly oppose movement of the pawl from one position to the other. Pressure responsive means may be associated with the pawl and operable upon the application of a predetermined force applied to the pawl resulting from the reverse force of the rotor to actuate an alarm or other device. The pawl may be moved into engagement with the ratchet wheel by manual or automatic means arranged exteriorly of the compressor casing.

3,799,693
BULLET NOSE FASTENING ARRANGEMENT
Peter Richard Hull, Ipswich, Mass., assignor to General Electric Company, New York, N.Y.
Filed Nov. 6, 1972, Ser. No. 304,082
Int. Cl. F01d *25/24*; **B64b** *1/24*
U.S. Cl. 415—121 R **5 Claims**



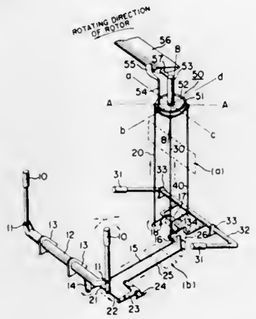
An arrangement for detachably fastening a bullet nose to the forward end of an aircraft engine is provided in a manner which positively precludes the possibility of one of the bullet nose fastening bolts from loosening and entering the engine inlet airstream.

3,799,694
VARIABLE DIFFUSER
James R. Duzan, Crofton, Md., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 20, 1972, Ser. No. 308,160
Int. Cl. F04d *27/00, 29/60*
U.S. Cl. 415—161 **4 Claims**



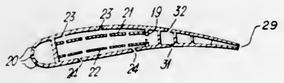
A variable diffuser for a centrifugal compressor has a set of fixed vanes remote from the compressor rotor and a set of movable vanes nearer the rotor. There is one movable vane for each two fixed vanes, and the movable vanes are swingable about axes adjacent their leading edges between a position in which the trailing edges of these vanes block the passage between two adjacent fixed vanes and a position in which the trailing edges of the movable vanes are substantially spaced from the fixed vanes.

3,799,695
CONTROL DEVICES OF ROTORCRAFTS
Eiichi Yamakawa, Kagamigahara, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe-shi, Japan
Filed Mar. 17, 1972, Ser. No. 235,645
Claims priority, application Japan, Apr. 6, 1971, 46-21237
Int. Cl. B64c *27/74*
U.S. Cl. 416—40 **8 Claims**



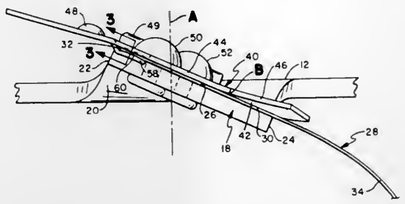
In a rotor control system of rotorcraft having variable pitch rotor blades and swash plate system which is controlled by the pilot's control stick and through which the cyclic pitch control and collective pitch control are effected, a link mechanism supported at a fulcrum is provided at least in the cyclic pitch control system and the position of said fulcrum is changed according to the forward flight speed of the rotorcraft, whereby the amount of longitudinal cyclic pitch change induced by the longitudinal control stick operation is decreased as the forward flight speed increases and concurrently the lateral cyclic pitch change is automatically imparted in the direction to compensate rolling motion of the rotorcraft, with the concomitant increase of said latter change as a function of the flight speed.

3,799,696
COOLED VANE OR BLADE FOR A GAS TURBINE ENGINE
Robert Frederick Redman, Beeston, England, assignor to Rolls-Royce (1971) Limited, London, England
Filed June 29, 1972, Ser. No. 267,581
Claims priority, application Great Britain, July 2, 1971, 31065/71
Int. Cl. F01d *5/08*
U.S. Cl. 416—97 **6 Claims**



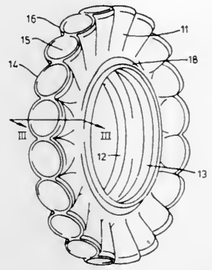
A hollow cooled blade or vane for a gas turbine engine comprises a hollow leading edge portion given substantially unrestricted access to a source of cooling air and provided with film cooling holes to the blade outer surface, a hollow center portion with an air entry tube supplied with cooling air and apertured to cause the air to impinge on the blade inner surface, and a trailing edge portion having a sinuous passage for cooling air therein.

3,799,697
FLEXIBLE BLADED FAN WITH TAB CONNECTED REINFORCING MEMBER
Allan W. De Jong, Chatham, Ontario, Canada, assignor to Fram Corporation, East Providence, R.I.
Filed Nov. 29, 1972, Ser. No. 310,596
Int. Cl. F04d *29/36*
U.S. Cl. 416—132 **7 Claims**



An automotive cooling fan having a flexible blade connected to a reinforcing member along the blade leading edge by lance tabs integral with the reinforcing member.

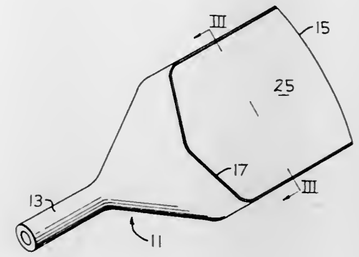
3,799,698
ROTORS FOR GAS TURBINE ENGINES
Lionel Haworth, Bristol, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Nov. 29, 1971, Ser. No. 202,749
Claims priority, application Great Britain, Dec. 4, 1970, 57670/70
Int. Cl. F01d *7/00*
U.S. Cl. 416—204 **6 Claims**



An annular rotor for supporting variable pitch blades of a fan for a gas turbine engine comprises two side walls which are of undulating shape so that at their radially outer ends they alternately meet and are spaced apart, thereby defining a plurality of circumferentially spaced apart rings, for supporting bearings on the roots of the fan blades.

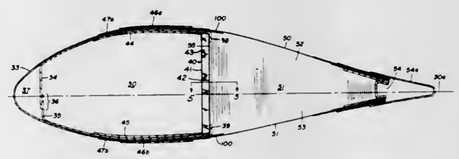
3,799,699
REVERSIBLE FAN ASSEMBLIES AND INTEGRAL BLADE AND TRUNNION UNITS
Ralph E. Master, Washington; Richard D. Philipsen, Peoria; Kenneth E. Starr, Manito, and Herbert C. Unkrich, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Continuation-in-part of Ser. No. 813,081, April 3, 1969, abandoned, Division of Ser. No. 70,328, Sept. 8, 1970. This application June 5, 1972, Ser. No. 259,700
Int. Cl. F04d *29/36*
U.S. Cl. 416—206 **12 Claims**

For a reversible fan, a blade is manufactured from a tubular member of a proper gage and diameter by spreading or flattening one end into a blade shape and swaging the other end of the tubular member to a reduced diameter to form an integral trunnion. The tubular member may be first slotted to aid in spreading the blade portion into the proper blade configuration. At the distal end of the trunnion of the integral blade and trunnion unit, a portion of the trunnion can be upset to provide a shoulder for retaining and positioning the integral blade



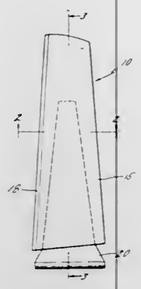
and trunnion in a fan bub in one of two positions for reversing air flow. Springs can be employed to bias each integral blade and trunnion radially outwardly so that the position of these units will be maintained by engagement with complementary indexing structure in the associated hub. As an alternative to upsetting the end of the trunnion, a washer member may be secured on its distal end and a blade indexing mechanism provided by the washer member and cooperating hub assembly.

3,799,700
MAIN ROTOR BLADE CONSTRUCTION
Willem Broekhuizen, Arlington, and Cecil E. Covington, Hurst, both of Tex., assignors to Textron Inc., Providence, R.I.
Filed May 17, 1971, Ser. No. 143,970
Int. Cl. B64c *27/46*
U.S. Cl. 416—226 **6 Claims**



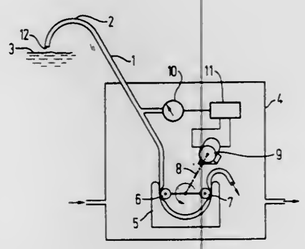
An aircraft proprotor blade having a leading edge spar with upper and lower after body skins secured at their leading edges to the upper and lower trailing edges, respectively, of the spar and coupled together along the trailing edges thereof. Honeycomb body halves are secured to and are substantially coextensive with each skin. The honeycomb cells are oriented substantially perpendicular to the blade chord plane with confronting ends of the cells intercised and adhesively bonded at the blade chord plane.

3,799,701
COMPOSITE FAN BLADE AND METHOD OF CONSTRUCTION
Edward A. Rothman, South Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Feb. 28, 1972, Ser. No. 229,873
Int. Cl. F01d *5/14*
U.S. Cl. 416—226 13 Claims



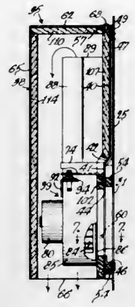
A composite fan blade is fabricated by bonding two complementary preformed outer shell halves defining an airfoil planform of composite material sandwiching a metal spar which spar extends beyond the airfoil planform to form the root of the blade.

3,799,702
APPARATUS FOR DRAINING BLOOD FROM A SURGICAL WOUND AND TRANSMISSION TO A HEART-LUNG MACHINE
Egon Georg Weishaar, 8000 Munich 2, Erzglessereistrasse 29, Munich, Germany
Filed Nov. 15, 1972, Ser. No. 306,937
Int. Cl. F04b *49/00*; A61m *1/00*; F04b *43/12*
U.S. Cl. 417—38 9 Claims



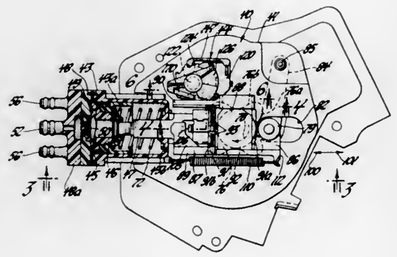
A pressure sensor is connected to the suction tube of an apparatus for draining blood from a wound and supplying it to a heart-lung machine. Means, which may be either a separate pump or the pump connected to the tube for pumping blood, forms an underpressure generator. The pressure sensor is responsive to a first underpressure in the tube for increasing the pumping action of the suction pump motor, and to ambient pressure for decreasing the pumping action of the pump motor. The sensor may also be responsive to a greater underpressure for stopping or reversing the motor.

3,799,703
VENTILATING UNIT FOR SOUND CONTROL ROOM
David L. Paine, Ellendale; Harvey M. Urch, Concord, and Daryl D. Douglas, Owatonna, all of Minn., assignors to Wenger Corporation, Owatonna, Minn.
Filed May 24, 1972, Ser. No. 256,304
Int. Cl. F24f *13/18*
U.S. Cl. 417—312 10 Claims



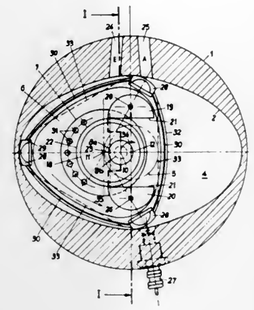
An enclosed ventilating unit for circulating air through a portable sound control room, including a casing adapted to be mounted on the wall of the sound control room, a fan unit in the casing, means resiliently mounting the fan unit in the casing to absorb vibration, and sound insulating means lining the interior of the casing to absorb sound, whereby the sound and the vibration of the fan unit and the sound of air flow are substantially minimized in the ventilating unit without transmission into the sound control room or to the surrounding space.

3,799,704
WASHER PUMP ASSEMBLY
Lloyd L. Kuck, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1972, Ser. No. 309,247
Int. Cl. B60s *1/48*
U.S. Cl. 417—319 4 Claims



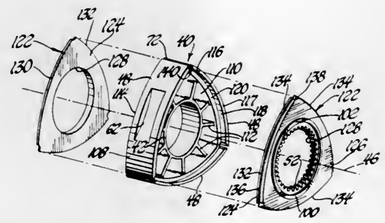
In a preferred form, this disclosure relates to a programmed washer pump assembly for a windshield cleaning apparatus and with the washer pump assembly being operable to intermittently deliver a predetermined number of squirts of washer fluid onto the windshield each time it is energized. The washer pump assembly includes a reciprocable pump having a spring actuated delivery stroke and an interruptible driving connection with a drive means. The washer pump assembly further includes a control and timer mechanism which is operable, when momentarily energized, to establish a driving connection between the pump and the drive means for a predetermined time interval and then automatically and abruptly interrupt the driving connection therebetween.

3,799,705
INTERNAL COMBUSTION ENGINE WITH ROTARY PISTON
Ernst Mac Gunthard, Haldenstr. 127, Zurich, Switzerland
Filed Oct. 3, 1972, Ser. No. 294,639
Claims priority, application Switzerland, Aug. 19, 1972, 12260/72
Int. Cl. F01c *1/02*; F04c *1/02, 17/02*
U.S. Cl. 418—61 A 7 Claims



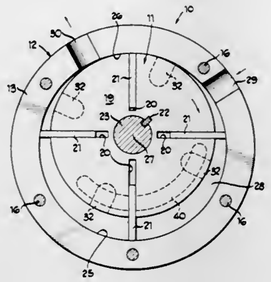
This invention relates to an internal combustion engine with rotary piston, whereby in a stator with the inside space limited by an oval skirt area a rotary piston of triangular shape, guided by plane parallel side areas of the stator, is moved such that the gravity center of the rotary piston executes a translation along a closed course and that its angle parts slide along the inner skirt area of the stator, forming thereby three closed volume-variable generating spaces.

3,799,706
ROTOR ASSEMBLY FOR A ROTARY MACHINE
John Bilobran, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 27, 1972, Ser. No. 318,914
Int. Cl. F01c *1/02*; F04c *1/02, 27/00*
U.S. Cl. 418—61 A 4 Claims



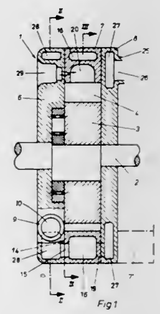
A rotor assembly for a rotary machine has a main body with a side plate mounted in each side thereof, the main body having a plurality of radially outwardly facing peripheral chamber faces. The rotor body and the side plates have radially inwardly and radially outwardly facing walls, respectively, that are radially spaced from each other and cooperatively provide axially outwardly facing side seal grooves of constant width and depth extending adjacent the rotor faces. The rotor body has a hub and the side plates have central openings therethrough giving access to this hub with there being formed an internal gear in the central opening of one of the side plates.

3,799,707
ROTARY COMPRESSOR
Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed June 12, 1972, Ser. No. 261,830
Int. Cl. F04c *15/04*
U.S. Cl. 418—77 6 Claims



A capacity control system for a rotary gas compressor of the sliding vane type having a rotor placed eccentrically within a working chamber provided by the cylinder of a stator housing, the rotor carrying blades or vanes freely slidable in slots in the rotor to engage the cylinder. A control plate is positioned between the rotor and one of the housing cover plates and has an arcuate aperture providing a flow path for refrigerant gas. The control plate is rotatably adjustable to locate the aperture in relation to slots in the rotor periphery, between the blades, to vary the effective size of the compression chamber.

3,799,708
COOLING ARRANGEMENT FOR A COMBUSTION ENGINE HAVING A ROTARY TYPE PISTON
Helmut Leptien, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed July 25, 1972, Ser. No. 274,914
Claims priority, application Germany, July 31, 1971, 2138435
Int. Cl. F01c *19/02*
U.S. Cl. 418—83 9 Claims



In a combustion engine having a rotary-type piston arrangement, and wherein the engine has a housing adapted to be cooled by a cooling medium, a piston of the rotary type mounted for rotation on an eccentric shaft and forming operating spaces of variable volume during rotation with a portion of the housing wall, such operating spaces being defined by arched portions of the housing and by the piston, the housing has a pair of side members and at least a central peripheral member in which the piston is placed, an inlet

opening for the entry of the cooling medium, passages formed in the side member and passages formed in the central member and communicating with the passages of the side member, an outlet passage formed in the other of the side member and communicating with the passage formed in the intermediate or peripheral member, wherein a cooling medium entering the inlet opening into at least a pair of streams and imparting a direction to the streams opposite to each other.

3,799,709

RADIAL SEAL FOR ROTARY ENGINE PISTONS

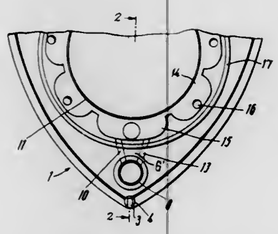
Johannes Reitz, Kirchhausen; Hans-Jurgen Frese, Bad Friedrichshall; Rainer Bedenbender, Fellerdilln, and Josef Heim, Oedheim, all of Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Germany

Filed June 8, 1972, Ser. No. 260,936

Claims priority, application Germany, June 8, 1971, 2128355

Int. Cl. F01c *19/02, 21/06;* **F04c** *27/00*

U.S. Cl. 418—91 **9 Claims**



A radial seal for rotary-piston, internal-combustion engines is disclosed. The piston is polygonal and concentrically mounted on an eccentric shaft for rotation with a sliding fit about an internal axis of rotation. The radial seal includes a sealing strip at each corner of the piston in piston grooves which are parallel to the piston axis. Sealing strip carriers at each corner of the piston extend radially and parallel to the piston axis are made of a material other than that of the piston. The carriers include tubes closed at both ends through which a cooling fluid is circulated. At the radially outer side of the tubes an extension forms the piston grooves. The tubes communicate with an annular chamber located at each face of the piston hub. The annular chambers are divided into a plurality of compartments in communication with each other. The compartments of one annular chamber are connected to the corresponding compartments in the other annular chamber by by-pass conduits.

3,799,710

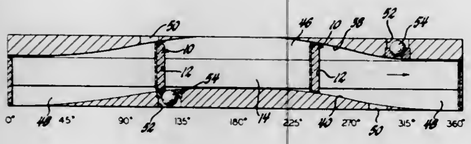
VANES FOR ROTARY PUMPS AND MOTORS

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 13, 1972, Ser. No. 297,400

Int. Cl. F01c *19/00;* **F03c** *3/00;* **F04c** *27/00*

U.S. Cl. 418—147 **4 Claims**



A fluid pumping vane including a body member having arcuate end surfaces in close proximity to surfaces of a pump housing defining a fluid chamber. The vane body member, having front and rear surfaces, also includes resilient lips terminating in free ends, the lips overlying the arcuate surfaces of the body member and being inherently biased into engagement with the housing surfaces to provide a tight seal. In preferred form, the body member can be composed of aluminum, graphite, bakelite, or similar material, while the sealing lips are composed of a low friction resilient plastic material such as polytetrafluoroethylene or any other low friction fluoropolymer. The sealing lips extend toward the front surface of the vane body so that high pressure gases enter the area between the arcuate end surfaces of the body and the lips and further urge the lips into engagement with the housing surfaces. The plastic material sealing lips can be integral with the vane body member, they can be attached to a surface of the vane body member by a polyimide type adhesive or they can be formed to include a tongue portion received in a mating retaining groove in the body member.

3,799,711

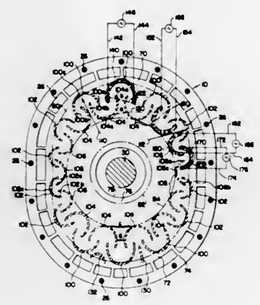
SIDE HOUSING FOR ROTARY PISTON ENGINE AND METHOD OF HARDENING A SURFACE OF THE SAME

George C. Nebesar, Parma, and Robert V. Vickers, Shaker Heights, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed July 20, 1972, Ser. No. 273,523

Int. Cl. F01c *21/00*

U.S. Cl. 418—178 **1 Claim**



A side housing for a rotary piston internal combustion engine having an inwardly facing surface in rubbing contact with seals on the rotor of the engine, the surface having separate and distinct hardened zones arranged in a generally uniform pattern with the zones having converging portions to provide tortuous, non-hardened areas in the surface and the method of hardening these zones.

3,799,712

ROTARY PISTON MACHINES

Bo Olof Roland Arnegard, Skarholmen, Sweden; Kaj Bengt Ingemar Emanuelsson, and Hans Kristoffer, both of Wilrijk, Belgium, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

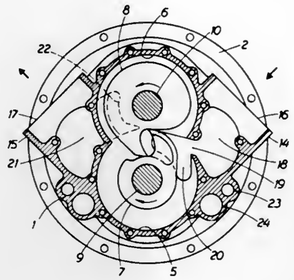
Continuation of Ser. No. 46,664, June 16, 1970, abandoned. This application Oct. 24, 1972, Ser. No. 300,103

Int. Cl. F01c *1/08;* **F04c** *17/04*

U.S. Cl. 418—191 **5 Claims**

Rotary piston machines have a casing with two intersecting cylindrical bores in which a main rotor and a gate rotor are mounted to rotate. Each rotor has a hub and one tooth with a concave flank extending from the hub and a recess adjacent said flank, said flank and recess of the gate rotor being generated by the main rotor tooth so that when the rotors rotate the main rotor tooth moves in sealing proximity along

the gate rotor concave tooth flank and the gate rotor recess. Together with the walls of the bores the rotors provide chambers which change volume during the rotation. The rotors



have hub portions with constant radius which is greater on the gate rotor hub and provide large axial inlet and outlet ports for an elastic working fluid.

3,799,713

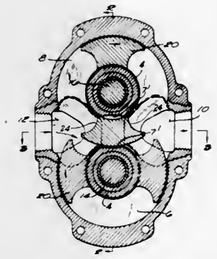
POSITIVE DISPLACEMENT PUMP

Henry P. Cloots, Oconomowoc, and James A. Neumann, East Troy, both of Wis., assignors to Waukesha Foundry Company, Inc., Waukesha, Wis.

Filed Mar. 22, 1972, Ser. No. 237,198

Int. Cl. F01c *1/18*

U.S. Cl. 418—206 **3 Claims**



Parallel pump shafts are inter-geared to rotate in opposite directions having 90° offset arcuate heads of crescent form as in Roots pumps, the periphery of each head having a close approach to a bearing support for the opposing head, there being a unique port design which permits axial and radial flow into the area where volumes are being created and destroyed, the object being to eliminate undesirable hydraulic effects, particularly cavitation.

3,799,714

MORTAR APPLICATOR

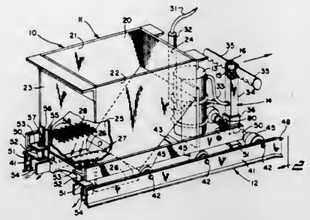
William H. Vetovitz, 8174 Strongsville Blvd., Strongsville, Ohio

Filed Dec. 29, 1971, Ser. No. 213,282

Int. Cl. B28b *19/00*

U.S. Cl. 425—63 **15 Claims**

A portable device for applying mortar to desired portions of successive courses of block, brick, or any flat surface to improve the construction of masonry walls. The device includes a hopper, vibrator, and a base assembly having side guides for



drawing the applicator along a course of block and dispensing mortar for laying the next course.

3,799,715

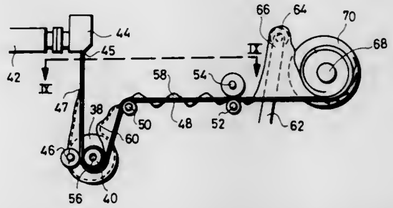
APPARATUS OF MAKING WRAPPING MATERIAL FOR ANNULAR GOODS

Isago Miura, 1-4-19 Honcho, Asaka, Japan

Division of Ser. No. 113,376, Feb. 8, 1971, Pat. No. 3,736,203. This application Feb. 1, 1973, Ser. No. 328,786

Int. Cl. B29d *7/22*

U.S. Cl. 425—66 **4 Claims**



An apparatus is provided for forming packing or wrapping material of an elastic plastic sheet material for products of special shapes and particularly annular articles. The sheet of material is permanently stretched in a longitudinal direction with the amount of stretching varying across the width of the sheet so that the sheet assumes a permanent shape to insure wrapping of an annular articles without any air gaps between the wrapping material and the article.

3,799,716

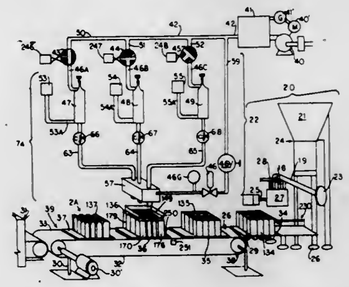
APPARATUS FOR MANUFACTURE OF COATED BRICKS

Thomas R. Salts, Amarillo, Tex., assignor to Crowe-Gulde, Inc., Amarillo, Tex.

Filed June 23, 1972, Ser. No. 265,548

Int. Cl. B28b *11/04*

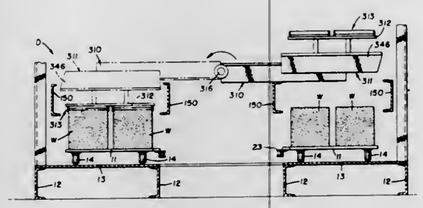
U.S. Cl. 425—104 **5 Claims**



Apparatuses and processes for coating concrete bricks with exposed surfaces having sharply delineated portions of con-

trasting color and/or texture by periodically and regularly forming atomized particles of a viscous cementitious slurry and directing same on to portions of surfaces of each of a plurality of green concrete bricks in groups located stationary in regular fashion for a brief period and thereafter firing the thus coated uncured brick. The apparatuses include means for rapidly and/or sequestially varying the colors applied to the different groups of bricks during successive cycles of coating the successively treated different groups of such brick.

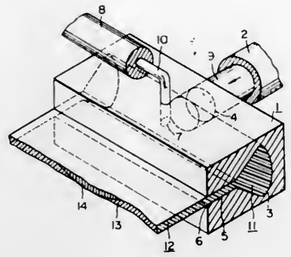
3,799,717
APPARATUS FOR APPLYING, ATTACHING AND PROCESSING DECORATIVE FACING TO AN ARTICLE
Andrew R. Nedoh, 4262 Hametown Rd., Norton, Ohio
Filed Apr. 11, 1972, Ser. No. 242,938
Int. Cl. B28b *3/10*
U.S. Cl. 425—125 **10 Claims**



Disclosed is a method and apparatus for automatically applying, attaching, curing and processing a decorative facing to an article such as a conventional building or other blocks, brick, tile or other kinds of building materials. A plurality of blocks or building materials to receive the facing are transferred to a loading station on an intake block feeder designed to present the blocks in pairs to a transfer device or arm which loads the pair of blocks onto a plurality of movable pallets. These pallets are intermittently driven in a carrousel-type arrangement through a plurality of work stations. First the blocks are properly centered on the pallet to receive a mold plate which carries two molds that are filled at another station with an uncured plastic compound. Means are provided to transfer the filled molds to the block and each mold is designed to be self-locking on the pair of blocks. The block and mold combination is thereafter transferred through a unique oven arrangement which systematically cures the plastic material to form the decorative facing on the block. As the blocks continue their intermittent transfer through the system and come out of the oven, the molds are automatically removed and positioned at a filling station for subsequent reuse. The same transfer device which loads the blocks onto the pallets simultaneously, while performing the loading function on another pair of blocks, then unloads the finished blocks onto a take-away conveyor. Other features are disclosed which make the system totally automated, such as a means which makes the system universally adaptable to various sized blocks or other items to which a decorative plastic facing may be applied.

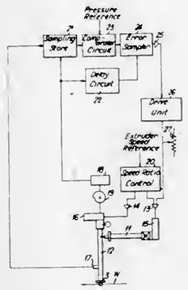
3,799,718
APPARATUS FOR PRODUCING A THERMOPLASTIC RESIN SHEET HAVING A COLOR BAND
Hiroshi Kiyono, Kyoto; Junichi Nakashima; Yasuyuki Fujisaki, both of Shiga; Yukio Ishigaki, Otsu, and Gen Endo, Kusatsu, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Division of Ser. No. 55,763, July 17, 1970, Pat. No. 3,715,420.
This application Dec. 16, 1971, Ser. No. 208,806
Claims priority, application Japan, July 19, 1969, 44-57208
Int. Cl. B29c *21/00;* **B29f** *1/12*
U.S. Cl. 425—131 **6 Claims**

A process for producing a thermoplastic resin sheet having a band of color by feeding a molten thermoplastic resin by an extruder into a sheet-forming flat die having a manifold and extruding said molten resin from an extrusion opening of said flat die, which comprises forcing a stream of a colored molten thermoplastic resin through at least one injection port opened into the manifold of the flat die into a main stream of the mol-



ten resin extruded from the extruder and fed to the manifold, associating the main stream of the molten thermoplastic resin and the stream of the colored molten thermoplastic resin within the manifold, and extruding the associated streams from the extrusion opening of said flat die.

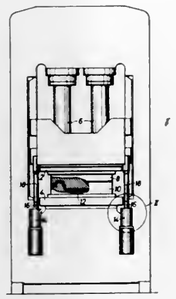
3,799,719
APPARATUS FOR EXTRUDING PLASTIC MATERIAL
Zbigniew Bonikowski, London, and Bruce Henry Keen, Middlesex, both of England, assignors to British Insulated Callender's Cables Limited, Longon, England
Division of Ser. No. 65,980, Aug. 21, 1970, Pat. No. 3,755,516.
This application May 29, 1973, Ser. No. 364,503
Int. Cl. B29f *3/06*
U.S. Cl. 425—149 **5 Claims**



The rate of feed of plastic material into a screw extruder is controlled in accordance with the internal pressure at at least one point along the extruder barrel by sampling the pressure measurement at one point in, or at each of several spaced points along, the extruder barrel at intervals under the control of a timing device driven by the extruder screw in such a way that each sample is taken from the same part of the pressure cycle. Pressure samples are compared with a reference signal to produce an error signal when the value of one or more pressure samples deviates from a desired value. These error

signals, which may themselves be sampled under the control of the timing device to avoid hunting, are caused to adjust the rate of feed of material to the extruder, e.g., from a second screw extruder, to restore the pressure to the desired value.

3,799,720
COMPRESSION MOULDING PRESS
Rune Axel Erik Fjellman, Box 7, 542 01 Mariestad, Sweden
Filed Sept. 19, 1972, Ser. No. 290,417
Int. Cl. B29c *3/06*
U.S. Cl. 425—157 **4 Claims**

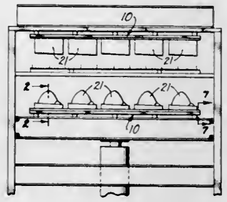


The invention relates to a compression moulding press of the kind wherein the object to be compression moulded is subjected to the total compression moulding pressure during the time the mould is closed. This is done by first bringing the parts of the moulds, during the compression moulding process, to a standstill in a predetermined position. After a predetermined time, when the curing has attained a certain state, the parts are again brought into contact with the compression moulding object. In the press used one of the two press platens operating the parts of the mould, at the side thereof directed towards the other platen, comprises hydraulic cylinders, wherein pistons are moveable substantially perpendicularly relative the platens. Said pistons determine the distance between the platens in cooperation with stationary abutments on the second platen, and said predetermined position of the parts of the mould corresponds to a first predetermined piston position, to which the movement of the pistons outwardly of the cylinders is restricted. According to the invention means are arranged for allowing and causing movement outwardly of the pistons beyond said first piston position, after the termination of the compression moulding operation.

In one embodiment the position of the pistons is limited by an internal abutment, which is axially movable in the corresponding cylinder between a first abutting position, wherein it defines the first piston position, and a second, external abutting position, which defines a second piston position, to which the piston is movable outwardly beyond the first piston position.

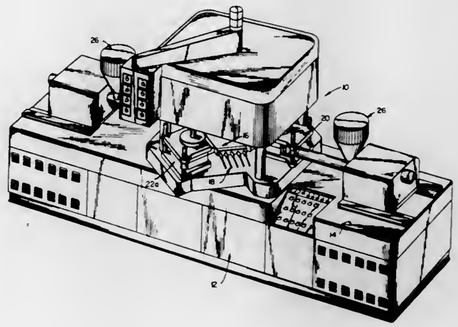
3,799,721
ADJUSTABLE MOLD PLATEN FOR FABRIC MOLDING
Jack E. Howard, Los Angeles, Calif., assignor to International Fabric Molders, Inc., Los Angeles, Calif.
Filed May 18, 1972, Ser. No. 254,493
Int. Cl. B29c *1/16*
U.S. Cl. 425—195 **5 Claims**

An adjustable platen for holding molds used in forming flat pieces of fabric into three-dimensional garments. A flat rectangular platen has a plurality of transversely directed slots. A plurality of parallel holding members extend longitudinally across the platen and are transversely adjustable by means of fastening members which extend through the slots.



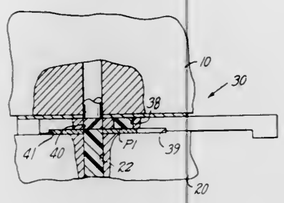
Each holding member has a channel in which a plurality of inverted T-nuts are mounted for sliding longitudinal movement to engage fastening members holding the molds. The combination of transverse and longitudinally adjustability permits substantially universal positioning of the molds.

3,799,722
MULTIPLE INJECTION BLOW MOLDING MACHINE
Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., South Brigantine, N.J.
Continuation of Ser. No. 52,811, July 7, 1970, Pat. No. 3,694,121. This application June 6, 1972, Ser. No. 260,314. The portion of the term of this patent subsequent to Sept. 26, 1989, has been disclaimed.
Int. Cl. B29d *23/03*
U.S. Cl. 425—242 B **4 Claims**



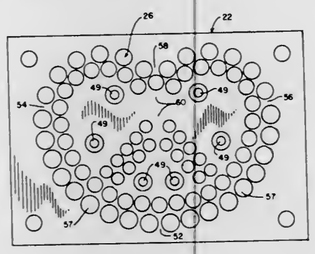
In an injection blow molding machine wherein an elevatable and rotatable turret that carries distinct sets of parison pins on its side faces is surrounded at angularly spaced points by parison mold stations, blow mold stations and ejection stations, the parison clamps at the parison mold stations are mechanically linked together for equalized operation and the turret is so connected to the linkage that it is lifted with the synchronized raising movement of the movable upper halves of the separable parison molds but only one-half the vertical distance thereof whereby the parison pins are equidistant of the part line between the partible halves of the parison molds and also the blow molds when the molds are open so that the pins clear the mold halves as the turret is indexed around the stations.

3,799,723
INJECTION MOLD WITH A SPRUE PLUGGING MECHANISM
William Lally; Kenneth L. Moore; John E. Robbins, and William F. Willbond, all of Leicester, England, assignors to USM Corporation, Boston, Mass.
Filed May 15, 1972, Ser. No. 253,160
Int. Cl. B29c *1/05*
U.S. Cl. 425—245 R **6 Claims**



An injection molding machine having mechanism for injecting fluid molding material into an article forming cavity through a sprue bore and a device for inserting a plug into the bore after the molding material is injected.

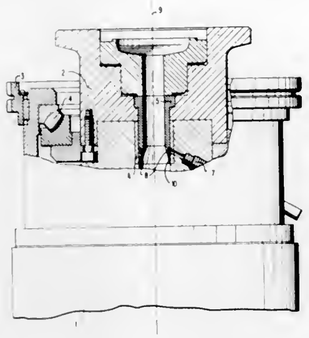
3,799,724
APPARATUS FOR PRETZEL MANUFACTURE
Francis J. Grady, R.D. No. 4, Reading, Pa.
Filed Feb. 9, 1972, Ser. No. 224,843
Int. Cl. A21c *11/16*
U.S. Cl. 425—311 **3 Claims**



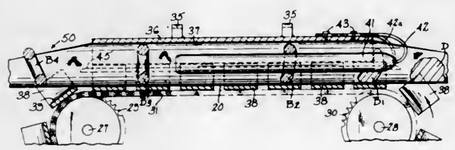
An extrusion head for an extrudable material, such as a food product dough, which is to be formed into a special shape, such as a pretzel configuration. The head includes a die and associated parts which are of such character and construction that portions of the extruded material will differ in width and thickness from other portions.

3,799,725
SEAL FOR A HORIZONTALLY DISPOSED BLOW MOLDING APPARATUS
Karl Schwarzrock, Lohmar, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Nov. 4, 1971, Ser. No. 195,597
Claims priority, application Germany, Nov. 30, 1970, 2058760
Int. Cl. B29f *3/00*
U.S. Cl. 425—326 B **14 Claims**

A horizontally disposed blow molding apparatus having an oscillating or rotating portion, a fixed portion and a seal disposed between the portions. The seal includes a bushing of spring steel with unilaterally formed, razor-sharp lips positioned in the fixed part and a bushing of bearing bronze located in the rotating part. The seal is preferably arranged in the zone of the axial material inlet to the blow molding apparatus. Advantageously, the steel spring bushing includes an annular groove in communication with a discharge pipe.

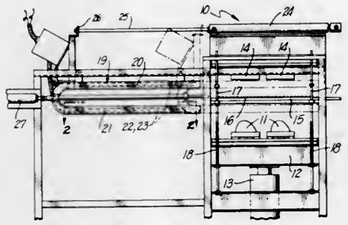


3,799,726
BAGEL FORMING MACHINE
John Lugo, 73 Green Meadow Rd., Milford, Conn.
Filed Oct. 5, 1971, Ser. No. 186,698
Int. Cl. A21c *11/00*
U.S. Cl. 425—364 **4 Claims**



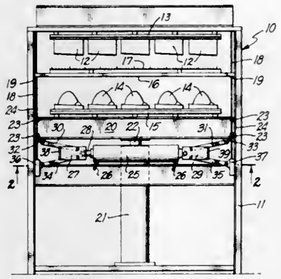
A machine for forming dough or the like in which the dough is transported by an endless belt through a stationary die member and movable die members about a central mandrel to form a toroidal or annular shape of the dough.

3,799,727
HEAT CONTROL FOR FABRIC MOLDING
Jack E. Howard, Los Angeles, Calif., assignor to International Fabric Molders Inc., Los Angeles, Calif.
Filed May 18, 1972, Ser. No. 254,494
Int. Cl. B29c *17/02*
U.S. Cl. 425—394 **5 Claims**



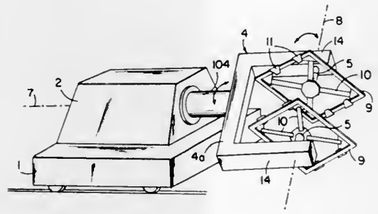
A heat control structure for use in fabric molding. A heater rack is mounted for sliding horizontal movement to heat both sides of the fabric simultaneously for molding in unheated molds. The heating rods adjacent to outer areas of the rack are disposed closer together than those in the inner areas to compensate for heat dissipation. Separate heat controls are provided for opposite sides of the fabric and for the inner and outer areas of the fabric.

3,799,728
MOLD CLOSING DEVICE FOR FABRIC MOLDING
Jack E. Howard, Los Angeles, Calif., assignor to International Fabric Molders, Inc., Los Angeles, Calif.
Filed May 18, 1972, Ser. No. 254,492
Int. Cl. B29c *3/00*
U.S. Cl. 425—416 **3 Claims**



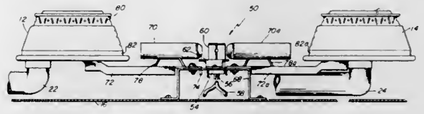
A mold closing device which supplements the normal mold closing action of a press for fabric molding. The device comprises a pair of pistons and cylinders extending horizontally beneath a support member on which mold parts are mounted for vertical movement. The cylinders and pistons are pivotally connected to pairs of lower and upper lever arms, the outer ends of which are pivotally connected to the press and to the four corners of the support member respectively. The cylinders are operated to move the pistons horizontally and exert vertical pressure upon the support member through the pivoting arms to cause sudden forceful closing of the molds.

3,799,729
ROTATIONAL CASTING OR MOLDING MACHINE
Hans Werner Hagen, Unterpfaffenhofen, Germany, assignor to Metzeler Aktiengesellschaft, Munich, Germany
Filed Apr. 3, 1972, Ser. No. 240,866
Int. Cl. B29c *5/04*
U.S. Cl. 425—435 **12 Claims**



A rotational casting or molding machine wherein a hollow bifurcated support is driven to rotate about a horizontal axis and each of its prongs carries a stub shaft driven by a mechanism which extends in part through the interior of the support. The shafts are rotatable about a common axis which is normal to the axis of the support and each shaft supports a discrete mold holder frame having an annular or polygonal outline and being coupled to the respective shaft by a set of equidistant connecting elements in the form of stacked leaf springs. The leaf springs allow for thermally induced movements of the frames in the axial direction of the shafts but hold the frames against angular movement with reference to their shafts. One end portion of each package of leaf springs is fixedly secured to the respective frame or to the respective shaft and the other end portion of each package is longitudinally movably secured to the respective shaft or to the respective frame. The leaf springs are either coplanar with the respective frames or are mounted in such a way that their inner end portions are spaced from the outer end portions as considered in the direction of the common axis of the shafts.

3,799,730
ELECTRIC IGNITION SYSTEM
Nalini R. Das, Bethlehem, and Edwin H. Strain, Allentown, both of Pa., assignors to Raytheon Company, Lexington, Mass.
Filed Aug. 1, 1973, Ser. No. 384,534
Int. Cl. F24c *3/10*
U.S. Cl. 431—191 **10 Claims**



A cooking range of the fluid-fueled type having at least a front burner and a rear burner with an electric ignitor therebetween, and flash tubes between each burner and the ignitor for supplying fuel from the respective burners to the ignitor for igniting the burners, the burners being located nonequidistant from a fuel supply manifold whereby unequal fuel pressure is applied at the burners and particularly at the flash tubes, the ignitor being located closer to the flash tube containing the lower fuel pressure whereby to ensure reliable ignition of the associated burner.

3,799,731
WICK TIP HOLDER
David M. Novak, 23610 Oliver Holmes Rd., Colton, Calif.
Filed Dec. 22, 1972, Ser. No. 317,809
Int. Cl. F23d *3/04*
U.S. Cl. 431—313 **6 Claims**

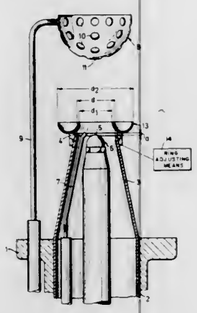
An end cap for being mounted on a fuel container, which end cap has a projection with a pair of holes through which a wick cord is looped. The free ends of the wick cord are then knotted inside the end cap with the remaining portion of the ends extending into the fuel. The openings in the end cap are larger than the wick cord, thus air is able to pass through these openings along with air passing through openings in the end caps adjacent the projection. This free flow of air shapes the flame to burn upwardly and away from the end cap and in a manner that the cord is not burned. Additionally, it is not possible to pull the cord up above the projection to enlarge the loop to increase the flame height.

3,799,732

BURNER FOR LIQUID FUELS

Wilhelm called Willi Brodlin, Allensbach/Bodensee, Germany, assignor to Firma Max Welshaupt GmbH, Schwendi/Wurtt., Germany

Filed Sept. 11, 1972, Ser. No. 287,710
Claims priority, application Germany, Sept. 21, 1971, 2147108
Int. Cl. F23d 13/12
U.S. Cl. 431—347 5 Claims



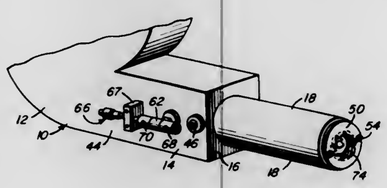
Disclosed is a liquid fuel burner of the type having a pressure atomizer nozzle arranged concentrically within an air supply tube, the latter being provided on its end with an inwardly tapering truncated terminal cone, and a fuel-air mixture distributing member axially adjustably arranged at an interval in front of the burner nozzle, this member having a convex outer surface provided with openings opposite the nozzle. In order to improve the starting capability of such a burner and to enable its operation at self-cleaning temperatures, a ring member is arranged a small distance in front of the nozzle, between it and the mixture distributing member, this ring member having an inside diameter smaller than and an outside diameter larger than the diameter of the terminal cone orifice.

3,799,733

OIL BURNER

Arthur J. Tickell, Sr., P.O. Box 3616, New Haven, Conn.

Filed June 27, 1972, Ser. No. 266,724
Int. Cl. F23d 13/24
U.S. Cl. 431—350 3 Claims



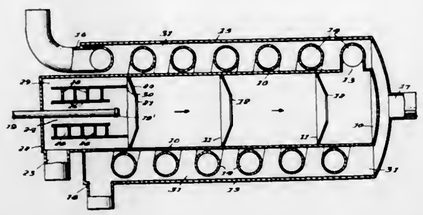
A liquid fuel oil burner of the type including an outer tubular housing including discharge and inlet ends and through which combustion air is blown under pressure with a tubular body disposed within the discharge end of the housing or tube and enclosing an axial discharge atomizing nozzle for liquid fuel and spaced ignition electrodes. The end of the tubular body corresponding to the discharge end of the housing is open and encloses the aforementioned nozzle and electrodes. Further, the discharge end of the housing includes a vaned turbulator ring of the tapering type for causing the air being discharged between the body and the housing to swirl about and toward the center axis of the housing. Disposed immediately outwardly of the discharge end of the housing is a secondary air turbulance developing plate in the form of an annular member whose inner peripheral marginal portion is registered with the annular spacing between the housing and body and includes further vanes inclined in the same direction as the vanes of the ring and are angularly displaced about the center axis of the housing so as to bridge across the angular spacing between adjacent vanes of the turbulator ring. Also, the nozzle and ignition electrodes are supported within the body for at least slight axial adjustment relative to the latter and the turbulator ring and the turbulator plate is also supported for axial displacement relative to the turbulator ring and body, independent of axial adjustment of the nozzle and the electrodes.

3,799,734

COMBUSTION DEVICE

John J. Bailey, 1701 N. Ashland Ave., Chicago, Ill.

Filed May 3, 1973, Ser. No. 356,803
Int. Cl. F23d 3/00
U.S. Cl. 431—353 9 Claims



A combustion device having a chamber for passage of the products of combustion therethrough and having a surrounding wall for heat transfer through said wall to external media. The combustion chamber has inlet and outlet means at opposite ends thereof with orifice plates extending transversely of the combustion chamber, which orifice plates have their peripheries secured directly in circumferentially spaced segments to the inner face of the surrounding wall, leaving minute segments between the secured segments for small amounts of combustion particles or gases to leak therethrough into the particles or gases passing through the orifice plates, thereby materially increasing the efficiency of the combustion of the burning gases.

3,799,735

CONVEYOR FLIGHTS FOR ROTARY KILN

Flemming E. Jensen, Copenhagen-Valby, Denmark, assignor to F. L. Smidth & Co., Cresskill, N.J.

Filed Jan. 5, 1972, Ser. No. 215,474
Int. Cl. F27b 7/14
U.S. Cl. 432—16 11 Claims

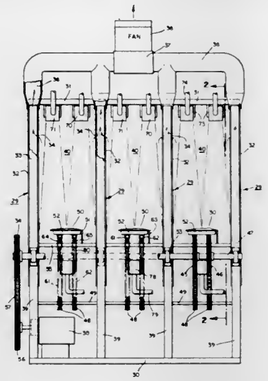
A method for producing heat exchange between particles of raw materials and hot combustion gases in an inclined rotary kiln is disclosed. The kiln includes trough-shaped conveyor flights constructed to discharge the particles over the length of the kiln in the form of clouds of substantially parallel vertical curtains extending across the kiln at an acute angle to the axis of the kiln. The kiln can be used in a plant including means for collecting and returning the material carried out of the kiln.

3,799,736

APPARATUS AND METHOD FOR BROWNING AND BAKING PIES

Frank A. Palladino, Pottstown, Pa., assignor to N. Palladino & Bros., Pottstown, Pa.

Filed May 5, 1972, Ser. No. 250,571
Int. Cl. F27b 9/14
U.S. Cl. 432—124 10 Claims



An oven for browning and baking pies, having a two chain conveyor for transporting pies through the oven, one chain geared to move slightly faster than the other to impart continuous rotation to the pies, with a pair of burners positioned above the path of the pies and arranged to direct their heat downwardly on opposite edge portions of the pies, such that as the pies are rotated all portions thereof are heated uniformly. A third burner is placed under the conveyor chains for use in baking operations. The oven preferably comprises a plurality of zones, each containing a conveyor and burners, the zones being formed by hollow partitions therebetween through which air and moisture are exhausted, the hollow partitions acting to insulate each zone from adjacent zones.

CHEMICAL

3,799,737

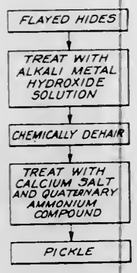
CURING AND PRETANNAGE OF HIDES

Don S. Elvrum, 6233 Saylin Lane, Annandale, Los Angeles, Calif. 90042

Original application July 19, 1967, Ser. No. 654,432, now Patent No. 3,574,517, dated Apr. 13, 1971. Divided and this application July 2, 1970, Ser. No. 52,017

Int. Cl. C14c *1/02, 1/06, 1/08*

U.S. Cl. 8—94.16 9 Claims



Hides may be cured and pretanned by: treating raw-hides with a sodium hydroxide solution so as to react the lipid material in order to cause formation of soaps, limited attack on protein material present in the hides, and swelling of the collagen in the hides; adding sodium chloride to the sodium hydroxide solution in order to enable this salt to be taken up from the solution by the hides, causing an increase in the strength of the swollen collagen; dehairing the hides; treating the hides with sodium sulphite solution so as to add strength to the swollen collagen; treating the hides with a mixture of a quaternary ammonium salt, and a calcium salt in order to precipitate any soaps present and to place the ammonium salt within the remaining hide material and to separate fascia tissue from the remaining hide material; and pickling the hides with an acid solution so as to effect a size reduction and strengthening of the swollen collagen. If desired, the hides may be bated prior to being pickled. The so-cured hides have properties which are related to the properties of the ammonium salt. The resulting hides can be further treated in accordance with conventional tanning practices.

3,799,738

FLAME RETARDANT PROCESS FOR CELLULOSICS

George M. Wagner, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Feb. 17, 1972, Ser. No. 227,294

Int. Cl. D06m *13/28, 13/44*

U.S. Cl. 8—181 10 Claims

An improved process for imparting flame retardance to cellulose-containing materials has been devised whereby materials which have been impregnated with a solution having a pH from about 7 to about 9 and a monomeric tris(hydroxymethyl) phosphine content of about 10 to about 40 percent by weight, dried to a moisture content of about 10 to about 20 percent and the monomer polymerized on and in the material by treatment with ammonia, are treated first with gaseous ammonia for about one to less than about five minutes and thereafter with an aqueous solution of ammonia for at least ten but not more than sixty seconds. The monomer is more rapidly polymerized on and in the material by the combined action of gaseous and aqueous ammonia than with gaseous ammonia alone, which results in a more effective and more economical process readily adaptable to high speed commercial textile machinery.

3,799,739

METHOD OF ANALYZING FOR CHOLESTEROL

Charles D. Warburton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed May 22, 1972, Ser. No. 255,476

Int. Cl. G01n *33/16*

U.S. Cl. 23—230 B 14 Claims

Quantitative determination of total cholesterol in body fluids such as blood serum is accomplished by contacting a sample of the fluid with bromine to form brominated derivatives of the cholesterol and cholesterol esters in the fluid, converting the brominated derivatives to the corresponding iodinated derivatives, and measuring the amount of iodine which is liberated upon decomposition of the iodinated derivatives.

3,799,740

CLINICAL COMPETITIVE-BINDING TEST METHODS

Everett K. Mincey, Chesterfield, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

No Drawing. Filed July 12, 1971, Ser. No. 161,882

Int. Cl. A61k *27/04;* G01n *33/16*

U.S. Cl. 23—230 B 6 Claims

An improvement in thyroid function testing provides a direct determination of the Effective Thyroxine Ratio which is a free thyroxine index. Unsaturated thyroxine-binding globulin (TBG) contained in a aliquot of the patient serum is used to compensate for distortions ordinarily introduced by elevated estrogen levels, etc. The principle is applicable to other competitive-binding methods.

3,799,741

PHARMACEUTICAL SCREENING TEST COMPOSITION

Herman Williams, Jr., Tucson, Ariz., assignor to WTC Chemical Corporation

No Drawing. Continuation-in-part of application Ser. No. 165,782, July 15, 1971, which is a continuation of application Ser. No. 699,348, Jan. 22, 1968, now abandoned. This application Nov. 27, 1972, Ser. No. 310,123

Int. Cl. G01n *21/06, 33/16*

U.S. Cl. 23—230 B 13 Claims

A two-part analytical reagent composition for determining the general pharmacological classification of a pharmaceutical preparation or a generally protein-free body fluid obtained from a person suspected of having a systemically active amount of a narcotic, stimulant, depressant, salicylate or hallucinogenic lysergic acid diethylamide. The first reagent comprises a reactant product solution of a major proportion of sulphuric acid together with minor proportions of solutions of formaldehyde, ammonium chloride, arsenic trioxide, lead acetate, and calcium hypochlorite together with minor amounts of

potassium dichromate, pyridine and para-dimethylaminobenzaldehyde and optionally ferric ammonium sulfate or cobalt thiocyanate. The second reagent comprises an aqueous solution of a surfactant, such as an alkyl aryl sulfonate-polyphosphate composition, together with minor amounts of dinitrophenol and formaldehyde solution. Upon the addition of a pharmaceutical substance or a relatively protein-free body fluid, such as urine or filtered blood serum, to the reagents, a characteristic coloration is produced which is qualitatively determinative of the broad pharmacological groupings set forth hereinabove.

799,742

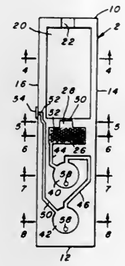
MINIATURIZED INTEGRATED ANALYTICAL TEST CONTAINER

Charles M. Coleman, 958 Washington Road, Pittsburgh, Pa. 15228

Filed Dec. 20, 1971, Ser. No. 209,884

Int. Cl. G01n *33/00, 33/16*

U.S. Cl. 23—253 R 89 Claims



An analytical test container having a reception chamber for receipt of a specimen. First passageway means connecting the container interior with the container exterior. First seal means disposed between the reception chamber and the container exterior. A separation chamber which may be a filtration chamber. Second seal means separating the reception chamber from the separation chamber. A first cuvette and a second cuvette. Conduit means for permitting flow from the separation and/or reaction chamber to the first and second cuvettes. Vent means communicating with at least one cuvette.

The first seal means may be a closure element in the form of an elongated rod having a closure sector adapted to close the first passageway means. The rod may have piercing means for destroying the integrity of the second seal means. The rod may also have specimen measuring and delivering recesses and a venting channel.

The conduit means for permitting flow from the separation chamber or reaction chamber to the first and second cuvettes may involve either sequential filling or parallel filling. Mixing means may be provided in the reception chamber and first and second cuvettes in order to facilitate admixture of the specimen and reagent materials.

Multiple systems for simultaneously running a standard and a test procedure or multiple testing procedures may be employed.

Serial reaction chambers for effecting immunologically based titrations may be provided in a modified form of container structure.

3,799,743

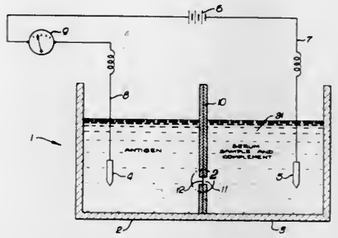
STABLE LYSIS RESPONSIVE LIPID BILAYER

James D. Alexander, 1238 Barry Ave., West Los Angeles, Calif. 90025, and Per Barfort, 765 Oregon Ave., Palo Alto, Calif. 94303

Filed Nov. 22, 1971, Ser. No. 200,835

Int. Cl. B01k *3/10;* G01n *33/16;* G01r *27/02*

U.S. Cl. 23—253 R 24 Claims



Porous support for lysis responsive lipid bilayer enables reliable detection of immune reactants in serum samples by contact of the sample with the bilayer and sensing of lysis response.

3,799,744

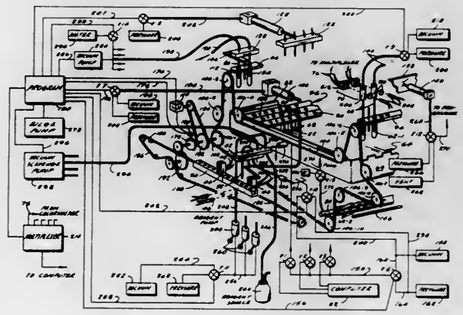
AUTOMATIC CHEMICAL ANALYSIS APPARATUS

Alan Richardson Jones, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 14, 1971, Ser. No. 189,092

Int. Cl. G01n *1/14*

U.S. Cl. 23—253 R 31 Claims



Automatic chemical analysis apparatus including a plurality of sampling heads operable to withdraw samples from sample cups in a sample cup holder, to mix the samples with reagents and then to deposit the samples in specific reaction tubes carried by beams in a bath. The sampling head includes a probe and a valve mechanism. An operating mechanism functions to move the probe and simultaneously operate the valve mechanism. The beams are oriented with respect to the sample cup holders and moved in synchronized relationship with the beams whereby a sensing device can sense and correlate indicia on each holder with tests performed on the samples in the reaction tube in the beam related to that holder. The beams are moved through the bath from an entrance end to an exit end thereof by a ram and are moved into and out of the bath by chains mounted on sprockets. The chains move the beams and tubes from the exit end past a colorimeter station where colorimetric

tests are performed. The results of the tests and the indicia sensed are fed to a computer which processes them and which provides a printout of the results with identification of the source of the sample obtained from the indicia. After the colorimetric tests have been performed, the beams are transported by the chains underneath the bath to the entrance end during which transporting the tubes are emptied, washed, rinsed and dried.

3,799,745

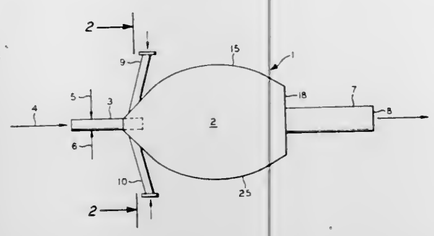
CARBON BLACK REACTOR

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 30, 1971, Ser. No. 158,339

Int. Cl. C01b *49/00*

U.S. Cl. 23—259.5 **2 Claims**



A carbon black reactor having a minimum cross-sectional area positioned upstream of the locus of discharge from the hydrocarbon feed inlet means, the walls of the reactor diverging outwardly from that locus to a vertically upstanding wall terminating the zone.

3,799,746

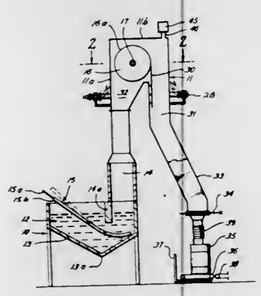
APPARATUS FOR MANUFACTURING ANHYDROUS ALUMINUM CHLORIDE

Harris Underwood, Jr., P.O. Box 352, La Porte, Tex. 77571

Continuation of application Ser. No. 33,304, Apr. 30, 1970, which is a continuation-in-part of application Ser. No. 703,377, Feb. 6, 1968, both now abandoned. This application Oct. 29, 1971, Ser. No. 193,688

Int. Cl. C01f *7/58*

U.S. Cl. 23—263 **1 Claim**



A reactor tank in which a stream of chlorine gas is injected into a molten pool of aluminum having a temperature between 1300° F. and 1500° F. to produce gaseous aluminum chloride. A conduit from said tank to a condenser in which the gas is condensed on the side of a rotating cylinder and scraped therefrom by a knife or scraper located on the downstream side of the cylinder. Only the cylinder is maintained at a temperature below the temperature at which the aluminum chloride condenses.

3,799,747

FUEL BURNER SYSTEM FOR A FLUIDIZED BED

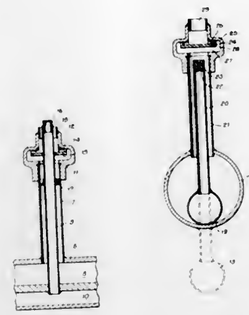
Paul Schmalfeld, Bad Homburg, and Roland Rammler, Frankfurt am Main, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of abandoned application Ser. No. 818,530, Apr. 23, 1969. This application Apr. 13, 1971, Ser. No. 133,716

Claims priority, application Germany, Apr. 27, 1968, P 17 58 244.4

Int. Cl. B01j *9/18;* **F27b** *15/14*

U.S. Cl. 23—277 R **4 Claims**



A plurality of upwardly extending burner nozzles are horizontally spaced and form a two-dimensional substantially horizontal array and each has at least one fluid outlet opening. An air distributor is disposed below said array and has a wall. Air supply conduits connect said air distributor to each of said burner nozzles. A fuel distributor is connected to each of said burner nozzles by fuel supply conduits extending through said wall. The fluid outlet openings are disposed in a reactor chamber defined by a reactor structure of a fuel-burning reactor for carrying out a reaction in a fluidized bed. Said reactor chamber extends over said array.

3,799,748

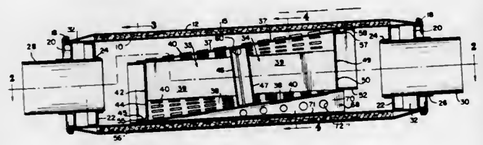
CATALYTIC CONVERTER

George E. Scheitlin and Joseph B. Collins, Columbus, Ind., and Michael W. Lambert, St. Louis, Mo., assignors to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of abandoned application Ser. No. 141,624, May 10, 1971. This application Dec. 1, 1972, Ser. No. 311,237

Int. Cl. F01n *3/14;* **B01j** *9/04*

U.S. Cl. 23—288 F **4 Claims**



A catalytic converter for removing noxious pollutants from an exhaust gas stream having a pair of conversion chambers mounted therein between its inlet and outlet. The conversion chambers are slidably interconnected at their adjacent ends and are rigidly connected to the converter at their opposed ends whereby they are free to expand and contract in response to temperature changes.

3,799,749

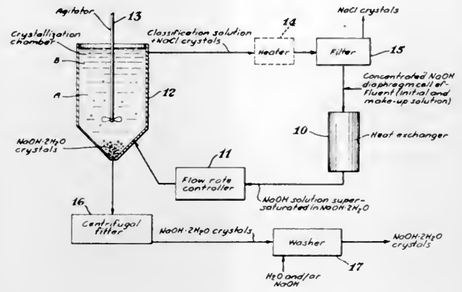
METHOD OF PURIFYING NaOH SOLUTIONS

John R. Moyer, Midland, Mich., and Marshall P. Neipert, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 876,698, Nov. 14, 1969. This application July 19, 1971, Ser. No. 163,888

Int. Cl. B01d *9/02*

U.S. Cl. 23—302 **16 Claims**



A method of removing impurities from NaOH solutions which comprises: cooling the NaOH solution to supersaturate with respect to a NaOH hydrate; forming a slurry of NaOH hydrate and impurity crystals from the supersaturated solution; countercurrently contacting the slurry with a classification solution such that the impurity crystals are carried with the classification solution, leaving the NaOH hydrate crystals behind; and after removal of the impurity crystals, recycling the solution with make up NaOH solution to the cooling stage. The NaOH hydrate crystals so produced can be washed and melted to produce high purity NaOH.

3,799,750

CAN STOCK WITH DIFFERENTIAL PROTECTIVE COATINGS

James E. Bird, Franklin Township, Westmoreland County, and Paul R. Carter, Monroeville, Pa., assignors to United States Steel Corporation

No Drawing. Application Aug. 27, 1971, Ser. No. 175,728, now Patent No. 3,749,651, dated July 31, 1973, which is a continuation-in-part of abandoned application Ser. No. 840,519, July 9, 1969. Divided and this application Nov. 6, 1972, Ser. No. 303,888

Int. Cl. B32b *15/04*

U.S. Cl. 29—195 T **2 Claims**

Differentially treated differential tinplate having a trivalent chromium oxide coating thereon to the extent that about 1.00 to 1.50 mg. of chromium per square foot is provided on the heavily tinned side and about 0.40 to 0.80 mg. chromium per square foot is provided on the reverse lightly tinned side. The process involves the cathodic electrolysis of the differential tinplate in a dilute sodium-dichromate solution having a pH of from 3.5 to 5.5 at a temperature within the range 160 to 200° F. The heavily tinned side thereof is subjected to an electrical current of 100 to 170 coulombs per square foot while the reverse side is subjected to not more than 45 coulombs per square foot, at current densities within the range 10 to 170 amperes per square foot.

3,799,751

MOTOR FUEL ADDITIVES

Donald R. Lachowicz and George S. Saines, Fishkill, Malvin J. Michelson, Poughkeepsie, and George W. Eckert, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 19, 1972, Ser. No. 255,122

Int. Cl. C10l *1/22*

U.S. Cl. 44—62 **7 Claims**

Fuel compositions, and particularly motor fuel compositions, to which are added minor amounts of nitroketonized olefin polymers and amine salts thereof for the purpose of providing such properties as rust protection, and carburetor de-icing.

3,799,752

APPARATUS FOR TEMPERING SHEETS OF GLASS, IN PARTICULAR, SHEETS OF CURVED FORM

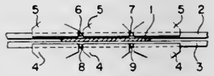
Jean Paul Robert Cheron, Ribecourt, France, assignor to Saint-Gobain, Neuilly-sur-Seine, France

Filed June 27, 1972, Ser. No. 266,687

Claims priority, application France, July 2, 1971, 24,220

Int. Cl. C03b *27/00*

U.S. Cl. 65—351 **15 Claims**



Method and apparatus for tempering sheet glass by jets of coolant directed against the surfaces thereof. In particular the invention is concerned with the tempering of a sheet of glass moving continuously or intermittently in the direction of its length, and shaped to a selected radius of curvature in planes normal to that direction, by passing on a series of shaping rollers, having curved or arcuate central portions. After that shaping the ribbon passes directly to and between upper and lower series of curved rollers associated with nozzles from which cooling fluid is blown to impinge upon the two surfaces of the ribbon. Each two consecutive rollers, both upper and lower, has arranged between them a set of transversely extending nozzle elements which are articulated together and so adjustable that the relation of each element to the contiguous section of its rollers, remains essentially constant for all pivotal or rotational adjustments of the curved rollers.

3,799,753

CONDITIONING GLASS BATH ADJACENT TO A VERTICAL SHEET DRAW

Claude Brichard, Moustier-sur-Sambre, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed July 14, 1972, Ser. No. 271,762

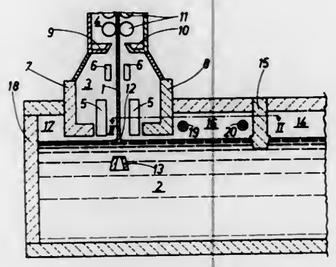
Claims priority, application Luxembourg, Aug. 13, 1971, 63,714; Aug. 20, 1971, 63,755

Int. Cl. C03b *15/04*

U.S. Cl. 65—95 **41 Claims**

Method and apparatus for improving the quality of a drawn flat glass ribbon by providing a mixing action on the gases constituting the atmosphere over a substantial

part of the width of the horizontal path through which molten glass flows before it is continuously drawn. This provides a mixing together of gases which normally oc-



cupy zones well spaced apart in a widthwise direction. The apparatus for producing the mixing action of the gases can be gas ejectors, propellers, or a tube having slots or orifices through which gas can be propelled.

3,799,754

METHOD FOR PRODUCING GLASS PRECURSOR COMPOSITIONS AND GLASS COMPOSITIONS THEREFROM

Ian M. Thomas, Temperance, Mich., assignor to Owens-Illinois, Inc.

No Drawing. Filed Nov. 27, 1972, Ser. No. 309,946

Int. Cl. C03b *5/16;* **C08h** *1/34*

U.S. Cl. 65—134 **23 Claims**

An improved process for preparing inorganic, oxidic, glass precursor compositions corresponding to a glass consisting essentially of silica, boric oxide, lead oxide, and, optionally, alumina or zinc oxide or mixtures of alumina and zinc oxide, wherein the glass has a sintering temperature in the range of about 300° C. to about 600° C. and melts to a uniform glass product at a temperature of less than about 860° C. by a process wherein a clear solution of a further hydrolyzable metallosiloxane is provided and there is incorporated therein lead oxide and, when present, zinc oxide, to form in the clear solution a uniform dispersion of these oxides, after which the system is further hydrolyzed so as to form a uniform gel and the gel is appropriately heated and calcined to produce substantially a carbon-free, inorganic glass precursor which, upon further heating, forms a colorless glass.

3,799,755

PROCESS FOR THE MANUFACTURE OF A PLANT SUBSTRATE BODY

David Rack, Schwarzgrabenweg 17, Salzburg, Austria

No Drawing. Continuation-in-part of abandoned application Ser. No. 216,225, Jan. 7, 1972. This application Apr. 25, 1973, Ser. No. 354,230

Claims priority, application Austria, Jan. 12, 1971, A 197/71

Int. Cl. C05f *11/02*

U.S. Cl. 71—24 **6 Claims**

Peat and/or soil is dried to a maximum water content of 8–14%, by weight, and the dried peat and/or soil is mixed with a liquid composition of reactants forming an elastic polyurethane foam. The resultant foam contains 20% to 60%, by weight, of the peat and/or soil as an effective plant growth medium supporting the root structure of a plant placed in the substrate foam.

3,799,756

SUSTAINED ACTION NITROGEN FERTILIZER

Rudolf Keller, Ziegelhausen, and Edmund Hoffmann and Walter Neugebauer, Constance, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 827,470, May 9, 1969. This application Jan. 26, 1972, Ser. No. 221,043

Claims priority, application Germany, May 11, 1968, P 17 67 452.1

Int. Cl. C05f *11/00*

U.S. Cl. 71—27 **7 Claims**

Application to soil of a fertilizing agent which comprises nitrilotriacetonitrile as substantially the sole source of nitrogen in an amount to provide between 0.001 and 1.5 tons of elemental nitrogen per hectare.

3,799,757

ARYLGLYOXYLONITRILEOXIMES AS PLANT REGULANTS

William D. Dixon, Kirkwood, and Maureen E. Becker, Clayton, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,984

Int. Cl. A01n *9/20*

U.S. Cl. 71—76 **15 Claims**

2-arylglyoxylonitrile, 2-oximes are useful as plant regulants to modify the normal sequential development of treated plants to agricultural maturity.

3,799,758

N - PHOSPHONOMETHYL-GLYCINE PHYTOTOXICANT COMPOSITIONS

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 123,057, Mar. 10, 1971. This application Aug. 9, 1971, Ser. No. 170,385

Int. Cl. A01n *9/36*

U.S. Cl. 71—86 **15 Claims**

N-phosphonomethylglycine and novel derivatives thereof useful as phytotoxicants or herbicides.

3,799,759

ARYL THIOUREA FRUIT ABSCISSION METHOD

Henry Martin, Basel, Dieter Duerr, Bottmingen, and Adolf Hubele, Riehen, Switzerland, Georg Pissiotas, Loerrach, Germany, and Otto Rohr, Therwil, and Jacques Rufener, Bottmingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

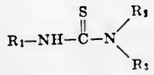
No Drawing. Filed Nov. 17, 1971, Ser. No. 199,804

Claims priority, application Switzerland, Nov. 19, 1970, 17,187/70

Int. Cl. A01n *9/12*

U.S. Cl. 71—99 **4 Claims**

The invention is concerned with a process and an agent for the promotion of fruit abscission, particularly for the facilitating of the fall of the fruit, and of the manual and mechanical harvesting of fruits and berries, said process comprising treating the fruit-bearing trees and bushes, shortly before the ripening of the fruit, with an agent containing as active substance a thiourea derivative of Formula I:



(I)

wherein

R_1 represents an unsubstituted phenyl radical, or a phenyl radical mono- or polysubstituted by lower alkyl or alkoxy, by halogen, haloalkyl and/or optionally chlorinated phenoxy, the allyl, benzyl, or phenethyl radical, the norbornenyl radical, or a 4,7-methanoindan-5-yl radical at least partially hydrogenated,

R_2 represents hydrogen, a lower alkyl or alkoxy radical, or the allyl radical, and

R_3 represents hydrogen, an optionally substituted phenyl radical, a lower alkyl, alkenyl, chloroalkenyl or dialkylamino radical, or the furfuryl radical, or

R_2 and R_3 together can also form an alkylene bridge.

3,799,760

METHOD FOR INHIBITING PLANT GROWTH

John A. Stephens, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 266,513, Mar. 20, 1963, which is a continuation-in-part of application Ser. No. 256,840, Feb. 7, 1963, both now abandoned. This application May 3, 1966, Ser. No. 547,376

Int. Cl. A01n *9/14*

U.S. Cl. 71—103 **13 Claims**

This invention relates to methods for controlling and protecting plant life by the application of an N-arylsulfonyl carbamate ester, or the amine or metal salt thereof.

3,799,761

PRODUCTION OF FERROALLOYS BY MIXING IN THE EXCLUSION OF AIR

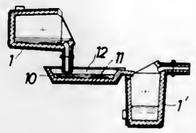
Friedrich Breuer, Eschweiler, Germany, assignor to Gesellschaft fur Elektrometallurgie m.b.H., Dusseldorf, Germany

Filed Sept. 3, 1971, Ser. No. 177,694

Claims priority, application Germany, Sept. 5, 1970, P 20 44 143.4

Int. Cl. C21c *5/52*

U.S. Cl. 75—13 **9 Claims**



Ferroalloys of the metals chromium, manganese, tantalum, niobium and/or vanadium with a nitrogen content of less than 0.015% may be obtained by reacting a molten mixture of raw stock and lime with metal-containing reducing agents while pouring the reaction mixture from one ladle to another in the absence of air, e.g. in the Perrin process, by the use of a ladle having a closed spout attached to the rim of the ladle of length at least equal to ¼ of the height of the said ladle whereby the liquid metal alloy is poured from the said ladle into liquid slag in a like ladle.

3,799,762

SLAG CONDITIONER FOR IRON AND STEEL PROCESSES

Boyd E. Cass, Ligonier, Pa., assignor to Carad, Inc.

No Drawing. Filed May 17, 1971, Ser. No. 144,228

Int. Cl. C21c *7/00;* **C22b** *9/10*

U.S. Cl. 75—55 **10 Claims**

A slag conditioner for use in iron and steel processes to condition the slag and facilitate the dissolution of lime in the slag comprising essentially constituents of calcium fluoride, and manganese and iron in the form of an oxide or carbonate. Fines of the constituents are briquetted with a binder which quickly yields its binding properties upon subjection to high temperatures and an addition of no more than approximately twenty percent by weight of an oxide of boron, while not necessary, may be made to further enhance the characteristics thereof. The manganese is preferably supplied from waste or by-product dust from the manufacturer of ferromanganese.

3,799,763

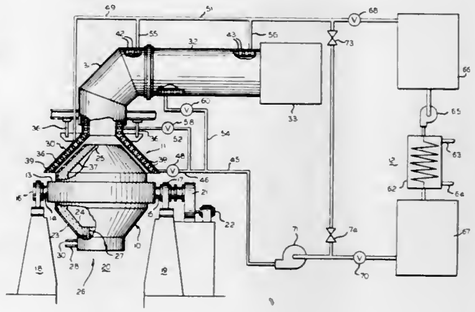
METHOD AND APPARATUS FOR COOLING THE EXHAUST GAS SYSTEM OF METALLURGICAL VESSELS

Alexander T. Dortenzo, Pittsburgh, Pa., assignor to Pennsylvania Engineering Corporation

Filed May 12, 1972, Ser. No. 252,917

Int. Cl. C21c *5/28, 5/40*

U.S. Cl. 75—60 **5 Claims**



A method and apparatus for cooling the gas exhaust system of metallurgical vessels wherein heat is generated during only a portion of the metal treatment cycle and including first and second coolant reservoirs each having a capacity to provide sufficient cooling fluid during periods of heat generation to cool the vessel exhaust system, and a heat exchanger disposed between said reservoirs and having sufficient capacity to transfer the average amount of heat generated by the vessel during a metal treatment cycle.

3,799,764

ROASTING OF COPPER SULFIDE CONCENTRATES COMBINED WITH SOLID STATE SEGREGATION REDUCTION TO RECOVER COPPER

William R. Ople, Holmdel, and Lamar D. Coffin, Edison, N.J., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,244

Int. Cl. C22b *5/10, 15/00*

U.S. Cl. 75—72 **19 Claims**

A method of upgrading copper recovery from copper-iron sulfide ore containing up to about 5% copper is provided comprising forming a sulfide concentrate containing at least about 15% copper from said ore, dead roasting the sulfide concentrate to produce a calcined concentrate in which the sulfur does not exceed about 1%, preferably does not exceed about 0.5% sulfur, subjecting the calcined concentrate to a controlled-reduction roast at an elevated reduction temperature with a reducing agent in the presence of an alkali metal halide, preferably a chloride such as NaCl, whereby copper oxide is selectively reduced, leaving the iron substantially all in the iron oxide form, the reduced copper metal being in a form recoverable by conventional separation procedures, such as mechanical or chemical methods.

3,799,765

FREE-MACHINING STAINLESS STEEL

William C. Clarke, Jr., Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio

No Drawing. Filed Feb. 29, 1972, Ser. No. 230,526

Int. Cl. C22c *39/14*

U.S. Cl. 75—126 C **7 Claims**

Straight-chromium stainless steel is characterized by a combination of ready machinability and good corrosion-

resistance. In addition to chromium of about 11.5% to 18%, the steel contains critical amounts of the three ingredients phosphorus, sulphur and zirconium, namely, about 0.04% to 0.12% phosphorus, about 0.20% to 0.50% sulphur and about 0.10% to 0.40% zirconium. Conveniently, the steel is melted in the electric arc furnace, and for best results, teeming is effected in a protective atmosphere.

3,799,766

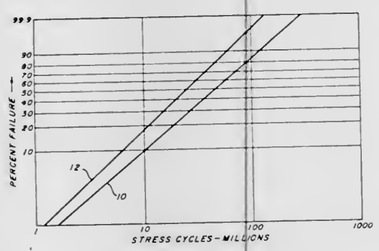
LOW-COST HYPEREUTECTOID BEARING STEEL CONTAINING MOLYBDENUM AND CHROMIUM

Charles P. Weigel, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Original application May 26, 1971, Ser. No. 146,911, now Patent No. 3,704,183, dated Nov. 28, 1972. Divided and this application July 10, 1972, Ser. No. 270,492

Int. Cl. C22c *39/14*

U.S. Cl. 75—126 C **3 Claims**



A low-cost hypereutectoid bearing steel having characteristics equal to or superior to higher priced steels of this type and containing as essential alloying additions .80–1.10% carbon, .50–1.00% manganese, .20–.60% chromium and .05–.25% molybdenum. A steel of this type, usually in the form of wire, rod, bar, forgings, rings or tubing, is annealed at a maximum temperature of 1400° F. for thirteen hours to produce an annealed microstructure comprising spheroidized carbides in a matrix of ferrite. After forming into bearing races or balls, the formed product is quenched from 1550° F. and thereafter tempered to produce a steel having a Rockwell C hardness of about 60 or greater and excellent fatigue strength.

3,799,767

PROCESS AND ALLOY FOR MAKING DUCTILE IRON

Andrew B. Malizio, Delran, and Martin A. Rice, Florence, N.J., and Harry F. Brooks, Levittown, Pa., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Oct. 15, 1971, Ser. No. 189,670

Int. Cl. C22c *37/02*

U.S. Cl. 75—130 A **8 Claims**

A process for producing ductile iron comprising adding to a bath of low-sulfur cast iron, a material containing at least two graphite-nodularizing elements. The additive material contains each nodularizing element in relatively low concentrations so that after dissolution in the bath the concentration of nodularizing elements remaining is sufficient to produce the desired structure, but the concentration of any one element is, of itself, insufficient to produce nodular (spheroidal) graphite.

3,799,768

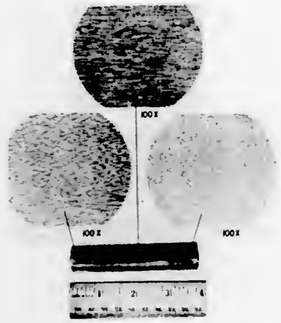
METHOD OF MAKING MONOCARBIDE FIBER-REINFORCED COBALT-BASE SUPERALLOY COMPOSITE EUTECTIC CASTINGS

Lemuel A. Tarshis, Latham, and Edward R. Buchanan, Burnt Hills, N.Y., assignors to General Electric Company

Filed Mar. 1, 1972, Ser. No. 230,927

Int. Cl. C22c *1/02*

U.S. Cl. 75—171 **5 Claims**



A high performance eutectic casting comprised of a cobalt-base superalloy matrix reinforced with 5 to 15 volume percent of uniformly aligned fibers of a metal monocarbide extending continuously entirely through the casting is made by directionally solidifying a melt containing the constituents of the monocarbide in amounts corresponding to the monocarbide content of the eutectic. The solidification rate is at least ¼"/hour.

3,799,769

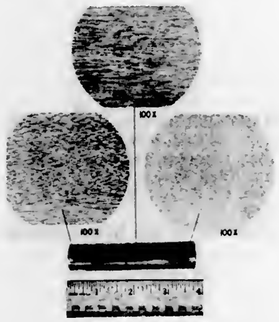
METHOD OF MAKING MONOCARBIDE FIBER-REINFORCED NICKEL-BASE SUPERALLOY COMPOSITE EUTECTIC CASTINGS

Lemuel A. Tarshis, Latham, and Edward R. Buchanan, Burnt Hills, N.Y., assignors to General Electric Company

Filed Mar. 1, 1972, Ser. No. 230,926

Int. Cl. C22c *1/02*

U.S. Cl. 75—171 **5 Claims**



A high performance eutectic casting comprised of a nickel-base superalloy matrix reinforced with 5 to 15 volume percent of uniformly aligned fibers of a metal monocarbide extending continuously entirely through the casting is made by directionally solidifying a melt containing the constituents of the monocarbide in amounts corresponding to the monocarbide content of the eutectic. The solidification rate is at least ¼"/hour.

3,799,770

ELECTRICAL CONTACT MATERIAL CONTAINING SILVER, CADMIUM OXIDE, TIN AND COBALT

Takeo Harada, Mishima-shi, and Takeshi Moriya and Rikichi Wakasa, Susonomachi, Shizuoka-ken, Japan, assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Dec. 6, 1971, Ser. No. 205,249

Claims priority, application Japan, Dec. 7, 1970, 45/107,588

Int. Cl. C22c *5/00*

U.S. Cl. 75—173 R **15 Claims**

Electrical contact material is disclosed containing silver, cadmium oxide, tin and cobalt having a microstructure of cadmium oxide particles dispersed in a silver matrix which are very fine and fibrous. The fibrous structure generally occurs normal to the oxidized surface.

3,799,771

ELECTRICAL CONTACT MATERIAL CONTAINING SILVER, CADMIUM OXIDE, TIN AND NICKEL

Takeo Harada, Mishima, Japan, assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Dec. 6, 1971, Ser. No. 205,255

Int. Cl. C22c *5/00*

U.S. Cl. 75—178 A **15 Claims**

Electrical contact material is disclosed containing silver, cadmium oxide, tin and nickel having a microstructure of cadmium oxide particles dispersed in a silver matrix which are fine and fibrous. The fibrous structure generally occurs normal to the oxidized surface.

3,799,772

SILVER-CADMIUM OXIDE TYPE MATERIAL

Edward J. Zdanuk, deceased, by Theresa R. Zdanuk, administratrix, Burlington, Richard H. Krock, Weston, and Yuan Shou Shen, Reading, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Feb. 4, 1972, Ser. No. 223,525

Int. Cl. C22c *5/00*

U.S. Cl. 75—173 A **15 Claims**

Improved properties including reduced arc erosion rate are obtained in silver-cadmium oxide materials by adding at least one additive selected from the group consisting of niobium and manganese metals in an amount from 0.001 up to 5%, and optionally tin.

3,799,773

ELECTROPHOTOGRAPHIC PROCESS EMPLOYING A PHOTOCHROMIC COMPOUND AND TRANSPARENT TONER

Syu Watarai, Hisatake Ono, Chiaki Osada, Satoru Honjo, and Yasuo Tamai, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,121

Claims priority, application Japan, Jan. 19, 1971, 46/1,322

Int. Cl. G03g *13/06*

U.S. Cl. 96—1 R **17 Claims**

A process for the formation of toner images where an electrostatical image is formed on an electrophotographic sensitive layer containing a photochromic compound and developed with a toner to form a toner image, the toner controlling the coloring or discoloring or the color shade of the photochromic compound in the sensitive layer.

3,799,774

MULTICOLOR ELECTROPHOTOGRAPHIC MASKING PROCESS

Seiji Matsumoto, Asaka, Japan, assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 86,499, Nov. 3, 1970. This application Nov. 13, 1972, Ser. No. 305,748

Claims priority, application Japan, Nov. 28, 1969, 44/95,988

Int. Cl. G03g *13/00, 13/22*

U.S. Cl. 96—1.2 **4 Claims**

A color masking technique suitable for use in a xerographic subtractive color process. A first subtractive toner image, developed upon a photosensitive plate, is utilized to optically mask the plate in a manner whereby the latent electrostatic image representative of the next subtractive toner to be applied to the plate is electrically corrected to compensate for the unwanted characteristic of the first toner to absorb light energy within the absorptive domain of the second toner.

3,799,775

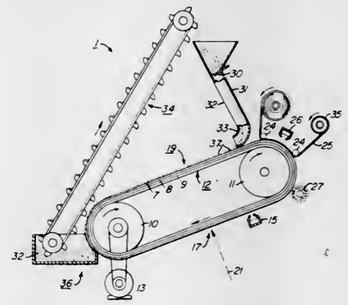
XEROGRAPHIC SYSTEM

Nicholas L. Petruzzella, Columbus, Ohio, assignor to Xerox Corporation, Rochester, N.Y.

Continuation of abandoned application Ser. No. 669,477, Sept. 21, 1967. This application July 13, 1972, Ser. No. 271,440

Int. Cl. G03g *5/00*

U.S. Cl. 96—1.5 **8 Claims**



An electrically conductive yet electronic charge carrier blocking interface comprising graphite between a support base and photoconductive insulating material of a xerographic plate, and a process of making and using the plate.

3,799,776

METHOD AND MATERIALS FOR PHOTOGRAPHIC COLOR IMAGING

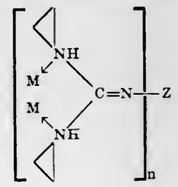
James E. Young, 50 Larchwood Drive, Pittsford, N.Y. 14534

Continuation-in-part of abandoned application Ser. No. 52,820, July 7, 1970. This application May 19, 1972, Ser. No. 254,932

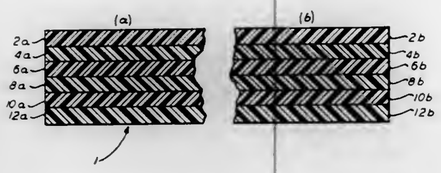
Int. Cl. G03c *1/40, 1/72, 7/00*

U.S. Cl. 96—2 **14 Claims**

Color imaging methodology and materials are disclosed utilizing cyanine dye coordinate structures of the type:



where M is a heavy metal ion and n is an integer, said structure being chosen to be light sensitive to a selected color component of a light pattern to be imaged, where



Z is a dye coupler for the developer-color former fragment ΔNH and which when coupled with said fragment yields a dye having a desired color relationship to said selected color component.

3,799,777

MICRO-MINIATURE ELECTRONIC COMPONENTS BY DOUBLE REJECTION

Terence W. O'Keeffe, Pittsburgh, and Jerome R. Morris, Trafford, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 20, 1972, Ser. No. 264,662

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.2 **10 Claims**

A micro-miniature electronic component and particularly an electromask of high resolution is made by defining, preferably with an electron beam, a component pattern in a radiation sensitive soluble layer preferably directly laid on a substrate surface, and thereafter transferring the pattern to a component layer on the substrate surface by sequentially rejecting and removing: (i) irradiated or unirradiated portions of the radiation sensitive layer to leave a radiation sensitive layer in a first defined pattern, (ii) portions of an etchant resistant layer overlaid on the radiation sensitive layer in the first defined pattern, and (iii) portions of first etchable and second etchant resistant layer in a pedestal cross-section and a second defined pattern, i.e. the negative of first defined pattern, overlaid directly on the substrate. The double rejection techniques leaves an etchant resistant component layer in the component pattern or its negative on the substrate.

3,799,778

FILM UNIT DIVERTER BAR WITH COLLAPSIBLE SPACER MEANS

Henry J. Bartnick, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1972, Ser. No. 268,974

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 C **10 Claims**

A stiffening diverter bar attached to a separable pod assembly of a self-processable film unit is provided with collapsible spacer means that increase the effective thickness of the bar to improve the spacing and manipulability of a plurality of such film units supplied in a cartridge for sequential exposure and processing. The processing is initiated by advancing the exposed film unit through a nip defined by a pair of juxtaposed pressure members, which collapse the spacer means and thereby reduce the effective thickness of the bar so that the spacer means do not interfere with the remainder of the processing operation or with efficient separation and storage of the exhausted pod assembly.

3,799,779

LIGHT-DESENSITIZABLE IMAGING SHEET

Malcolm B. Burleigh, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,215

Int. Cl. G03c *1/92*

U.S. Cl. 96—82 **29 Claims**

Imaging sheets are provided comprising a light-sensitive layer including (1) film-forming binder, (2) a reactant which is reactive with a co-reactant to provide a visible change and is rendered non-reactive with said co-reactant upon desensitization with excited oxygen, and (3) a polycyclic, aromatic, oxygen-sensitizing dye.

3,799,780

PROCESS FOR OBTAINING A HIGH CONTRAST SILVER HALIDE PHOTOGRAPHIC IMAGE

Tsuneo Suga, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd.

No Drawing. Filed May 10, 1972, Ser. No. 252,014

Claims priority, application Japan, May 12, 1971, 46/31,141

Int. Cl. G03c *5/30*

U.S. Cl. 96—66 R **7 Claims**

Process for obtaining a high contrast silver halide photographic image, wherein, after imagewise exposure to light, a light-sensitive silver halide photographic material having a silver halide emulsion layer is treated with a lith-type alkali developer containing hydroquinone as a developing agent, said developer further comprising a thiocyanate compound capable of liberating thiocyanate ion and not more than 0.004 mole of potassium bromide per liter of the developer.

3,799,781

SYNTHETIC SILVER HALIDE EMULSION BINDER

Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Dec. 14, 1972, Ser. No. 315,083

Int. Cl. G03c *1/04*

U.S. Cl. 96—113 **28 Claims**

A photosensitive silver halide emulsion wherein the emulsion binder comprises a vinyl aminoalkyl ether polymer or copolymer.

3,799,782

SYNTHETIC SILVER HALIDE EMULSION BINDER

Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed Dec. 14, 1972, Ser. No. 315,089

Int. Cl. G03c *1/04*

U.S. Cl. 96—113 **21 Claims**

A photosensitive silver halide emulsion wherein the emulsion binder comprises a graft copolymer of a vinyl aminoalkyl ether monomer on a polyhydroxy-substituted polymer.

3,799,783

SILVER HALIDE EMULSION CONTAINING SENSITIZING DYE COMBINATION

Ruth Linda Hill, Carlisle, and Alan E. Rosenoff, Boston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1972, Ser. No. 214,745

Int. Cl. G03c *1/14*

U.S. Cl. 96—124 **11 Claims**

A film unit is disclosed wherein a photosensitive silver halide emulsion is given improved green sensitivity by spectrally sensitizing said emulsion with a combination of unsymmetrical 2'-cyanine and benzimidazolocarbocyanine dyes.

3,799,784

ULTRASONIC DELAY LINE GLASS

Syozo Takeuchi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of abandoned application Ser. No. 86,381, Nov. 2, 1970. This application Aug. 14, 1972, Ser. No. 280,299

Claims priority, application Japan, Oct. 31, 1969, 44/87,347

Int. Cl. C03c *3/08, 3/10, 3/30*

U.S. Cl. 106—53 **2 Claims**

An ultrasonic solid delay line glass having the composition, in mole percent, consisting of SiO_2 54 to 65%; B_2O_3 17 to 28%; $SiO_2+B_2O_3$ 79 to 85%; Al_2O_3 3 to 6%; R_2O 3 to 10%; and PbO 6 to 13%, and having a low temperature coefficient of delay time at about ordinary temperatures, in which said R_2O may be substituted by at least one metal oxide selected from the group consisting of CaO and MgO, such that the composition still contains 3% R_2O and in which said PbO may be substituted by at least one metal oxide selected from the group consisting of Bi_2O_3, ZrO_2 and BaO, in an amount of 0 to 8%, 0 to 4% and 0 to 6%, such that the composition still contains 5% PbO, and R represents at least one alkali metal is disclosed.

3,799,785

COLORED CEMENT

Theodore F. Tanner, Richardson, Tex., assignor to General Portland Cement Co., Dallas, Tex.

No Drawing. Continuation-in-part of application Ser. No. 51,361, June 30, 1970, now Patent No. 3,667,976, dated June 6, 1972. This application Aug. 19, 1971, Ser. No. 173,256

The portion of the term of the patent subsequent to June 6, 1989, has been disclaimed

Int. Cl. C04b *7/10*

U.S. Cl. 106—101 **10 Claims**

An improved portland cement is provided by burning a mixture of argillaceous and calcareous materials with a color-enhancing amount of metal oxide in a burning zone of a kiln and thereafter rapidly quenching the resulting clinker from a temperature above about 2600° F. to effect a very rapid cooling thereof. It is generally preferred that the clinker be quenched from a temperature of between 2650° F. to 2850° F. at a very rapid rate such as in a water quench zone.

3,799,786

CROSSLINKABLE POLYMER COMPOSITIONS UTILIZING N-HETEROCYCLIC COMPOUNDS WITH CLEAVABLE OXY SUBSTITUENTS

Philip W. Jenkins, Donald W. Heseltine, and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Application Mar. 18, 1971, Ser. No. 125,834, now Patent No. 3,699,025, dated Oct. 17, 1972, which is a division of application Ser. No. 766,288, Oct. 9, 1968, now Patent No. 3,615,453, dated Oct. 26, 1971. Divided and this application May 17, 1972, Ser. No. 254,277

Int. Cl. G03c *5/30, 1/06;* **C09d** *3/04*

U.S. Cl. 106—125 **15 Claims**

Energy-sensitive compounds containing a heterocyclic nitrogen atom substituted with an —OR group are cross-linking agents for polymers having hardenable groups.

3,799,787

ADMIXTURES FOR FILLING NATURAL AND ARTIFICIAL SUBTERRANEAN VOIDS

William A. Davis, Kittanning, Pa., assignor to Michael L. Vongrey, Jr., Kittanning, Pa.

No Drawing. Original application Aug. 19, 1969, Ser. No. 851,457. Divided and this application Oct. 25, 1972, Ser. No. 300,870

Int. Cl. E02d *3/12;* **C09k** *3/00*

U.S. Cl. 106—287 SS **17 Claims**

The back filling of natural and artificial subterranean voids for purposes of surface subsidence control and acid entrained water drainage control coming from such voids with a fluid formed admixture of a cementitious nature which solidifies upon setting in the void, the rate of solidification controlled by the amount of hydraulic cement or silicic acid added to the admixture. In the situation where the grout is employed also for control of acid entrained water drainage, ingredients are added to reduce the acid content to a by-product which is placed in colloidal suspension in a gelatinous material in the admixture due to fermentation of an activating agent with a fermenting agent of vegetable material and eliminate further formation of acid from subterranean potentially formable acid bearing strata to thereby re-establish the water table as well as providing safe palatable water.

Admixtures containing natural elements are provided which form a hydrating supporting mass. When the mass solidifies, it possesses a straight porous nature.

In the case of admixtures possessing a fermentation action, there is a leavening action causing the mass when placed in a subterranean void, to bloat and be expansive in nature to completely fill the area of the void.

3,799,788

CARBON BLACK PIGMENTS

Merrill E. Jordan, Walpole, William G. Burbine, Whitman, and Frank R. Williams, Quincy, Mass., assignors to Cabot Corporation, Boston, Mass.

No Drawing. Filed Apr. 2, 1973, Ser. No. 346,959

Int. Cl. C08h *17/08*

U.S. Cl. 106—307 **9 Claims**

A new and novel class of carbon black pigments having well-defined properties which are suitable for use in special black applications and are particularly useful in the preparation of reinforced rubber systems.

3,799,789

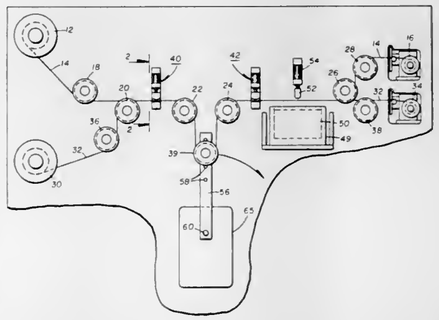
METHOD OF TINNING WIRE

Jacques D. Pierre-Louis, Chicago, and Donald K. Sandmore, Oak Lawn, Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,051

Int. Cl. C23c *1/04*

U.S. Cl. 117—4 **9 Claims**



Equal lengths of a continuous supply of wire are incrementally advanced across a supply of molten solder. During the dwell between each incremental advance of the wire, a portion of each successive advanced length of wire is immersed into the solder to form a solder coating, or tinning, thereon. The continuous length of wire, having a plurality of solder coated portions with non-solder coated sections therebetween, is then severed at the center of each of its solder coated portions to form a plurality of wires having solder coated ends with non-solder coated sections therebetween.

3,799,790

METAL CARBIDE SPHERULES ENCAPSULATED WITHIN A PYROLYTIC CARBON SHELL

David Arthur Schulz, Fairview Park, Ohio, and Charles Lamar Turner, Cornwell Heights, Pa., granted to the United States Atomic Energy Commission under the provisions of 42 U.S.C. 2182

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,209

Int. Cl. B44d *1/02;* **G21c** *3/20*

U.S. Cl. 117—37 R **16 Claims**

A process for producing nuclear fuel particles having a fissionable metal carbide spherule encapsulated within a protective pyrolytic carbon shell having an inner diameter greater than the outer diameter of the enclosed spherule which comprises depositing a layer of aluminum oxide on a fissionable metal carbide spherule, pyrolyzing a hydrocarbon gas and depositing the pyrolytic carbon thereby produced so as to form a substantially uniform porous coating on the aluminum oxide layer, and then heating the coated particle so as to volatilize and diffuse the aluminum oxide layer through the porous carbon coating, leaving a void between such coating and the metal carbide spherule. After the aluminum oxide layer has been diffused through the porous pyrolytic carbon coating, a denser high-strength protective coating of pyrolytic carbon can be applied to the spheroid.

3,799,791

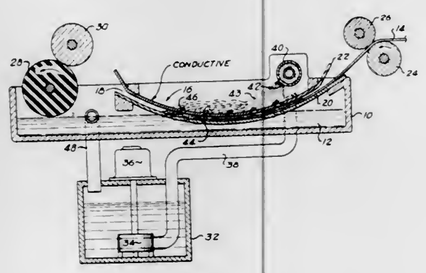
FIELD CONTROL DEVELOPMENT OF ELECTROSTATIC IMAGES

James A. Kolibas, Broadview Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation of application Ser. No. 763,606, Sept. 30, 1968, which is a continuation of application Ser. No. 561,784, June 30, 1966, both now abandoned. This application Apr. 17, 1972, Ser. No. 244,590

Int. Cl. C03g *13/10, 15/10*

U.S. Cl. 117—37 LE **8 Claims**



For developing latent electrostatic images on paper sheets there is provided a developing station which includes a tank for holding a bath of liquid developer including an insulating carrier liquid with pigment particles dispersed therein, and a restricted guideway or channel for leading the sheets down into and up out of the bath. The upper member, at least, of the guideway is of conductive material and provides a field control effect for intensifying the deposit of pigment particles in the image areas. The field control member must be placed close to but out of contact with the imaged sheet surface in order to have the desired field control effect. In order to replace the liquid developer in this restricted channel rapidly enough to prevent its being stripped of pigment particles, the field control member is provided with openings through which fresh liquid developer can be rapidly introduced into the channel, and spray means and baffles are arranged to effect this developer replacement as efficiently and rapidly as possible. Moreover, the arrangement is such that hydrodynamic forces are also generated in the liquid developer in the channel to maintain the sheet against a guiding surface and hence at an accurate spacing from the field control member.

3,799,792

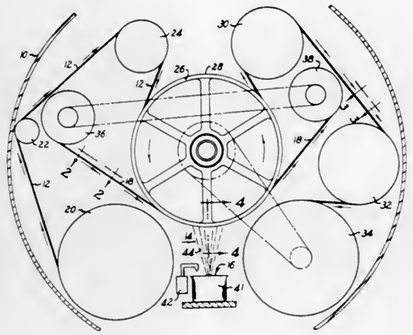
VAPOR DEPOSITION METHOD

Stanley Rying, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 14, 1971, Ser. No. 207,795

Int. Cl. C23c *13/04*

U.S. Cl. 117—43 **6 Claims**



A method is disclosed for depositing a pattern of material onto a substrate. The substrate is conveyed through a deposition station at which vapors of the vaporizable material are directed toward a surface of the substrate. A mask having a preselected pattern of apertures therein is also conveyed through the deposition station intermediate the one surface of the substrate and the vapors in order to selectively expose preselected portions of the surface of the substrate to the vapors to permit deposition of the vapors thereon. The mask and the substrate are moved through the deposition station at different relative velocities.

3,799,793

FORMATION OF STAR TRACKING RETICLES

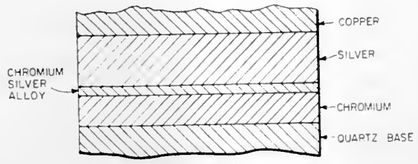
Wade O. Smith, Bowie, and Albert R. Toft, Edgewater, Md., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Original application Oct. 12, 1970, Ser. No. 80,029, now Patent No. 3,702,808. Divided and this application Apr. 17, 1972, Ser. No. 244,566

Int. Cl. C23c *13/02*

U.S. Cl. 117—45 **9 Claims**

A method for the production of reticles, particularly those for use in outer space, wherein the product is a quartz base coated with highly adherent layers of chromium, chromium silver, and silver vacuum deposited through a mask, and then coated with an electrodeposit of copper from a copper sulfate solution followed by an electrodeposit of black chromium. The masks are produced by coating a beryllium-copper alloy substrate with a positive working photoresist, developing the photoresist according to a pattern to leave a positive mask, plating uncoated areas with gold, removing the photoresist, coating the substrate with a negative working photoresist, developing the negative working photoresist to expose the base metal of the pattern, and chemically etching the unplated side of the pattern to produce the mask. The mask produced is then used in the vacuum deposition of: (1) chromium metal on the surface of a quartz base to obtain a highly adherent quartz-chromium interface; (2) silver on the chromium deposit, during the final stage of chromium deposit, to produce a silver-chromium alloy layer; and (3) silver onto the surface of the alloy layer. The coated quartz base is then coated by electroplating utilizing an acid copper deposit followed by a black-chromium electrodeposit to produce the product of the present invention.



3,799,794

PROCESS OF METAL PLATING

George T. Miller, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Sept. 23, 1969, Ser. No. 860,424

Int. Cl. B44d *1/092;* **C23c** *3/02*

U.S. Cl. 117—47 A **14 Claims**

A process comprising subjecting a substrate to a member of the group of elemental phosphorus and low oxidation state phosphorus compounds, and thereafter to a metal salt or complex thereof is employed to provide electrostatic and magnostatic shielding of wires and in the production of antistatic textiles. Improvements in the coating of filaments are provided by subjection of the substrate to a solution of elemental phosphorus, molten elemental phosphorus, and thereafter to the metal salt or complex thereof, and also by employing a second metal salt bath.

3,799,795

METHOD OF COATING GLASS SURFACE AND PRODUCTS PRODUCED THEREBY

James E. Crawford and Richard H. Russell, Adrian, Mich., assignors to Owens-Illinois, Inc.

No Drawing. Filed Dec. 9, 1971, Ser. No. 206,493

Int. Cl. B44d *1/20;* **C03c** *17/32*

U.S. Cl. 117—54 **11 Claims**

The lubricity and scratch resistance of a glass surface are improved by applying a pyrolyzable tin or titanium compound to the hot glass surface to form a substantially colorless tin or titanium oxide layer thereon, and then applying, directly upon the oxide layer, an aqueous solution of a water-soluble thermosetting ester which is a reaction product of (a) a non-ionic surfactant that contains at least one alcoholic hydroxy group with (b) a polycarboxylic acid or anhydride of the class consisting of aliphatic dicarboxylic acids and anhydrides having not more than six carbon atoms and benzene polycarboxylic acids and anhydrides having from 3 to 4 carboxyl groups, drying and setting the ester to produce a transparent, substantially colorless insoluble coating layer. The resulting dual coating has high lubricity, and affords scratch resistance which is much greater than that which would be imparted by either coating alone.

3,799,796

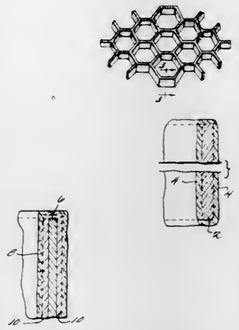
PREPARATION OF STRUCTURES WITH A COATING OF Al_2O_3/SiO_2 FIBERS BONDED TO Al_2O_3 FOR USE AS CATALYST SUBSTRATES

James B. Hunter, Newtown Square, Pa., assignor to Matthey Bishop, Inc., Malvern, Pa.

Filed Oct. 6, 1970, Ser. No. 78,523

Int. Cl. B01j *11/32*

U.S. Cl. 117—70 A **4 Claims**



A refractory composition suitable as a catalyst support comprising a porous coating of Al_2O_3/SiO_2 fibers surrounding and integrally bonded to an inner portion comprising Al_2O_3.

3,799,797

PROCESS FOR IMPARTING SCALE RESISTANCE TO A SURFACE

James W. Hughes, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,631

Int. Cl. B44d *1/14;* **C23f** *15/00*

U.S. Cl. 117—72 **10 Claims**

Novel epoxy resins modified with polyisocyanates and pendant polyether chains provide an excellent scale-resistant surface when applied as a coating and exposed to mineralized water prone to deposit scale on surfaces.

3,799,798

METHOD OF BONDING A POLYSULFIDE SEALANT TO A MASONRY SURFACE

Richard L. Elmer, Trenton, and Elizabeth A. Peterson, Levittown, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Original application Mar. 18, 1971, Ser. No. 125,883, now abandoned. Divided and this application Apr. 26, 1972, Ser. No. 247,717

Int. Cl. B32b *13/12;* **B44d** *1/14*

U.S. Cl. 117—72 **4 Claims**

A fluid primer adapted to be applied to masonry surfaces to improve the adhesion thereto of sealant compositions based on liquid polysulfide polymers. The primer comprises an organic solvent solution of a chlorinated rubber and a poly(lower alkyl methacrylate), preferably poly(n-butyl methacrylate). The primer provides a bond which exhibits both good adhesion and resistance to ultra-violet light.

3,799,799

COATING OF MICA REINFORCEMENT FOR COMPOSITE MATERIALS

Raymond T. Woodhams, Toronto, Ontario, and Frank J. Golemba, Sarnia, Ontario, Canada, assignors to Fiberglas Canada Limited, Toronto, Ontario, Canada

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,473

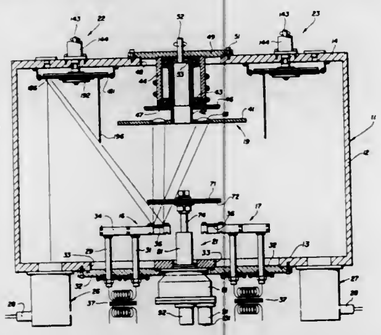
Int. Cl. B44d *1/02*

U.S. Cl. 117—100 S **16 Claims**

The preparation of high performance composite mica-polymer material. In one system polystyrene is coated

onto mica flakes having a high aspect ratio of at least about 20, and preferably in the range of 50 to 100 or higher. The mica flakes are coated with the polymer by in situ polymerization onto the mica particles in suspension. Various additive materials may be employed to enhance the efficiency of the in situ coating step. For example, a silane coupling agent may be added to an aqueous slurry of the mica particles. As another example a copolymerizable monomer such as dimethylaminoethylmethacrylate (DMAEMA) may be added. The coated mica particles are filtered and the resultant composite powder is useful for the molding of high performance composite particles.

3,799,800
COATING METHOD UTILIZING TWO COATING MATERIALS
Alfred J. Thelen, Nils H. Bergfelt, and Eugene A. Eufusia, Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Original application Mar. 14, 1966, Ser. No. 533,996, now Patent No. 3,636,916. Divided and this application July 19, 1971, Ser. No. 164,130
Int. Cl. C23c *11/00*
U.S. Cl. 117—106 R **3 Claims**



A coating method for controlling the index of refraction of a layer upon a substrate by utilizing two coating materials having different indices of refraction by evaporating each of the coating materials to provide a vapor stream which impinges upon the substrate and masking the substrates from the vapor stream to provide a vapor stream carrying the coating materials to the substrate in a proportion related to the desired index of refraction.

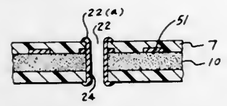
3,799,801
PROCESS FOR THE FINISHING OF TEXTILE MATERIALS
Helmut Kirschnek, Leverkusen, Wilfried Kortmann, Hohenlimburg, and Karl-Heinz Breyer, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Sept. 8, 1971, Ser. No. 178,805
Claims priority, application Germany, Sept. 8, 1970, P 20 44 372.5; Feb. 25, 1971, P 21 08 903.2
Int. Cl. C08j *1/44*
U.S. Cl. 117—139.5 CQ **11 Claims**

Process for the finishing of textile materials for improving their soil release, oil release and soil redeposition properties wherein are used as finshing agents optionally in combination with known textile finishing agents difunctional polyalkylene glycol ether derivatives of the formula

$$R_3O-\left(\underset{X_1}{CH}-CH_2-O\right)_p-R_1-\left(O-CH_2-\underset{X_2}{CH}\right)_q-OR_3$$

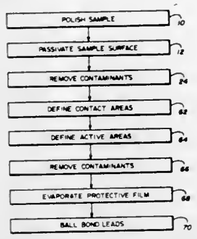
wherein R_1, X_1, X_2, R_2, R_3, p and q have the meaning stated below.

3,799,802
PLATED THROUGH HOLE PRINTED CIRCUIT BOARDS
Frederick W. Schneble, Jr., 16 Karen Court, Oyster Bay, N.Y. 11771; John F. McCormack, 116 Milburn Lane, Roslyn Heights, N.Y. 11577; Rudolph J. Zeblisky, 41 Glenwood Drive, Hauppauge, N.Y. 11787; John Duff Williamson, Box 364–A, Radio Ave., Miller Place, N.Y. 11764; and Joseph Polichette, 9 Hitchcock Lane, South Farmingdale, N.Y. 11735
Continuation-in-part of applications Ser. No. 561,123, June 28, 1966, Ser. No. 598,444, Dec. 1, 1966, and Ser. No. 701,817, Jan. 29, 1968. This application Mar. 27, 1969, Ser. No. 811,142
Int. Cl. H05k *3/00;* **B41m** *3/08*
U.S. Cl. 117—212 **7 Claims**



Plated through hole circuit boards include a non-registered insulating solder mask superimposed on a circuit pattern conductor carried by an insulating base, a hole extending through the mask and the conductor and into the base, and a continuous metal deposit on the wall of the hole extending from the base interior to the surface of the insulating mask and bridging the conductor.

3,799,803
SURFACE PASSIVATION
Herbert Kraus, Richardson, and Billy H. Breazeale, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 13, 1969, Ser. No. 876,458
Int. Cl. B44d *1/20;* **C23b** *5/62*
U.S. Cl. 117—212 **15 Claims**

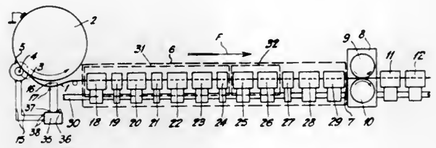


Passivation of a semiconductor surface polished with a solution of a methyl alcohol:bromine is completed by treating the polished surface with a hydrogen peroxide solution after rinsing with a solution of alcohol and water. Next, a deionized water rinse removes contaminants from the hydrogen peroxide treated surface. Finally, the passivated surface is dried in an atmosphere of pure nitrogen gas.

3,799,804
PROCESS AND APPARATUS FOR OBTAINING WIRE FOR MAGNETIC MEMORIES
Rene Fernand Victor Girard, Grenoble, and Jacques Le Guillerm, Avrille, France, assignors to Societe Industrielle Honeywell Bull, Paris, France
Original application Apr. 1, 1970, Ser. No. 24,635, now Patent No. 3,669,866. Divided and this application Jan. 3, 1972, Ser. No. 217,409
Int. Cl. B44d *1/34, 1/42*
U.S. Cl. 117—231 **3 Claims**

A process and apparatus for the continuous fabrication and testing of a wire having a conductive core covered

with a thin magnetic film, wherein the conductive core is pulled with substantially zero tension through apparatus in which a magnetic film is deposited on the core and

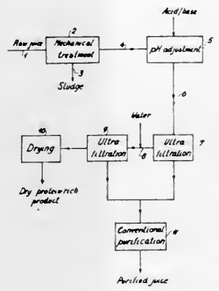


treated, and wherein the completed wire is then pushed through apparatus in which its physical properties are measured.

3,799,805
PROCESS FOR THE PRODUCTION OF DEXTRINS
Kaname Sugimoto, Okayama, Japan, assignor to Hayashibara Company, Okayama, Japan
No Drawing. Filed Aug. 18, 1971, Ser. No. 172,899
Claims priority, application Japan, Sept. 2, 1970, 45/76,856
Int. Cl. C13l *1/08*
U.S. Cl. 127—38 **2 Claims**

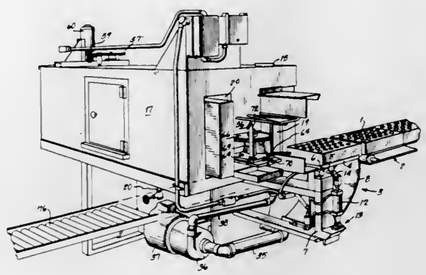
Process for the production of dextrins with relatively low molecular weights and a narrow range of molecular distribution, wherein the stage of modifying starch with an acid or with acids is performed by heating the starch with an acid or acids in an aqueous solution of organic solvent or organic solvents selected from the group comprising ethanol, methanol propanol, acetone and fatty acids.

3,799,806
PROCESS FOR THE PURIFICATION AND CLARIFICATION OF SUGAR JUICES, INVOLVING ULTRAFILTRATION
Rud Frik Madsen, Nakskov, Denmark, assignor to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark
Filed Apr. 20, 1972, Ser. No. 245,828
Int. Cl. C13d *3/16*
U.S. Cl. 127—54 **14 Claims**



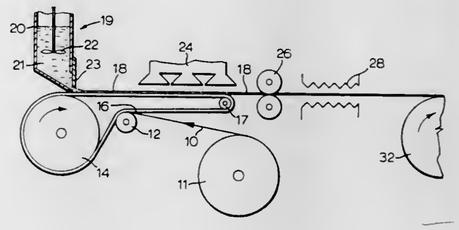
A process for the purification and clarification of sugar juice comprising the steps of mechanically separating insoluble materials from the juice, subjecting the juice to a first ultrafiltration, adding water to the concentrate, subjecting the diluted concentrate to a further ultrafiltration, combining the permeates obtained by said ultrafiltrations and subjecting said combined permeates to a final purification.

3,799,807
AUTOMATIC CASE WASHING SYSTEM
Howard M. Sadwith, Colts Neck, N.J., assignor to Industrial Washing Machine Corporation, Matawan, N.J.
Original application Jan. 15, 1965, Ser. No. 425,701, now Patent No. 3,675,665, dated July 11, 1972. Divided and this application May 27, 1971, Ser. No. 147,427
Int. Cl. B08b *1/02*
U.S. Cl. 134—32 **2 Claims**



An automated method of washing reusable containers, cases, cartons or the like, particularly those adapted to house bottles therein, which includes both a washing and rinsing operation. The containers or the like are first transported to a washing area resting on their bottoms, then rotated 90° to rest on their edges at predetermined intervals and scoured with jets of washing fluid. The containers or the like, after removal from the washing area, are rotated 180° about a vertical axis and inserted into a rinsing area whereat they are sprayed so as to be rinsed clean of any residual washing fluid. The containers, now cleaned and ready for another use, are removed from the machine.

3,799,808
PROCESS FOR MAKING POROUS ELECTRODE PLATES
Herbert A. Hancock, Dartmouth, Nova Scotia, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada
Filed Oct. 7, 1971, Ser. No. 187,380
Claims priority, application Canada, Nov. 5, 1970, 97,434
Int. Cl. H01m *43/04*
U.S. Cl. 136—29 **2 Claims**



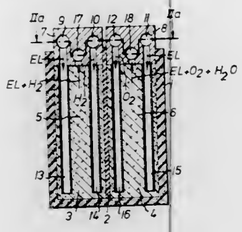
An elongated, self-supporting porous metal plate is produced by a process of applying a layer of slurry of nickel powder volatile liquid and organic binder to a flexible carrier strip which is capable of being decomposed at sintering temperature and then drying, coining, and sintering the layer of slurry and decomposing the carrier.

3,799,809

FUEL CELL

Harald Bohm, Oberursel, and Gerhard Louis, Frankfurt-Schwanheim, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 23, 1972, Ser. No. 228,616
Claims priority, application Germany, Feb. 23, 1971, P 21 08 537.0
Int. Cl. H01m *27/02*
U.S. Cl. 136—86 R **6 Claims**



A fuel cell having an anode and a cathode each in the form of a particulate filling, the anode and cathode being separately contained. The anode and cathode are soaked by an electrolyte continuous between the anode and cathode, while fuel is interspersed in the anode and an oxidant is interspersed in the cathode.

3,799,810

FAST ACTIVATION RESERVE BATTERY

Richard A. Wallace, 43 Kingscote Garden, Stanford, Calif.

No Drawing. Continuation of abandoned application Ser. No. 83,764, Oct. 26, 1970. This application Sept. 14, 1972, Ser. No. 289,144
Int. Cl. H01m *21/14*
U.S. Cl. 136—112 **19 Claims**

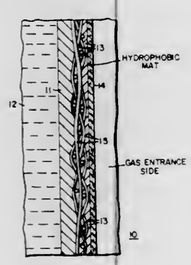
Fast activation reserve battery comprising a lead dioxide-zinc pulse cell that employs an immobilized electrolyte carried by a moisture-proof nitrocellulose and wax-coated cellulosic separator.

3,799,811

HYDROPHOBIC MATS FOR GAS DIFFUSION ELECTRODES

Ronald N. Sampson, Murrysville, and Jacob Chottiner, McKeesport, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 31, 1972, Ser. No. 285,164
Int. Cl. H01m *13/00*
U.S. Cl. 136—120 FC **6 Claims**



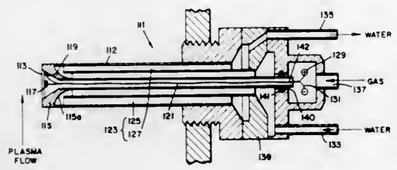
A gas diffusion electrode having a gas entrance side and an electrolyte contacting side, for use with a liquid electrolyte and a gas in an electrochemical cell, comprises a coherent porous catalyzed body, containing an electrical conductor and a hydrophobic outer layer on the gas entrance side. The hydrophobic outer layer comprising a mat containing fibrillated very high molecular weight polyethylene.

3,799,812

TRANSPIRATION RADIOMETER

Robert J. Moffat, Palo Alto, Calif., Bruce D. Hunn, Potsdam, N.Y., and Joseph Galate, Houston, Tex., assignors to the United States of America as represented by the Secretary of the Navy

Filed Aug. 22, 1972, Ser. No. 282,749
Int. Cl. H01v *1/04*
U.S. Cl. 136—213 **9 Claims**



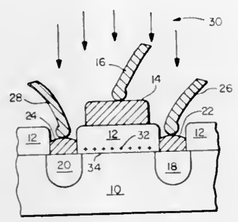
An annular edge-cooled transpiration radiometer for measuring the total radiation incident on the walls of a circular tube containing a flowing plasma. The device is an annular, tube-like device and comprises a sensing means, a cooling means and a transpiration gas means. The device separates radiation from convection by blowing cold gas through a porous section of the circular tube wall. The alternative embodiment is a spot radiometer comprising a porous disk supported on the end of a cylindrical-shaped gas transpiration means which is also provided with a cooling means. The spot radiometer is suitable for installation into a duct or enclosure and is designed for "energy balance" operation.

3,799,813

RADIATION HARDENING OF MOS DEVICES BY BORON

Vitaly Danchenko, Silver Spring, Md., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 9, 1971, Ser. No. 206,266
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **5 Claims**



A novel technique is disclosed for radiation hardening of MOS devices and specifically for stabilizing the gate threshold potential at room temperature of a radiation subjected MOS field-effect device of the type having a semiconductor substrate, an insulating layer of oxide on the

substrate, and a gate electrode disposed on the insulating layer. In the preferred embodiment, the novel inventive technique contemplates the introduction of boron into the insulating oxide, the boron being introduced within a layer of the oxide of about 100 A–300 A thickness immediately adjacent the semiconductor-insulator interface. The concentration of boron in the oxide layer is preferably maintained on the order of 10^{18} atoms/cm.^{3}. The novel technique serves to reduce and substantially annihilate radiation induced positive gate charge accumulations, which accumulations, if not eliminated, would cause shifting of the gate threshold potential of a radiation subjected MOS device, and thus render the device unstable and/or inoperative.

3,799,814

CHROMATE TREATED METAL SHEET

Hidehisa Yamagishi, Yokohama, Hiroshi Takano, Kawasaki, and Iwakichi Kawaguchi, Hiratsuka, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed July 15, 1971, Ser. No. 165,777
Int. Cl. C23b *11/00*
U.S. Cl. 148—6.2 **5 Claims**

On an electrolytic chromate treated metal sheet having a hydrate chromic oxide layer which is adjusted 0.1 to 0.8 mg. Cr./dm.^{2}, 0.05 to 2.5 mg. Cr/dm.^{2} a film is formed which is due to the water soluble resin. This resin is an organic film forming agent which does not reduce a hexavalent chromium such as triasine-formaline resin, titanium modified acrylic resin or carboxylic acid modified acrylic resin thereby providing a chromate treated metal sheet of excellent corrosion resistance and good adhesivity of paint varnish, lacquer and other organic finishes.

3,799,815

COLORING OF ALUMINUM AND ITS ALLOYS

Coimbatore V. Subramaniam, 443 S. Alexandria, Apt. 7, Los Angeles, Calif. 90020

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,439
Int. Cl. C23f *7/02*
U.S. Cl. 148—6.27 **11 Claims**

An improved method of coloring aluminum or its alloys by the use of an aqueous coloring bath of an alkaline pH containing a chemical of the chromophore or auxochrome groups or a combination of both.

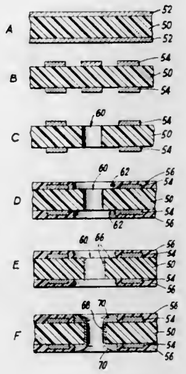
3,799,816

METALLIZING INSULATING BASES

Frederick W. Schneble, Jr., Oyster Bay, John F. McCormack, Roslyn Heights, Rudolph J. Zeblisky, Hauppauge, John Duff Williamson, Miller Place, and Joseph Polichette, South Farmingdale, N.Y., assignors to Photocircuits Corporation, Glen Cove, N.Y.

Continuation of abandoned application Ser. No. 16,846, Mar. 5, 1970. This application Jan. 11, 1972, Ser. No. 217,047
Int. Cl. C23f *1/02;* **B44d** *1/092*
U.S. Cl. 156—3 **7 Claims**

According to this invention, an improved process for selective metallization of insulating substrata, as for example in the manufacture of printed circuits, decorative articles, automobile trim, and the like, is provided which comprises coating an insulating, seeder repellent mask on the surface of a suitable insulating base so as to leave exposed selected areas to be metallized, contacting the board with a seeder solution to thereby render the exposed areas of the board not protected by the seeder repellent mask catalytic to the reception of electroless metal, and contacting the board with an electroless metal



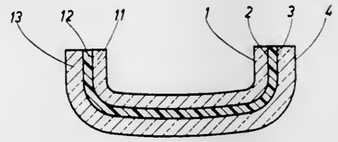
deposition solution to metallize the exposed catalytic areas of the board not protected by the seeder repellent mask

3,799,817

GLASS LAMINATE AND METHOD OF MANUFACTURE

Robert Van Laethem, Loverval, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed June 1, 1971, Ser. No. 148,402
Claims priority, application Great Britain, May 21, 1971, 16,282/71
Int. Cl. B32b *17/10, 31/12;* **C03c** *15/02*
U.S. Cl. 156—3 **27 Claims**



A laminate, and a method of manufacture therefor, of a plurality of sheets, at least one of which is of glass, the glass sheet having one face which is an internal face of the laminate which has been preliminarily subjected to a rectifying treatment for reducing the severity of flaws likely cause stress concentrations when tensioning forces are applied to that face of the glass sheet.

3,799,818

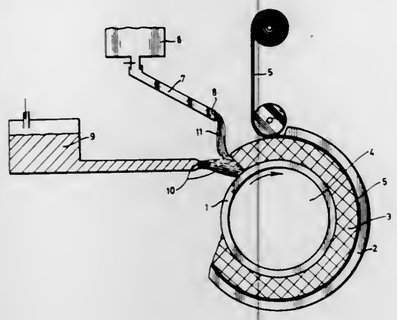
PROCESS AND INSTALLATION FOR MANUFACTURING FIBER REINFORCED SANDWICH TUBE

Hein Bulters, Vroomshoop, Gerrit Heidemann, Oldenzaal, and Warner Jan de Putter, Hardenberg, Netherlands, assignors to Industriele Onderneming Wavin N.V., Zwolle, Netherlands

Filed Apr. 27, 1972, Ser. No. 248,161
Claims priority, application Netherlands, Apr. 29, 1971, 7105953
Int. Cl. B32b *5/16;* **B31c** *13/00;* **B65h** *81/00*
U.S. Cl. 156—62.2 **12 Claims**

The invention relates to a sandwich tube comprising an inner and an outer fiber reinforced layer of thermosetting resin and an intermediate layer therebetween consist-

ing of inorganic filler material coated with thermosetting resin and obtained by spraying a finely divided resin into a mass of loosely held inorganic filler material. A non-



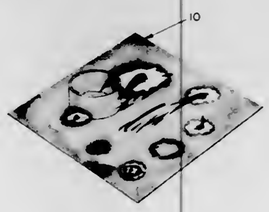
woven is present between the intermediate layer and the outer fiber reinforced layer.

3,799,819

METHOD OF FORMING AN ILLUSTRATION OR PICTURE

Ellwood B. Lippincott, Moorestown, N.J. (7015-K Lochlan Circle, Baltimore, Md. 21239)

Filed May 4, 1972, Ser. No. 250,199
Int. Cl. B44d *5/00*
U.S. Cl. 156—63 **8 Claims**



A plastic member is rubbed upon a water-soaked silicon carbide sandpaper to form a solution of water, plastic pigment and abrasive. Plastic members of various configurations are placed upon the sandpaper and solution in a preselected pattern and upon drying, the solution beads up around the plastic members allowing a drying effect in the configurations of the plastic members. Paint pigment of various colors may be added to the solution depending upon the intensity desired of particular colors. The solution and pigment then are spread in varied intensities by various tools and the illustration is permitted to dry.

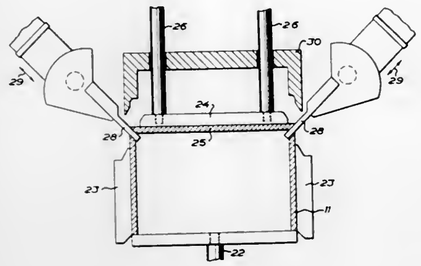
3,799,820

PROCESS OF MANUFACTURING OPEN OR CLOSED PACKAGINGS OF FOAM PLASTICS, PREFERABLY FOAM POLYSTYRENE

Soren Elof Mauritz Sollerud, Solviksgatan 26, 603 64 Norrkoping Sweden

Continuation-in-part of abandoned application Ser. No. 114,266, Feb. 10, 1971. This application Jan. 18, 1972, Ser. No. 218,728
Claims priority, application Sweden, Feb. 11, 1970, 1,754/70
Int. Cl. B65b *7/28;* **B29c** *27/00*
U.S. Cl. 156—69 **21 Claims**

A process of manufacturing packages from rigid-type foam plastics, preferably foam polystyrene. Such surfaces as are to be joined are heated by direct contact with movable heating jaws until the desired surface configuration having a layer of molten material thereon has been obtained. The surfaces are then immediately put together and subjected to pressure. After the surfaces have been pressed together a shaping member can be urged against



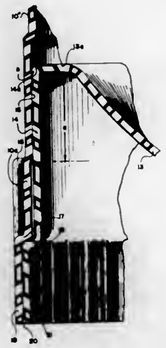
them to shape the joint and wipe any excess molten material therefrom. The heating jaw surfaces are preferably oblique relative to the plane of the surfaces to be joined, whereby the surfaces are bevelled and enlarged to produce a high strength, overlapped weld joint. The surfaces to be joined may also be formed with alternating ridges and valleys to further increase the area of the surfaces joined.

3,799,821

METHOD FOR MAKING THIN WALLED THERMOPLASTIC PRESSURE VESSELS

Elwyn Jones, 3318 N. Branch Road, Beaverton, Mich. 48612

Original application Oct. 12, 1970, Ser. No. 79,910, now Patent No. 3,712,497. Divided and this application July 14, 1972, Ser. No. 272,013
Int. Cl. B29c *27/08*
U.S. Cl. 156—73 **3 Claims**



A bottle, particularly for carbonated beverages such as conventional soft drinks and beer, and formed of thin walled, flexible, synthetic plastic parts which are differential pressure formed in heated thermoplastic webs and then severed therefrom, and comprising generally: an upper side wall portion having a neck from which the beverage or the like may be poured, and a generally convex bottom wall for the bottle or vessel having a continuous peripheral flange telescopically received within the lower end of the side wall portion. The external diameter of the upper portion of the flange is slightly greater

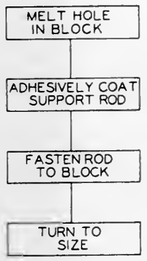
than the interior diameter of the section of the side wall portion in which it is received so as to be received therein with an interference fit, the parts being friction welded together to dispose friction weld material between the upper portion of the flange and the side wall at the periphery of the convex bottom wall to securely bond the parts together. Another embodiment of the invention is disclosed in which the side wall portion is formed of telescopically interfitted and friction welded upper and lower sections.

3,799,822

METHOD OF MANUFACTURING A COMPRESSIBLE SURFACE PRINTING ROD

Walter J. Lewicki, Jr., and Kenneth L. Welk, Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Oct. 13, 1971, Ser. No. 188,858
Int. Cl. B29c *27/00;* **B32b** *31/12*
U.S. Cl. 156—83 **1 Claim**



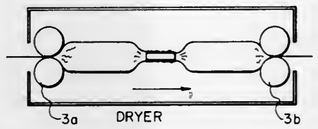
A method is provided for placing a polyurethane foam coating on a metal shaft of a printing roller. A hole is melted in the polyurethane foam block, and the rod is then placed in the hole and adhesively secured to the polyurethane. The structure is then reduced to the required diameter to provide a printing roller with a compressible cover of polyurethane.

3,799,823

METHOD FOR SPLICING COLLAGEN CASING

Robert D. Talty and Lionel C. Arnold, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Mar. 30, 1972, Ser. No. 239,605
Int. Cl. A22c *13/00*
U.S. Cl. 156—86 **4 Claims**



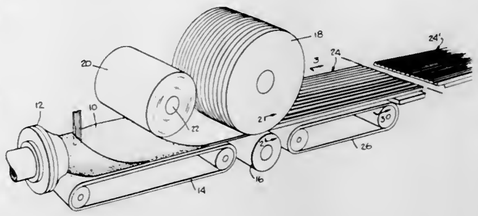
Accumulated fluids are vented from extruded collagen casing by cutting the casing at periodic intervals. The casing is cut completely in two just ahead of the dryer and is spliced by placing the cut ends of the casing onto a tubular coupler and shrinking them onto the coupler by applying heat. Apparatus is disclosed for supplying heated fluid to the periphery of the casing to be spliced in order to shrink the casing onto the tubular coupler.

3,799,824

METHOD OF MAKING POWER TRANSMISSION BELTS

Matthew H. Arnao, Huntingdon Valley, Pa., and Leonard J. Grecco, Pennsauken, N.J., assignors to Uniroyal, Inc., New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,174
Int. Cl. B29h *7/22*
U.S. Cl. 156—139 **3 Claims**



An extruded or calendered sheet of vulcanizable rubber is treated by passing it between the nip of a smooth roller and a circumferentially grooved roller with a fabric being fed to the sheet on the grooved roller side in order to impart to the rubber sheet and the fabric a series of continuous closely spaced longitudinally-extending ribs. The formed sheet is then cut transversely into desired belt circumference lengths and the cut ends are brought together to form a continuous band-like belt carcass with the ribbed surface facing inwardly. The carcass is positioned over tensioning rollers each of which has accommodating grooves for the ribs and the spacings there between, and the carcass is tensioned while a reinforcing cord of low extensibility is wrapped around the carcass preferably, but not necessarily, as a continuous helical spiral winding. A layer of a fabric coated with vulcanizable rubber stock is applied over the tension cord members on the exterior or non-grooved side, and the resulting assembly is cut along longitudinally spaced lines located between the ribs and extending inwardly into the rubber underlying the tension members, but leaving a rubber and/or fabric layer connecting the ribs together. An additional fabric layer is applied over the previously cut fabric in order to facilitate the transfer of the band-like carcass off the tension rollers. The resultant carcass with the outer fabric is subjected to pressure-forming and curing and then severed to form individual belts.

3,799,825

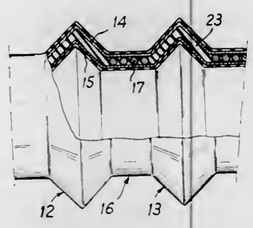
HOSES AND PIPES

Jacques Champleboux and Robert Delaux, Clermont-Ferrand, France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Continuation-in-part of application Ser. No. 99,628, Dec. 18, 1970. This application Feb. 24, 1972, Ser. No. 228,906
Int. Cl. F16l *11/08*
U.S. Cl. 156—144 **5 Claims**

This invention relates to a method of manufacturing a hollow tubular member such as a pipe, hose, sheath or

the like, in which at least one layer of helically-wound parallel cables is applied to a rubber cylinder. In accordance with the invention, said layer is formed by placing on the rubber cylinder parallel to its axis and over its whole periphery, bands formed by segments of cables embedded in rubber, said segments of metal cables of said bands being mutually parallel and making with the longitudinal direction of said bands an angle equal to that which said



bands make with the axial direction of said hollow member.

3,799,826

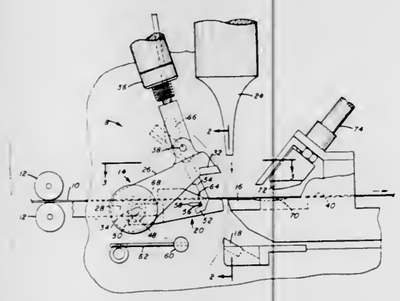
METHOD FOR SPLICING WEBS

Martin W. Kron, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 20, 1972, Ser. No. 290,605

Int. Cl. G03d *15/04;* **B29c** *27/04*

U.S. Cl. 156—159 **5 Claims**



A method and apparatus for removing an imperfect portion of a web to form trailing and leading web portions, and splicing the web portions to form a continuous perfect web. The apparatus comprises a pair of fixed, spaced apart knife blades adjacent separate perfect and imperfect web paths, and a movable knife blade cooperating with the fixed knife blades in succession for severing the web at opposite ends of the imperfect portion to form a trailing web end portion lying in the perfect web path and a leading web end portion lying in the imperfect web path. A web guiding member is coupled to the movable blade for selectively guiding the web along the perfect and imperfect web paths. When the movable blade is returned to its normal position, the web guiding member moves the leading web end portion to the perfect film path in position to be spliced to the trailing web end portion.

3,799,827

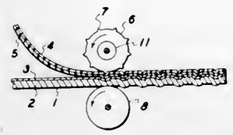
PROCESS FOR PROTECTING THE SURFACE OF AN IMAGE

Masaaki Takimoto and Seiji Matsumoto, Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1971, Ser. No. 211,301

Int. Cl. B31f *7/00*

U.S. Cl. 156—219 **4 Claims**



Images are protected by laminating a film over the surface of the image. A pressure roller provided with projections is used to improve the bonding of the film to the image support.

3,799,828

SYNTHETIC PAPERS AND THE METHOD OF MAKING THE SAME

Masanori Takashi and Mitsuo Yoshiyasu, Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

Original application Mar. 21, 1969, Ser. No. 809,629, now abandoned. Divided and this application Aug. 12, 1971, Ser. No. 171,103

Claims priority, application Japan, Mar. 26, 1968, 43/19,204

Int. Cl. B32b *31/14*

U.S. Cl. 156—229 **4 Claims**

A synthetic paper of a laminated structure consists of a base layer made of a biaxially oriented plastic film containing 0–20% by weight of a fine inorganic filler and at least one paper-like layer made of a uniaxially oriented plastic film containing 0.5–65% by weight of a fine inorganic filler. This synthetic paper is made by laminating the paper-like layer in non-oriented state on the base layer which has been previously subjected to uniaxial drawing in its longitudinal direction to obtain a composite laminated structure, and further drawing the composite structure thus obtained in its transverse direction.

3,799,829

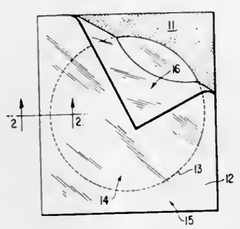
TRANSFERABLE DECAL LICENSE

Edward G. Heatwole, Richmond, Va., assignor to Transcal, Inc., Richmond, Va.

Filed Nov. 10, 1971, Ser. No. 197,238

Int. Cl. B41m *3/12*

U.S. Cl. 156—235 **1 Claim**



A transferable adhesive label or license comprises an indicia carrying layer with an adhesive layer on one side thereof. A peelable layer is removably joined to the adhesive layer on the side opposite the indicia carrying layer. The three-layered label has heavy perforations therethrough permitting the inner region, that region surrounded by the perforations, to be removed from the remainder of the label or license and adhered to another surface.

3,799,830

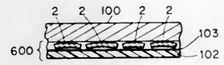
METHOD OF PRODUCING BORON CARBIDE FILM LAMINATES

Lloyd R. Allen, Middlesex, Mass., assignor to National Research Corporation, Cambridge, Mass.

Application July 30, 1969, Ser. No. 846,053, which is a continuation-in-part of application Ser. No. 611,191, Nov. 25, 1966, which in turn is a continuation-in-part of application Ser. No. 524,615, Feb. 1, 1966, all now abandoned. Divided and this application Jan. 12, 1972, Ser. No. 217,401

Int. Cl. B32b *3/22;* **C23c** *13/04*

U.S. Cl. 156—249 **8 Claims**



Production of boron carbide films by vacuum deposition.

3,799,831

METHOD FOR ASSEMBLY OF EVAPORATOR TUBING TO LINER

Leslie N. Griffiths, Tarvin, England, assignor to Kelvinator, Inc., Grand Rapids, Mich.

Filed Dec. 1, 1971, Ser. No. 203,590

Int. Cl. B32b *31/00;* **C09j** *3/30;* **B28f** *1/32*

U.S. Cl. 156—297 **6 Claims**

A method and apparatus for assembling tubing to a supporting and heat exchanging wall for heat transfer therebetween by which the tubing is prepositioned on the wall and held by a releasable holding force until an adhesive or cementitious binder material permanently secures the tubing to the wall with sufficient strength to retain the tubing in the desired position after removal of the holding force. In refrigeration apparatus, evaporator tubing may be assembled on the exterior walls of a boxlike liner by temporarily holding it in position with a magnetic field provided by a magnet carrying male fixture formed to fit the interior of the liner, coating the liner exterior and tubing with a binder such as by dipping it in a molten thermoplastic and allowing the thermoplastic to set by cooling, and removing the male fixture.

3,799,832

TECHNIQUE FOR BONDING TETRAFLUOROETHYLENE SHEET TO METAL SUBSTRATE

Franklin G. Reick, Westwood, N.J., assignor to Michael Ebert, Frederick R. Picut, and Franklin G. Reick, fractional part interest to each

Filed Dec. 6, 1971, Ser. No. 205,203

Int. Cl. B32b *15/08;* **C09j** *5/02*

U.S. Cl. 156—330 **9 Claims**

A method of bonding a sheet of tetrafluoroethylene material to a metal plate or substrate, in which the surfaces of the sheet and plate to be joined are first treated to improve their adhesion ability. The treated surfaces are then coated with a solution constituted by an epoxy resin and a dianhydride curing agent in a mixed solvent formed by tetrahydrofuran and dimethylformamide. These surface coatings are dried and then brought together in a heated press to effect curing and bonding thereof. Essentially the same method is used to effect an elastomeric bond of the two materials, but in this instance, the epoxy solution coatings, which further include an elastomer constituent, are first dried and cured to provide a primer, after which they are sprayed with an

elastomer solution that is then dried. The primed sheet and plate surface having a dried elastomer layer thereon are then pressed-cured and bonded.

3,799,833

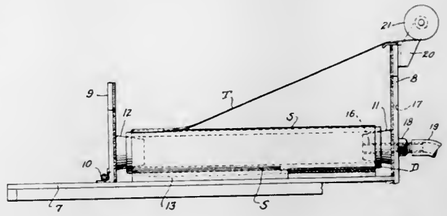
APPARATUS FOR JACKETING FIBROUS DUCTS

David Waksman, Roeland Park, Kans., and James R. Stewart, Kansas City, Mo., assignors to Certain-Teed Products Corporation, Valley Forge, Pa.

Original application Apr. 14, 1970, Ser. No. 28,369, now Patent No. 3,668,039. Divided and this application Feb. 4, 1972, Ser. No. 223,791

Int. Cl. B31f *7/00*

U.S. Cl. 156—443 **7 Claims**



A method and apparatus for applying a jacket sheet to an open ended porous fibrous duct, by wrapping the sheet around the duct, applying end closures to the ends of the duct, at least one such closure having a vacuum connection so that by reduction of pressure in the interior of the duct, the external atmospheric pressure will serve to hold the jacket sheet snugly against the duct, and interconnecting the adjacent edges of the jacket sheet while it is being held snugly against the exterior of the duct under the influence of the reduced internal pressure and the external atmospheric pressure.

3,799,834

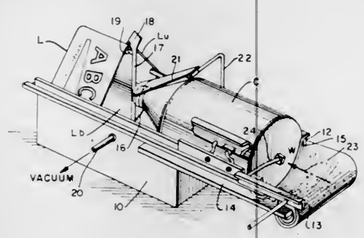
CONTAINER LABEL OPERATING DEVICE

Steve J. Horvath, 12600 S. Harvard, Chicago, Ill. 60628

Filed Aug. 14, 1972, Ser. No. 280,227

Int. Cl. B65c *3/10*

U.S. Cl. 156—481 **5 Claims**



In a container labeling machine, flat tubular labels are supplied as a two-ply running web which has transverse lines of perforations between the individual labels. A container moves along a concave guide which has spaced double walls defining a passage for the label web. At one end of the guide, a reciprocable cutter penetrates both plies of the web at a line of perforations, and a detent on the cutter separates one ply of the web from the other ply which is held in place. A pivotally mounted shoe, engaged by the moving container, opens the separated plies of the label into a container-fitting form.

3,799,835

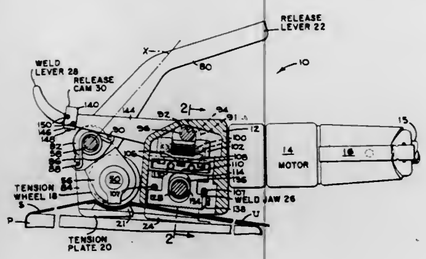
ANTI-CREASE FRICTION WELD STRAPPING TOOL

Charles G. Gilmore, Wilmington, Del., assignor to FMC Corporation, San Jose, Calif.

Filed July 24, 1972, Ser. No. 274,776

Int. Cl. B23k *27/00*

U.S. Cl. 156—580 **2 Claims**



A hand tool for joining thermoplastic strapping about an article has a strap tensioning wheel, a manually operated tension plate cooperating with the wheel, oscillating and fixed welding jaws, and an air motor for driving both the tension wheel and one of the jaws. A clutch is provided for disconnecting the motor drive from the tension wheel although the motor always remains connected to the oscillating jaws. A manual release lever releases the tension plate from the tension wheel, and a weld lever is manually operated for closing the welding jaws and declutching the motor from the strap tensioning wheel, whereupon the motor oscillates the welding jaw to make the joint. A cam is mounted on the weld lever and positioned to engage and operate the release lever to retract the tension plate after the weld jaws have been closed on the strap. This eliminates crease failure of the strap between the weld jaws and the tensioning assembly during the friction weld oscillation.

3,799,836

DEVITRIFIED GLASS WITH FIBROUS CRYSTALS IN PARALLEL RELATIONSHIP

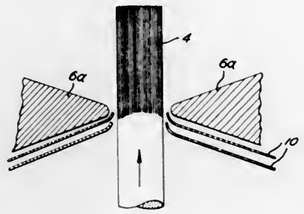
Philip Sydney Rogers and James Williamson, both % The Imperial College of Science & Technology, London SW. 7, England

Filed Mar. 14, 1972, Ser. No. 234,486

Claims priority, application Great Britain, Mar. 18, 1971, 7,167/71

Int. Cl. C03b *29/00*

U.S. Cl. 161—1 **13 Claims**



A devitrified silicate glass element comprising closely packed individual fibrous crystals lying in parallel relationship to one another along the length of the element is prepared by the controlled heat treatment of an elongated silicate glass element containing one or more crystal growth catalysts. The devitrified glass element may be disintegrated to provide individual fibrous crystals at least 3 mm. long and having a diameter less than 1 μm.

3,799,837

FLUTING AND CORRUGATED CARDBOARD CONTAINING SUCH FLUTING

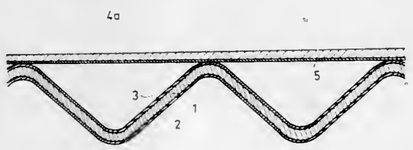
Odd Witnes, Sarpsborg, Norway, and Olvind Reidar Langaard, Saffle, Sweden, assignors to Billeruds Aktiebolag, Saffle, Sweden, and M. Peterson & Son A/S, Moss, Norway

Filed May 7, 1971, Ser. No. 141,187

Claims priority, application Sweden, May 22, 1970, 7,112/70

Int. Cl. B32b *3/28, 3/30*

U.S. Cl. 161—135 **5 Claims**



Corrugated cardboard having a high rigidity in the wet state contains a fluting which consists of a laminated material. Said laminated material contains a core sheet

having a weight of 50–150 g./m.^{2} and a modulus of elasticity of at least 1000 N/mm.^{2}. The core sheet consists of a rigid plastics which retains its rigidity in the wet state. The core sheet has on both sides paper coatings having a weight of 10–50 g./m.^{2}.

3,799,838

CLEANER AND PRIMER COMPOSITION FOR METAL SURFACES

Harvey P. Shaw, Troy, and Robert A. Murphy, Burnt Hills, N.Y., assignors to General Electric Company

No Drawing. Filed July 15, 1971, Ser. No. 163,038 (Filed under Rule 47(a) and 35 U.S.C. 116)

Int. Cl. B32b *15/08, 25/04;* **C09k** *3/00*

U.S. Cl. 161—207 **14 Claims**

A primer and cleaner composition for metal surfaces having therein 2.00 to 46.0% by weight of an alkenyl tris(organoxy)silane from 0.01 to 5.0% by weight of phosphorous acid, from 0.1 to 30% by weight of a silicate or a partial hydrolyzate product of a silicate and from 50 to 97% by weight of a ketone.

The preferable ketone in the above composition is methylethyl ketone. The present composition is especially suitable as a cleaner and primer composition for adhering one-package room temperature vulcanizable silicone compositions to metal surfaces.

3,799,839

REACTIVITY AND POWER DISTRIBUTION CONTROL OF NUCLEAR REACTOR

David L. Fischer and Frederick R. Channon, San Jose, Calif., assignors to General Electric Company

Continuation-in-part of application Ser. No. 762,776, Sept. 26, 1968, which is a continuation-in-part of application Ser. No. 708,391, Feb. 26, 1968, both now abandoned. This application Jan. 7, 1971, Ser. No. 104,705

Int. Cl. G21c *3/58*

U.S. Cl. 176—68 **8 Claims**

This describes a spatial distribution, amount, density and configuration of burnable poison to control a predetermined amount of excess reactivity and to maintain a constant or stationary power distribution during the operating cycle of a nuclear reactor core. In the illustrated embodiment of the invention the burnable poison is distributed throughout the core in a relatively small number of the fuel rods. In a preferred embodiment of the invention plutonium fuel is used in conjunction with the burnable poison to improve local power distribution and control margin and as an effective means for utilizing plutonium fuel.

3,799,840

METHOD FOR PRODUCING CITRIC ACID

Hideo Fukuda, Osaka, Takashi Suzuki, Kakogawa, Shunichi Akiyama, Kyoto, and Yasuhiro Sumino, Kobe, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 5,151, Feb. 22, 1970, now Patent No. 3,689,359. This application Aug. 14, 1972, Ser. No. 280,206

Claims priority, application Japan, Jan. 22, 1969, 44/4,527

The portion of the term of the patent subsequent to Sept. 5, 1989, has been disclaimed

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **8 Claims**

This invention relates to a method for producing citric acid which involves inoculating a citric acid-accumulating yeast belonging to the genus Candida, capable of utilizing hydrocarbons and incapable of utilizing citric acid in an aqueous culture medium containing, as the main carbon source, at least one normal paraffin containing 9 to 20 carbons in the molecule; incubating the culture until citric acid is substantially accumulated in the culture broth; and recovering the thus accumulated citric acid therefrom. The invention also relates to a method for selection of Candida yeasts which produce citric acid in the above process, yet which are incapable of utilizing the citric acid once produced.

3,799,841

MICROBIOLOGICAL REDUCTION OF 11-HYDROXY-15-KETO PROSTAGLANDIN INTERMEDIATES

William Marsheck, Lake Zurich, and Masateru Miyano, Morton Grove, Ill., assignors to G. D. Searle & Co.

No Drawing. Filed Nov. 21, 1972, Ser. No. 308,480

Int. Cl. C12d *1/02*

U.S. Cl. 195—30 **2 Claims**

This invention is concerned with a process for the stereoselective-microbiological reduction of 11-hydroxy-9,15 - dioxoprosta - 8(12),13 - dienoic acid to dl - cis-11,15-dihydroxy - 9 - oxoprosta-8(12),13-dienoic acids by the fermentative action of Flavobacterium sp. NRRL B–5641.dl-cis-11,15-dihydroxy - 9 - oxoprosta-8(12),13-dienoic acid is a hypotensive agent and a key intermediate to other pharmacologically active compounds.

3,799,842

PROCESS FOR THE PRODUCTION OF A NEW ANTIBIOTIC SF–733 SUBSTANCE

Takashi Shomura and Norio Ezaki, Yokohama, Takashi Tsuruoka and Tomizo Niwa, Kawasaki, Eiichi Akita, Tokyo, and Taro Niida, Yokohama, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

Original application Dec. 3, 1968, Ser. No. 780,620, now Patent No. 3,661,829. Divided and this application June 1, 1970, Ser. No. 54,058

Claims priority, application Japan, Dec. 18, 1967, 42/80,601; Oct. 15, 1968, 43/74,634

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **4 Claims**

A process for the production of an antibiotic SF–733 substance which comprises cultivating SF–733 strain of *Streptomyces thermoflavus* in an aueous nutrient medium under submerged aerobic condition and recovering the active ingredient, amorphous free base of SF–733 substance from the medium and more particularly obtaining

free base crystal of SF–733 substance by passing said amorphous substance through ethanol-solvate state on the way of crystallization.

3,799,843

DETERMINATION OF ACID PHOSPHATASE

William S. Stavropoulos, Carmel, and Robert D. Crouch, Indianapolis, Ind., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 10, 1972, Ser. No. 270,072

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **2 Claims**

A novel substrate for determining acid phosphatase which comprises a neutral buffered solution of magnesium thymolphthalein monophosphate is described. A method for using the substrate is also described. The composition is stable for extended periods.

3,799,844

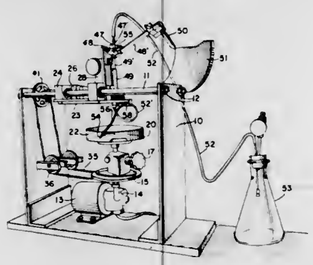
INSTRUMENTAL METHOD FOR PLATING AND COUNTING AEROBIC BACTERIA

Jeptha E. Campbell and James E. Gilchrist, Cincinnati, Ohio, assignors to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

Filed June 2, 1971, Ser. No. 149,137

Int. Cl. C12k *1/00*

U.S. Cl. 195—127 **5 Claims**



A machine for depositing a varying amount of bacteria solution on the surface of a solidified agar plate in the configuration of an archimedes spiral. The amount of solution deposited on the agar is continuously decreased, resulting in a higher concentration of bacteria per unit length at the center of the spiral and a decreasing concentration per unit length at the edge of the plate. After an incubation period the bacteria becomes visible, and are counted by interrupting a light beam incident to a photodiode. The concentration of an unknown solution may be determined by visually counting the number of colonies on a discrete area of the plate.

3,799,845

BEER DISTILLATION

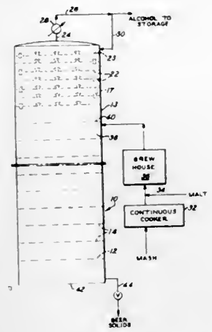
Fred S. Love, Newton Lower Falls, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed July 6, 1971, Ser. No. 159,842

Int. Cl. B01d *3/22*

U.S. Cl. 203—99 **4 Claims**

Beers having adhesive solids tending to deposit and block the interstices of ordinary sieve trays are distilled in a column still with easy two-way gas and liquid flow by using perforated plates having perforations exceeding one-half inch in diameter evenly distributed in a pattern



throughout the tray surface to provide a normal low pressure drop.

3,799,846

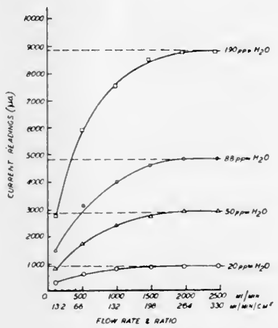
MOISTURE ANALYSIS METHOD

Italo A. Capuano, Orange, Conn., assignor to Olin Corporation

Continuation-in-part of abandoned application Ser. No. 59,886, July 31, 1970. This application June 9, 1972, Ser. No. 261,244

Int. Cl. G01n *27/46*

U.S. Cl. 204—1 T **5 Claims**



The moisture content of fluids is determined, using electrodes separated by a film of suitable hydroscopic substance, by passing the aeriform fluid over a limited area of film at such a rate that only a small part of the moisture is removed by the hydroscopic substance. Simultaneously, the water absorbed by the hygroscopic substance is electrolyzed by passage of direct current between the electrodes. At extremely rapid rates of flow of the fluid, a steady state is rapidly established and the flow of current used in the electrolysis is directly proportional to the concentration of water contained in the fluid. As a result, the measurement of the amperage accurately measures the water content in the fluid. The method is simpler, faster and more accurate than prior art methods depending on coulometric measurement of the total water contained in the sample.

3,799,847

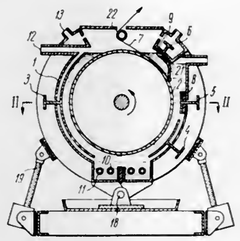
METHOD FOR ELECTROLYTICALLY PRODUCING A METAL BAND

Antonina Vladimirovna Buzhinskaya, Murmansky proezd 6, kv. 54; Leonid Alexandrovich Sergeev, prospekt Miro 34, kv. 2; Vladimir Ivanovich Trofimov, Neglinnaya ulitsa 17, kv. 29; Vyacheslav Borisovich Bobrov, Yaroslavskaya ulitsa 1/9, kv. 30; Anna Ilinichna Migina, B. Spasskaya ulitsa 36/2, kv. 5; and Tatyana Fedorovna Perelygina, Vorgtnikovsky perevlok 11, kv. 31, all of Moscow, U.S.S.R.; and Anatoly Borisovich Bobrov, deceased, late of Moscow, U.S.S.R.; by Evodika Nikolaevna Bobrova, ulitsa Arbat 51, kv. 117; and Irina Maximovna Bobrova, Konkovo-Derevlevo 1, mikroraion, korpus 4, kv. 118, both of Moscow, U.S.S.R., administrators

Filed May 9, 1972, Ser. No. 251,737

Int. Cl. C23b *7/02, 7/04;* **B01k** *3/02*

U.S. Cl. 204—13 **1 Claim**



The method resides in depositing the metal electrolytically on the surface of a cathode from an electrolytic solution, with the current density being successively varied in a plurality of stages: during the first ones of these stages the current density is maintained within a range from 1,000 to 5,000 a./sq. m., during the last stage but one the current density is maintained within a range from 5,000 to 10,000 a./sq. m. for a period from 1 second to 300 seconds, during the last stage the current density is maintained within a range from 4,000 to 50,000 a./sq. m. for a period from 1 second to 200 seconds, the electrolytic solution being positively agitated during all said stages except the last one.

The apparatus comprises at least three anode plates arranged about the periphery of the cathode drum and raidially spaced therefrom within the bath containing the electrolytic solution, the anode plates being connected to the individual power supply sources. The two anode plates, which are the last ones in the direction of the progress of the metal band, have the ratio of the respective surface areas thereof within a range from 15:1 to 5:1. The interelectrode space, pertaining to the last one of these anode plates, is separated by a partition from the rest of the internal space of the bath.

3,799,848

METHOD FOR ELECTROLYTICALLY COATING ANODIZED ALUMINUM WITH POLYMERS

Edwin S. Kolic, Gahanna, Ohio, and Sigmund Bereday, 11 Suchville, Bayamon, Puerto Rico; said Kolic assignor to said Bereday

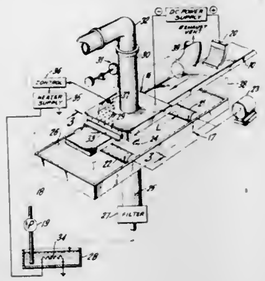
Filed Apr. 1, 1971, Ser. No. 130,310

Int. Cl. C23b *9/02;* **C23f** *17/00*

U.S. Cl. 204—38 E **13 Claims**

An aluminum surface is specially anodized to provide a polymer-active oxide layer, following which a film-forming polymeric organic material is applied to the treated surface and bonded to it by means of the polymer-active oxide layer.

The apparatus comprises means for continuously transporting a length of aluminum metal in and through a treatment zone, a hydraulic circuit including a wetting head adjacent and generally directed at the metal as it passes through the zone, the circuit including means for continuously supplying electrolyte to the wetting head to discharge the same at the passing metal length, an electric-supply means including means for anodically effecting an



electrical coupling with said metal length, and an electrical connection to a cathode in contact with the electrolyte in the hydraulic circuit, such that in the presence of a continuously sprayed liquid stream of electrolyte from the head to the metal, an electrochemical circuit is completed via the stream for carrying out the foregoing method.

3,799,849

REACTIVATION OF CATHODES IN CHLORATE CELLS

Edward H. Cook, Jr., Lewiston, and Daniel J. Snyder, Depew, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 98,178, Dec. 14, 1970, which is a continuation-in-part of application Ser. No. 688,985, Dec. 8, 1967, both now abandoned. This application June 26, 1972, Ser. No. 266,090

Int. Cl. C01b *11/26*

U.S. Cl. 204—95 **4 Claims**

Steel cathodes which have become deactivated by exposure to an electrolyte containing in excess of 300 grams per liter alkali metal chlorate during a shutdown period in chlorate cell operation are reactivated by resuming electrolysis with an alkali metal chloride brine having a chlorate concentration below 300 grams per liter, continuing electrolysis while maintaining this lower level of chlorate concentration in the brine until the hydrogen efficiency of the cell reaches at least 95% and, thereafter, increasing the chlorate concentration in the electrolyte to above 300 grams per liter.

3,799,850

ELECTROLYTIC PROCESS OF EXTRACTING METALLIC ZINC

Ivan Dimitrov Entshev, Nikola Tsanov Kinchev, Gueorgui Alexandrov Haralampiev, Alexander Minchev Alexandrov, and Todor Ivanov Smilenov, Plovdiv, and Jossif Genchev Stojanov, Sofia, Bulgaria, assignors to NIIZM, Plovdiv, Bulgaria

No Drawing. Continuation-in-part of abandoned application Ser. No. 796,605, Feb. 4, 1969. This application Sept. 8, 1971, Ser. No. 178,787

Int. Cl. B01k *3/00;* **C22d** *1/22*

U.S. Cl. 204—119 **4 Claims**

A method for obtaining zinc from its sulfuric acid solutions by an electrolytic process in which the current flow between the electrodes is reversed for from 0.3 to 1.2% of the electrical current cycle and the frequency of changing the sign of the electrodes is from 2.0 to 6.0 times a minute.

3,799,851

METHOD OF REMOVING ORGANO-LEAD COMPOUNDS FROM AQUEOUS MEDIA BY ALTERNATING CURRENT ELECTROLYSIS

Joseph E. Milam, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Dec. 19, 1972, Ser. No. 316,594
Int. Cl. C02b *1/82*
U.S. Cl. 204—149 **10 Claims**

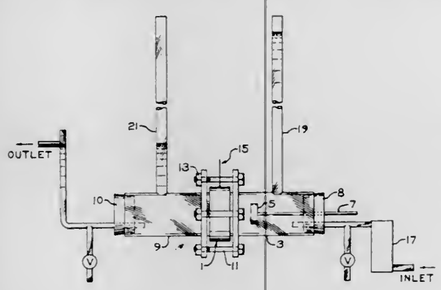
A method for reducing the organo lead content of dilute aqueous solutions and dispersions is disclosed. The lead is present as various organo-lead compounds from the manufacture of automotive anti-knock additives, and is in the form of compounds of the type $PbR_{4-n}Cl_n$, where R is an alkyl group and *n* is a number between 0 and 2. As disclosed herein, a solution containing the organo-lead compound is electrolyzed in an electrolytic cell by alternating current electricity.

3,799,852

METHOD OF REDUCING THE ORGANO-LEAD CONTENT OF AQUEOUS SOLUTIONS BY ELECTROLYSIS IN A POROUS CATHODE ELECTROLYTIC CELL

Joseph E. Milam and Edward E. Estep, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1972, Ser. No. 316,597
Int. Cl. C02b *1/82;* **C23b** *5/16*
U.S. Cl. 204—149 **10 Claims**



A method and apparatus are disclosed for reducing the organo-lead content of dilute aqueous solutions. The lead, present as organo-lead compounds, e.g., from the manufacture of automotive anti-knock additive, is in the form of compounds of the type $PbR_{4-n}X_n$ where R is an alkyl group having from 1 to 3 carbon atoms, X is a halogen, and *n* is a number from 0 to 2. Most commonly, R is a methyl or ethyl group, *n* is 1, and X is chlorine.

As disclosed herein, the solution containing the organo-lead compound is passed through an electrolytic cell having a porous, electrolyte-permeable graphite cathode.

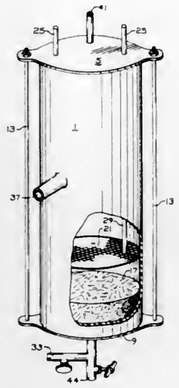
3,799,853

METHOD FOR REDUCING THE ORGANO LEAD COMPOUND CONTENT OF AQUEOUS SOLUTIONS BY ELECTROLYSIS IN AN ELECTROLYTE PERMEABLE METALLIC CATHODE ELECTROLYTIC CELL

William Worth Carlin, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 19, 1972, Ser. No. 316,648
Int. Cl. C02b *1/82;* **C23b** *5/16*
U.S. Cl. 204—149 **8 Claims**

A method and apparatus for reducing the lead content of dilute aqueous solutions is disclosed. The lead is present as organo-lead compounds from the manufacture of automotive anti-knock compounds most frequently as triethyl lead chloride. The organo-lead compound-containing solution is passed through an electrolytic cell having an elec-



trolyte permeable cathode fabricated from a metal having hydrogen over voltage in excess of 1.6 volts. The lead is deposited on the cathode.

3,799,854

METHOD OF ELECTRODEPOSITING CATIONIC COMPOSITIONS

Robert D. Jerabek, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed June 19, 1970, Ser. No. 47,917
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **17 Claims**

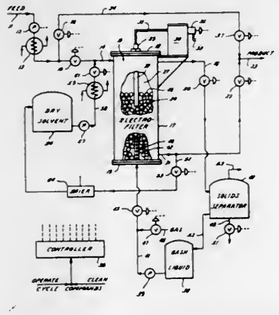
It has been found that aqueous coating compositions comprising a blocked organic polyisocyanate and an amine group containing resin can be electrodeposited. These compositions deposit on the cathode to provide coatings having excellent properties.

3,799,855

SOLIDS REMOVAL PROCESS

Albert D. Franse, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed June 15, 1972, Ser. No. 263,072
Int. Cl. B03c *5/02, 5/00*
U.S. Cl. 204—188 **17 Claims**



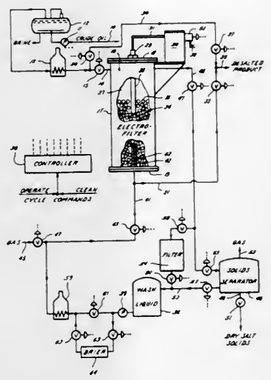
A process for the removal of solids from a viscous heavy hydrocarbon stream such as petroleum residuum. The process includes the step of adjusting the temperature of a porous bed until the stream can flow therethrough without any significant condensation of dissolved or entrained water. The solids containing stream is passed through the porous bed which bed is formed of hard granular spheroidal particles. These particles are substantially uniform in size and of a rigid and substantially incompressible dielectric material. An electric field is established within the porous bed having an intensity of at least 5 kilovolts per inch of DC potential. The electric field causes the removal of solids from the stream and their tenacious adhesion to the particles. The stream with reduced solids contents is removed from the porous bed to a subsequent utilization. The particles are periodically cleaned of the accumulated solids to restore the solids-removal efficiency of the porous bed.

3,799,856

WATERLESS DESALTING PROCESS

Albert D. Franse, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed June 15, 1972, Ser. No. 263,019
Int. Cl. B03c *5/02, 5/00*
U.S. Cl. 204—188 **14 Claims**



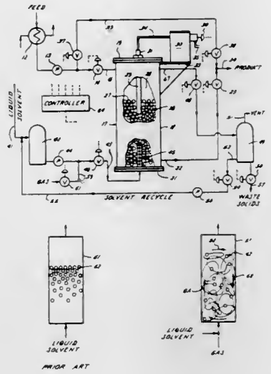
A process for the waterless desalting of a stream of salt-contaminated hydrocarbon such as crude oil and its products. The salt-carrying stream is provided (e.g., electric dehydration) with a dispersed water content of less than 1% by volume. The temperature of the stream is adjusted until all of the water is in solution within the hydrocarbon phase and only salt solids are dispersed within the stream. The stream is passed, with all of the water being held in solution, through a porous bed formed of hard granular spheroidal particles. The particles are substantially uniform in size and of a rigid and substantially incompressible dielectric material. An electric field is established within the bed having an intensity of at least 5 kilovolts per inch of DC potential. The salt solids are removed from the stream by their tenacious adhesion to the spheroidal particles. The stream with reduced salt solids is removed to a subsequent utilization. The spheroidal particles are periodically cleaned in the absence of the electric field of the accumulated salt solids with a non-aqueous wash liquid for restoring the efficiency of the bed to remove further quantities of salt solids from the stream under the influence of the electric field. In another aspect of the present process, salt solids are obtained from the particle cleaning in a substantial anhydrous form for ready disposal.

3,799,857

ELECTROFILTER SYSTEM

Albert D. Franse, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed June 15, 1972, Ser. No. 263,044
Int. Cl. B03c *5/00, 5/02*
U.S. Cl. 204—188 **20 Claims**



An electrofilter system for removing solids from an organic liquid. The system comprises a vessel with an upright flow axis, inlet and outlet means for passing the organic liquid through a particulate bed residing in the vessel. The bed is formed of hard-granular, spheroidal particles of substantial uniformity in size and of a rigid and substantially incompressible dielectric material. The vessel has a void region above the bed to permit a substantial vertical expansion of the particles. An electric field within the bed has an intensity sufficient for removing solids from the organic liquid by their adhesion to the particles. The particles are periodically cleaned of adhering solids by means providing for (1) interruption of the electric fields, (2) expansion of the particles into the void region, and (3) induction of particles into a circular movement relative to one another, and then (4) removal of the released solids from the vessel.

3,799,858

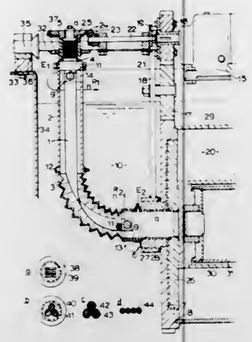
CURRENT LEAD-IN DEVICES FOR CONTAINERS EMPLOYED IN ELECTROLYTIC TREATMENTS

Hans Henig, Parsifalstrasse 6, 85 Nuremberg, Germany

Filed May 15, 1972, Ser. No. 253,250
Claims priority, application Germany, May 15, 1971, P 21 24 270.6
Int. Cl. C23b *5/78*
U.S. Cl. 204—213 **10 Claims**

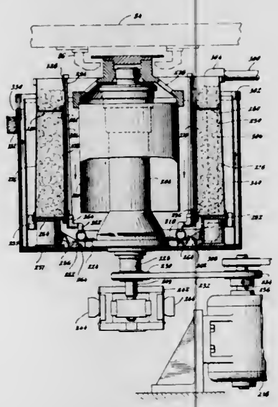
A current lead-in device for supplying direct current to rotatable electrolytic containers, especially tumbling barrels for electroplating metal or plastics parts in bulk, consists essentially of a flexible conductor surrounded by a flexible casing which is electrically insulating and chemi-

cally resistant against the electrolyte, and also includes means for rotating the conductor synchrously with the



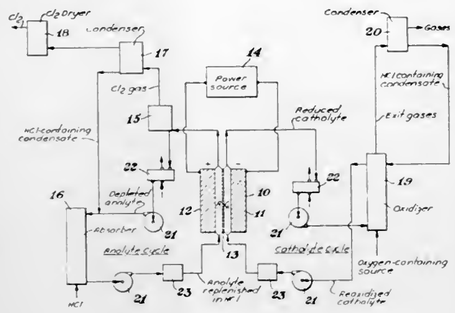
container, operative upon the conductor at two or more points spaced apart thereon, usually above all the ends thereof.

3,799,859
ELECTROFORMING SYSTEM
Edwin M. Wallin, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed May 8, 1972, Ser. No. 250,894
Int. Cl. B23p *1/00;* **C23b** *7/02*
U.S. Cl. 204—216 **12 Claims**



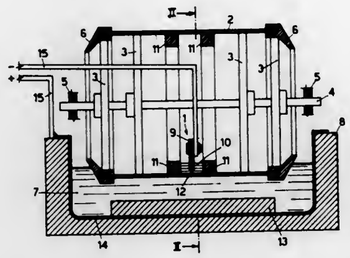
A method and apparatus is disclosed for forming a relatively thin, flexible, electrically conductive endless belt on a support mandrel wherein the mandrel and belt exhibit different temperature coefficients of expansion. The method comprises the steps of preheating the support mandrel to a temperature of a plating solution, positioning the preheated mandrel in an electrolytic cell containing the plating solution, rotating the mandrel in the solution for an interval of time sufficient for depositing a film of predetermined thickness on a surface of the mandrel, and withdrawing the mandrel and an endless belt formed thereon from the solution and cooling the mandrel and belts in a cooling bath for facilitating the removal of the belts from the mandrel.

3,799,860
APPARATUS FOR PREPARATION OF Cl_2 BY ELECTROLYSIS OF HCl AND POLYVALENT METAL CHLORIDES
Gerhard Gritzner and James J. Leddy, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Original application July 24, 1969, Ser. No. 844,402, now Patent No. 3,635,804. Divided and this application Jan. 14, 1972, Ser. No. 218,005
Int. Cl. C22d *1/02*
U.S. Cl. 204—258 **18 Claims**



The present invention relates to a dual electrolyte system utilizing a diaphragm electrolytic cell. The anolyte and catholyte, containing aqueous HCl and a polyvalent reducible metal chloride, are processed and recycled separately. The system of the present invention produces high purity Cl_2 at higher than conventional current efficiencies.

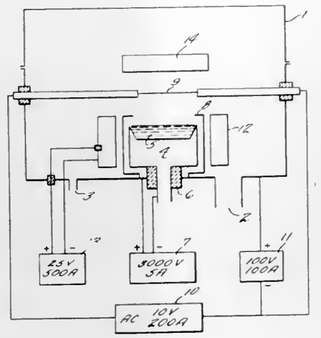
3,799,861
ELECTRICAL CONTACT FOR EQUIPMENT USED IN THE ELECTROLYTICAL PRODUCTION OF METALS, PARTICULARLY COPPER
Bruno Di Pietro, Milan, Italy, assignor to Raptes Researches Applications and Trade Establishment, Triesen, Liechtenstein
Filed July 14, 1972, Ser. No. 271,985
Claims priority, application Italy, July 22, 1971, 7,592/71
Int. Cl. B01k *3/00*
U.S. Cl. 204—279 **9 Claims**



An electrical contact between moving and stationary conducting elements, in particular for equipment used in the electrolytical production of metals, such as copper in form of plates, which eliminates the wearing of the contact points, the voltage drops, the overheating of the movable contact and other inconveniences. This contact essentially comprises a mercury bath contained within

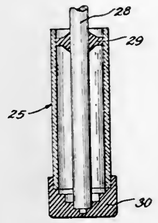
a number of beads of flexible and electro-insulating material, and the inside face of a metallic belt rotatably mounted around pulleys. In this bath is immersed a conducting bar spaced from said belt by means of pawls in anti-friction insulating material in order to prevent the direct contact between the bar and the rotating belt.

3,799,862
APPARATUS FOR SPUTTERING
Richard C. Krutenat, Middletown, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Original application May 13, 1970, Ser. No. 36,798, now abandoned. Divided and this application Nov. 19, 1971, Ser. No. 200,566
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **1 Claim**



Apparatus generating very high power densities in the vicinity of a sputtering target and liquefaction thereof is utilized to provide very rapid deposition of high temperature alloys with minimal thermal fractionation.

3,799,863
ELECTROPHORESIS AND ELECTROFOCUSING APPARATUS
Rashid A. Zeineh, 5742 W. Dakin St., Chicago, Ill. 60634
Original application Apr. 26, 1971, Ser. No. 137,490, now Patent No. 3,699,033. Divided and this application Sept. 20, 1972, Ser. No. 290,432
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **7 Claims**

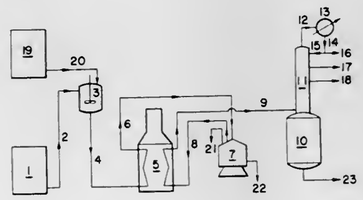


A method and apparatus for electrophoretic and electrofusing analysis. Tubes with gel around an internal core rod or rods enable analysis of samples which are electrophoresed within the tube without removing the gel and sample from the tube.

3,799,864
FLUID CATALYTIC CRACKING PROCESS
Dorrance P. Bunn, Jr., Houston, and Roy E. Pratt, Groves, Tex., assignors to Texaco Inc., New York, N.Y.
No Drawing. Filed Jan. 2, 1973, Ser. No. 320,036
Int. Cl. B01j *9/20;* **C10g** *11/00*
U.S. Cl. 208—80 **9 Claims**

A fluidized catalytic cracking process employing multiple elongated riser reaction zones wherein a charge stock, comprising a light fraction boiling in the 400–650° F. range and having a pour point of +10° F. or higher and a heavy fraction boiling above 650° F., is converted to produce substantial yields of high octane debutanized naphtha and light cycle gas oil boiling in 400–650° F. range and having a pour point of 0° F. or less. The light fraction is separately cracked in a first riser reaction zone at high temperature and high conversion for control of light cycle gas oil product pour point. The heavy fraction is separately cracked in a second riser reaction zone at moderate temperature and moderate conversion for control of naphtha to light cycle gas oil product ratio.

3,799,865
PROCESS FOR PRODUCING NEEDLE-SHAPED COAL PITCH COKE
Yoshio Suetsugu, Kitakyushu-shi, and Harunori Miyazaki, Kawasaki-shi, Japan, assignors to Nittetsu Chemical Industrial Co., Ltd., and Lummus-Japan Company, Ltd., both of Tokyo, Japan
Filed Nov. 30, 1971, Ser. No. 203,251
Claims priority, application Japan, Dec. 2, 1970, 45/105,950
Int. Cl. C10g *9/14*
U.S. Cl. 208—131 **9 Claims**

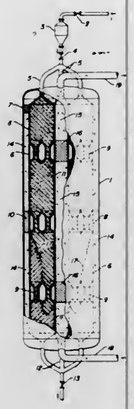


A process for producing needle-like coal pitch coke by delayed coking method characterized by steps of removing quinoline-insoluble matter from the coal pitch, heating said pitch at a temperature above 450° C., introducing the heated pitch into a coking reactor at a surface velocity tons/hr./m.^{2} of cross section of the coking reactor) less than the value of $(T_o-450)/34 \cdot D$, wherein T_o represents temperature (° C.) of the starting pitch at the inlet of the coking reactor and D represents ratio by weight of distillate lighter than 400° C. in the starting pitch, and maintaining the average temperature in the reactor at a temperature above 400° C. for at least 20 hours, while light oil and other minor components which do not take part in the reaction are withdrawn from the top of the reactor.

3,799,866
HYDROCARBON CONVERSION PROCESS UTILIZING A MOVING BED REACTOR
Robert A. Lengemann, London, England, assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 18, 1972, Ser. No. 298,711
Int. Cl. C10g *35/06*
U.S. Cl. 208—139 **11 Claims**

A moving bed of a catalyst which deactivates in a zonal manner is transferred downward through a multipass radial flow reactor while a hydrocarbon feed stream flows

in a stepwise countercurrent fashion across the catalyst. To provide uniform conversion and maximum usage of the catalyst, a zone of active catalyst and a zone of de-



activated catalyst are both maintained across the height of a single selected pass by controlling the catalyst transfer rate.

3,799,867

REFORMING WITH PLATINUM AND TANTALUM OR NIOBIUM CATALYST

Joseph Robin Cardwell, Ashford, and Christopher Ronald Pout, Feltham, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Nov. 3, 1971, Ser. No. 195,442

Claims priority, application Great Britain, Nov. 25, 1970, 55,983/70

Int. Cl. C10g *35/06;* **B01j** *11/78, 11/12*

U.S. Cl. 208—139 **2 Claims**

A catalyst of 0.01–5% Pt on a refractory support, contains also 0.01–5% wt. of Ta or Nb. The support is preferably alumina which may contain halogen. The Ta or Nb may be added at any convenient stage in the catalyst preparation, including adding it as a chloride or fluoride during the preparation of the support.

The Pt-Ta or Pt-Nb catalysts may be used for hydrocarbon conversion, particularly reforming isomerization, hydrocracking, and hydrogenation.

3,799,868

RISER-REACTOR SYSTEM PROVIDING IMPROVED FLUIDIZED CATALYST CONTACTING

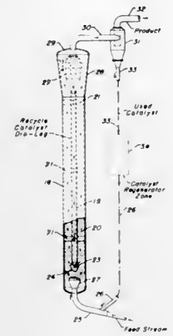
James E. Gantt, Elmwood Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 28, 1971, Ser. No. 193,510

Int. Cl. B01j *9/00;* **C10g** *13/14*

U.S. Cl. 208—153 **5 Claims**

A dilute phase riser-reactor system with an axial core member therethrough provides an elongated upwardly flowing annular-shaped column of catalyst reactant mixture. The elimination of a central portion of a large riser-reactor also eliminates the usual zone of low concentration of particles and thus enhances the fluidized contacting operation. A modified construction and arrangement utilizing a central core member as a dip-leg for the recirculation of catalyst has the advantage of providing for a high catalyst to oil ratio in the riser-reaction zone and



a lowered quantity of catalyst to be handled by a regenerator.

3,799,869

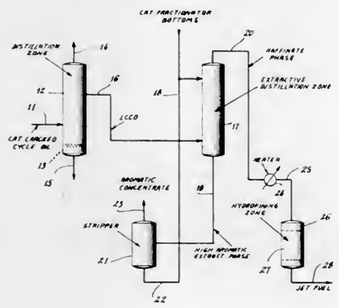
METHOD OF PRODUCING JET FUEL BY UPGRADING LIGHT CATALYTIC CYCLE OIL

Donald W. Deed, Millburn, and George G. Lukk, Murray Hill, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Apr. 13, 1972, Ser. No. 243,809

Int. Cl. C10g *21/14, 31/14*

U.S. Cl. 208—211 **9 Claims**



Jet fuel is produced by extractive distillation of light catalytic cycle oil boiling in the jet fuel boiling range using catalytic fractionator bottoms as the solvent, and subsequent finishing such as mild hydrofining of the low-aromatics raffinate.

3,799,870

LEAD TRAP

Israel J. Heilweil, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 245,339, Apr. 19, 1972. This application Mar. 9, 1973, Ser. No. 339,683

Int. Cl. C10g *17/00, 29/04*

U.S. Cl. 208—251 **6 Claims**

In providing lead free gasoline from gasoline which may become contaminated during transportation or storage in vessels also used for transport and storage of leaded gasoline; a lead trap is provided at the point of dispensing to motor vehicles characterized by a material having selective chemisorption properties with respect to tetraalkyl lead.

3,799,871

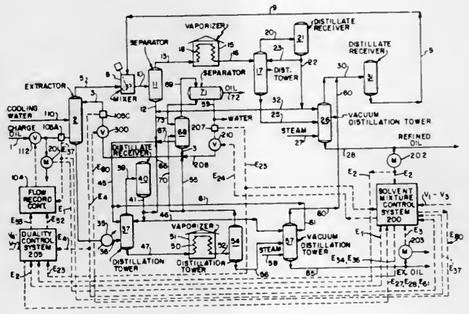
MEANS AND METHOD FOR OPTIMIZING REFINED OIL YIELD FROM A SOLVENT REFINING UNIT

Avilino Sequeira, Jr., Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,313

Int. Cl. C10g *21/00*

U.S. Cl. 208—324 **13 Claims**



A control system controls a solvent refining unit which refines charge oil to yield refined oil and extract oil using a mixture of at least two solvents of different economic values. A condition, such as the refractive index or the specific gravity, of the charge oil, of the refined oil and of the extract oil is sensed and corresponding signals C_C, C_R and C_E, respectively, are provided. A network provides a signal corresponding to the refined oil volume percent yield Y in accordance with the condition signals C_C, C_R and C_E and the following equation:

$$Y = \frac{C_E - C_C}{C_E - C_R}$$

The refined oil yield Y is used to determine the ratio of solvent mixture to refined oil to control the solvent mixture while maintaining the quality of the refined oil. The control system changes the flow rate of one of the solvents in a stepping fashion to affect the solvent mixture. The solvent mixture to refined oil ratio for a current step is compared with the solvent mixture refined oil ratio of the next previous step. When a minimum solvent mixture to refined oil ratio is obtained, the control system maintains the solvent mixture and that solvent mixture to refined oil ratio.

3,799,872

OIL-WATER SEPARATION

Raymond E. Hargis and Donald O. Bartley, Tyler, Tex., assignors to Howe-Baker Engineers, Inc., Tyler, Tex.

No Drawing. Filed Jan. 16, 1973, Ser. No. 324,019

Int. Cl. B01d *11/00*

U.S. Cl. 210—21 **8 Claims**

A method for separating the oil fraction from the aqueous fraction in an oil-containing aqueous stream by contacting the stream with 5 to 20% by volume of a low boiling hydrocarbon liquid and 5 to 100 p.p.m. by volume of a liquid surfactant composition.

3,799,873

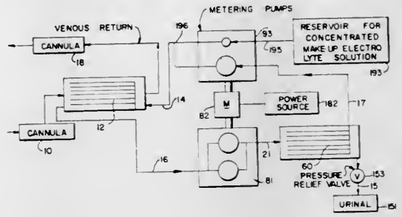
ARTIFICIAL KIDNEY

Clinton E. Brown, Silver Spring, Md., assignor to Hydronautics, Incorporated, Laurel, Md.

Continuation-in-part of abandoned application Ser. No. 3,102, Jan. 15, 1970, which is a continuation-in-part of application Ser. No. 722,727, Apr. 19, 1968, now Patent No. 3,579,441. This application July 9, 1971, Ser. No. 161,864

Int. Cl. B01d *13/00*

U.S. Cl. 210—22 **25 Claims**



An extra-corporeal device employing dialysis and filtration means performs the function of a natural kidney. In the device, a bodily fluid such as peritoneal fluid or arterial blood is withdrawn from the body and passed through a dializer that causes selective diffusion of toxic, low molecular weight solutes into a water-containing dialysate. The dialysate and solutes are then passed through a filtration means or combination of filtration and electrodialzing means that permit only the passage of pure water or pure water and dissolved electrolytes while retaining the low molecular weight toxic solutes. The purified filtrate from the filtration means is recycled and combined with a controlled amount of make-up electrolyte solution as the dialysate for the dialyzer and the unfiltered residue from the filtration means is discharged as waste. The peritoneal fluid or blood in transit through the dialyzer is thus cleansed of toxic substances and is suitable for return.

3,799,874

WELL CEMENTING

Patrick N. Parker, Allen, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 164,089, July 19, 1971, which is a division of application Ser. No. 42,459, June 1, 1970, now Patent No. 3,625,286. This application Mar. 16, 1973, Ser. No. 342,196

Int. Cl. E21b *33/16*

U.S. Cl. 252—8.55 R **6 Claims**

A spacer composition for use while cementing a well that contains an oil base drilling fluid, the spacer containing a water-in-oil emulsion and at least one of an inorganic and organic material such as halides, borates, phosphates, and the like.

3,799,875

CUTTING OIL COMPOSITIONS

Raymond Rohde, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,271

Int. Cl. C10m *1/38, 1/30*

U.S. Cl. 252—48.8 **5 Claims**

Cutting oil composition:

(1) mineral oil
(2) hydrogenated butadiene-styrene copolymer
(3) sulfur-containing organic extreme pressure agent
(4) chlorine-containing organic extreme pressure agent.

3,799,876

CORROSION INHIBITING LUBRICATION METHOD

James A. White, Groves, and Ralph P. Chesluk, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,362
Int. Cl. C10m *1/20, 1/32*
U.S. Cl. 252—51.5 R 2 Claims

Method for inhibiting corrosion in a power system containing a lubricating oil and wherein metallic members of the system are only intermittently contacted with the liquid lubricating oil and are susceptible to corrosion comprising adding an alkylaminoalkanol or alkylaminomethylether corrosion inhibitor to the lubricating oil, said alkylaminoalkanol or alkylaminomethylether having the formula:

RR'N—Y—OR

in which R is an alkyl radical having from 3 to 10 carbon atoms, R' is hydrogen, an alkyl radical having 1 to 8 carbon atoms, or in conjunction with R a cyclohexyl radical, Y is an alkylene radical having from 2 to 3 carbon atoms and R'' is hydrogen or a methyl group.

3,799,877

METHOD OF PREPARING HYDROCARBYL-SUBSTITUTED HETEROCYCLIC NITROGEN COMPOUNDS, REACTION PRODUCTS PREPARED THEREBY AND COMPOSITIONS CONTAINING SAME

John C. Nnadl, Glassboro, and Phillip S. Landis, Woodbury, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,466
Int. Cl. C10m *1/32, 3/26*
U.S. Cl. 252—51.5 R 9 Claims

Alpha-hydrocarbyl or beta-hydrocarbyl mono- and bislactams, hydrocarbyl tetrahydropyrrolidines and mixtures thereof are obtained by the steps of reducing a maleic anhydride-olefin adduct with a metal or ammonium hydride, in the presence of a solvent in which the said anhydride is not associated, and reacting the resulting product with an amine, such as alkylene-polyamine, to produce the resulting product. Alternatively, the maleic anhydride-olefin adduct is reacted with the amine or polyamine to produce the corresponding imido or bis-imido type product, followed by the said reducing step. The maleic anhydride-olefin adduct of particular interest is an alkenylsuccinic anhydride, preferably in which the alkenyl group is a radical of from about 6 to about 600, and preferably from about 20 to about 300, carbon atoms. The products of this invention have utility as detergents or dispersants in industrial organic fluids, such as lubricating oils, and fuels. They also act as neutralizing agents, anticorrosion agents and the like.

3,799,878

METHOD OF HYDRAULIC TRANSMISSION OF POWER AND HYDRAULIC FLUID COMPOSITIONS THEREFOR

Youji Komatsu, Ichihara, and Tohru Kamita and Kazuo Tanaka, Soka, Japan, assignors to Maruzen Oil Company Limited, Osaka, Japan

No Drawing. Filed July 15, 1971, Ser. No. 163,059
Claims priority, application Japan, July 21, 1970, 45/63,733
Int. Cl. C09k *3/00*
U.S. Cl. 252—79 20 Claims

A method of hydraulic transmission of power which comprises employing a fluid comprising a polyethylene glycol monopivalate of the general formula:

$$HO-(C_2H_4O)_n-\overset{\overset{O}{\|}}{C}-C-C(CH_3)_3$$

wherein *n* represents an integer of 2–4, as a hydraulic fluid in fluid pressure systems.

The present invention relates also to a hydraulic fluid composition comprising the polyethylene glycol monopivalate having 2–4 oxyethylene groups as a principal component.

3,799,879

METHOD FOR CLEANING DISHES AND THE LIKE

Andries Francke and Karl Ludwig Heinz, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 228,235, Feb. 22, 1972, which is a continuation of application Ser. No. 866,720, Oct. 15, 1969, which is a continuation-in-part of application Ser. No. 856,902, Sept. 4, 1969, which in turn is a continuation of application Ser. No. 683,004, Nov. 14, 1967, all now abandoned. This application Apr. 27, 1972, Ser. No. 248,076
Int. Cl. C11d *7/42*
U.S. Cl. 252—89 6 Claims

This invention relates to a method for cleaning dishes and the like, and comprises applying to the dishes an aqueous solution of a dishwashing composition containing an amylolytic enzyme prepared from bacteria or fungi together with a detergent surfactant and a water-soluble builder salt. The composition has a pH of 7 to 9 at a concentration of 3 g. per litre in aqueous solution.

3,799,880

SPRAY DRIED CONTROLLED DENSITY DETERGENT COMPOSITION

William A. Kelly, Haworth, Lynn H. Lander, Harrington Park, and Frank C. Mlcoch, Jr., East Paterson, N.J., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Jan. 4, 1972, Ser. No. 215,405
Int. Cl. C11d *9/14, 11/02, 13/20*
U.S. Cl. 252—110 15 Claims

Soap and a resin which is a copolymer of maleic anhydride and either ethylene or methyl vinyl ether, are used in combination as additives to nonionic detergent crutcher slurries to be spray dried, for the purpose of controlling the bulk density of the spray-dried product within a desirably low range.

3,799,881

CATHODOCHROMIC CATHODE RAY TUBE AND METHOD FOR PREPARING CATHODOCHROMIC SODALITE FOR SAID TUBE

Igal Shidlovsky, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Original application Jan. 13, 1971, Ser. No. 106,036, now Patent No. 3,705,323. Divided and this application July 10, 1972, Ser. No. 270,247
Int. Cl. G09b *5/20*
U.S. Cl. 252—300 4 Claims

A cathodochromic cathode ray tube comprises an image screen employing improved cathodochromic sodalite. The cathodochromic sodalite is prepared by forming an amorphous mass from a mixture of a sodium halide, sodium hydroxide, aluminum oxide and silicon dioxide. The mass is calcined at an elevated temperature so as to drive out hydrated water from the mass. The calcined mass is crushed to a powder and then sintered so as to form crystalline sodalite. The temperature is raised from the initial sintering temperature to 1000° C. or more so as to cause a portion of the sodium halide in the sodalite to be evaporated therefrom thereby resulting in a non-stoichiometric crystal having vacancies in the positions which sodium and halide ions normally occupy in the crystal.

3,799,882

PRODUCTION OF METAL OXIDES

Walter Philip Holland, Whitehaven, England, assignor to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed June 28, 1971, Ser. No. 157,740
Claims priority, application Great Britain, June 30, 1970, 31,777/70
Int. Cl. C01g *43/02*
U.S. Cl. 252—301.1 R 6 Claims

A method of producing a metal oxide by thermal decomposition of its nitrate by dispersing an aqueous solution of the nitrate on a carbon matrix and heating to decompose the nitrate and, in the presence of oxygen to oxidize the carbon matrix. The method has particular advantage for the production of fissile oxides to be used as nuclear fuel.

3,799,883

PRODUCTION OF HIGH PURITY FISSION PRODUCT MOLYBDENUM-99

Hirofumi Arino, New Windsor, N.Y., Henry H. Kramer, Mahwah, N.J., and James J. McGovern, Monroe, and Alfred K. Thornton, New Hampton, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,396
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R 33 Claims

High purity fission product molybdenum-99 is prepared by a process which comprises the steps of:

(a) irradiating a uranium material,
(b) dissolving the irradiated uranium material in an aqueous inorganic acid to form a solution,
(c) precipitating molybdenum-99 by contacting the solution with alpha-benzoinoxime,
(d) recovering the molybdenum precipitate and dissolving the precipitate in an aqueous alkaline solution,
(e) contacting the solution containing the dissolved molybdenum-99 with adsorbents which are selective for the removal of impurities associated therewith, and
(f) thereafter recovering radioactive molybdenum-99.

3,799,884

PREPARATIONS OF SULFUR SUSPENSIONS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed June 29, 1972, Ser. No. 267,555
Int. Cl. B01j *13/00*
U.S. Cl. 252—313 R 8 Claims

Aqueous suspensions of finely subdivided sulfur having particle size ranges suitable for use as soil sulfur and/or as pesticidal sulfur are described. The invention comprises a method for the preparation of these suspensions of sulfur wherein porous particulate sulfur is suspended in an aqueous medium and is subjected to high shear and turbulence by pumping the resulting suspension through a closed circulation system for a period of time from 5 to about 200 minutes, sufficient to comminute the particulate sulfur to a finely subdivided state and form a stable suspension of the finely subdivided sulfur. In its preferred embodiment, the sulfur is distributed and handled as porous particulate sulfur and, at the application site, the particulate sulfur is added to an aqueous medium contained in the vessel of a conventional spray applicator and is circulated through the pump of the applicator and returned to the vessel for the requisite period of time to comminute the sulfur to the finely subdivided state. When the sulfur is sufficiently subdivided, the pump discharge is diverted to the spray nozzles of the applicator and the sulfur is applied to the soil or to the plants in an otherwise conventional procedure.

3,799,885

TEST SYSTEM FOR MONITORING HEPARIN

Lewis Hilliard Dennis, Silver Spring, and Woodrow James Reno, Glen Burnie, Md., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,581
Int. Cl. G01n *33/16*
U.S. Cl. 252—408 2 Claims

A test system employing a novel buffered calcium chloride reagent adapted for use in monitoring heparin therapy is disclosed. The buffered test reagent is a pH stable calcium chloride solution having an activator admixed therewith. The novel buffer employed is n-2-hydroxy ethyl piperazine-n'-2-ethane sulfonic acid.

3,799,886

CATALYSTS FOR THE MANUFACTURE OF PHTHALIC ANHYDRIDE

Klaus Felice, Donaustauf, Josef Sedlmeier, Munich, Walter Gierer, Regensburg, Werner Frey, Munich, and Otto Wiedemann, Munich-Geiselgasteig, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,401
Claims priority, application Germany, Feb. 12, 1971, P 21 06 796.9
Int. Cl. B01j *11/06*
U.S. Cl. 252—461 2 Claims

A catalyst for use in manufacturing phthalic anhydride consisting of a carrier coated with a coating of vanadium pentoxide and titanium dioxide, which after a 5-hour tempering period at 400° C. has a BET surface of 15–100 sq. m./g.

3,799,887

PERIPHERAL IMPREGNATION OF CATALYST SUPPORT MATERIAL

John F. Brennan, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,199
Int. Cl. B01j *11/06, 11/32*
U.S. Cl. 252—463 5 Claims

A porous catalyst base or support material, for example alumina, is initially saturated with a polymerizable hydrocarbon, for example styrene, which is thereafter polymerized. Subsequent impregnation of the support with catalytic materials is thus restricted to the peripheral surface thereof. The impregnated support is subsequently calcined whereby the hydrocarbon polymer is depolymerized and separated therefrom.

3,799,888

METHOD OF PREPARING A CATALYST OF VANADIUM-TITANIUM OXIDES FOR VAPOR-PHASE OXIDATION AND OXIDIZING AMMONOLYSIS OF AROMATIC AND HETEROCYCLIC COMPOUNDS

Boris Viktorovich Suvorov, ulitsa Pushkina 102/44, kv. 27; Alfred Davydovich Kagarlitsky, ulitsa Timiryazeva 71, kv. 44; Dauren Khamitovich Sembaev, ulitsa Furmanova 91/97, kv. 7; Ivetta Sergeevna Kolodina, 7 Mikroraion 36, kv. 18; and Aleftina Ivanovna Loiko, ulitsa Dekhakanskaya 139, all of Alma-Ata, U.S.S.R.

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,933
Int. Cl. B01j *11/06, 11/22*
U.S. Cl. 252—469 5 Claims

A method of preparing a catalyst of vanadium-titanium oxides for vapor-phase oxidation and oxidizing ammonolysis of aromatic and heterocyclic compounds comprising preparing a powdery mixture of vanadium pentoxide and titanium dioxide with the mole ratio of 1:0.6–32, respectively. The aforesaid mixture is pressed into tablets and

then exposed to heat treatment in air at a temperature of from 650° C. to 1000° C.

Said method is technologically simple and makes it possible to obtain a catalyst featuring high activity and selectivity as well as high mechanical strength and thermal stability.

3,799,889

HYDROGENATION AND HYDRODEALKYLATION CATALYST

Vladimir Mikhailovich Gryaznov, Leninskie gory MGU zona L, kv. 11; Viktor Sergeevich Smirnov, Kutuzovsky prospekt 26, kv. 555; Alexandr Petrovich Mischenko, Khersonskaya ulitsa 7, korpus 4, kv. 515; Natalia Vsebolodovna Orekhova, ulitsa Marii Ulyanovoi 9, korpus 1, kv. 95; Boris Petrovich Krivdin, Belyaevo-Bogorodskoe, kvartal 48, korpus 23, kv. 114; Viktoria Petrovna Polyakova, ulitsa Trofimova 15, kv. 201; and Evgeny Mikhailovich Savitsky, ulitsa Dmitria Ulyanova, DNR-3, kv. 13, all of Moscow, U.S.S.R.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,195
Claims priority, application U.S.S.R., Nov. 27, 1969, 1,375,574, 1,375,575
Int. Cl. B01j *11/12*
U.S. Cl. 252—470 **8 Claims**

Hydrogenation and hydrodealkylation catalysts of aromatic hydrocarbons comprising a palladium alloy with molybdenum, containing from 0.1 to 30 percent by weight of molybdenum.

The catalyst can be manufactured in the form of powders, blacks, membranes, foils or tubes and employed in the processes of hydrogenation and hydrodealkylation of aromatic hydrocarbons carried out either separately or simultaneously.

3,799,890

COMPOSITION AND METHOD OF BONDING GOLD TO A CERAMIC SUBSTRATE AND A BONDED GOLD ARTICLE

Baynard R. Smith, 701 Lakeside Drive, North Palm Beach, Fla. 33408

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,943
Int. Cl. H01b *1/02, 1/06*
U.S. Cl. 252—514 **11 Claims**

A composition for, as well as a method of bonding gold to a ceramic and a bonded gold article which includes a composition of gold and copper oxide for bonding a gold layer to a ceramic substrate. Gold powder and copper oxide particles define a solid composition mixture wherein the copper oxide has a weight percentage in the preferred region between 1.2% and 1.4%. Organic binder is added to a predetermined amount of copper oxide particles and blended. The gold powder is incorporated into the copper oxide and organic binder to form a total composition mixture. The organic binder has a weight percentage of the total composition mixture wtihin the preferred range of 50% to 85%. The total composition mixture is blended and applied to a ceramic substrate. The coated ceramic article is fired within the preferred temperature range 1020° C. to 1040° C. Copper oxide crystals are formed which impregnate the ceramic substrate and form a high strength bond between the gold layer and the ceramic substrate.

3,799,891

GOLD COMPOSITION FOR BONDING GOLD TO A CERAMIC SUBSTRATE UTILIZING COPPER OXIDE AND CADMIUM OXIDE

Baynard R. Smith, 701 Lakeside Drive, North Palm Beach, Fla. 33408

No Drawing. Continuation-in-part of application Ser. No. 232,943, Mar. 8, 1972. This application Apr. 27, 1972, Ser. No. 248,014
Int. Cl. H01c *7/00*
U.S. Cl. 252—514 **13 Claims**

A composition for, as well as a method of bonding gold to a ceramic substrate and a bonded gold article which includes a composition of gold, copper oxide, and cadmium oxide for bonding a gold layer to a ceramic substrate. Gold powder, copper oxide particles and cadmium oxide particles define a solid composition mixture where the copper oxide has a weight percentage in the preferred region between 0.25% and 3.0% and the cadmium oxide has a weight percentage in the preferred region between 1.0% and 5.0%. Organic binder is added to a predetermined amount of the copper oxide and cadmium particles and then blended. The gold powder is incorporated into the copper oxide, cadmium oxide, and organic binder to form a total composition mixture. The organic binder has a weight percentage of the total composition mixture within the ranges of 10% to 95%. The total composition mixture is blended and applied to a ceramic substrate. The coated ceramic article is fired within the preferred temperature range 950° C. to 1000° C. Copper oxide crystals impregnate the ceramic substrate and form a high strength bond between the gold layer and the ceramic substrate.

3,799,892

BENZOXEPIN-3-ONES AND BENZODIOXEPIN-3-ONES AS PERFUME ODORANTS

John J. Berreboom, Old Lyme, Donald P. Cameron, New London, and Charles R. Stephens, Jr., East Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Application Oct. 28, 1969, Ser. No. 2,058, now Patent No. 3,647,479, which is a division of application Ser. No. 572,206, Aug. 15, 1966, now Patent No. 3,517,031. Divided and this application Oct. 19, 1971, Ser. No. 190,663
Int. Cl. C11b *9/00*
U.S. Cl. 252—522 **4 Claims**

Benzoxepin-3-ones and benzodioxepin-3-ones, prepared by a novel synthesis, are useful as odorant agents for perfumes to impart a watermelonlike odor.

3,799,893

METHYLENE PHOSPHONATES OF GLYCIDYL REACTED POLYAMINES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Filed Mar. 31, 1971, Ser. No. 129,955
Int. Cl. C08g *43/00*
U.S. Cl. 260—2 BP **4 Claims**

Methylene phosphonates of glycidyl reacted polyalkylene polyamines and to uses therefor, particularly as scale inhibitors, chelating agents, etc.

3,799,894

ADDUCTS, CONTAINING EPOXIDE GROUPS, FROM POLYEPOXIDE COMPOUNDS AND BINUCLEAR N-HETEROCYCLIC COMPOUNDS

Daniel Porret, Binningen, Juergen Habermeier, Allschwil, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Apr. 14, 1969, Ser. No. 816,029, now abandoned. Divided and this application Nov. 2, 1971, Ser. No. 195,038
Claims priority, application Switzerland, Apr. 17, 1968, 5,635/68
Int. Cl. C08g *30/04*
U.S. Cl. 260—2 EP **6 Claims**

New "advanced" adducts, containing epoxide groups, from (1) polyepoxide compounds which on an average contain more than one epoxide group in the molecule, and (2) less than one equivalent of NH groups for every epoxide equivalent of the polyepoxide compound (1) of a binuclear, five or six-membered, unsubstituted or substitued N-heterocyclic compound with an endocyclic NH group in each nucleus, the heterocyclic rings being linked by a divalent aliphatic, cycloaliphatic or araliphatic radical, preferably an alkylene radical, which may be interrupted by oxygen atoms, e.g. the reaction product of 2 mols of diomethane-diglycidyl ether and 1 mole of 1,1'-methylene-bis-(5,5-dimethyl-hydantoin). The epoxide resins "advanced" by means of such nitrogen compounds have a good storage stability and excellent electrical properties.

3,799,895

HALOCYANOALKYL EPOXY ETHERS AND POLYMERS THEREOF

Stephen E. Cantor, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,648
Int. Cl. C08g *23/02, 23/20*
U.S. Cl. 260—2 A **10 Claims**

Halocyanoalkyl epoxy ethers of the General Formula I:

(I)

are disclosed, together with homopolymers and copolymers (including terpolymers) thereof. The polymers are highly oil-resistant, have improved flame-resistance, and can be vulcanized through the pendant halogen group.

3,799,896

POLYISOCYANURATE

Ernest K. Moss, St. Petersburg, Fla., assignor to The Celotex Corporation, Tampa, Fla.

No Drawing. Continuation-in-part of abandoned application Ser. No. 4,050, Jan. 19, 1970. This application May 8, 1972, Ser. No. 251,279
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AW **23 Claims**

An improved polyisocyanurate comprising polymethylene polyphenylisocyanate having a functionality of 2.1 to 3.2 and having an equivalent weight between 120 and 180; a polyol having an equivalent weight between 30 and 100; a tertiary amine; an N-substituted aziridine; an organic epoxide, and a blowing agent.

These compositions exhibit an advantageous cream time and firm time and a reduced friability.

3,799,897

PROCESS FOR MANUFACTURING SELF-EXTINGUISHING POLYURETHANE FOAMS

Satomi Suzuki, Tokyo, Osamu Fujii, Konosu, Hirokazu Wakabayashi and Toshio Kishimoto, Kawagoe, and Masashi Numabe, Tokyo, Japan, assignors to Toyo Rubber Chemical Industrial Corporation, Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 63,012, Aug. 11, 1970. This application June 20, 1972, Ser. No. 264,434
Int. Cl. C08g *22/46*
U.S. Cl. 260—2.5 AJ **3 Claims**

A process for manufacturing polyurethane foams by reacting a polyhydroxyl compound containing at least two hydroxyl groups with an isocyanate compound in the presence of a foaming agent through catalysis by an organic amine compound, characterized in that said reaction for forming polyurethane foams is conducted in the presence of a flameproof composition comprising chlorinated paraffin and antimony oxide bearing a weight ratio ranging between 1:0.05 and 1:7, said flameproof composition being used in the range from 20 to 200 parts by weight per 100 parts by weight of said polyhydroxyl compound and being preliminarily mixed with part of the polyhydroxyl compound.

3,799,898

STABLE HYDROPHILIC POLYURETHANE FOAMS PREPARED BY USING A SURFACTANT SOLUBLE IN THE HYDROPHILIC POLYOL REACTANT

Roland J. Lamplugh, Chester, and Rocco P. Triolo, Broomall, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Continuation of abandoned application Ser. No. 806, Jan. 5, 1970. This application Oct. 16, 1972, Ser. No. 297,732
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AD **7 Claims**

Hydrophilic polyurethane foams which are flexible and stable, i.e., non-collapsible and non-shrinkable, non-disintegratable and characterized by improved "wet-out" and "percent volume-swell" properties, are produced from a foamable polyurethane-forming reaction mixture comprising (a) a hydrophilic polyol, (b) a foam-stabilizing amount of a surfactant which is soluble in said hydrophilic polyol and, if desired, (c) a foam-shrinkage inhibiting agent.

3,799,899

TWO-STEP POLYMERIZATION OF LAURYLLACTAM WITHOUT MINERAL ACID CATALYSTS

Roland Feinauer and Karl-Adolf Muller, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Oct. 11, 1972, Ser. No. 296,527
Claims priority, application Germany, Oct. 20, 1971, P 21 52 194.8
Int. Cl. C08g *20/10*
U.S. Cl. 260—18 N **6 Claims**

A process for the two-step polymerization of lauryllactam without mineral acid catalysts and optionally in the presence of monocarboxylic acids or polycarboxylic acids as chain regulators wherein the first step is carried out at a temperature of about 270–290° C. in the presence of water, under superatmospheric pressure and after the removal of water the second step is carried out at a temperature of about 240–265° C., which is lower than the temperature of the first step.

3,799,900

PROCESS FOR THE PREPARATION OF MODIFIED GLYCIDYL ISOCYANURATE RESINS

Erwin Weinrich, Dusseldorf-Holthausen, Germany, assignor to Henkel & Cie G.m.b.H., Holthausen, Germany

No Drawing. Filed Nov. 16, 1967, Ser. No. 683,443
Claims priority, application Germany, Nov. 30, 1966, H 61,143
Int. Cl. C08g *45/00*
U.S. Cl. 260—18 EP **10 Claims**

This invention relates to a process of preparation of soft, hardenable epoxide resins based on triglycidyl isocyanurate which, when hardened, retain the desired high temperature stability with a greater flexibility than hardened triglycidyl isocyanurate resins, as well as the soft, hardenable epoxide resins produced. This process is characterized by reacting a crystalline triglycidyl isocyanurate having an epoxide oxygen content of at least 14% with an organic acid derivative free of the epoxide reacting substituents selected from the group consisting of organic monocarboxylic acids, organic dicarboxylic acids, and organic monocarboxylic acid anhydrides, said organic acid derivative being present in a ratio to provide from 1 to

10 carboxyl groups for each 30 epoxide groups in the mixture and recovering a soft, hardenable epoxide resin.

3,799,901

PREPARATION OF LATEXES BY DIRECT DISPERSION OF ACIDIC ORGANIC POLYMERS INTO AQUEOUS ALKALINE MEDIA

Gordon D. McCann and Earl L. Dumitru, Midland, and James B. Louch, Coleman, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 741,903, July 2, 1968. This application Mar. 12, 1971, Ser. No. 123,888

Int. Cl. C08f *47/16, 47/18*

U.S. Cl. 260—29.6 PM **18 Claims**

Synthetic latexes and aqueous colloidal dispersions, free of added external surfactants and emulsifiers, are made from normally solid, water- and alkali-insoluble thermoplastic oragnic addition polymers containing plurality of acid groups in the polymer structure and which are in non-colloidal massive form by digesting the polymer in admixture with an enveloping alkaline aqueous liquid medium until the polymer spontaneously converts into colloidal particles in the aqueous medium. In an example, a solid thermoplastic ternary copolymer of ethylene, 11.2% by weight ethyl acrylate, and 11% by weight acrylic acid, in the form of molding granules, was converted to latex form by digestion in aqueous ammonia or in aqueous potassium hydroxide. The resulting dispersions are useful in impregnating, coating and adhesive compositions.

3,799,902

POLYMERIC LATICES AND SODIUM ALUMINATE

Donald R. Anderson, Oswego, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,339

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 NR **10 Claims**

A coating composition comprising:

(A) From 1 to 99% by weight of sodium aluminate; and

(B) From 1 to 99% by weight of a stable liquid dispersion of:

(1) a polymeric latex composed of a water-in-oil emulsion which contains dispersed therein a finely-divided water-soluble anionic vinyl addition polymer, said polymeric latex having uniformly distributed therethroughout;

(2) a water-soluble cationic polymer:

with the weight ratio of (1):(2) being within the range of 1:10 to 10:1 and the total amount of this anionic polymer of (1)+(2) present within said dispersion being within the range of from 0.001% to 75% by weight.

3,799,903

PROCESS FOR MAKING MACROSPHERICAL THERMOSET RESIN PARTICLES AND PRODUCT THEREOF

Daniel J. Najvar, Lake Jackson, Tex., assigner to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,306

Int. Cl. C08f *45/04, 45/24*

U.S. Cl. 260—29.6 M **20 Claims**

Macrospherical thermoset resin particles which may have an organic agent such as a biocidal material dispersed therein are prepared by curing a polyphase mixture of a thermosettable resin phase, an aqueous phase, a resin miscible effect agent when desired and certain inorganic materials.

3,799,904

URETHANE RUBBER COMPOSITION

Toyoji Ogasawara and Hideo Yanagisawa, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 59,673, July 30, 1970. This application Feb. 28, 1972, Ser. No. 230,096

Int. Cl. C08g *51/50*

U.S. Cl. 260—30.6 R **1 Claim**

A urethane rubber composition for peroxide vulcanization is shown. It includes a rubber composition having a urethane bond and a phosphoric acid ester plasticizer containing a divalent, trivalent or tetravalent metal.

3,799,905

DENTAL EPOXIDES

Maurice William Holloway, Winchester, and Brian Edward Causton, Basingstoke, England, assignors to National Research Development Corporation, London, England

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,843

Claims priority, application Great Britain, Sept. 24, 1970, 45,609/70; Apr. 30, 1971, 12,542/71

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP **11 Claims**

A pack suitable for the production of a cured polyepoxide resin composition, which comprises a polyepoxide resin, a curing agent comprising a complex of a Friedel-Crafts' catalyst and an aqueous strong non-carboxylic acid or aqueous fluoacid, and means to prevent premature reaction between the resin and the curing agent.

3,799,906

HEAT STABILITY OF ASBESTOS-FILLED POLYPROPYLENE

John H. Kletzman, Middlesex, and Mario P. Tocci, Somerville, N.J., assignors to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed Nov. 10, 1971, Ser. No. 197,508

Int. Cl. C08f *45/10*

U.S. Cl. 260—42.45 **10 Claims**

Polyester forming reactants of low volatility including an organic acid or anhydride such as trimellitic anhydride, and a polyhydric alcohol, such as dipentaerythritol or pentaterythritol, are admixed at a temperature above 400° F. with partially stabilized polypropylene and asbestos filler to provide a heat stabilized, asbestos-filled polypropylene composition.

3,799,907

SUSPENSION POLYMERIZATION OF STYRENE IN THE PRESENCE OF AN ANTIOXIDANT SUCH AS BISPHENOL-A

Sam H. Hastings, Baytown, Tex., assignor to Esso Research and Engineering Company

Continuation-in-part of abandoned application Ser. No. 864,993, Oct. 9, 1969. This application Aug. 16, 1972, Ser. No. 281,062

Int. Cl. C08f *1/11*

U.S. Cl. 260—45.95 R **28 Claims**

High-clarity, free-radical, suspension polymerized polymers, such as polystyrene, are prepared by a suspension polymerization process in which the suspending agent is an organic material, such as polyvinyl alcohol, and an interface antioxidant, such as a bisphenol-A, is added to the suspension. Optionally, the suspension mixture is

maintained at an essentially neutral pH, as with a buffering salt of a strong base and a weak acid, e.g. sodium acetate.

3,799,908

HOT-MELT ADHESIVES OF POLYAMIDES CONTAINING OXIME COMPOUNDS OR ESTERS THEREOF

Clive D. Moon and Robert F. K. Neumann, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application Nov. 7, 1968, Ser. No. 774,200, now Patent No. 3,658,755. Divided and this application Jan. 24, 1972, Ser. No. 220,424

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 R **12 Claims**

Oxime compounds or esters thereof are admixed with polyolefins or polyamides to make a hot-melt adhesive to be applied as a coating or laminate for metal or glass.

3,799,909

METHOD OF CURING EPOXY RESINS USING N-AMINOALKYLPHTHALAMIDES

Robert S. Taylor, Livermore, Calif., assignor to Hexcel Corporation, Dublin, Calif.

No Drawing. Original application Apr. 26, 1971, Ser. No. 137,673, now Patent No. 3,704,090. Divided and this application Aug. 21, 1972, Ser. No. 282,089

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN **5 Claims**

Aromatic dicarboxamide diamines are provided for use as aqueous rust inhibitors or temperature controlled curing or cross-linking agents for polymers having amine reactive functionalities, e.g. epoxy resins and polyisocyanate resins.

3,799,910

COMPOSITIONS OF POLYOL ETHERIFIED METHYLOL ACRYLAMIDE MONOMERS

Kiyozo Shingai, Tadashi Watanabe, Koichiro Murata, and Osamu Isozaki, Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki-shi, Japan

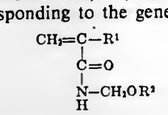
No Drawing. Filed Oct. 8, 1971, Ser. No. 187,817

Claims priority, application Japan, Oct. 12, 1970, 45/88,793, 45/88,794

Int. Cl. C08f *15/02*

U.S. Cl. 260—78.5 UA **8 Claims**

Polymerizable composition comprising an addition product and an ethylenically unsaturated monomer of less than 300 parts by weight per 100 parts by weight of said addition product; said addition product being prepared by introducing polymerizable unsaturated groups of a derivative of acrylamide through the ether exchange reaction to a compound having at least two hydroxyl groups in the molecule and having a hydroxyl equivalent of 30 to 240 and/or a synthetic resin having more than two hydroxyl groups in the skeleton, having a hydroxyl equivalent of 130 to 3000 and having a number average molecular weight of 500 to 100,000, and said derivative of acrylamide corresponding to the general formula:



in which R^1 is hydrogen or methyl group and R^2 is hydrogen or alkyl group of 1 to 8 carbon atoms.

3,799,911

BINDER FOR ELECTROPHOTOGRAPHIC COATINGS

Israel J. Dissen, Chicago, and Ronald B. Schultz and Manoucher Amin-Madani, Waukegan, Ill., assignors to The Dexter Corporation, Windsor Locks, Conn.

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,954

Int. Cl. C08f *15/40*

U.S. Cl. 260—78.5 R **12 Claims**

A polymeric binder for zinc oxide for use as an electrophotostatic coating composition contains a terpolymer of about 50–70% by weight ethyl acrylate, about 30–50% by weight styrene, and about 1–5% by weight maleic acid which is partially mono-esterified prior to and during polymerization.

3,799,912

PROCESS FOR THE POLYMERIZATION OF DODECALACTAM IN THE PRESENCE OF POTASSIUM HYDROXIDE

Remy Hebert, Serquigny, France assignor to Societe Anonyme dite: Aquitaine-Total Organico Tour Aquitaine, Courbevole, France

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,432

Claims priority, application France, Nov. 30, 1970, 7042887

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 L **14 Claims**

This invention concerns a process for the polymerization of dodecalactam, in the presence of potassium hydroxide and water, offering a fast way of obtaining a high yield of polyamides with high molecular weight and with excellent resistance to degradation, and consequently hydrolysis, when kept in contact with boiling water.

Polymerization is carried out, preferably at between 290 and 320° C., in the presence of between 0.05 and 2% potassium hydroxide.

The polymers thus obtained can be used easily to manufacture moulded articles, sheets, tubes or pipes, by extrusion, injection or blowing.

3,799,913

PRODUCTION OF HYDROCARBON RESIN COMPOSITIONS FROM ALPHA-METHYL STYRENE, INDENE AND VINYL TOLUENE

Harvey B. Wheeler, Pittsburgh, Anthony S. Andrews, McKees Rocks, and James A. Schlademan, Pittsburgh, Pa., assignors to Neville Chemical Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,434

Int. Cl. C08f *19/00*

U.S. Cl. 260—80.78 **14 Claims**

Hydrocarbon resins are produced by polymerizing a reaction mixture containing alpha-methyl styrene, indene and vinyl toluene as the principal polymerizable constituents in the presence of a Friedel-Crafts type catalyst such as boron trifluoride. The alpha-methyl styrene/indene/vinyl toluene terpolymer or resin may advantageously be used with short and medium oil alkyd resins and other coating compositions in both air-dry and baking type finishes, especially where heat and ultraviolet light stability, drying time, gloss and gloss retention, water and caustic resistance, and leveling properties are important. The resin may also be used advantageously in hot melt adhesives and coatings and as a modifier in wax systems, especially where low odor, color stability, and viscosity stability are important.

3,799,914

STANDABLE FLEXIBLE CONTAINER WITH STRAW

Justin M. Schmit, Pompano Beach, Fla., and Robert D. Cushman, Duluth, Minn., assignors to Jeno's Inc., Duluth, Minn.

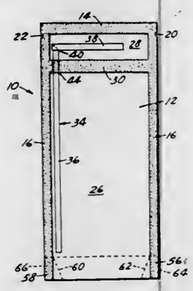
Continuation-in-part of application Ser. No. 19,951, Mar. 16, 1970, now Patent No. 222,237, dated Oct. 12, 1971. This application Apr. 29, 1970, Ser. No. 32,933 The portion of the term of the patent subsequent to Oct. 12, 1985, has been disclaimed

Int. Cl. B65d *47/06, 75/48*

U.S. Cl. 426—85 **13 Claims**

A standable flexible container adapted for storing fluids and having side walls formed of a thin, preferably heat sealable, flexible sheet material. The container bottom is constructed so that when the container is filled, the bottom opens to form a broad base for supporting the con-

tainer of fluid in a standing, upright position. An elongated dispensing member enclosed within the container extends between a lower fluid compartment and an upper, dispensing member storage compartment. The dispensing member has a folded, or foldable, top portion capable of being unfolded into a dispensing position, and a relatively



straight bottom portion which extends into the lower compartment. The bottom portion of the dispensing member cooperates with the container side walls to form a fluid tight seal therewith and, in concert with a seal formed in the dispensing member, a hermetic seal is established which isolates stored fluid in the lower compartment.

3,799,915
PHOTOPOLYMERS

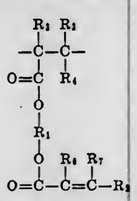
William R. Dunnavant, Columbus, Ohio, Edward M. Harris, Webster Groves, Mo., Philip F. Kurz and Richard A. Markle, Columbus, Ohio, and Edward H. Parker, Ballwin, Mo., assignors to Western Litho Plate & Supply Co., St. Louis, Mo.

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,661

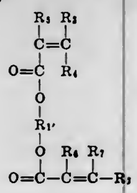
Int. Cl. C08f *3/50, 15/16*

U.S. Cl. 260—86.1 R **26 Claims**

Photosensitive homopolymers and substantially noncrosslinked copolymers containing the recurring unit:



R_1 may be substituted or unsubstituted alkylene, aralkylene, alkoxyalkylene or aryloxyalkylene. R_2 is a substituted or unsubstituted aryl group or heterocyclic group having aromatic character. R_3, R_4, and R_5 are hydrogen, halogen or lower alkyl. R_6 and R_7 may be hydrogen, halogen, nitro, lower alkyl, phenyl, substituted phenyl, phenoxy and lower alkoxy. Lithographic plates bearing these photosensitive polymers can be stored without deterioration for extended periods prior to exposure, and produce highly abrasion resistant plates on being exposed. The photosensitive polymers of the invention are preferably produced by homopolymerization of novel monomers having the general formula:



where R_1' is alkylene, haloalkylene, alkoxyalkylene, amino-alkylene, cycloalkylene, aralkylene, cycloalkylalkylene, cyanoalkylene, and aryloxyalkylene, and R_2, R_3, R_4, R_5, R_6, and R_7 are as defined above; and by copolymerization of these monomers with one or more ethylenically unsaturated comonomers. Methods of preparing the photopolymers and the novel monmers are also disclosed, as are methods of preparing and exposing plates bearing the polymers.

3,799,916
VINYL CHLORIDE BASED POLYMERS PREPARED BY IN-SITU INITIATORS IN ACID MEDIUM

Michael Langsam, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed June 19, 1972, Ser. No. 264,044

Int. Cl. C08f *3/30, 15/06, 15/30*

U.S. Cl. 260—87.1 **10 Claims**

Granular vinyl chloride based polymers are manufactured in the presence of a peroxydicarbonate free-radical catalyst, which is prepared in-situ in an acid reaction mixture. By initiating and maintaining polymerization at a pH constantly maintained below 7 the need for excess haloformate may be avoided without sacrificing product quality.

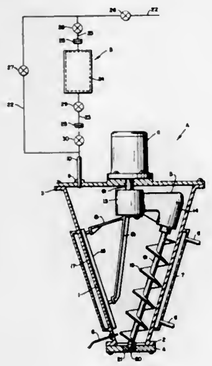
3,799,917
VINYL POLYMERIZATION BY BULK METHOD

Philip P. Rathke, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Continuation-in-part of abandoned application Ser. No. 111,496, Feb. 1, 1971. This application Feb. 15, 1972, Ser. No. 226,416

Int. Cl. C08f *1/04, 1/98*

U.S. Cl. 260—92.8 R **32 Claims**



Vinyl chloride polymers are formed by a process employing a special reactor which has a generally frusto-conicaly shaped polymerization portion with a vertically disposed longitudinal axis and in which the polymerization is effected while an agitator is being moved within the frusto-conical portion to provide a desirable type of gentle, controlled mixing and agitation. The agitation is generally effected by employing one or more elongated shafts, each of which carries a plurality of helical screw flights thereon, which shafts are provided with motion within the reactor which has at least a rotational component, and in one embodiment has both rotational and radial dimensions. The moving shafts come into at least periodic proximity with the side walls. The shafts containing the plurality of helical screw flights are also re-

volved about their own axis. This process is especially suitable for the formation of polyvinyl chloride by bulk polymerization techniques.

3,799,918
ALKYL ESTERS OF α-ASPARTYL α-ALKYL ALIPHATIC AMINO ACID DIPEPTIDES

Robert H. Mazur, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Apr. 26, 1972, Ser. No. 247,665

Int. Cl. C07c *103/52;* **A23l** *1/26*

U.S. Cl. 260—112.5 **4 Claims**

Alkyl esters of α-aspartyl α-alkyl aliphatic amino acid dipeptides are potent sweetening agents and can be prepared by catalytic hydrogenolysis of the corresponding compounds having amino and β-carboxy protecting groups.

3,799,919
SURFACE TREATING COMPOSITIONS

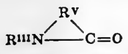
Robert Muir Gibbon, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 10, 1972, Ser. No. 242,783

Int. Cl. C08f *19/14*

U.S. Cl. 260—18 S **16 Claims**

Surface treating composition comprising an OH— containing diorganopolysiloxane, a cross-liking agent, an organotin compound and a nitrogen containing compound of the general formula $R^{II}CONR^{III}R^{IV}$ of



where R^{II}, R^{III} and R^{IV} may be, e.g., alkyl groups and R^{IV} is a divalent hydrocarbon group.

3,799,920
1,4-BENZODIAZEPINE DERIVATIVES

Giorgio Ferrari, Milan, and Cesare Casagrande, Como, Italy, assignors to Siphar S.A., Lugano, Switzerland

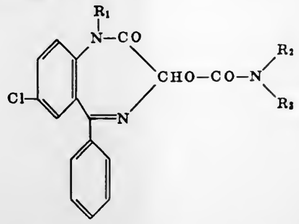
No Drawing. Filed Aug. 19, 1971, Ser. No. 173,305

Claims priority, application Switzerland, Aug. 24, 1970, 12,627/70

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D **17 Claims**

The invention relates to a process for preparing 1,4-benzodiazepine derivatives which contain a carbamic ester group, having interesting therapeutic properties and, more particularly, a myorelaxing effect, corresponding to the general formula:



(I)

wherein the radical R_1 is hydrogen or a lower alkyl of 1 to 4 carbon atoms, and R_2 and R_3 are, each, hydrogen, a lower alkyl of 1 to 4 carbon atoms, a cycloalkyl or lower alkyl bearing as a substituent an amine or hydroxy group, and the radicals R_2 and R_3 can also make up, conjointly, a polymethylene chain, or also a polymethylene chain containing one hetero-atom, the process starting from compounds of class of 3-hydroxy-benzodiazepinones.

3,799,921
N¹-ACYL-2-PHENYLHYDRAZINO-2-IMIDAZOLINES AND PROCESSES FOR THEIR PREPARATION AND USE

Knut Zellerhoff, Wuppertal-Elberfeld, Siegismund Schutz, Metzkausen, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,291

Claims priority, application Germany, Aug. 22, 1970, P 20 41 732.7

Int. Cl. C07c *49/34*

U.S. Cl. 260—240 J **40 Claims**

Phenylhydrazino-2-imidazoline derivatives bearing an acyl group in the N^1-position are acaricidal agents. The compounds, of which 2-(N^1-propionyl-N^2-phenylhydrazino)-2-imidazoline is a typical embodiment, are prepared by treating the appropriate phenylhydrazino-2-imidazoline with an acylating agent.

3,799,922
4-SUBSTITUTED 3-CEPHEM COMPOUNDS

Timothy Yu-Wen Jen, Broomall, Pa., and Jerry A. Weisbach, Cherry Hill, N.J., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Nov. 17, 1971, Ser. No. 199,751

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **13 Claims**

4-diazoacetylcephalosporins are prepared from the reaction of the 4-carboxylic acid chlorides with diazomethane. These compounds are intermediates useful for preparing 4-acetic acids and 4-haloacetyl compounds which have antibacterial activity. 4-hydroxymethylcephalosporins are prepared by reduction of the 4-carboxylic acid chlorides.

3,799,923
3-THIOLATED CEPHALOSPORIN DERIVATIVES AND PRODUCTION OF SAME

Tadayoshi Takano, Hirakata, Masaru Kurita, Takatsuki, Hiroo Nikaido, Suita, Masashi Mera, Amagasaki, Nobukiyo Konishi, Kyoto, and Ritsuko Okui, Takatsuki Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,183

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **6 Claims**

The present invention discloses cephalosporin derivatives, having in their 3-position a 5-mercapto-1, 3,4-thiadiazol-2-ylthio group and in their 7-position a tetrazolyl radical, which are active against microorganisms, including *Proteus mirabilis.*

3,799,924
ESTER CLEAVAGE PROCESS

Billy G. Jackson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,697

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **8 Claims**

This invention is addressed to an improved method for converting the p-nitrobenzyl esters of Δ^3-cephalosporin acids to the corresponding acid wherein the ester is reacted with a dithionite under basic conditions.

3,799,925

TRIAZINE DERIVATIVES

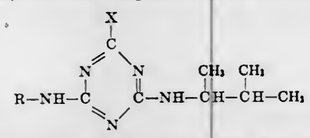
Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 728,052, May 9, 1968. This application Jan. 14, 1971, Ser. No. 106,597

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **6 Claims**

New 1,3,5-triazine compounds of the formula



X=halogen, lower alkoxy, lower alkylmercapto, R=lower alkyl, lower alkoxyalkyl,

and their use in pesticidal preparations is disclosed.

3,799,926

CERTAIN s-TRIAZOLO[1,5-a]PYRIMIDINE COMPOUNDS AND THEIR PREPARATION

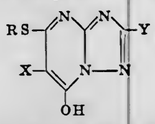
George Frank Duffin, Romford, and James Hogg, Harlow, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation of abandoned application Ser. No. 816,433, Jan. 16, 1969, which is a division of application Ser. No. 425,941, Jan. 15, 1965, now Patent No. 3,462,272. This application Dec. 16, 1971, Ser. No. 208,899

Int. Cl. C07d *57/18*

U.S. Cl. 260—256.5 R **15 Claims**

Novel heterocyclic compounds of the formula



wherein R is alkyl, X is hydrogen, cyano, —CONR²R³ in which R² and R³ are hydrogen or alkyl, COOR⁴ wherein R⁴ is alkyl, and COR⁵ wherein R⁵ is alkyl or aryl, and Y is hydrogen, alkyl, alkylthio, aryl and amino; and a process for its preparation which comprises reacting a 3-amino-1,2,4-triazole with a β,β-dialkylthioacrylic ester.

3,799,927

N-METHYLENETHIOPHOSPHATE DERIVATIVES OF 1,4-OXAZINES AND 1,4-OXAZANES

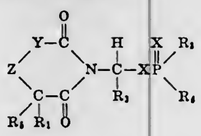
Neil F. Newman, Matawan, N.J., assignor to Esso Research and Engineering Company

No Drawing. Original application July 1, 1970, Ser. No. 51,687, now Patent No. 3,681,327. Divided and this application May 22, 1972, Ser. No. 255,474

Int. Cl. C07d *87/10, 87/34*

U.S. Cl. 260—247.1 **3 Claims**

N-methylenethiophosphates of six-membered ring cyclic imides have been prepared which show marked insecticidal activity. These compounds can be characterized by the following structural formula:



wherein R_1 and R_5 are selected from hydrogen, C_1 to C_{16} alkyl, C_6 to C_{10} aryl optionally substituted with chloro, bromo, nitro, or C_1 to C_4 alkyl; halo-substituted C_1 to C_{16} alkyl, C_1 to C_6 alkoxy, C_2 to C_6 alkenyl, C_2 to C_6 alkynyl, C_1 to C_4 alkylsulfoxide, nitrile, C_1 to C_4 alkylamino, C_6 to C_{10} aryloxy, C_1 to C_4 carboalkoxy, C_2 to C_4 dialkylamino, nitro, C_2 to C_6 alkoxyalkyl, C_2 to C_6 alkylthioalkyl, bromo, chloro, C_1 to C_6 alkylthio and C_1 to C_6 alkylsulfonyl; R_2 is hydrogen, C_1 to C_4 alkyl optionally substituted with chloro or bromo, R_3 and R_4 can be the same or different and are C_1 to C_6 alkyl, C_1 to C_6 alkoxy, C_6 to C_{10} aryloxy, C_1 to C_6 alkylthio, C_1 to C_6 haloalkyl, C_6 to C_{10} aryl, C_6 to C_{10} halo-substituted aryl, C_7 to C_{11} arylalkyl, C_6 to C_{10} arylthio, and C_7 to C_{11} halo-substituted arylalkyl; X is either O or S; Y is either O or S or

and Z is either O, S, or

with the proviso that when Y is O or S, Z must be

and when Z is O or S, Y must be

3,799,928

3-AMINO ALKYL-4-PHENYL-2(1H)-QUINOLONE DERIVATIVES

Ludwig H. Schlager, Polletistrabe 35, Vienna XXII, Austria

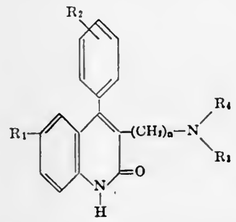
No Drawing. Filed Sept. 16, 1971, Ser. No. 181,225

Claims priority, application Austria, Sept. 18, 1970, 8,462; Sept. 1, 1971, 7,605

Int. Cl. C07d *33/46*

U.S. Cl. 260—268 BQ **5 Claims**

3-aminoalkyl-4-phenyl-2(1H)-quinolones and physiologically acceptable acid addition salts thereof having the formula:



(I)

wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, trifluormethyl, cyano, nitro and alkylthio, n is an integer from 1 to 9, and R_3 and R_4 are independently selected from the group consisting of hydrogen, alkyl, aralkyl, cycloalkyl, hydroxyalkyl, acyloxyalkyl or dialkylamino-

akyl, or R_3 and R_4 together with the nitrogen atom form a heterocyclic ring which may include a second heteroatom selected from the group consisting of O, N and S, and when the second heteroatom is nitrogen, said nitrogen may be bound to an alkyl, hydroxyalkyl, acyloxyalkyl or acyl group, are useful as sedatives.

3,799,929

CINCHONINIC ACID DERIVATIVES

Richard E. Holmes, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 17, 1972, Ser. No. 235,850

Int. Cl. C07d *33/48, 33/56*

U.S. Cl. 260—287 R **6 Claims**

A group of novel 8-chloro-2-heteroarylcinchoninic acids and derivatives which are useful as antibacterial agents.

3,799,930

1,4-DIHYDRO-1-SUBSTITUTED-4-OXO-3-QUINOLINECARBOXLIC ACIDS AND ESTERS

Takenari Nakagome, Toyonaka, Hideo Agui, Ikeda, Toru Mitani, Nishinomiya, Mitsuo Nakashita, Kobe, Toshiaki Komatsu, Takarazuka, and Akio Izara and Yasuko Eda, Toyonaka, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

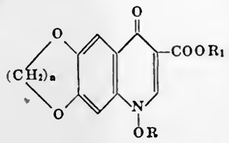
No Drawing. Filed July 9, 1971, Ser. No. 161,265

Claims priority, application Japan, July 9, 1970, 45/60,214, 45/60,216; July 10, 1970, 45/60,776; Aug. 1, 1970, 45/67,518; Dec. 28, 1970, 46/129,978, 46/129,979, 46/129,981

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R **5 Claims**

Novel antibacterial agents comprising a 1,4-dihydro-1-substituted-4-oxo-3-quinolinecarboxylic acid derivative of the formula:



wherein R is a C_1–C_{20} alkyl, a C_2–C_6 alkenyl, a C_3–C_6 cycloalkyl, a C_3–C_6 cycloalkyl-C_1–C_3 alkyl, a hydroxy-C_1–C_6 alkyl, a C_1–C_4 alkoxy-C_1–C_3 alkyl, or an aryl-C_1–C_3 alkyl; R_1 is a hydrogen atom or a C_1–C_6 alkyl; and n is a figure of 1, 2 or 3, a process for producing the derivatives and pharmaceutical compositions containing the same. The above-identified derivative possesses antibacterial activity against gram-negative bacteria at test concentration levels of about 0.0001 to 1.0 mg./cc.

3,799,931

PROCESS FOR THE MANUFACTURE OF DELTA 4-STEROIDAL LACTAMS

Robert J. Chorvat, Arlington Heights, and Raphael Pappo, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed July 12, 1972, Ser. No. 271,151

Int. Cl. C07d *101/00*

U.S. Cl. 260—289 AZ **4 Claims**

Δ^4-steroidal lactams are manufactured by contacting the corresponding A-nor-1,2-seco-aldehydo acids with ammonium formate in formic acid, at elevated temperatures.

3,799,932

GAMMA-PIPERIDINOBUTYROPHENONES

Hisao Yamamoto, Nishinomiya, Masaru Nakao and Kikuo Sasajima, Toyonaka, Isamu Maruyama, Minoo, and Shigenari Katayama, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

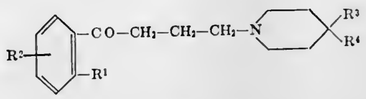
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,522

Claims priority, application Japan, Mar. 20, 1970, 45/23,724; May 22, 1970, 45/44,304; May 29, 1970, 45/46,669, 45/46,670; May 30, 1970, 45/46,970, 45/46,773; June 6, 1970, 45/48,930

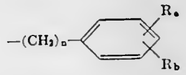
Int. Cl. C07d *29/20*

U.S. Cl. 260—293.6 **6 Claims**

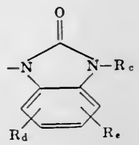
A novel process for preparing central nervous system active butyrophenone derivatives in which γ-piperidinobutyrophenone derivatives of the formula



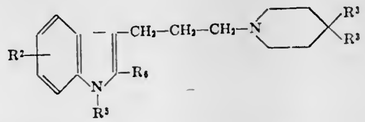
wherein R^1 is hydrogen, halogen, amino, acylamino, alkylamino or N-acylalkylamino; R^2 is hydrogen or halogen; R^3 is hydrogen or hydroxyl; and R^4 is a group having the formula,



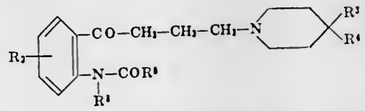
(wherein each of R_a and R_b is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl; and n is 1 or 2), or a group having the formula,



(wherein R_c is hydrogen or lower alkyl; and each of R_d and R_e is hydrogen, halogen, lower alkyl or lower alkoxy), can be prepared by reacting an indole derivative of the formula,

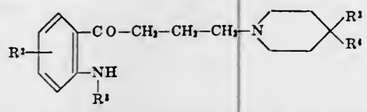


wherein R^2, R^3 and R^4 are the same as defined above, and R^5 and R^6 are hydrogen or alkyl having up to 4 carbon atoms respectively, with an oxidizing agent to yield an o-acylamino-γ-piperidinobutyrophenone derivative of the formula,



wherein R^2, R^3, R^4, R^5 and R^6 are the same as defined above, and further, if necessary, hydrolyzing the product

to yield an o-amino-γ-piperidinobutyrophenone derivative of the formula,



wherein R^2, R^3, R^4 and R^5 are the same as defined above, and further diazotizing, if desired, in case R^5 is hydrogen, the obtained o-amino-γ-piperidinobutyrophenone derivative and subsequently decomposing the resultant diazonium compound to replace the diazonium group by hydrogen or halogen. Among the butyrophenone derivatives thus obtained, those in which R^1 is halogen, amino, acylamino, alkylamino or N-acylalkylamino are novel compounds.

3,799,933

METHOD OF PREPARING NEW INDOLIC DERIVATIVES USABLE FOR SYNTHESIZING DEXTRO-ROTARY VINCAMINE

Jean George Le Men, 139 Boulevard Pommery, and Jean Levy, 108 Avenue d'Epernay, both of 51 Reims (Marne), France

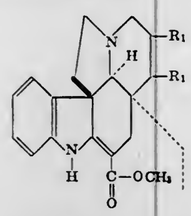
Filed Oct. 22, 1971, Ser. No. 191,753

Claims priority, application France, Oct. 22, 1970, 7038181

Int. Cl. C07d *57/00*

U.S. Cl. 260—293.53 **6 Claims**

Process for preparing dextro-rotatory vincamine, in which a (−) tabersonine of Formula I is re-arranged:



(in which R_1 and R_2 are hydrogen or form together an additional valency bond which is destroyed by reduction at any stage of the method) into a mixture from which a levorotatory amino ester is isolated by chromatography; this amino ester is oxidized into an immonium salt which is reduced to give the epimer of the amino ester obtained previously, in the form of its dextro-rotatory isomer. This is oxidized and the resulting product hydrolized to give the dextro-rotatory vincamine.

3,799,934

UNSYMMETRICAL ESTERS OF 1,4-DIHYDROPYRIDINE 3,5-DICARBOXYLIC ACID

Horst Meyer and Friedrich Bossert, Wuppertal-Elberfeld, Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 7, 1972, Ser. No. 242,239

Claims priority, application Germany, Apr. 10, 1971, P 21 17 571.3

Int. Cl. C07d *31/36, 31/50*

U.S. Cl. 260—294.8 G **13 Claims**

Unsymmetrical esters of 4-substituted-1,4-dihydropyridine 3,5-dicarboxylic acid optionally substituted by lower alkyl groups in the 2- and 6-positions are cardiovascular agents. The compounds, of which 2,6-dimethyl-4-(2'-nitro phenyl)-1,4-dihydropyridine 3,5-dicarboxylic acid 3-methyl-5-allyl ester is a typical example, can be prepared through condensation of an ylidene-β-ketocarboxylic acid ester with either an enamino carboxylic acid ester or a β-ketocarboxylic acid ester and ammonia.

3,799,935

SUBSTITUTED AMINOHALO-PYRIDINES

Howard Johnston, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Application Nov. 13, 1970, Ser. No. 90,442, which is a continuation-in-part of abandoned application Ser. No. 880,422, Nov. 26, 1969, which in turn is a continuation-in-part of abandoned application Ser. No. 807,979, Mar. 17, 1969. Divided and this application Oct. 10, 1972, Ser. No. 296,298

Int. Cl. C07d *31/46*

U.S. Cl. 260—294.9 **4 Claims**

Disclosed as novel compounds are amino and halo substituted pyridines which are further substituted with cyano, trichloromethyl or dichloromethyl groups. The compounds have utility as pesticides and find particular usage as fungicides, bactericides and insecticides.

3,799,936

UNSYMMETRICAL ESTERS OF 1,4-DIHYDROPYRIDINE 3,5-DICARBOXYLATES

Horst Meyer and Friedrich Bossert, Wuppertal-Elberfeld, Wulf Vater, Opladen, and Kurt Stoepel, Wuppertal-Vohwinkel, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 7, 1972, Ser. No. 242,238

Claims priority, application Germany, Apr. 10, 1971, P 21 17 572.4

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 R **22 Claims**

Unsymmetrical esters of 4-substituted - 1,4 - dihydropyridine 3,5 - dicarboxylic acid optionally substituted by lower alkyl groups in the 2- and 6-positions are cardiovascular agents. The compounds, of which 2,6-dimethyl-4 - (2' - methyl phenyl) - 1,4 - dihydropyridine 3,5-dicarboxylic acid 3-methyl-5-allyl ester is a typical example, can be prepared through condensation of an ylidene-β-ketocarboxylic acid ester with either an enamino carboxylic acid ester or a β-ketocarboxylic acid ester and ammonia.

3,799,937

N-(2',5'-DIHYDROXYPHENYL OR 2',5'-DILOWER-ALKOXYPHENYL)ALKYLENE PYRIDINIUM COMPOUNDS AND DERIVATIVES THEREOF

Stanley M. Bloom, 89 Gordon Road, Waban, Mass. 02155

No Drawing. Original application July 1, 1968, Ser. No. 741,293, now Patent No. 3,590,692, dated July 6, 1971. Divided and this application Dec. 30, 1970, Ser. No. 102,931

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 R **6 Claims**

Quaternary ammonium compounds of the formula:

DEV—LINK—QUAT

wherein DEV is a dihydroxyaryl silver halide developing radical or a dialkoxyaryl or dialkoxymethoxyaryl precursor thereof; LINK is a hydrocarbon radical of at least two and preferably three carbon atoms or a hydrocarbon radical preceded by and/or interrupted by individual atoms of oxygen or sulfur with the proviso that an interrupting atom of oxygen or sulfur cannot be closer than two carbon atoms away in the chain from the positively charged nitrogen atom of the quarternary ammonium radical QUAT bonded to LINK through the penetavalent nitrogen atom.

The preferred mode of preparation of these compounds is by the alkylation of an amine. These compounds are especially useful in photography as silver halide developing agents.

3,799,938

CERTAIN 4-THIA-2,6-DIAZABICYCLO [3.2.0]HEPTANE DERIVATIVES

Karl Heusler, Basel, Switzerland, and Robert Burns Woodward, Cambridge, Mass., assignors to Ciba-Geigy Corporation

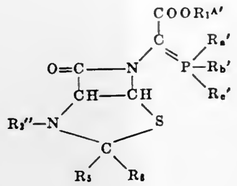
No Drawing. Original application July 22, 1969, Ser. No. 843,754. Divided and this application June 29, 1971, Ser. No. 158,083

Claims priority, application Switzerland, July 23, 1968, 10,994/68, 10,995/68, 10,996/68; Dec. 11, 1968, 18,502/68, 18,503/68, 18,505/68

Int. Cl. C07d *99/24*

U.S. Cl. 260—306.7 **5 Claims**

The invention concerns compounds of the formula



(Ia)

in which $R_1^{A'}$ is lower alkyl, halogeno-lower alkyl, cycloalkyl or phenyl-lower alkyl, R_2'' is an acyl radical, each of R_5 and R_6 is lower alkyl, and each of R_a', R_b' and R_c' is lower alkyl or phenyl. These compounds are intermediates for the manufacture of ceph-3-em-4-carboxylic acid compounds.

3,799,939

CERTAIN 6-CARBOXY-4-THIA-1-AZABICYCLO [3.2.0]HEPTANE COMPOUNDS

Henry Rapoport, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

No Drawing. Original application June 22, 1970, Ser. No. 48,550, now Patent No. 3,714,156. Divided and this application Sept. 15, 1972, Ser. No. 289,405

Int. Cl. C07d *99/14*

U.S. Cl. 260—306.7 **3 Claims**

A process for preparing lactams, particularly 1-azabicyclo[4.2.0]octanes, 1 - azabicyclo[3.2.0]heptanes, 4-thia-1 - azabicyclo[3.2.0]heptanes and 5 - thia - 1 - azabicyclo [4.2.0]octenes, which comprises subjecting a cyclic α-ketoamide to an oxidizing agent to form a carboxyl substituted lactam structure. The oxidant is preferably periodate, in an aqueous solution, at pH 5–9 and room temperature. The novel products obtained from the process are useful intermediates in the preparation of antimicrobial agents. The cyclic α-ketoamide starting materials are also novel.

3,799,940

PROCESS FOR PRODUCING AROMATIC ALDEHYDES

Harold E. Mains, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 857,576, Sept. 12, 1969. This application Dec. 16, 1971, Ser. No. 208,734

Int. Cl. C07c *47/48, 47/54*

U.S. Cl. 260—340.5 **10 Claims**

A novel process for producing aromatic aldehydes and their stable precursors comprising ozonizing an aryl alkene at a temperature of from about 0 to 45° C. to produce an aromatic alkyl ozonide; treating the aromatic alkyl ozonide with an alkali metal, alkaline earth metal, or ammonium bisulfite at a temperature of from about 0° C. to 20° C. to form a solid adduct; and optionally, treating the solid adduct with an alkali metal base to liberate the aromatic aldehyde.

3,799,941

PROCESS FOR THE PRODUCTION OF SULFURIC ACID SOLUTIONS OF 2 - AMINO - 5 - NITROTHIAZOLE

Horst Kindler and Hans-Gerhard Fischer, Frankfurt am Main-Fechenheim, Wilhelm Antoni, Bischofsheim, and Ewald Appel, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt am Main-Fechenheim, Germany

No Drawing. Filed Jan. 27, 1972, Ser. No. 221,412

Claims priority, application Germany, Feb. 4, 1971, P 21 05 156.9

Int. Cl. C07d *91/34*

U.S. Cl. 260—306.8 R **6 Claims**

2-amino-thiazole bisulfite is introduced into at least three times its weight of sulfuric acid of a concentration of at least 90% and is then nitrated to produce the title product.

3,799,942

4,5-SUBSTITUTED N-OXY AND HYDROXY HYDROIMIDAZOLES

David G. B. Boocock, Scarborough, Ontario, Canada, Raphael O. Dorchai, Portlaoise, Ireland, and Jeanne H. Osiecki, Los Altos Hills, and Edwin F. Ullman, Atherton, Calif., assignors to Syva Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 696,718, Jan. 10, 1968, which is a continuation-in-part of application Ser. No. 740,055, June 26, 1968, which in turn is a continuation-in-part of application Ser. No. 752,744, Aug. 15, 1968, all now abandoned. This application Apr. 12, 1971, Ser. No. 133,327

Int. Cl. C09d *49/34*

U.S. Cl. 260—309.6 **15 Claims**

Mono and poly-4,4,5,5-tetrasubstituted-1,3-diazoles are provided having at least one nitrogen atom bonded to an oxygen atom. The diazoles are provided in varying states of oxidation. Particularly desirable compounds are those in which one of the oxidants is present as a free radical, the compound being an extremely stable free radical and useful for spin labeling, oxidation inhibition, and free

radical chain termination, for example, in polymerizations. By virtue of the excellent stability of the free radicals, the free radical compounds can also be used as standards for calibration of electron spin resonance spectrometers.

3,799,943

1,2-DIPHENYLINDOLES

Malcolm R. Bell, East Greenbush, and Andrew W. Zalay, Albany, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed June 23, 1971, Ser. No. 156,068

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.16 **5 Claims**

The invention relates to novel 1-[4-(R_1R_2N-C_nH_{2n}-O) phenyl]-5-R_4-2-(4-R_3-phenyl)indoles having antifertility and hypocholesterolemic activities and to novel intermediates for their preparation.

3,799,944

CHLORINE-CONTAINING AROMATIC DIOXINE COMPOUNDS AND PROCESS FOR THE PRODUCTION THEREOF

Gerhard Darsow and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 19, 1970, Ser. No. 38,918

Claims priority, application Germany, June 13, 1969, P 19 30 259.1

Int. Cl. C07d *15/18*

U.S. Cl. 260—340.3 **2 Claims**

New chlorine-containing aromatic dioxine compounds are provided which are valuable flame-resistant agents for resins such as polyesters and which are the reaction products of hexachlorobenzene or a tetrachlorobenzene with a dialkali metal phenolate.

3,799,945

2-(N-2-CYANOETHYLDITHIOCARBAMYLMETHYLENE)-5-HYDROXY - 4H - PYRAN - 4-ONE AND METAL CHELATES

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,368

Int. Cl. C07d *7/16*

U.S. Cl. 260—345.9 **8 Claims**

2 - (N - 2 - cyanoethyldithiocarbamylmethylene) - 5-hydroxy-4H-pyran-4-one and metal chelates thereof are effective agents for controlling undesirable microorganisms.

3,799,946

DIBENZO[b,d]PYRAN COMPOUNDS

Bernard Loev, Broomall, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,380

Int. Cl. C07d *7/18*

U.S. Cl. 260—345.3 **4 Claims**

The compounds are dibenzo[b,d]pyrans having pharmacological activity such as central nervous system activity and gastric acid secretion inhibitory activity. A preferred compound is 3-(1,2-dimethylheptyl)-1-hydroxy-6,6,9-trimethyl-6H-dibenzo[b,d]pyran.

3,799,947

HALOMETHYL VINYL GLYCIDYL ETHERS

Arthur E. Gurgiolo and Robert W. McAda, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

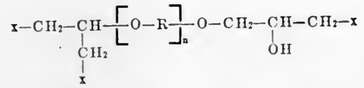
No Drawing. Original application Nov. 1, 1967, Ser. No. 679,624, now Patent No. 3,590,009. Divided and this application Dec. 11, 1970, Ser. No. 97,327

Int. Cl. C07d *1/18*

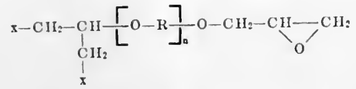
U.S. Cl. 260—348 R **4 Claims**

Our invention comprises:

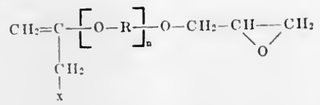
1. New compounds of the formulas



(I)



(II)



(III)

wherein R is alkylene, haloalkylene, aralkylene or haloaralkylene, $n=0$ to 6, and x is Cl, Br or I;

2. Their method of preparation which comprises reacting by contacting a glycerine di-halohydrin with 0 to 6 moles of an alkylene oxide and at least 1 mole of an epihalohydrin to produce Formula (I) and then treating same with a dehydrohalogenating agent to produce Formulas (II) and (III);

3. The polymers and copolymers of Formulas (II) and (III);

4. The method of vulcanizing the polymers and copolymers of Formula (III).

3,799,948

PROCESS FOR PREPARING PURE EPICHLOROHYDRIN BY EXTRACTION WITH A POLYHYDRIC ALCOHOL

Manfred Kruger, Offenbach, Ewald Noll, Grosskrotzenburg, Gerd Schreyer and Herbert Tanner, Grossaunheim, and Wolfgang Weigert, Offenbach (Main), Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed May 13, 1971, Ser. No. 143,702

Claims priority, application Germany, May 15, 1970, P 20 23 839.5

Int. Cl. C07c *1/16*

U.S. Cl. 260—348.5 L **6 Claims**

Process for recovering pure carboxylic acid free epichlorhydrin from the reaction mixtures containing the same and which have been obtained in reacting allylchloride with percarboxylic acid which comprises extracting the reaction mixture with glycerol or a saturated diol whose boiling point is higher than that of the carboxylic acid formed from the percarboxylic acid and thereafter separately working up the extract and the carboxylic acid free reaction mixture to recover the carboxylic acid and epichlorohydrin.

3,799,949

PROCESS FOR THE PREPARATION OF EPICHLORHYDRIN FROM ALLYLCHLORIDE

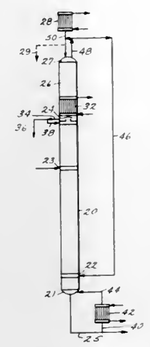
Rudolf Keller, Ziegelhausen, Manfred Kruger, Offenbach, Theodor Lussling, Grossauheim, Ewald Noll, Grosskrotzenburg, Gerd Schreyer and Herbert Tanner, Grossauheim, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Nov. 29, 1971, Ser. No. 202,842

Claims priority, application Germany, Dec. 8, 1970, P 20 60 190.5

Int. Cl. C07d *1/16*

U.S. Cl. 260—348.5 L **4 Claims**



Allyl chloride in excess is epoxidized with a solution of perpropionic acid or perbutyric acid to form epichlorhydrin. The excess allyl chloride and epichlorhydrin formed are separated by distillation.

3,799,950

PROCESS FOR THE MANUFACTURE OF POLYGLYCIDYL ETHERS

Werner Margotte, Birsfelden, and Alfred Renner, Muenchenstein, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Continuation of abandoned application Ser. No. 881,629, Dec. 2, 1969. This application Apr. 19, 1972, Ser. No. 245,632

Claims priority, application Switzerland, Dec. 6, 1968, 18,312/68

Int. Cl. C07d *1/18*

U.S. Cl. 260—348.6 **3 Claims**

Process for the manufacture of polyglycidyl ethers by condensation of aliphatic or cycloaliphatic polyhydroxy compounds which have a melting point of at least 80° C., for example pentaerythritol, dipentaerythritol, sorbitol, 2,2-bis-(p-hydroxycyclohexyl)-propane or 1,12-dihydroxydodecane, with an epihalogenohydrin or β-methylepihalogenohydrin, for example epichlohydrin, in a first stage in the presence of a solvent which consists of 100–30 percent by weight of 1,4-dioxan and 0–70 percent by weight of another organic solvent which has a boiling point of at least 70° C. and is not reactive towards an epihalogenohydrin, to give the corresponding chlorhydrin ethers and, in a second stage, with agents which split off hydrogen halide, to give the corresponding polyglycidyl ethers.

3,799,951

AMINO CITRIC ACID DERIVATIVES

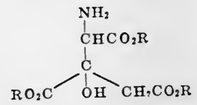
Robert William Guthrie, Fairfield, and Richard Wightman Kierstead, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,290

Int. Cl. C07d *109/00*

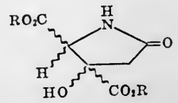
U.S. Cl. 260—349 **4 Claims**

Amino citric acids and esters, and lactams thereof, of the formulas:



Ia

and



wherein all R groups are hydrogen or the same lower alkyl, and the stereoisomers, optical antipodes and pharmaceutically acceptable salts thereof, which compounds inhibit fatty acid synthesis in biological systems and are thus useful in treatment of obesity and in correcting conditions of lipid abnormalities. Additionally, epoxide, azide and sulfonate ester intermediates are disclosed.

3,799,952

SALICYLOYLAMINO-ANTHRAQUINONE PIGMENTS

Andre Pugin, Riehen, and Kurt Burdeska and Ernst Model, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

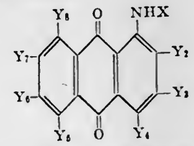
No Drawing. Original application Sept. 21, 1969, Ser. No. 854,770, now Patent No. 3,682,966. Divided and this application July 13, 1971, Ser. No. 162,254

Claims priority, application Switzerland, Sept. 13, 1968, 13,770/68

Int. Cl. C09b *1/42, 1/54*

U.S. Cl. 260—377 **6 Claims**

Pigments of the formula



are of yellow color with a greenish hue. They are distinguished by particularly good weather and light-fastness and fastness to solvents.

3,799,953

1,4-BIS(4,'4''-DIHYDROXY-TRIPHENYLMETHYL) BENZENE

Dieter Freitag, Ulrich Haberland, and Heinrich Krimm, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of application Ser. No. 178,443, Sept. 7, 1971. This application Sept. 1, 1972, Ser. No. 285,699

Int. Cl. C07c *39/16*

U.S. Cl. 260—395 **1 Claim**

The subject matter of the invention relates to 1,4-bis-bis-(4',4''-dihydroxy-tri-phenyl-methyl)-benzene and plastics, in particular to branched polycarbonates, on the basis of this tetra-hydroxy-compound.

3,799,954

URETHANES FOR THE TREATMENT OF RUBBER

Maurice Edward Cain, Welwyn Garden City, Geoffrey Thomas Knight, Shefford, and Keith Frederick Gazeley and Peter McHugh Lewis, Hitchin, England, assignors to The Natural Rubber Producers' Research Association, London, England

No Drawing. Original application Nov. 16, 1970, Ser. No. 90,138, now Patent No. 3,721,659. Divided and this application Sept. 7, 1972, Ser. No. 287,027

Claims priority, application Great Britain, Nov. 28, 1969, 58,403/69

Int. Cl. C07c *125/06*

U.S. Cl. 260—396 N **2 Claims**

Novel urethanes having the formula

$$X\{NH.CO.O.N{=}Q{=}Z\}_m$$

where X is an organic group of functionality *m*, Q is an aromatic group in the quinonoid configuration, Z is an imino group, and *m* is an integer equal to 1 or more, may be made by reacting an organic isocyanate with a nitrosoaniline. The compounds are useful in the treatment of rubber.

3,799,955

METHOD OF MAKING 11 ALPHA- OR 11 BETA-HYDROXY - 18 - NOR - 17-ALPHA-ALKYL-17 BETA-METHYLANDROSTA - 4,13 - DIENE-3-ONES

Giovanni De Marchi and Carlo Scolastico, Milan, Italy, assignors to Laboratorio Prodotti Biologici Braglia S.p.A., Milan, Italy

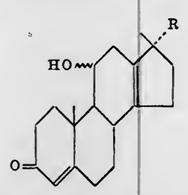
No Drawing. Filed Jan. 29, 1973, Ser. No. 327,772

Claims priority, application Italy, July 31, 1972, 27,685/72

Int. Cl. C07c *167/00*

U.S. Cl. 260—397.45 **4 Claims**

A method for making compounds of the formula



by reacting the corresponding 11-hydroxy-17α-alkylandrosta-4-ene-17β-ol-3-one with a catalytic amount of ethylene glycol and p-toluene sulfonic acid, thereby assuring ketalization while causing reverse pinacol rearrangement to produce the intermediate 11-hydroxy-18-nor-17α-alkyl - 17β-methylandrosta-5,13-diene-3-ethyleneketal and hydrolyzing the intermediate in a solution of acetone, ethanol, or methanol in the presence of a catalytic amount of HCl is disclosed.

3,799,956

SURFACE ACTIVE AGENT AND METHOD OF PREPARING THE SAME

Yoshinobu Nakamura, Funabashi, Riyuzi Ito, Yokohama, Shunsuku Aman, Ichikawa, and Kazutaka Kojima, Tokyo, Japan, assignors to Toho Chemical Industry Co., Ltd., Tokyo, Japan

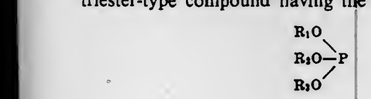
No Drawing. Filed Oct. 12, 1970, Ser. No. 80,030

Claims priority, application Japan, Oct. 14, 1969, 44/81,569; Nov. 1, 1969, 44/87,363

Int. Cl. C07f *9/02, 9/10*

U.S. Cl. 260—403 **5 Claims**

A novel surface active agent comprising a phosphorous triester-type compound having the following formula:



wherein R_1 is a conventional nonionic surface active agent residue to which ethylene oxide or both ethylene oxide and propylene oxide is added, and R_2 and R_3 are a conventional nonionic surface active agent residue to which ethylene oxide or both ethylene oxide and propylene oxide is added or an alkyl group having 8 to 22 carbon atoms and its preparation are described. The surface active agent is superior in surface activity, heat-resisting stability and a reduced foaming property.

3,799,957

ESTERS OF 10-OXA-2,4-ALKADIENOIC ACIDS

Vaclav Jarolim, Frantisek Sehnal, and Frantisek Sorm, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved., Prague, Czechoslovakia

No Drawing. Filed July 3, 1972, Ser. No. 268,428

Claims priority, application Czechoslovakia, July 19, 1971, PV 5,303/71

Int. Cl. C07c *69/66;* **A01n** *9/24*

U.S. Cl. 260—410.9 R **7 Claims**

Novel 10-oxa-2,4-alkadienoic acids and esters, preparation thereof and the control of insects.

3,799,958

ESTER SYNTHESIS FOR PREPARATION OF SPECIFIC GLYCERIDES

Lawrence C. Mitchell, Southfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed July 21, 1971, Ser. No. 164,915

Int. Cl. C07c *3/00;* **C11c** *69/30*

U.S. Cl. 260—410.7 **4 Claims**

Dipolar, aprotic solvents such as dimethyl sulfoxide are efficaciously employed in the reaction of alkali metal carboxylates with organic halides. For the formation of specific triglycerides, glyceryl mono- or dihalides are preferably employed. Reaction sequences have been devised for preparation of triglycerides whereby undesirable acyl group migration does not occur.

3,799,959

ALKALINE DRY CELL AND PERMANGANATE CATHODE THEREFOR

James Epstein, Sharon, and Charles C. Liang, Andover, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Original application May 7, 1969, Ser. No. 822,660, now Patent No. 3,620,848. Divided and this application Oct. 12, 1971, Ser. No. 189,475

Int. Cl. C07f *13/00*

U.S. Cl. 260—429 R **12 Claims**

A cathode depolarizer for alkaline dry cells comprised of active permanganate material having a high degree of insolubility in alkaline electrolytes. A process for producing the permanganate is set forth and the disclosure further describes an alkaline dry cell employing the permanganate cathode depolarizer.

3,799,960

METAL COMPLEXES OF DITHIOBIURETS

Alfred F. Marks, Trenton, N.J., assignor to Esso Research and Engineering Company

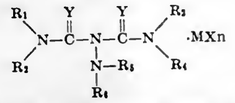
No Drawing. Original application Apr. 27, 1970, Ser. No. 32,337, now Patent No. 3,686,244. Divided and this application July 3, 1972, Ser. No. 268,304

Int. Cl. C07f *3/06, 11/00, 13/00*

U.S. Cl. 260—429 R **2 Claims**

Metal complexes of dithiobiurets have been found to exhibit effective fungicidal and growth regulating activity.

Exemplary of such compounds are those represented by the following structure:



wherein R_1–R_6 are each selected from a group consisting of hydrogen, C_1–C_{10} alkyl, C_1–C_{10} alkenyl, C_3–C_{10} cycloalkyl optionally substituted with C_1–C_6 alkyl chloro, bromo, C_6–C_{10} aryl, optionally substituted with C_1–C_6 alkyl, chloro, bromo, C_7–C_{10} aryl alkyl, C_7–C_{10} alkaryl.

R_1 and R_6 and/or R_3 and R_4 and/or R_5 and R_6 together can be a carbocyclic ring containing one or more heteroatoms such as N or S; M is one selected from the group consisting of zinc, iron, nickel, copper, manganese and cobalt; X is an anion being one selected from the group consisting of chloride, bromide, iodide, sulfate, nitrate, phosphate and acetate; *n* is an integer determined by the valence of the metal atoms, and Y is either O or S.

3,799,961

PROCESS FOR PRODUCING PALLADIUM (O) AND PLATINUM (O) COMPLEX COMPOUNDS WITH TRIPHENYLPHOSPHINE

Yury Sergeevich Varshavsky, ulitsa Ropshinskaya 1/32, kv. 18, and Nonna Viktorovna Kiseleva, Survorovsky prospekt 51, kv. 4, both of Leningrad, U.S.S.R.

No Drawing. Filed July 6, 1972, Ser. No. 269,403

Int. Cl. C07f *15/00*

U.S. Cl. 260—429 R **4 Claims**

A process for producing palladium (O) and platinum (O) complex compounds with triphenylphosphine of the formula $M(Ph_3P)_4$, wherein M is palladium or platinum, comprising reacting the starting compounds of palladium or platinum such as $PdCl_2$ or $H_2PtCl_6 \cdot XH_2O$, with triphenylphosphine in dimethylformamide medium, followed by treating the reaction mixture with hydrazine hydrate.

3,799,962

ALKOXYSILOXANOLS

Richard Newton Lewis, Tecumseh, Mich., assignor to Stauffer Chemical Company

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,406

Int. Cl. C07f *7/18*

U.S. Cl. 260—448.8 R **12 Claims**

Alpha-alkoxy-omega-siloxanols, $R'O(R_2SiO)_xH$, are produced by contacting cyclic siloxanes with alcohols under mild conditions. For example, hexamethylcyclotrisiloxane heated at reflux in methanol for four hours gives 5 - methoxyhexamethyltrisiloxan-1-ol in high yield. The reaction proceeds more rapidly in the presence of weak acids or bases. The products are useful as antistructure agents, coupling agents, and filler-treating agents for silicone elastomers.

3,799,963

PURIFICATION OF ISOCYANATES BY REDUCING THE HYDROLYZABLE CHLORINE AND ACID CONTENT

Pierrepont Adams, Darien, Conn., assignor to Olin Corporation

No Drawing. Filed May 12, 1972, Ser. No. 252,613

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 SP **10 Claims**

The use of formic acid or derivatives thereof in reducing the hydrolyzable chlorine and acid content of organic isocyanates.

3,799,964

UREA DERIVATIVES, A METHOD OF PRODUCING THEM AND PREPARATIONS WHICH CONTAIN THE NEW SUBSTANCES AS ACTIVE INGREDIENTS

Jan Johannes van Daalen and Jasper Daams, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 61,402, Aug. 5, 1970. This application June 13, 1972, Ser. No. 262,331

Claims priority, application Netherlands, Aug. 13, 1969, 6912348

Int. Cl. C07c *127/18*

U.S. Cl. 260—453 R **7 Claims**

It has been found that new urea derivatives have strong biocidal effects on plants. The compounds are capable of heavily damaging or destroying not only dicotyledonous weeds but also several monocotyledonous weeds, whereas various monocotyledonous plants suffer no injury due to the use of the new active compounds. Owing to their activity the compounds are particularly suitable for selective control of weeds, mainly monocotyledonous weeds. A strongly active compound is 3-(4-cyclopropylphenyl)-1,1-dimethyl urea.

3,799,965

ALICYCLIC DIISOCYANATES

Kenneth D. MacKay, Circle Pines, and Edgar R. Rogier, Minnetonka, Minn., assignors to General Mills Chemicals, Inc.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,885

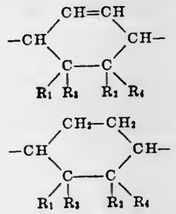
Int. Cl. C07c *119/04*

U.S. Cl. 260—453 A **7 Claims**

Diisocyanates of the formula

$$R'—Z—R''—NCO$$

where R′ is a monovalent straight chain aliphatic hydrocarbon radical containing 2 to 6 carbon atoms, R″ is a divalent straight chain aliphatic hydrocarbon radical containing 7 to 11 carbon atoms, the sum of the carbon atoms in R′ and R″ is 13, and Z is a divalent radical of the structure



where R_1 and R_2 are H or CH_3 with the proviso that one of such radicals must be H and R_3 and R_4 are H or NCO with the proviso that one of such radicals must be H and the other must be NCO. Such diisocyanates find use in polymer and prepolymer preparations.

3,799,966

DI-(2-PHENOXYETHYL) PEROXYDICARBONATE

Jose Sanchez, Grand Island, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,435

Int. Cl. C07c *73/10;* **C08f** *1/60*

U.S. Cl. 260—463 **1 Claim**

Di-(2-phenoxyethyl) peroxydicarbonate and improved processes employing same as initiators for the polymeriza-

tion of ethylenically unsaturated monomers (such as vinyl chloride) and as curing catalysts for curing unsaturated polyester resin compositions.

3,799,967

SYNTHETIC PROSTAGLANDINS

Robert B. Morin, Middleton, Wis., Douglas O. Spry, Indianapolis, and Kenneth L. Hauser, Greencastle, Ind., and Richard A. Mueller, Glencoe, Ill., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application Dec. 16, 1968, Ser. No. 784,225, now Patent No. 3,644,502. Divided and this application Oct. 8, 1971, Ser. No. 187,830

Int. Cl. C07c *69/74, 61/36*

U.S. Cl. 260—468 D **2 Claims**

Synthetic prostaglandins are synthesized from o-methoxyphenyl acetic acid by introduction of a proper acid side chain, conversion of the aromatic nucleus to the cyclopentane nucleus, and introduction of the second side chain. Novel compounds having a high level of biological activity are claimed.

3,799,968

N-ARYL-N-FLUOROALKYLSULFONYL CARBAMATES

Joseph K. Harrington, Edina, and Jerry E. Robertson, North Oaks, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Apr. 8, 1968, Ser. No. 719,748

Int. Cl. C07c *143/74*

U.S. Cl. 260—470 **9 Claims**

Substituted and unsubstituted N-acylperfluoroalkanesulfonanilides which have utility as herbicides or plant growth regulators.

3,799,969

UREA DERIVATIVES

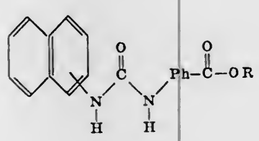
Udo Hoppe, Hamburg, Germany, assignor to Beiersdorf Aktiengesellschaft

Filed Sept. 1, 1971, Ser. No. 177,085

Int. Cl. C07c *127/16*

U.S. Cl. 260—471 R **1 Claim**

The invention concerns new urea derivatives of the formula:



wherein

Ph denotes the ortho-, meta- or para phenylene ring and

R denotes the 2-ethylhexyl-, 2-butyloctyl-, 2-hexyldecyl-, 2-octyldodecyl-, 2-decyltetradecyl-, 2-dodecylcetyl-, 2-isohexyl-isodecyl-, 2-isoheptyl-isoundecyl-, isooctyl-, -isononyl- or butoxyethylenyl group

which are particular effective as sunscreens.

3,799,970

ORTHO-PHENYLENEDIOXYDIMALONATES

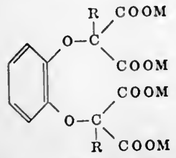
Marvin M. Crutchfield, Creve Coeur, and John N. Rapko, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 22, 1973, Ser. No. 325,761

Int. Cl. C07c *65/00*

U.S. Cl. 260—473 G **6 Claims**

Novel ortho-phenylenedioxydimalonates, represented by the formula



wherein R is hydrogen, methyl, or ethyl, and M is alkali metal or ammonium, are useful sequestrants and detergency builders. The ester, acid, ester-salt, ester-acid, acid-salt, and ester-acid salt forms of such compounds are useful intermediates for the preparation of the salts.

3,799,971

N(p-n-ALKANOYLOXYBENZYLIDENE(-p'-AMINOPHENYL ACETATE

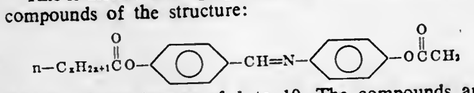
Edward L. Steiger and Heinz J. Dietrich, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,174

Int. Cl. C07c *119/10*

U.S. Cl. 260—479 R **2 Claims**

This is disclosed the preparation of novel mesomorphic compounds of the structure:



where x is an integer of 1 to 10. The compounds are prepared by the reaction of para-acetoxyaniline and para-n-alkanolyloxybenzaldehyde.

3,799,972

POLYMERIC ACRYLIC COMPOUNDS

John D. Cawley, Rochester, and Jan W. H. Faber, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Nov. 28, 1969, Ser. No. 880,894, now Patent No. 3,705,136, dated Dec. 5, 1972. Divided and this application Aug. 21, 1972, Ser. No. 282,891

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **9 Claims**

Acrylic compounds are disclosed which comprise either thio-substituted polycyclic groups or polycyclic groups comprising at least 4 carbocyclic rings which can optionally be thiosubstituted. In one embodiment, polymers can be prepared from the above acrylic compounds.

3,799,973

1-(PHENOXY)-3-ALKYLAMINO-2-PROPANOLS AND THE SALTS THEREOF

Leslie Harold Smith, Alderley Park, Macclesfield, Cheshire, England

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,377

Int. Cl. C07c *93/06*

U.S. Cl. 260—501.17 **10 Claims**

New 1 - (hydroxyalkoxy)phenoxy-3-amino-2-propanol derivatives, processes for their manufacture, pharmaceutical compositions containing them and a method for using them in treatment of heart disease. The compounds

possess β-adrenergic blocking activity. Representative of the compounds disclosed is 1-(2-β-hydroxyethoxyphenoxy)-3-t-butylamino-2-propanol.

3,799,974

NOVEL HYDROBICYCLIC AROMATIC COMPOUNDS

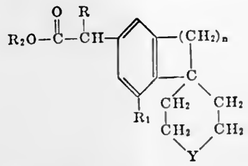
Genevieve Rousseau, Paris, Andre Allais, Les Lilas, and Andre Poittevin, Vaires-sur-Marne, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Original application Aug. 31, 1970, Ser. No. 68,530, now Patent No. 3,682,964, dated Aug. 8, 1972. Divided and this application May 18, 1972, Ser. No. 254,568

Int. Cl. C07c *63/00, 65/15, 65/20*

U.S. Cl. 260—515 R **4 Claims**

Novel spiro benzocyclane acetic acid compounds of the formula



I

wherein R is selected from the group consisting of hydrogen and linear and branched alkyl of 1 to 4 carbon atoms, R_1 is selected from the group consisting of hydrogen, chlorine, trifluoromethyl and lower alkoxy, Y is selected from the group consisting of methylene, oxygen and sulfur, n is 2, 3 or 4 and R_2 is selected from the group consisting of hydrogen, substituted or unsubstituted alkyl of 1 to 6 carbon atoms and cation of nontoxic, pharmaceutically acceptable mineral and organic bases, processes for their preparation and novel intermediates. The compounds of Formula I have analgesic and anti-inflammatory properties.

3,799,975

PROCESS FOR ISOLATING DOPA

Ado Kaiser, Neu-Frenkendorf, Wolfgang Koch, Riehen, Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,593

Claims priority, application Switzerland, Oct. 30, 1970, 16,051/70

Int. Cl. C07c *101/72*

U.S. Cl. 260—519 **19 Claims**

A process for isolating dopa in substantially pure form from an aqueous medium containing water insoluble impurities by forming a complex of L-dopa with a boric acid or a borate salt.

3,799,976

PURIFICATION OF TEREPHTHALIC ACID

Hans-Juergen Nienburg and Wolfgang Eisfeld, Ludwigshafen, and Harro Wache, Fussgoenheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 8, 1971, Ser. No. 178,773

Claims priority, application Germany, Sept. 16, 1970, P 20 45 747.0

Int. Cl. C07c *51/42, 63/26*

U.S. Cl. 260—525 **7 Claims**

A process for purifying terephthalic acid (obtained from crude terephthalic acid and containing small amounts of 4-carboxybenzaldehyde and other impurities) by a reductive treatment of an aqueous solution which contains from 5 to 45% by weight of crude terephthalic acid and from 0.003 to 3% by weight of formic acid at elevated temperature and in the presence of a noble metal catalyst of the Eighth Group of the Periodic Table. The aqueous mixture is heated to a temperature of at least 230° C.

3,799,977

OXIDATION OF GLYCOLS

Thomas F. Rutledge, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,801

Int. Cl. C07c *51/26, 53/22*

U.S. Cl. 260—531 R **3 Claims**

Process for preparing monocarboxylic acids from glycols whereby the formation of monocarboxylic acid is favored and the formation of dicarboxylic acid is substantially suppressed. The process comprises oxidizing neopentyl glycol, ethylene glycol, and polyethylene glycols containing from 2 to 8 ethylene glycol units, to the corresponding monocarboxylic acid, in the presence of an oxygen containing gas and a supported platinum metal oxidation catalyst, while adding a suitable base to maintain the pH of the reaction mixture within the range of 6.5 to 9.

3,799,978

PROCESS FOR THE PREPARATION OF UNSATURATED CARBONYL COMPOUNDS

Takashi Ohara, Nishinomiya, Michikazu Ninomiya, Kobe, Isao Yanagisawa, Ikeda, Michio Ueshima, Nishinomiya, and Masahiro Takata, Toyonaka, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

No Drawing. Filed Dec. 23, 1971, Ser. No. 211,680

Int. Cl. C07c *57/04, 51/32*

U.S. Cl. 260—533 N **2 Claims**

A process for the preparation of unsaturated carbonyl compounds which comprises the catalytic vapor phase oxidation of an olefin having at least 3 carbon atoms in the presence of a catalytic oxide in which the atomic ratio among the constituent elements, Co:Fe:Bi:W:Mo:Si:Z ranges 2.0–20.0:0.1–10.0:0.1–10.0:0.5–10.0:2.0–11.5:0–15.0:0.005–1.0, with the proviso that W plus Mo equals 12.0, and Z stands for an alkaline earth metal.

3,799,979

PROCESS FOR THE PRODUCTION OF ALPHA, BETA-UNSATURATED CARBOXYLIC ACIDS

Jorg Hensel and Theodor Lussling, Grossauheim, Ewald Noll, Gross-Krotzenburg, Hans Schaefer and Gerd Schreyer, Grossauheim, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed May 25, 1972, Ser. No. 256,676

Claims priority, application Germany, May 28, 1971, P 21 26 534.9

Int. Cl. C07c *51/20, 57/04*

U.S. Cl. 260—533 N **28 Claims**

Alpha, beta unsaturated carboxylic acids are produced by catalytically oxidizing alkenes with oxygen, suitably in the presence of steam, on a mixed catalyst bed consisting of a mixture and/or compound of oxides of antimony, molybdenum, vanadium, and tungsten and in a given case one or more oxides of lead, silver, copper, tin, titanium, bismuth and/or oxygen containing compounds of these elements as the first catalyst and a mixture and/or compounds of oxides of nickel, cobalt, iron, bismuth, phosphorus, molybdenum and in a given case samarium or tantalum and/or oxygen containing compounds of these elements as second catalysts. The catalysts can include carriers.

3,799,980

PROCESS FOR PRODUCING CITRIC ACID

Kiyoshi Nara, Kyoto, Kazuhiko Ohta, Osami Yamazaki, and Hideo Fukuda, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sept. 10, 1971, Ser. No. 179,412

Claims priority, application Japan, Sept. 11, 1970, 45/80,246

Int. Cl. C07c *59/16*

U.S. Cl. 260—535 P **4 Claims**

Citric acid is separated from admixture with L(+)-isocitric acid by adding sulfuric acid to an aqueous solu-

tion containing citric acid and L(+)-isocitric acid until the amount of sulfuric acid present in the aqueous solution is 40 to 50% of the weight of L(+)-isocitric present; the solution is concentrated whereby the citric acid crystallizes out and the thus crystallized citric acid is recovered.

3,799,981
PROCESS FOR THE PREPARATION OF NITRILOTRIACETAMIDES

Donald H. Thorpe, Williamsville, and George C. Hopkins, Clarence, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 741,201, June 28, 1968. This application Dec. 31, 1970, Ser. No. 103,277
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 A **20 Claims**

There is provided a process for producing nitrilotriacetamides which comprises forming a polyhydroxy ester of ingredients comprising nitrilotriacetic acid and a glycol, and thereafter reacting said polyhydroxy ester with a compound selected from the group consisting of ammonia, primary amines, dimethylamine and mixtures thereof, wherein said compound has a dissociation constant (K_b) of less than 1×10^{-7}. The nitrilotriacetamides are useful as epoxy curing agents and in forming methylol compounds which are used in permanent press fabrics, molding compounds and the like.

3,799,982
N-(β,β-DIFLUORO, α-METHYLPHENETHYL)-FORMAMIDE

Bryan B. Molloy and Ray W. Fuller, Indianapolis, and Kenneth L. Hauser, Greencastle, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application July 14, 1971, Ser. No. 162,621, now Patent No. 3,719,713. Divided and this application Oct. 24, 1972, Ser. No. 300,056
Int. Cl. C07c *103/12*
U.S. Cl. 260—562 P **1 Claim**

β-Fluoro-β-phenyl-α-methylethylamines useful as sympathomimetic amines with diminished central effects.

3,799,983
CATALYTIC HYDROGENATION PROCESS

Hubert Corr, Wilhelm Friedrichsen, and Guenther Poehler, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,796
Claims priority, application Germany, Apr. 26, 1969, P 19 21 467.6
Int. Cl. C07c *87/34*
U.S. Cl. 260—563 D **4 Claims**

Catalytic hydrogenation process carried out at elevated temperatures and pressures in the presence of supported catalysts comprising elements in Group 8, 7b and/or 6b of the Periodic Table, the material to be hydrogerated being in substantially liquid phase. The catalysts are prepared by spraying shaped carrier material with a solution or suspension containing one or more metals and/or compounds of said elements and optionally basifying alkali metal or alkaline earth metal compounds and optionally a bonding agent at temperatures ranging from 150° to 500° C. followed, if desired, by heating to a temperature of from 300° to 1,000° C., preferably from 300° to 650° C.

3,799,984
O-POLYALKOXYLATED HIGH MOLECULAR WEIGHT n-ALKANONE AND n-ALKANAL OXIMES

Lawrence F. Kuntschik and Robert S. Edwards, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 737,866, June 18, 1968. This application Nov. 24, 1971, Ser. No. 202,022
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 AE **7 Claims**

There is provided O-polyalkoxylated high molecular weight n-alkanone and n-alkanal oximes corresponding to the formula:

by contacting an n-paraffin oxime with a base, and thereafter reacting the oxime with an oxirane in the substantial absence of water. The high molecular weight n-alkanone and n-alkanal oximes provided herein are useful as nonionic surfactants, as biodegradable detergents, as chemical intermediates in the production of anionic detergents, as lubricating oil additives, and as antirust and anti-icing additives in fuels.

3,799,985
N,N-BIS(2-HYDROXYETHYL)-3,4,5-TRIMETHYL-ANILINE

Wallace A. Erickson, Chicago, Ill., assignor to Wallace A. Erickson & Company, Chicago, Ill.

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,016
Int. Cl. C07c *91/06*
U.S. Cl. 260—573 **1 Claim**

N,N-bis (2-hydroxyethyl)-3,4,5 trimethyl aniline has unique utility as an accelerator for free radical polymerizations.

3,799,986
MONO- AND TRIS (AMINO-LOWERALKOXY)-(ALKYL)-POLYOXYALKYLENE COMPOUNDS AND METHOD OF PREPARATION

Fedor Poppelsdorf, Charleston, W. Va., assignor to Union Carbide Corporation

No Drawing. Application June 26, 1963, Ser. No. 290,578, which is a continuation-in-part of applications Ser. No. 107,060, May 2, 1961, and Ser. No. 230,253, Oct. 12, 1962, all now abandoned. Divided and this application Dec. 8, 1967, Ser. No. 689,004
Int. Cl. C07c *93/02, 95/02, 121/38*
U.S. Cl. 260—584 B **17 Claims**

A process is disclosed for manufacturing novel amines comprising reacting an olefin nitrile such as acrylonitrile with various polyhydroxy compounds followed by hydrogenation of the nitrile group to obtain the amines. Some examples of the amines prepared comprise:

(1) α-(3-aminopropoxy-ω-(n-butyl)-poly-1,2-oxypropylene
(2) α-ω-bis-(3-aminopropoxy)-poly-1,2-oxypropylene-1,4-oxybutylene
(3) α-ω-bis-(3-aminopropoxy)-poly-1,2-oxypropylene
(4) α-ω-bis-(3-aminopropoxy)-poly-1,2-oxybutylene
(5) 1,2,6-tris[α-(3-aminopropoxy)-poly-1,2-oxypropyl]-hexane
(6) 1,2,3-tris[α-(3-aminopropoxy)-poly-1,2-oxypropyl] propane
(7) the tris (3-aminopropoxy)-ether of oxypropylated tris-(4-hydroxyphenyl)propane

The hydrogenation is advantageously conducted in the presence of a tertiary amine such as trimethylamine, mixtures of a tertiary amine and ammonia or ammonia when the nitrile is free from polymeric nitriles.

The amines are useful as components of polyurethane elastomers, polyurethane foams, flexible and rigid polyamide resins and epoxy resin hardeners.

3,799,987
4-ACETIC-6,8A-ETHANO-1,1,6-TRIMETHYL-1,2,3,5,6,7,8,8A-OCTAHYDRONAPHTHALENE, PROCESS FOR MAKING SAME AND COMPOSITIONS CONTAINING SAME

Garry C. Kitchens, Wayne; Alan R. Hochstetler, Bloomfield, and Kent Kaiser, Pequannock, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Jan. 18, 1971, Ser. No. 107,430
Int. Cl. C07c *45/100*
U.S. Cl. 260—586 R **6 Claims**

The novel 4-aceto-6,8a-ethano-1,1,6-trimethyl-1,2,3,5,6,7,8,8a-octahydronaphthalene can be isolated from acetylated thujopsene and thujopsene isomers and is a valuable perfume agent.

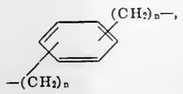
3,799,988
ω-GUANIDINO ACID DIAMIDE DERIVATIVES AND MANUFACTURING THE SAME

Sadao Hashimoto, Itano-gun; Katsushi Okada; Ryuji Sakakibara, both of Naruto, and Setsuro Fujii, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company Limited, Tokyo, Japan

Filed Apr. 2, 1970, Ser. No. 25,240
Claims priority, application Japan, Apr. 2, 1969, 44-25806
Int. Cl. C07c *103/50*
U.S. Cl. 260—561 A **8 Claims**

The present ω-guanidino acid diamide derivatives are new compounds having a structural formula of

wherein *m* is an integer of 1 to 10 and R is an alkylene of one to 12 carbon atoms or

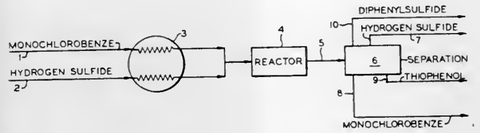


n being 0 or an integer of 1 to 3. The above derivatives and onium salts thereof are excellent in pharmacological activity, particularly in antagonism to bradykinin and inhibition of edema, and thus useful as anti-inflammatory agent.

3,799,989
CLEAVAGE OF AROMATIC THIOETHER

Fred T. Sherk, and Donald H. Kubicek, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed July 29, 1971, Ser. No. 167,320
Int. Cl. C07c *149/28*
U.S. Cl. 260—609 D **6 Claims**



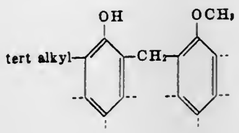
Aromatic thioether formed by reaction of H_2S and chlorobenzene at an elevated temperature at which thiophenol is formed is caused to undergo cleavage with H_2S to form additional thiophenol. The cleavage takes place under essentially the same or similar conditions as are acceptable for the formation of the thiophenol. The thioether can be subject to cleavage in the same or a reactor different from that in which thiophenol is being formed. Or, a reactor can be employed cyclically forming thiophenol and thioether and at a different time cleaving thioether.

3,799,990
ALKOXY SUBSTITUTED STERICALLY HINDERED PHENOLS

Roland Nast, Cologne-Buchheim; Harald Oertel, and Kurt Ley, both of Odenthal-Globusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 855,372, Sept. 4, 1969, Pat. No. 3,642,669. This application Apr. 1, 1971, Ser. No. 130,506
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 R **4 Claims**

Polyurethans stabilized against degradation and discoloration caused by the action of light or UV radiation, oxygen, substances present in the atmosphere, such as nitrogen oxides, and heat by the addition of alkoxy substituted sterically hindered phenols which has a 2-(2′-hydroxy-3-′-tertiary alkylbenzyl) anisole unit:



as stabilizers.

3,799,991
PROCESS FOR MAKING DIARYL METHANES

William E. Smith, 1937 Townsend Rd., Schenectady, N.Y.

Filed Apr. 26, 1972, Ser. No. 247,687
Int. Cl. C07c *41/00*
U.S. Cl. 260—613 R **6 Claims**

Aryl substituted methanes can be prepared by effecting reaction between an aromatic compound containing a nuclearly bonded hydrogen and hexamethylenetetramine in the presence of an acidic agent selected from the class consisting of sulfuric acid and phosphoric acid.

3,799,992
FLUORINATED VINYL ETHERS AND USE THEREOF

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

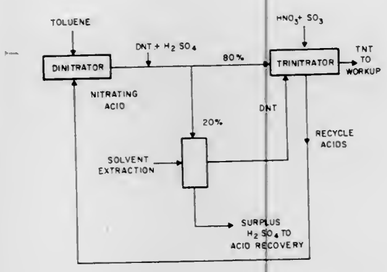
Division of Ser. No. 457,533, May 20, 1965, Pat. No. 3,465,045. This application May 23, 1969, Ser. No. 827,164
Int. Cl. C07c *41/56, 43/12*
U.S. Cl. 260—614 F **5 Claims**

Novel fluoroalkyl ethers, typically $(CF_3)_2CF\text{-}O\text{-}CH_2\text{-}CH_2\text{-}Br$, are prepared by reacting a ketone with an alkali metal fluoride, then reacting the resulting intermediate with a dihaloethane. These ethers may be dehydrohalogenated by reaction with alcoholic KOH to yield the corresponding fluoroalkyl vinyl ethers, e.g., $(CF_3)_2CF\text{-}O\text{-}CH\ \ CH_2$. The vinyl derivatives are useful for providing oil- and water-repellent coatings on fibrous materials, e.g., fabrics.

3,799,993
PROCESS FOR THE MANUFACTURE OF TRINITROTOLUENE

Marion E. Hill, Palo Alto; Wesley E. Tolberg, Atherton, and Gerald J. McDonald, Menlo Park, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 25, 1972, Ser. No. 283,694
Int. Cl. C07c *79/10*
U.S. Cl. 260—645 14 Claims



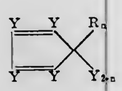
Process for preparing TNT comprises nitrating toluene with an anhydrous nitrating agent NO_2HSO_4 obtained by mixing HNO_3 and oleum. The process eliminates pollution problems associated with conventional manufacturing processes and produces TNT in high yields and rapid reaction rates.

3,799,994
SUBSTITUTED POLYHALOGENATED CYCLOPENTADIENES

Victor Mark, Ransomville, N.Y., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 786,429, Dec. 23, 1968, abandoned, which is a continuation-in-part of Ser. No. 44,890, July 25, 1960, Pat. No. 3,478,117. This application Apr. 19, 1971, Ser. No. 135,391
Int. Cl. C07c *23/08*
U.S. Cl. 260—648 C 6 Claims

Compounds of the formula



wherein Y is independently selected from the group consisting of methyl, hydrogen and a halogen of atomic weight between 35 and 80 with at least four of the Y substituents being said halogen; each R is independently selected from the group consisting of alkyl having at least one and a maximum of 12 carbon atoms, alkenyl having at least two and a maximum of five carbon atoms, alkoxyalkyl having at least two and a maximum of six carbon atoms, and *n* is one of the integers one or two.

These compounds possess insecticidal activity and are valuable intermediates for the preparation of insecticides having low mammalian toxicity.

3,799,995
PREPARATION OF OMEGA-HYDROPERFLUOROALKANES

John Hutchinson, Runcorn, England, assignor to the Imperial Industries Limited, London, England

Continuation-in-part of Ser. No. 750,014, Aug. 5, 1968, abandoned. This application Aug. 6, 1971, Ser. No. 169,859
Int. Cl. C07c *17/22, 19/08*
U.S. Cl. 260—653 5 Claims

A process for making ω-hydroperfluoroalkanes $H(CF_2)nF$ wherein n is an even integer equal to at least two and not great than 14 which comprises heating a fluorinated primary alcohol $H(CF_2)nCH_2OH$ with a metal fluoride selected from the group consisting of cobalt trifluoride, chromium trifluoride, manganese trifluoride, cerium tetrafluoride, lead tetrafluoride, bismuth pentafluoride and silver difluoride at a temperature of 50° C to 350° C.

3,799,996
PREPARATION OF TETRAFLUOROETHYLENE

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 4, 1971, Ser. No. 169,046
Int. Cl. C07c *17/26, 21/18*
U.S. Cl. 260—653.3 9 Claims

Tetrahalo-substituted ethylenes, and particularly tetrafluoroethylene, may be prepared by reacting a mixed tetrahalomethane with a metal carbonyl in the presence of an inert solvent. The tetrafluoroethylene which is prepared is useful as a starting material for the preparation of polymeric substances.

3,799,997
PREPARATION OF ALKENYNES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 8, 1971, Ser. No. 196,792
Int. Cl. C07c *21/22*
U.S. Cl. 260—654 D 9 Claims

Compounds containing both an ethylenic and an acetylenic linkage may be prepared by dehydrochlorination of chloro-substituted unsaturated compounds such as alkenes or alkadienes.

3,799,998
MANUFACTURE OF HALOGENATED HYDROCARBONS

David Geoffrey Mead, Widnes, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 518,015, Jan. 3, 1966, Pat. No. 3,480,682. This application July 31, 1969, Ser. No. 855,444
Int. Cl. C07c *21/02*
U.S. Cl. 260—654 A 16 Claims

Method of producing monohalogenated olefins by oxyhalogenating an olefin at a temperature between 250° and 550° C in the presence of a supported catalyst containing platinum or rhodium and a compound of copper and a rare earth metal. The catalyst may also contain a compound of an alkali-metal or an alkaline earth metal. The catalyst support is titania, zirconia or alumina having a specific surface area between about 0.5 to 50m² per gram.

3,799,999
SYNTHESIS OF PRIMARY ALKYL HALIDES

Ronnie D. Gordon, Richardson, Tex., and Charles M. Starks, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 75,286, Sept. 24, 1970. This application Mar. 10, 1972, Ser. No. 233,768
Int. Cl. C07c *17/20*
U.S. Cl. 260—658 R 8 Claims

Primary alkyl halides are reacted with ethyl halides to interchange the halide groups, the reaction being conducted in the presence of a catalyst comprising alkali metal or alkaline earth metal halides in an aprotic solvent.

3,800,000
PROCESS FOR RECOVERING A NICKEL(0) OLIGOMERIZATION CATALYST IN THE FORM OF A NICKEL(II) DIMERIZATION CATALYST

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

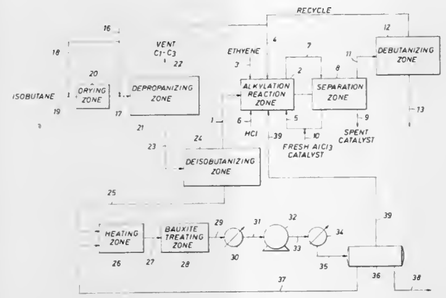
Filed Jan. 3, 1972, Ser. No. 215,142
Int. Cl. C07c *3/10*
U.S. Cl. 260—666 PY 5 Claims

An integrated process is provided wherein a nickel(0) complex-catalyzed oligomerization and a nickel(II) complex-catalyzed dimerization are coordinated such that the nickel(0) oligomerization catalyst is recovered after use in the nickel(II) complex form which is then utilized as a dimerization catalyst.

3,800,001
ETHYL CHLORIDE PYROLYSIS AND USE OF ETHYLENE AND HYDROGEN CHLORIDE IN ALKYLATION

Gerald F. Prescott; Charles T. Lewis, Jr., and William R. Owens, all of Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 28, 1972, Ser. No. 293,222
Int. Cl. C07c *3/56*
U.S. Cl. 260—683.53 8 Claims



Isobutane is alkylated with ethylene in the presence of HCl promoted aluminum chloride alkylation catalyst; ethyl chloride is a by-product formed and recovered from the hydrocarbon effluent in a normal butane - ethyl chloride fraction. The normal-butane-ethyl chloride fraction is pyrolyzed at 400°–1,000° F with bauxite catalyst to form ethylene, hydrogen chloride along with normal butane; the normal butane is separated from the mixture, by condensation, and the remaining vapor stream of ethylene and hydrogen fluoride is recycled to the alkylation reaction.

3,800,002
PROCESS FOR PREVENTING THE POLYMERIZATION OF CONJUGATED DIENES

Tatsusuke Chikatsu; Yoshinori Yoshida; Shinichi Shimokawa, and Toshio Akimoto, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Company Limited, Tokyo, Japan

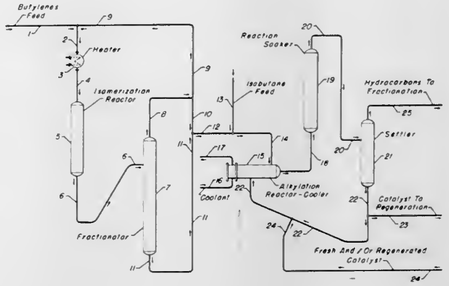
Filed Mar. 9, 1971, Ser. No. 122,514
Int. Cl. C07c *7/00, 7/13*
U.S. Cl. 260—681.5 R 11 Claims

A process for preventing the polymerization of conjugated dienes in solvents at high temperatures comprising the addition of at least one compound selected from the group consisting of organic phosphoric acid esters of the specific general formula, pyridine, nuclear substituted derivatives of pyridine wherein the substituents are alkyl groups, quinoline, nuclear substituted derivatives of quinoline wherein the substituents are alkyl groups, and anthracene, to the solvent containing a conjugated diene as inhibitor.

3,800,003
BUTENES ISOMERIZATION, SEPARATION AND ALKYLATION

Jay E. Sobel, Highland Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 31, 1972, Ser. No. 240,069
Int. Cl. C07c *3/54, 5/30*
U.S. Cl. 260—683.49 4 Claims



A process for producing an alkylation reaction product from an isoparaffinic reactant and an olefinic reactant containing 1-butene, 2-butene and isobutylene which includes passing the olefinic reactant through an isomerization zone, fractionating the isomerization zone effluent to separate 2-butene from 1-butene and isobutylene, passing the 2-butene to an alkylation zone with the isoparaffinic reactant and an alkylation catalyst, recycling a portion of the 1-butene and isobutylene to the isomerization zone, and passing a portion of the 1-butene and isobutylene to the alkylation zone with the 2-butene and isoparaffinic reactant.

3,800,004
PHENOLIC BASED UNSATURATED POLYESTER RESIN

Donald W. Sherwood, Buffalo, and Carmine A. Siconolfi, Tonawanda, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed July 14, 1971, Ser. No. 162,675
Int. Cl. C08g *37/20, 5/18*
U.S. Cl. 260—848 17 Claims

Curable thermoplastic polymer compositions having low acid numbers are prepared by a novel one step procedure by reacting an alpha, beta-ethylenically unsaturated dicarboxylic

acid, anhydride, or acid halide with a mixture of oxyalkylated derivatives of a polyfunctional novolak resin mixture and a substantial proportion, at least 5 percent by weight of oxyalkylated derivative of a monofunctional phenol. The thermoplastic polymer compositions are co-polymerizable with ethylenically unsaturated monomers, e.g., styrene, to form thermoset polymers which are characterized by excellent resistance to caustic alkalis.

3,800,005
POLYMERIZATES OF HYDROXYETHERIFIED PHENOLIC RESIN ESTERIFIED WITH UNSATURATED POLYCARBOXYLIC ACID AND LAMINATES THEREFROM

Donald W. Sherwood; Richard B. Tideswell, both of Buffalo, and Francis M. Kujawa, Tonawanda, all of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed July 14, 1971, Ser. No. 162,676
Int. Cl. C08g *37/20, 5/18;* **C08f** *3/48*
U.S. Cl. 260—848 **20 Claims**

New thermoplastic polyester resin compositions and processes for the preparation thereof are provided. The new compositions comprise mixed polyesters of alpha beta ethylenically unsaturated dicarboxylic acids which are esterified on the one side with a monofunctional alcohol having a boiling point above about 135°C and on the other side with a polyfunctional oxyalkylated novolak resin containing substantially no free phenolic hydroxyl groups. The polyesters when copolymerized with ethylenically unsaturated monomers produced thermoset polymers which are characterized by excellent resistance to caustic alkalis.

3,800,006
GRAFT POLYMERS FROM VINYL COMPOUNDS WITH BETA-PROPIOLACTONE, EPSILON-CAPROLACTONE AND ETHYLENE OXIDE

Shitomi Katayama; Hideichi Horikawa, both of Tokyo; Yukio Takahashi, Akita, and Noboru Masuda, Tokyo, all of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 807,999, March 17, 1969. This application Apr. 7, 1972, Ser. No. 242,205
Claims priority, application Japan, May 25, 1968, 43-35325
Int. Cl. C08f *29/50, 29/56, 29/24*
U.S. Cl. 260—874 **6 Claims**

A process of preparing graft polymers with graft chains consisting of ring-opened units of at least one of the cyclic monomers β-propiolactone, ϵ-caprolactone, and ethylene oxide which comprises reacting said cyclic monomers with homopolymers or co-polymers consisting of vinyl units containing carboxylate ions —COO^-. The invention also relates to the graft polymers so prepared. These graft polymers are colorless, easy to dye, have a high degree of plasticity, and low tendency to develop electrostatic charge. Depending on the graft ratio, which may be controlled, materials useful as adhesives, gums and paints may be produced having high graft ratios, while materials with low graft ratios are used for fibers, plastics and films.

3,800,007
PROCESS FOR PREPARING BLOCK COPOLYMERS WITH PEROXY-CONTAINING CHAIN-TRANSFER AGENTS AND PRODUCTS

Richard Anthony Bafford, Aiken, S.C., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 18, 1971, Ser. No. 190,376
Int. Cl. C08f *1/60*
U.S. Cl. 260—877 **14 Claims**

Block copolymers are prepared by polymerizing an unsaturated monomer in the presence of a polymerization catalyst and a chain transfer agent which is a cumyl peroxide containing one or more alkyl or cycloalkyl substituents, which substituents have at least one benzylic hydrogen atom, at a temperature below that which the peroxide decomposes, and subsequently polymerizing the peroxy containing polymer so formed in the presence of additional monomer at a temperature above the decomposition point of the peroxide.

3,800,008
ORIENTED POLYMER STRAP

Howard W. Starkweather, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilminton, Del.

Division of Ser. No. 845,692, July 29, 1969, Pat. No. 3,651,196. This application Aug. 5, 1971, Ser. No. 169,333
Int. Cl. C08f *29/12*
U.S. Cl. 260—897 B **3 Claims**

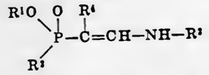
Manufacture of strapping from resin at least 75 percent of which is polyethylene having a density of at least 0.95 g/cc and preferably from 0.955 to 0.967 g/cc and a melt index of from 0.2 to 1.0 and preferably from 0.4 to 0.9 by extruding a billet, roll orienting the billet, followed by stretching at ambient temperature, followed by stretching in a liquid bath maintained at from 93°C. to the melting point of the polyethylene and preferably from 110° to 130°C. to give a total deformation of from 10 to 18 times and preferably 11 to 13.5 times.

3,800,009
2-PHOSPHONO-3-AMINO ACRYLIC ACID ESTERS

Wataru Nagata, Nishinomiya, and Yoshio Hayase, Sakai, both of Japan, assignors to Shionogi & Co., Ltd., Higashi-ku, Osaka, Japan

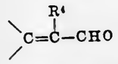
Division of Ser. No. 803,106, Feb. 27, 1969, Pat. No. 3,673,284. This application Apr. 7, 1972, Ser. No. 242,206
Claims priority, application Japan, Mar. 7, 1968, 43-14901; Mar. 19, 1968, 43-18134; Mar. 19, 1968, 43-18135; Mar. 30, 1968, 43-20805
Int. Cl. C07f *9/38*
U.S. Cl. 260—941 **2 Claims**

Reagents for aldehyde synthesis, particularly for formylolefination, of the general formula:



wherein R^1 represents a lower alkyl group, R^2 represents R^1O or an alkyl, aralkyl or aryl group, R^3 represents an acyclic or cyclic alkyl or aryl group, and R^4 represents a hydrogen atom, an alkyl, aralkyl or alkoxycarbonyl group or a halogen atom, which react with carbonyl compounds

to yield α,β-unsaturated aldehydes of the general formula:



wherein R^4 has the same meaning as described above.

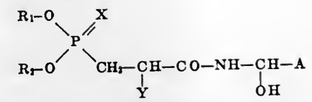
3,800,010
PHOSPHONOPROPIONIC ACID AMIDE DERIVATIVES

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 4, 1971, Ser. No. 112,769
Claims priority, application Switzerland, Feb. 6, 1970, 1775/70
Int. Cl. C07f *9/40;* **C08f** *45/58*
U.S. Cl. 260—943 **11 Claims**

The subject of the invention are phosphonopropionic acid amide derivatives of the formula

(1)



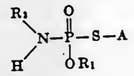
wherein R_1 and R_2 each denote an alkyl, halogenoalkyl or alkenyl radical with up to 4 carbon atoms each, X denotes a sulphur atom or preferably an oxygen atom, Y denotes a methyl group or preferably a hydrogen atom and A denotes a halogenated alkyl radical. These compounds are made by reacting the corresponding phosphonopropionic acid amide with the corresponding halogenoaldehyde. The compounds are used as flameproofing agents for fibers or in plastics or they serve as intermediates for the manufacture of other valuable compounds.

3,800,011
AMIDOTHIOL PHOSPHORIC ACID ESTERS

Keimei Fujimoto, Kobe; Kunio Mukai, Nishinomiya; Masachika Hirano, Minoo; Katsutoshi Tanaka; Hisami Takeda, both of Takarazuka, and Suminori Kawano, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Osaka, Japan

Filed Oct. 12, 1970, Ser. No. 80,224
Claims priority, application Japan, Oct. 23, 1969, 44-85059
Int. Cl. A01n *9/36;* **C07f** *9/24*
U.S. Cl. 260—940 **13 Claims**

Amidothiol phosphoric acid esters having the formula,



wherein R_1 is methyl, ethyl or propyl, R_2 is a C_3–C_{10} alkenyl, a C_3–C_{10} alkylthioalkyl, a C_2–C_{10} alkoxyalkyl or a C_2–C_{10} cyanoalkyl, and A is a C_1–C_3 alkyl, a C_3–C_6 alkenyl, a C_3–C_6 alkinyl, a halogen-substituted C_3–C_6 alkenyl or a halogen-substituted C_3–C_6 alkinyl, which are used as an active ingredient of a pest controlling composition with a systemic action.

3,800,012
METHOD AND APPARATUS FOR SEMI-CONTINUOUS PREPARATION OF AN EXPLOSIVE COMPOSITION

Hans Hiorth, Lierbyen, Norway, assignor to Dyno Industrier A.S., Oslo, Norway

Filed Feb. 13, 1973, Ser. No. 332,165
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 R **6 Claims**

The invention relates to a method and apparatus for the semi-continuous mixing of an explosive composition containing a premixed powder component and gelatine component, in which the components from the respective containers are blown out from nozzle-shaped outlet orifices as jets by means of pressure media controlled by weight impulses. The jets meet to cause a premixing in a predetermined ratio whereafter the composition resulting from the mixing of the jets is post-mixed more thoroughly by kneading, is subdivided into lumps and is transported away.

3,800,013
CHEMICAL EMBOSSING USING AMINE-FORMALDEHYDE DERIVATIVES

John L. H. Allan, Easton, Pa., assignor to GAF Corporation, New York, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,872
Int. Cl. B29d *27/00*
U.S. Cl. 264—52 **40 Claims**

An improved process for the chemical embossing of a thermoplastic sheet comprising blending

1. a vinyl resin, e.g., polyvinylchloride,
2. a plasticizer for the vinyl resin,
3. a blowing agent which decomposes when heated at a temperature in the range above the glass transition temperature of the plasticized vinyl resin and below the decomposition temperature of the resin,
4. an amine-formaldehyde derivative that will undergo condensation polymerization under acidic conditions; and optionally,
5. a component containing a plurality of groupings which will undergo condensation polymerization with the derivative of (4) under acidic conditions.

Such a blended composition is formed into a sheet and to such sheet is applied, in a pre-determined pattern, a composition comprising

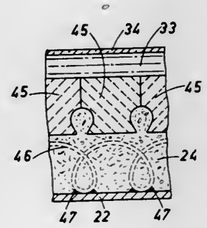
a. a material that will penetrate the sheet and cause condensation polymerization of component (4) or components (4) and (5), and, optionally,
b. a liquid that will penetrate the sheet,

The foaming of the sheet and creating of the embossed effect is accomplished by causing the condensation polymerization to take place and heating the resulting sheet to a temperature sufficient to fuse the plasticized resin and decompose the blowing agent.

3,800,014
METHOD OF CONSTRUCTING A REFRACTORY WALL IN A FLOAT GLASS FURNACE

Edgard Brichard, Jumet, Belgium, assignor to Glaverbel, Watermael-Bortsfort, Belgium

Continuation-in-part of Ser. No. 873,141, Oct. 29, 1969, Pat. No. 3,657,399. This application Feb. 16, 1972, Ser. No. 226,703
Int. Cl. F27d *1/16*
U.S. Cl. 264—30 **9 Claims**



A refractory wall is constructed by casting a first layer of refractory concrete next to the shell and while the castable is still in a castable condition, carbon bricks or blocks having an interlocking or interengaging configuration on one face are pushed into the castable to cause the castable to enter the interlocking configuration and upon setting lock the bricks to the castable layer. Carbon powder with or without a binder can be placed in the joints between the carbon blocks. Metal anchors can also be used to hold the castable layer tightly against the shell.

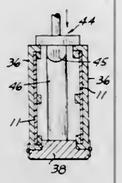
3,800,015
METHOD OF FORMING A BLOCK TO BE USED IN THE CONSTRUCTION OF A WALL

Melvin H. Sachs, 26765 Fullerton Ave., Birmingham, Mich.

Continuation-in-part of Ser. No. 21,981, March 23, 1970, abandoned, Continuation-in-part of Ser. No. 732,973, May 29, 1968, abandoned. This application May 19, 1972, Ser. No. 254,954
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 **2 Claims**

A method of forming a wall comprising preforming thin, rigid sheets with furring strips secured to their inner faces,

then making building blocks by molding foamed plastic between the inner faces of a spaced pair of such sheets so that the sheets are bonded to and the furring strips are embedded within and bonded to the plastic, and including forming vertically extending holes through the plastic material and a horizontally extending channel along the upper edge of the



plastic between the sheets. Next, stacking the blocks in courses to form a wall, with their vertical openings aligned with and their channels covered by the blocks next above them, and pouring concrete slurry into the openings and channels to form a concrete supporting grid within the wall. Thereafter, applying attachments to such sheets by means of mechanical fasteners engaged with said strips.

3,800,016

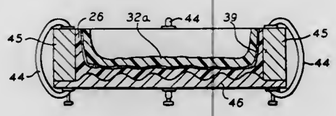
PROCESS FOR MANUFACTURING A RIGID PLASTICS TILE WITH TEXTURED SURFACE

Arthur H. Roberts, 12 Lynnwood Dr., Westbury, N.Y.

Division of Ser. No. 22,117, March 30, 1971, abandoned, which is a continuation of Ser. No. 526,605, Feb. 10, 1966, abandoned, which is a continuation-in-part of Ser. No. 455,764, May 14, 1965, Pat. No. 3,405,026, which is a continuation-in-part of Ser. No. 475,989, July 30, 1965, Pat. No. 3,414,456, which is a continuation-in-part of Ser. No. 523,778, Jan. 28, 1966, Pat. No. 3,419,455, which is a continuation-in-part of Ser. No. 525,667, Feb. 7, 1966, Pat. No. 3,420,729, said Ser. No. 455,764, said Ser. No. 475,989, said Ser. No. 523,778, said Ser. No. 525,667, Continuation-in-part of Ser. No. 22,002. This application Dec. 17, 1971, Ser. No. 209,177The portion of the term of this patent subsequent to Oct. 8, 1985, has been disclaimed.

Int. Cl. B29d *27/00*

U.S. Cl. 264—45 **22 Claims**



Rigid composite impact resistant textured tiles having a pliable and essentially void-free plastics facing component and a rigid backing component, are prepared by a specific sequential operation.

3,800,017

METHOD OF MANUFACTURING ELECTRIC CABLES IN A DIELECTRIC MATERIAL SATURATED WITH CABLE GAS

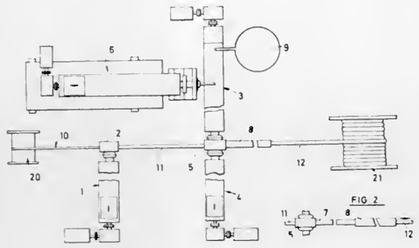
Albert Leslie Williams, Egham, and Stefan Verne, London, both of England, assignors to British Insulated Callender's Cables Ltd., London, England

Filed Aug. 17, 1971, Ser. No. 172,474

Claims priority, application Great Britain, Aug. 18, 1970, 39796/70

Int. Cl. B29c *5/10*

U.S. Cl. 264—46 **19 Claims**



In the manufacture of a high voltage electric cable having a dielectric wall of plastics or elastomeric material, the dielectric material is saturated with a cable gas by injecting the gas into the material in an extruder by which a layer of the dielectric material is being applied around a cable conductor. The extrudate is cooled by passing it, without exposing it to a gas other than a cable gas, from the extruder orifice into and through a cooling chamber which contains substantially no gas other than a cable gas at a pressure such that the extrudate is saturated with cable gas when it leaves the cooling chamber. Where the dielectric material is a material that can be set by cross-linking the extrudate emerging from the extrusion orifice is passed directly into and through apparatus which effects cross-linking of the material before the extrudate enters the cooling chamber.

3,800,018

FABRICATION OF CELLULAR RESINOUS PRODUCTS

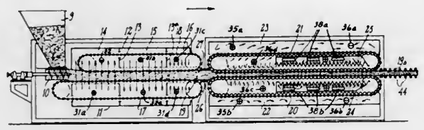
Maurice Charpentier, Rantigny, France, assignor to Saint-Gobain, Neuilly sur Seine, France

Continuation of Ser. No. 542,367. This application Aug. 26, 1970, Ser. No. 66,970

Claims priority, application France, Apr. 15, 1965, 65.13377; Aug. 27, 1969, 69.29272

Int. Cl. B29d *27/00, 27/08*

U.S. Cl. 264—53 **8 Claims**



Method and apparatus for the production of agglomerated granules of polystyrene, in sheet or block form. The expanded granules are uniformly heated under relative slight compression by blowing air through them for a period of between 10 seconds and three minutes. The air is preferably at or above the softening temperature of the granules. The heated granules are then compressed under a pressure of from 0.5 to 4 metric tons/m.^{2} until their apparent volume is approximately

one-half their original volume. The compressed granules are then cooled while remaining under pressure, to a temperature at which the agglomeration does not swell or re-expand. The method can be carried out by batch or by continuous procedures.

3,800,019

PROCESS FOR PRODUCING ROPE STRUCTURES

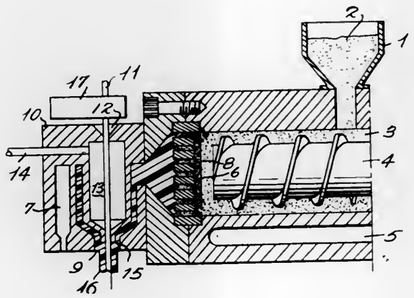
Michael Richard Parsey, Campion, and Alexander David, Harrogate, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 637,936. This application Mar. 17, 1970, Ser. No. 20,329

Claims priority, application Great Britain, May 20, 1966, 22578/66

Int. Cl. B29f *3/10*

U.S. Cl. 264—102 **10 Claims**



A rope structure is made by compacting a bundle of synthetic filaments by passing the bundle through a compacting die, further compacting the bundle by subjecting it to a reduced atmospheric pressure and, while the bundle is compacted, extruding a plastic sheath around the bundle.

3,800,020

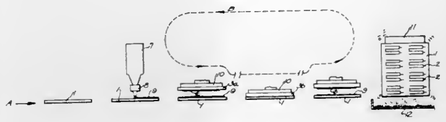
METHOD OF MAKING A CIRCUIT BOARD

A. James Parfet, Ft. Collins, Colo., assignor to Paul C. Cramer Company, Cincinnati, Ohio

Filed Mar. 23, 1972, Ser. No. 237,336

Int. Cl. B22f *3/12*; **H05k** *3/10*

U.S. Cl. 264—104 **6 Claims**



A printed circuit board formed by applying a thin layer of powdered metal composed of a mixture of copper-tin-lead to a heat softenable substrate, such as a sheet of thermoplastic resin, followed by the application of a heated die to the powdered surface, the die having the desired circuit pattern formed thereon and acting to sinter the metal particles in the areas contacted by the circuit defining portions of the die and also acting to soften the underlying portions of the substrate to effect a bond between the sintered metal circuit pattern and the substrate, the remainder of the powdered metal layer being unaffected by the sintering operation and readily removable for reclamation and reuse.

3,800,021

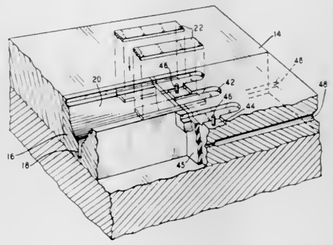
METHOD OF MANUFACTURING WINDSHIELD WIPER BLADES

Edward Monett, Westfield, and Jack E. Monett, Scotch Plains, both of N.J., assignors to Roller Corporation of America, South Plainfield, N.J.

Continuation of Ser. No. 122,053. This application Jan. 5, 1973, Ser. No. 321,130

Int. Cl. B29c *1/14*; **B29d** *3/02*; **B29h** *3/10*

U.S. Cl. 264—177 **5 Claims**



Mold having bottom part containing extruded slotted aluminum rods in side by side relation having vertical slots expanded thereabove to form channels, side slats in said channels, perforated metal strips above said slats, a divider mold part having bottom grooves registering with perforations in said metal strips, a top cavity in said division part receiving loading material, and a top mold part having a plunger snugly fitting said loading material cavity.

3,800,022

PROCESS FOR THE PRODUCTION OF NEW ORIENTED FILM AND TAPES

Richard Harold Barclay Buteux, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 100,792, is a division of Ser. No. 634,079, April 27, 1967, Pat. No. 3,595,736. This application Jan. 17, 1973, Ser. No. 324,427

Claims priority, application Great Britain, May 26, 1966, 23578/66

Int. Cl. B29d *7/24*

U.S. Cl. 264—210 R **6 Claims**

Processes for the production of uniaxially drawn films and tapes of polyethylene-1:2-diphenoxy-4:4:-dicarboxylate in which the film or tape is first crystallised by heating to 80°–220°C and then uniaxially oriented.

3,800,023

LOADING A CATION EXCHANGE RESIN WITH URANYL IONS

Paul A. Haas, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 16, 1972, Ser. No. 253,731

Int. Cl. C01g *56/00*

U.S. Cl. 423—7 **6 Claims**

A method for loading ion exchange resins is described. The process comprises contacting a cation exchange resin with a uranyl nitrate salt solution which is acid deficient.

3,800,024
PROCESS FOR NEUTRALIZATION AND REGENERATION OF AQUEOUS SOLUTIONS OF ACIDS AND DISSOLVED METALS

Bo Anders Forsell, and Rune John Valdemar Niklasson, both of Nynashamn, Sweden, assignors to Rederiaktiebolaget Nordstjernan, Stockholm, Sweden

Filed Nov. 1, 1971, Ser. No. 194,444
Claims priority, application Sweden, Nov. 3, 1970, 14826/70
Int. Cl. C01g *37/02, 49/02, 53/04*
U.S. Cl. 423—55 3 Claims

A method of treating acid solutions containing iron, chromium, nickel and fluoride ions is provided, wherein the pH of the solution is adjusted to separate the iron, chromium and fluoride ions from nickel by the precipitation of compounds thereof, and wherein the nickel is subsequently recovered from the remaining solution by precipitation.

3,800,025
RECOVERY OF TUNGSTEN FROM LOW GRADE TUNGSTEN ORES

Joseph S. Fox, Lewiston, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

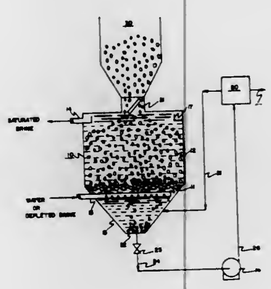
Filed Mar. 30, 1972, Ser. No. 239,618
Int. Cl. C01g *41/00*
U.S. Cl. 423—61 4 Claims

A method of extracting tungsten from ores containing low tungsten concentrations comprising the steps of roasting a particulated low grade tungsten-containing ore in the presence of the reagents Na_2CO_3 or Na_3PO_4 and NaCl, followed thereafter by water-leaching and filtering. About 85 percent of the tungsten reports in the filtrate whereupon it can be extracted by conventional techniques.

3,800,026
METHOD FOR PREPARING SODIUM CHLORIDE BRINE

George J. Morgan, Ossining, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Apr. 6, 1971, Ser. No. 131,744
Int. Cl. B01d *11/02*; C01d *3/08*
U.S. Cl. 423—179 4 Claims

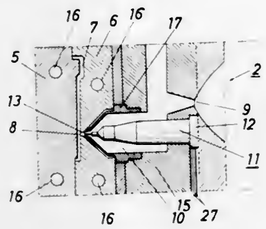


An improved process for preparing brine by passing a liquid upwardly through a bed of salt the improvement which comprises removing a slurry of brine and particulate matter from the bottom of the dissolving vessel, separating at least a portion of the particulate matter from the brine stream and returning the separated brine to the dissolving vessel at a point below the salt bed.

3,800,027
INJECTION MOLDING APPARATUS FOR SYNTHETIC RESIN

Shigeru Tsutsumi, 1165 Toyama-machi, Yamagata-ken, Yonezawa, Japan

Filed Feb. 8, 1972, Ser. No. 224,547
Claims priority, application Japan, Feb. 17, 1971, 46-6900
Int. Cl. B29f *3/08*
U.S. Cl. 425—243 5 Claims



The present disclosure relates to an apparatus for injection molding of synthetic resin without forming sprue waste. The structure is improved so as not to form sprue waste in a sprue and runner of a mold by providing a heater to heat intermittently for fusing the synthetic resin solidified in the sprue gate, being arranged in the runner and its pointed wire extended from the heater being introduced in the gate opening.

3,800,028
FORMATION OF HIGHLY REACTIVE FORM OF PHOSPHORUS PENTASULFIDE

Stephen Robota, North Tonawanda, and Vernon J. Lloyd, Lewiston, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,411
Int. Cl. C01b *25/14*
U.S. Cl. 423—303 7 Claims

The preparation of highly reactive phosphorus pentasulfide is described. The process involves forming a mixture of an inert gas and vapors of phosphorus pentasulfide and cooling the resultant mixture to condense therefrom phosphorus pentasulfide in a highly reactive form.

3,800,029
PROCESS FOR RECOVERING SODIUM FLUOSILICATE FROM WET PROCESS PHOSPHORIC ACID

Tsunehiko Omoto; Tadashi Inoue, and Takanori Yazaki, all of Hikoshima, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Feb. 17, 1971, Ser. No. 116,213
Claims priority, application Japan, Feb. 27, 1970, 45-18743
Int. Cl. C01b *25/16, 33/08*
U.S. Cl. 423—321 7 Claims

Sodium fluosilicate of high quality is recovered from wet process phosphoric acid by adding a sodium compound to phosphoric acid not containing substantial amount of fluosilicic acid dissolved therein to form an aqueous solution containing phosphoric acid and sodium dihydrogen-phosphate, adding said aqueous solution to wet process phosphoric acid containing fluosilicic acid dissolved therein and separating the resulting sodium fluosilicate crystals from the defluorinated phosphoric acid.

3,800,030
PROCESS FOR PURIFYING SILVER COMPOUNDS

Darla Long, Boston, and Kenneth Norland, Belmont, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 2, 1972, Ser. No. 249,513
Int. Cl. C01g *5/00*
U.S. Cl. 423—491 10 Claims

Heavy metal impurities may be separated from silver ion by precipitating and separating silver acetylide from an impure silver salt solution. Reaction of the appropriate acid with the separated silver acetylide may be employed to generate a purified silver salt therefrom. The process of the present invention is useful for purifying aqueous silver nitrate solutions for use in manufacturing photographic silver halide emulsions.

3,800,031
PROCESS FOR PREPARING SILICA HYDROGEL

Howard James Sale, Arnold, Md.; Alberto Delgado, Savannah, Ga., and Carroll Francis Doyle, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,841
Int. Cl. C01b *33/16*
U.S. Cl. 423—338 11 Claims

An improved and rapid process for purifying a silica hydrogel of soluble contaminants which comprises reducing the hydrogel to a controlled particle size range and thereafter treating the sized hydrogel in a continuous three-step operation. Treatment involves first dewatering a hydrogel slurry, washing the resulting hydrogel with acidified water, followed by washing with ammoniated water. All treatment steps are carried out on a moving belt maintained under a vacuum.

3,800,032
ACTIVE MAGNESIUM OXIDE

Herbert Eberle, Hannover; Wolfgang Meyer, Benthe, and Helmut Bartling, Ronnenbarg, all of Germany, assignors to Salzdetfurth AG

Filed Nov. 9, 1971, Ser. No. 197,155
Claims priority, application Germany, Dec. 7, 1970, 2060089
Int. Cl. C01f *5/08, 5/02, 5/16*
U.S. Cl. 423—636 7 Claims

A process for the preparation of active magnesium oxide having a large specific area by dispersing magnesium hydroxide or oxide with water forming a turbid liquid having a turbidity density of about 5 to 20 percent and vigorously agitating the liquid for about 5 to 60 minutes, the temperature of the turbid liquid being kept at about 80° to 110° C throughout the process, by introducing steam, washing the filter cake, drying and calcining the separated magnesium compound to obtain large surface area magnesium oxide.

3,800,033
HAIR CONTROL COMPOSITIONS AND METHOD OF USE

Richard Edwin Flawn, Shepperton; Malcolm Richard Nearn, Camberley, and Peter John Petter, Maidenhead, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 313,077
Claims priority, application Great Britain, Dec. 8, 1971, 56968/71
Int. Cl. A61k *7/10*
U.S. Cl. 424—47 8 Claims

A hair control preparation, particularly an aerosol hairspray, comprises a solution of a film-forming resin and a normally solid plasticiser for the resin which gradually volatilises from the resin after the hair control preparation has been applied to the hair, the weight ratio of resin to volatile plasticiser being from 1:2 to 20:1.

3,800,034
METHOD FOR PREPARING PRESSED POWDER MAKEUP STICKS AND PRODUCT PRODUCED

Charles R. Kircher, Milwaukee, Wis., and Richard L. Kole, Port Jervis, N.Y., assignors to Kolman Laboratories, Inc., Port Jervis, N.Y.

Continuation-in-part of Ser. No. 785,371, Dec. 19, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,202
Int. Cl. A61k *7/02*
U.S. Cl. 424—63 7 Claims

A cosmetic makeup composition in the form of a dry pressed powder stick. The dry composition is composed of finely divided, generally inert materials, including 40 percent to 90 percent by weight of chalk, colorants, and a binder. To prepare the composition, the finely divided material and colorants are mixed with an aqueous solution of the binder to provide a granulated mixture. After thoroughly mixing, the mixture is preferably extruded into stick form and dried to evaporate the water. The stick is dried at a slow rate, causing a migration of the binder toward the outer surface of the stick so that the outer surface has a higher content of binder than the central portion of the stick. The resulting dry powder stick has a high cohesive strength and improved "pay-off" when applied to the skin.

3,800,035
PRODUCTION OF INTERFERON FROM HUMAN LEUKOCYTES IN THE ABSENCE OF SERUM

Moshe Goore, Norristown, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

Filed Dec. 7, 1971, Ser. No. 205,766
Int. Cl. A61k *27/00*
U.S. Cl. 424—85 7 Claims

Interferon production from human leukocytes in the absence of serum is achieved by first priming the cells with interferon in the presence of serum, removing the serum, and then incubating the cells with an inducer in a serum-free medium.

3,800,036
ICE MILK OR LOW FAT IMITATION ICE CREAM

John Lester Gabby; Dennis Dale Corbin, and Jack Bruner Lowe, all of Evansville, Ind., assignors to The Drackett Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 153,837, June 16, 1971, which is a continuation-in-part of Ser. No. 74,211, Sept. 21, 1970, abandoned. This application Jan. 10, 1972, Ser. No. 216,809
Int. Cl. A23g *5/00*
U.S. Cl. 426—164 12 Claims

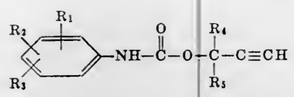
Frozen desserts including ice milk and imitation ice cream having no triglyceride fat ingredient or optionally up to 7 percent by weight of fat can be prepared by employing as texturizing ingredient 0.5 to 1.5 percent by weight of a polyglycerol ester. From 0.05 to 0.5 percent by weight of a hydrophilic colloid stabilizer is optionally employed.

3,800,037
INSECTICIDAL AND ACARICIDAL SUBSTITUTED CARBANILIC ACID ESTERS

Henry Martin, Basel, Switzerland; Georg Pissiotas, Loerrach, Germany, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Midland, Mich.

Filed Sept. 4, 1970, Ser. No. 69,887
Claims priority, application Switzerland, Sept. 4, 1969, 13420/69
Int. Cl. A01n *9/08*
U.S. Cl. 424—186 27 Claims

Substituted carbanilic acid propargyl esters of the formula



in which R_1, R_2 and R_4, which may be the same or different, each represents a hydrogen atom or a halogen atom or an alkyl, alkoxy or halogenalkyl radical each having from one to four carbon atoms or a $-NO_2$ or $-SCN$ group, and R_4 and R_5, which may be the same or different, each represents a hydrogen atom or an alkyl group having from one to four carbon atoms, used as synergistic agents for insecticidally and/or a acaricidally active substances.

3,800,038

UTERINE ADMINISTRATON OF EUTECTIC SOLID SOLUTIONS OF STEROID HORMONES IN A STEROIDAL LIPID CARRIER

Harry W. Rudel, New York, N.Y., assignor to Biological Concepts, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 138,317, April 28, 1971, abandoned. This application Apr. 21, 1972, Ser. No. 246,171

Int. Cl. A61k *17/00*

U.S. Cl. 424—239 **6 Claims**

A pharmaceutical preparation suitable for parenteral administration comprises an active therapeutic ingredient in solid solution with a steroidal lipid carrier. The therapeutic ingredient may be for example, a natural or synthetic steroid hormone, a prostaglandin, or an antibiotic.

3,800,039

ANTITHROMBOGENIC PROCESS EMPLOYING SUBSTITUTED 6,7-DIALKOXYQUINAZOLINES

Norman R. Marquis, and Roger L. Vigdahl, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Oct. 21, 1970, Ser. No. 82,839

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **13 Claims**

An antithrombogenic process is disclosed for the prevention of aggregation of blood platelets of a mammal subject to thromboembolic disease which comprises contacting a compound selected from a group of 2,4-substituted-6,7-dialkoxyquinazolines with the blood of the mammal. Illustrative of the 6,7-dialkoxyquinazolines which are useful in the antithrombogenic process of the present invention are 4-amino-6,7-dimethoxyquinazoline and 6,7-dimethoxy-4-ethylquinazoline.

3,800,040

METHODS FOR CONTROLLING RODENT POPULATIONS USING SUBSTITUTED DIQUINOLYDISULFIDES

Reuben G. Jones, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sept. 1, 1971, Ser. No. 177,086

Int. Cl. A01n *9/12, 9/22*

U.S. Cl. 424—258 **3 Claims**

Rodenticidal compositions and methods in which a 5,5′-disubstituted 8,8′-diquinolyl disulfide is the rodenticidally active ingredient.

3,800,041

ANALGESIC COMPOSITIONS AND METHODS

Joseph A. Miller, Jr., Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 830,101, June 3, 1969, abandoned. This application Mar. 2, 1971, Ser. No. 120,310

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **7 Claims**

Improved analgesic compositions comprising, in combination, α-d-propoxyphene or a pharmaceutically acceptable acid addition salt thereof and indomethacin or a pharmaceutically acceptable cationic salt thereof; and methods of employing such improved analgesic compositions to obtain enhanced analgesia.

3,800,042

NEW (THENYLIDENE AMINO)OXY) ALKYL CARBOXYLIC ACIDS AND SALTS AND ESTERS THEREOF AS ANALGESIC AND ANTI-INFLAMMATORY AGENTS

Jan Van Dijk, and Johannes Maria Antonius Zwagemakers, both of van Houtenlaan, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 26,756, April 8, 1970, Pat. No. 3,704,911. This application Oct. 24, 1972, Ser. No. 300,434

Claims priority, application Netherlands, Apr. 10, 1969, 6905499

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 **5 Claims**

Certain [(thenylidene amino) oxy] alkyl carboxylic acids their esters and salts have been found to have strong anti-inflammatory activities and analgesic analgesic

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3,800,043

1-SUBSTITUTED BIGUANIDES AS GASTROINTESTINAL SPASMOLYTIC AGENTS

George H. Douglas, Paoli; Julius Diamond, Lafayette Hill, and Bernard J. Burns, Philadelphia, all of Pa., assignors to William H. Rorer Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 89,005, Nov. 12, 1970, abandoned. This application Oct. 14, 1971, Ser. No. 189,195

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 **23 Claims**

1-substituted phenyl biguanides are disclosed which possess useful gastrointestinal spasmolytic properties. Some of the compounds also display gastric anti-secretory and anti-hypertensive properties.

3,800,044

PHARMACEUTICAL METHODS USING A SUBSTITUTED 10-AMINOALKYL-9,10-DIHYDROANTHRACENE

Paul N. Craig, Ambler, and Charles L. Zirkle, Berwyn, both of Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 742,171, July 3, 1968, Pat. No. 3,622,630, which is a continuation-in-part of Ser. No. 631,584, April 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 526,975, Feb. 14, 1966, abandoned. This application May 10, 1971, Ser. No. 122,099

Int. Cl. A61k *21/00*

U.S. Cl. 424—330 **10 Claims**

Pharmaceutical compositions comprising a substituted 10-aminoalkyl-9,10-dihydroanthracene have utility as tranquilizers and/or antidepressants.

3,800,045

LOWER CALORIE CANDY

Clarence E. Brucker, Oak Park; Kenneth S. Uhlarik, Broadview; John W. Lampe, Jr., and John W. Bush, both of Chicago, all of Ill., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 8, 1971, Ser. No. 132,544

Int. Cl. A23g *3/00*

U.S. Cl. 426—162 **1 Claim**

A reduced calorie candy is described characterized by the substitution of about 11 to 28 percent gum arabic, 18 to 26 percent of microcrystalline cellulose, and about 20 percent high fructose content sweetener for a portion of the sweetened, condensed skim milk, and vegetable fat usually used in such compositions. Calorie reduction of over 55 percent may be obtained without loss of the texture or flavor of high caloric candy.

3,800,046

ARTIFICIALLY SWEETENED CONSUMABLE PRODUCTS

James M. Schlatter, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 841,582, July 14, 1969, Pat. No. 3,714,139, and a continuation-in-part of Ser. No. 2,393, Jan. 12, 1970, Pat. No. 3,642,491, said Ser. No. 841,592, is a continuation-in-part of Ser. No. 543,054, Pat. No. 3,492,131. This application Feb. 9, 1972, Ser. No. 224,989

Claims priority, application Italy, July 6, 1970, 51947/70; Great Britain, Apr. 17, 1967, 17474/67; July 17, 1968, 33971/68

Int. Cl. A23l *1/26*

U.S. Cl. 426—168 **10 Claims**

Artificially sweetened consumable products and sweetening compositions having low caloric content and lacking in unpleasant after-taste are obtained by incorporating a sweetening agent of the class consisting of the lower alkyl esters of aspartylhexahydrophenyl=lanine.

3,800,047

PROCESS FOR PRODUCING DEHYDRATED POTATO PRODUCTS FORTIFIED WITH STABLE VITAMIN C

Arden O. Pulley, Blackfoot, Idaho, assignor to American Potato Company, San Francisco, Calif.

Filed Oct. 21, 1971, Ser. No. 191,335

Int. Cl. A23l *1/12*

U.S. Cl. 426—302 **4 Claims**

Dehydrated potato products are coated with a water solution comprising ascorbic acid or its salts, a film forming oxygen barrier, and sulfur dioxide. Upon storage in air, treated products do not discolor and vitamin activity is protected.

3,800,048

COMPOSITION OF HALOGENATED HYDROXY-DIPHENYL ETHERS

Ernst Model, Basel, and Jakob Bindler, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 627,603, Apr. 3, 1967, Pat. No. 3,629,477, which is a continuation-in-part of Ser. No. 570,742, Aug. 8, 1966, Pat. No. 3,506,720, which is a continuation-in-part of Ser. No. 345,080, Feb. 17, 1964, abandoned. This application Sept. 23, 1970, Ser. No. 74,896. The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.

Int. Cl. A01n *9/20*

U.S. Cl. 424—304 **7 Claims**

Halogen-2-hydroxy-diphenyl ethers are useful in bactericidal compositions and method in the protection of organic materials. Illustrative compounds are 2′,4,4′,5-tetrachloro-2-hydroxydiphenyl ether, 4,4′,5-trichloro-2-hydroxydiphenyl ether, 2′,4,4′-trichloro-5-bromo-2-hydroxydiphenyl ether and 4,4′-dichloro-5-bromo-2-hydroxydiphenyl ether.

3,800,049

PROCESS FOR OBTAINING DRIED FRUITS, ESPECIALLY PRUNES

Jean Larroche, and Claude Larroche, both of 12 Lamartine, (47), Villeneuve sur Lot, France

Filed July 27, 1971, Ser. No. 166,634

Claims priority, application France, July 30, 1970, 70.28193; May 13, 1971, 71.17370

Int. Cl. A23b *7/04*

U.S. Cl. 426—305 **1 Claim**

An improved process for obtaining dried fruit, notably prunes, is described.

The picked fruit is treated, either immediately after having first been subjected to blanching, or a few days after picking and following partial dehydration, or after lengthy preservation. They are subjected to two successive steps: (a) enriching of the fruit by the penetration of its cells by a sugar, sweetening product or other substance enabling the dry extract of the fruit to be increased by osmosis, and (b) dehydration which permits a more or less large amount of the water contained in the fruit cells to be extracted. The invention therefore consists in an enriching of the fruit followed by a dessication.

Said process, applied notably to the Ente plum, enables a larger gauge size prune of improved flavor to be obtained.

3,800,050

PREPARATION OF A PUFFED, STARCH CONTAINING FOOD PRODUCT

Gene T. Popel, 2416 Monroe Ave., San Diego, Calif.

Continuation of Ser. No. 485,068, Sept. 4, 1965, abandoned, which is a continuation-in-part of Ser. No. 361,940, April 23, 1964, abandoned. This application Sept. 3, 1970, Ser. No. 69,477

Int. Cl. A23l *1/10, 1/12*

U.S. Cl. 426—343 **17 Claims**

Puffed food products are produced by cooking a slurry of water, a foodstuff and starch containing at least 20 percent by weight amylose, thereby producing a gelatinized mass. The gelatinized mass is formed into pieces, dried and puffed.

3,800,051

REDUCING SERUM CHOLESTEROL WITH CERTAIN SUBSTITUTED PHENOLS

James W. Barnhart, Indianapolis, and Philip J. Shea, Zionsville, both of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 21, 1970, Ser. No. 74,155

Int. Cl. A61k *27/00*

U.S. Cl. 424—346 **5 Claims**

Methods useful for lowering serum cholesterol in animals comprising administration to the animal of a hypocholesteremic amount of a substituted phenol, and compositions to be employed in practicing the method.

3,800,052

PREPARATION OF AN ACIDIFIED MILK BEVERAGE

Kaoru Inagami; Hidemoto Kamada, both of Tokyo; Kazuo Ino, Zama; Takeshi Terabayashi, Tokyo; Hiroki Iio, Yamato, and Hirosi Yamamura, Tokyo, all of Japan, assignors to Calpis Shokuhin Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1971, Ser. No. 200,832

Claims priority, application Japan, Nov. 26, 1970, 45-103694; Dec. 17, 1970, 45-112854

Int. Cl. A23c *23/00*

U.S. Cl. 426—359 **6 Claims**

A sour milk beverage having good whiteness and stability is made by adding acid to skim milk to bring the pH within the

range 3.50 to 3.70. The skim milk is used in a quantity such that the finished product contains 0.6 to 2.5 percent of solids-not-fat content. The acid may be added to bring the beverage to a pH of 3.70 to 3.80 provided that sugar is added first to the skim milk so that the sugar is at least 15 percent of the combined weight of skim milk and sugar. At this pH the drink may contain 0.6 to 3.0 percent of solids-not-fat content. The addition of sugar before acidification is also applicable to the beverage with pH of 3.50 to 3.70 and increases the stability.

3,800,053

PROCESS FOR PREPARING PROTEIN MONOFILAMENTS

Donald A. Lange, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed June 26, 1972, Ser. No. 266,200

Int. Cl. A23j *3/00*

U.S. Cl. 426—364 **11 Claims**

Protein monofilaments are prepared from oilseed protein materials and water through the formation of an extrudable plastic mass and the extrusion of same into a gaseous medium. The products find use as food supplements and as texturizing bases for foods such as meat analogs.

3,800,054

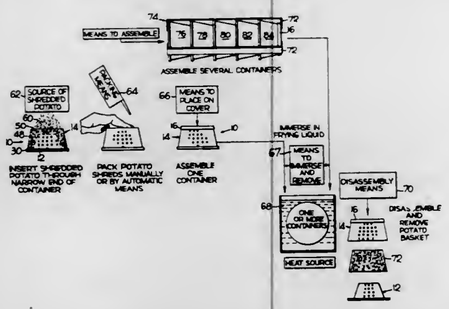
METHOD FOR MAKING POTATO BASKETS

John C. Giesfeldt, Milwaukee, Wis., assignor to Baskettes Ltd., Milwaukee, Wis.

Filed May 19, 1971, Ser. No. 144,747

Int. Cl. A23l *1/12*

U.S. Cl. 426—390 **13 Claims**



A container for making potato baskets or the like comprises an inner shell, an outer shell and a cover member. The inner shell comprises a first conical perforated side wall member, a perforated end wall at the narrow end of the side wall member, and a perforated flange member at the wide end of the side wall member, which flange member extends outwardly therefrom. The outer shell comprises a second conical perforated side wall member of greater length and diameter than the first side wall member and its wide end is adapted to releasably engage the flange member when the two shells are nested together. An opening at the narrow end of the second side wall member is adapted to be closed by a cover member which releasably engages the second side wall member. The first and second side wall members have different angular slopes so that the space enclosed therebetween is wider at the narrower end of the container than at the other end to facilitate the insertion of a raw shredded comestible and to facilitate the removal of the cooked basket.

Several assembled and filled containers can be stacked together and releasably secured by brackets, with the flange member of one container closing off the opening in the narrow end of an adjacent container.

In accordance with the method, a raw shredded comestible is inserted into the space through the opening in the narrow end of an assembled container and packed firmly in place. Then, the cover is put in place (or several containers are stacked together and releasably secured by the brackets) and the filled, closed container is immersed in hot frying liquid until the comestible is cooked. Then, the container is removed from the liquid and the inner and outer shells are separated to release the cooked basket.

3,800,055

PULSATING-FLOW COFFEE EXTRACTION PROCESS

William E. Gallagher, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 153,535, June 16, 1971, abandoned. This application July 11, 1973, Ser. No. 378,370

Int. Cl. A23f *1/08*

U.S. Cl. 426—432 **6 Claims**

A method for increasing the rate of extraction in a coffee extraction column which comprises superimposing a pulsating flow on the feed water of a conventional coffee extraction column.

3,800,056

PROCESS FOR MAKING PEANUT FLAKES

Jack H. Mitchell, Jr., Clemson University, Clemson, S.C.

Continuation-in-part of Ser. No. 839,673, July 7, 1969, Pat. No. 3,689,287. This application Oct. 8, 1971, Ser. No. 187,837. The portion of the term of this patent subsequent to Sept. 5, 1989, has been disclaimed.

Int. Cl. A23l *1/36*

U.S. Cl. 426—457 **9 Claims**

This invention relates to a process for converting peanuts into thermostable, bland flavored, precooked full-flat flakes, which includes the steps of steaming the unground peanuts, drying to a moisture level of two to three per cent, removing the skins and hearts, grinding the peanuts to a fine consistency, precooking the finely divided peanuts with water, and then drum drying the product.

ERRATA

For Classes 426—85, 426—164 and 426—162 thru 426—302 see:
Patents Nos. 3,799,914, 3,800,036, 3,800,045 thru 3,800,047

3,800,057

ELECTRICALLY HEATED FURNACE UTILIZING CERAMIC HEATING ELEMENTS

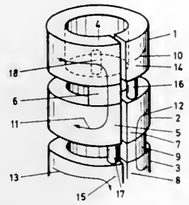
Wilhelm H. Kuhlmann-Schafer, Hannover; Klaus Hagen, Peine; Hans-Dieter Peters, Schmedenstedt, and Gunther Wolters, Edemissen, all of Germany, assignors to Preussag AG., Hannover, Germany

Filed July 9, 1973, Ser. No. 377,387

Claims priority, application Germany, July 25, 1972, 2236286

Int. Cl. H05b *3/14*

U.S. Cl. 13—25 **12 Claims**



An electrically heated furnace utilizing ceramic heating elements. The heating elements are series-connected across a spark gap and take on a variety of different configurations depending on their specific application.

3,800,058

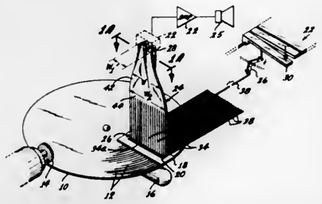
LIGHT COLLECTOR FOR OPTICAL ORGAN

Stephen Bartok, Gardena; George J. Klose, Redondo Beach, and George W. Stewart, Costa Mesa, all of Calif., assignors to Opsonar Organ Corporation, Bronx, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,738

Int. Cl. G10h *3/06*

U.S. Cl. 84—1.18 **7 Claims**



In an electro-optical organ which includes a device, such as, a rotating disc with numerous concentric tracks of varying opacity representing respective musical tones or sounds and a light source diverting light through all of the tracks, for establishing time-varying light beams representing the musical tones which pass through a relatively long and narrow slit, and a photocell for generating electrical signals in audible to such light beams which signals are employed, for example, in an amplifier and loudspeaker arrangement, for producing corresponding auidble sounds; a light collector is provided for transmitting the light beams from the slit to the photocell and is constituted by a body of light transmitting material having pickup and output ends disposed at the slit and photocell, respectively, and including a first substantially planar portion which tapers from a relatively large width corresponding to the length of the slit at the pickup end to a relatively smaller width at the output end, and second portions directed from the first planar portion at substantial angles to the latter and extending along the first planar to the output end from locations spaced from the output end, with the widths of such second portions increasing progressively therealong toward the output and so as to substantially equalize the cross-sectional areas of the light-transmitting body between its pickup and output ends. The aforementioned second portions may be constituted by longitudinal corrugations in the planar portion of the light-transmitting body or may extend along the opposite side edges of such planar portion.

3,800,059

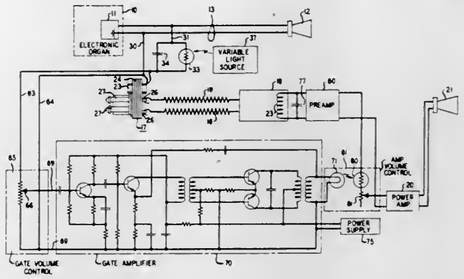
ENHANCEMENT EQUIPMENT FOR CONNECTION TO ELECTRONIC MUSICAL INSTRUMENTS

Leonard W. Pavia, 460 Columbia Tnpk., Florham, N.J.

Continuation-in-part of Ser. No. 145,856, May 21, 1971, abandoned. This application Oct. 5, 1972, Ser. No. 295,361

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.24 **10 Claims**



Spatial enhancement equipment for connection to existing organs or other electronic musical instruments comprises an artificial reverberation unit having coiled springs and an input transducer including a driving coil. The connection of the driving coil to the output amplifier of the organ includes a series connection of a photoresistor having a capacitor shunted across it. A variable light source applies pulses of light to the photoresistor alternately to cause it to conduct and not conduct. When the photoresistor is not conducting the electrical signals from the organ are applied to the driving coil through the shunt capacitor, introducing a phase shift into the signal. The variable light source is disclosed as a rotating disc having different patterns of opacity on it. A gating arrangement connected in parallel with the reverberation unit prevents noise from activating the power amplifier of the enhancement equipment in the absence of musical input. The gating arrangement includes a gating amplifier driving a filamentary bulb optically coupled to a photoresistor connected between the preamplifier and power amplifier of the enhancement equipment.

3,800,060

KEYNOTE SELECTOR APPARATUS FOR ELECTRONIC ORGANS

John Ray Hallman, Jr., Box 2, Green Bank, W. Va.

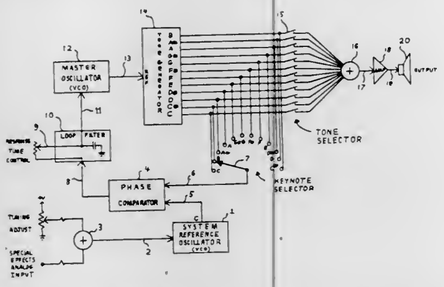
Continuation-in-part of Ser. No. 220,068, Jan. 24, 1972, abandoned. This application Apr. 27, 1973, Ser. No. 355,291

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.24 **10 Claims**

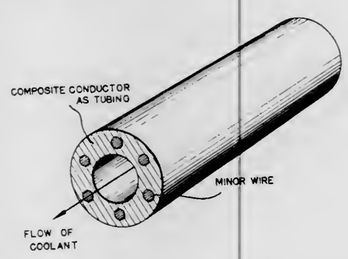
An electronic organ keynote selection apparatus, for selectively altering the key to which the organ is tuned, may be employed in organs utilizing single voltage controlled master oscillator tone generator systems. The apparatus includes a phase locked loop comprising a phase comparator producing a control voltage coupled to a loop filter providing loop stabilization and loop response time control (musical slur speed control) coupled to the voltage controlled master oscillator providing the reference to the tone generator. One input of

the phase comparator is connected to an oscillator providing a system tuning reference. the other input to the phase comparator is selectively coupled by switching means (keynote selector) to one of the tone generator outputs thereby establishing a phase lock between the reference oscillator and the selected tone generator output. The instrument keynote is altered when the phase comparator input is changed to a different tone generator output by the keynote selector. A loop response time control provides a means by which the time required for a keynote change may be regulated which provides the musical slur effect to an electronic instrument which here to fore has only been possible with the wind instruments. A new method of playing music results when the keynote selector comprises a standard organ keyboard. With one hand the player strikes a chord on a tone selector keyboard while



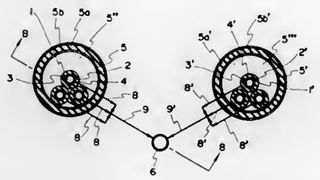
with the other hand selecting the instrument key on the keynote selector keyboard and regulating the keynote change speed (slur speed), thus providing novel organ musical effects, as well as providing an easier means for playing musical accompaniment since only the chords associated with the key of C are required since these chords may be transposed to chords associated with other keys by the keynote selector. A special effects analog input to the system reference oscillator is provided which may have complex analog signal inputs and in fact this in combination with the keynote selector appropriately manipulated with a hand will provide new musical possibilities to the instrument and composer. Essentially what is provided is a new music synthesizer which offers all the capabilities of the conventional monophonic synthesizer but with new polyphonic capabilities added.

3,800,061
COMPOSITE CONDUCTOR CONTAINING SUPERCONDUCTIVE WIRES
Warren L. Larson, Lexington, and James Wong, Wayland, both of Mass., assignors to Norton Company, Worcester, Mass.
Continuation of Ser. No. 534,177, March 14, 1966, abandoned. This application Mar. 5, 1969, Ser. No. 807,166
Int. Cl. H01v *11/08*
U.S. Cl. 174—15 C **6 Claims**



A superconductor cable substitute made by co-working multiple rods of superconductive niobium-titanium or niobium-zirconium alloy with a common copper matrix to extend the copper and rods to form a final elongated product which has superconductive wires distributed in a reduced cross-section copper conductor with a complete metallurgical bond between the normal-conductive copper and the superconductor wires contained therein. The super conductor cable can be in the form of a tube.

3,800,062
COOLING METHOD FOR TRANSMISSION CABLES
Hirobumi Kataoka; Kazunari Suzuki; Yoshio Takayama, and Yoshisuke Iwata, all of Tokyo, Japan, assignors to Kanto Tar Products Co. Ltd. and Furukawa Denki Kagyo Co., Ltd., both of Tokyo, Japan
Filed July 24, 1972, Ser. No. 274,208
Claims priority, application Japan, July 24, 1971, 46-55538; Dec. 30, 1971, 46-1092
Int. Cl. H01v *11/00*
U.S. Cl. 174—15 C **13 Claims**



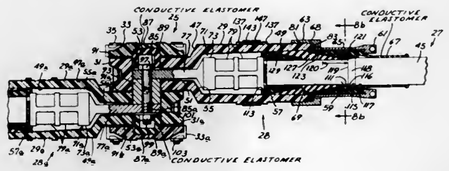
The invention relates to a method and associated apparatus for cooling power transmission cables, wherein a coolant for cooling the power transmission cables is introduced into a pipe which envelopes cryo resistive or super conducting transmission cables which cables each have conductors provided with coolant ducts therein. The coolant flows through the coolant ducts in the conductors of the transmission cables and absorbs the heat generated in the conductors, the warm coolant is recovered at appropriate points along the transmission cable and transmitted via a return pipe or pipes installed along the cable and cold coolant is introduced into succeeding sections of the transmission cable so as to cool the succeeding sections of the cable conductors and a central cooling station for cooling, introducing and recovering coolant is installed at one end of the return pipe, to enable the entire transmission cable line to be cooled by a single central cooling station.

3,800,063
ELECTRICAL SERVICE PEDESTAL
Vincent H. Di Maggio, 751 Spencer St., Monterey, Calif., and John Wong, 820 Bedford Dr., Salinas, Calif.
Filed June 28, 1972, Ser. No. 284,416
Int. Cl. H02g *9/00;* **H02b** *1/08*
U.S. Cl. 174—38 **10 Claims**

An electrical service pedestal for mounting a meter and circuit breaker panel to serve traffic signal systems, lighting

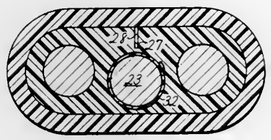
systems, and the like, comprising an elongate rectangular structure formed of generally channel shaped members and having both a fixed top plate and bottom base plate. The structure, which is upright in normal placement, has an interior dividing partition which extends for its full length. The bottom base plate has a plurality of holes for securing said structure to a concrete foundation and an aperture which is generally bisected by the dividing partition at the juncture of the rectangular structure and the base plate. The inside of the structure cooperates with the dividing partition to form two raceways for carrying a plurality of unfused and fused service wires to and from a meter and breaker panel, a device common to the art, that could be mounted on the front of the pedestal.

3,800,064
UNIVERSAL POWER CABLE JOINT WITH CLOSED-CELL SPONGE STRESS RELIEF ELEMENT
George E. Lusk, Downers Grove, Ill., assignor to G&W Electric Specialty Company, Blue Island, Ill.
Filed Sept. 28, 1972, Ser. No. 292,903
Int. Cl. H02g *15/02;* **H01b** *17/26*
U.S. Cl. 174—73 R **25 Claims**



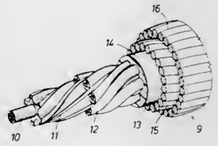
A cable joining device of modular concept includes a tubular housing for receiving a prepared end of a power cable which has a region of high electrical stress, and a stress relief element for interposition between the housing and the cable. The stress relief element includes a compressible portion having electrically conductive properties and forming a stress control shield, a high dielectric strength portion contiguous to the shield portion, and a third portion that is compressible, has electrically conductive properties and is contiguous to the high dielectric strength portion. The interposition of the stress relief element causes it to be under radial compressive stress, which creates a continuous compliance of the element to the cable. The relation of the portions to one another is such that the high dielectric strength portion surrounds the region of high electrical stress of the cable. The tubular housing includes a provision for an accessible voltage test point.

3,800,065
GROUNDED POWER CABLE
Steve Bunish, Marion, and Joseph W. Faulkner, Sweetser, both of Ind., assignors to The Anaconda Company, New York, N.Y.
Filed Mar. 26, 1973, Ser. No. 345,049
Int. Cl. H01b *9/00*
U.S. Cl. 174—115 **8 Claims**



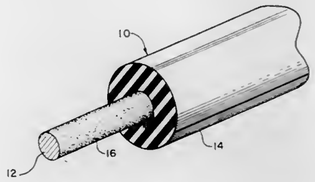
An economical parallel conductor grounded cable that can, if desire, be insulated in a single operation, has the grounding wire between the phase conductors but close to one flat surface of an extrusion of insulation. This extrusion is slotted from the other flat surface to a point close to the ground and is covered by a second, non-adhering, extrusion of uniform wall thickness.

3,800,066
GAS BLOCKED LOGGING CABLE
William A. Whitfill, Jr., and Richard P. McNerney, both of Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 30, 1972, Ser. No. 302,159
Int. Cl. H01b *7/24, 7/02*
U.S. Cl. 174—116 **6 Claims**



Method and apparatus for forming a well logging cable that is gas-blocked by virtue of having solid outer conductors cabled around a stranded, filled center conductor and interred in a monolithic matrix material. Substantially all void spaces are thereby eliminated to prevent collection of gas anywhere within the cable at high temperatures and pressures.

3,800,067
METHOD OF MANUFACTURING AN ELECTRICALLY INSULATED METALLIC CONDUCTOR WITH THE INSULATION ADHERING TO THE CONDUCTOR, AND PRODUCT
Jon Arthur Eklund, West Chelmsford, Mass., assignor to General Electric Company, New York, N.Y.
Filed Nov. 22, 1972, Ser. No. 308,718
Int. Cl. H01b *7/02*
U.S. Cl. 174—120 R **9 Claims**

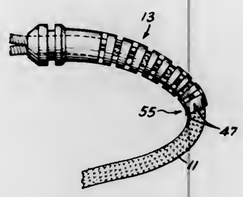


A method of adhering electrical insulating material to a metallic conductor comprising applying rosin to the surface of the conductor and forming the insulation thereover, and the product of a conductor with the insulation adhering thereto by means of the intermediate rosin. The rosin not only bonds the insulation, but also provides a flux for soldering when the insulation is removed from the conductor.

3,800,068
STRAIN RELIEF

Duane E. Torgerson, Aurora, Ill., assignor to Belden Corporation, Chicago, Ill.

Filed Jan. 10, 1972, Ser. No. 216,568
Int. Cl. H01r 13/56
U.S. Cl. 174—135 4 Claims

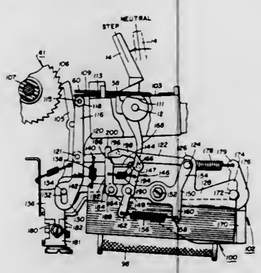


A strain relief for electrical cords wherein the flexible characteristics of the end of the tail portion are improved.

3,800,069
SINGLE STEP TAPE READER

David J. Derenski, Chicago, and Kenneth W. Wlater, Bensenville, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Nov. 6, 1972, Ser. No. 304,174
Int. Cl. H04l 23/00
U.S. Cl. 178—4.1 11 Claims



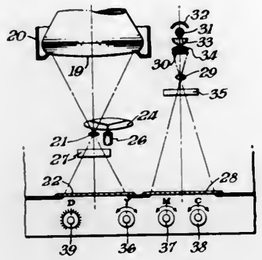
A telegraph transmitter is adapted to generate a stream of output signals while operating in a continuous or running mode as an encoded punched tape incrementally is driven past a sensing station by an intermittently operated tape advancing means in response to a spontaneously reciprocated electromagnetic armature. The transmitter has a single character or discontinuous mode requiring manipulation of a manual member for moving the tape through the agency of the advancing means for each character to be sensed. Repeat of the single character mode can be attained only by intention.

3,800,070
DEVICE FOR DETERMINING THE QUANTITIES OF COLORED PRINTING LIGHT FOR THE PHOTOGRAPHIC PRINTING OF COLOR TRANSPARENCIES

Siegfried Barbieri, Brixen, Italy, assignor to DURST A.G. Fabrik Fototechnischer Apparate, Bozen, Italy

Filed Sept. 8, 1971, Ser. No. 178,641
Claims priority, application Italy, Sept. 18, 1970, 4872/70
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 A 10 Claims

A closed circuit television camera and monitor system, of the field sequential type, is connected to the photographic color printing apparatus for scanning the transparency illuminated by the printing light. The relative amounts of the three basic color components in the printing light are adjusted by inserting corresponding filters into the printing light until a satisfactory balance is obtained in the color image viewed on

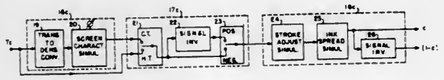


the monitor. The duration of the exposure is determined by varying the aperture of the television camera lens and therefore the brightness of the monitored image.

3,800,071
GRAPHIC ARTS PROCESS SIMULTATION SYSTEM

Nicholas J. Reeber, Hauppauge, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Continuation of Ser. No. 874,550, Nov. 6, 1969, abandoned.
This application Apr. 10, 1972, Ser. No. 242,867
Int. Cl. H04n 5/84, 9/32
U.S. Cl. 178—5.2 A 8 Claims



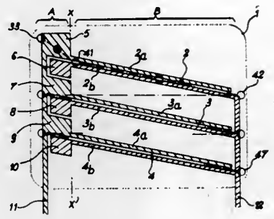
Disclosed is a system which electro-optically scans a set of color separations and processes the resulting signals in accordance with an electrical analog of an adjustable, halftone color reproduction process to develop a group of output signals which collectively represent the apparent color, in a given color representation system, of elemental areas of the actual composite color print that could be obtained from the set of color separations by means of the half-tone color reproduction process. The group of output signals is developed in such a form as to be readily utilizable in diverse forms of color image display apparatus for developing a displayed color image which simulates the aforementioned actual composite color print.

Also disclosed is novel electro-optical apparatus useful in the above system for scanning simultaneously, in parallel, the four photographic transparencies of a four-color separation set. The electro-optical apparatus utilizes a bank of four lenses to simultaneously image the raster of a scanning light source onto each of four corresponding color separation transparencies which are positioned in a rectangular array in a common plane. The scanning light transmitted by each transparency is independently collected and detected to generate a set of output signals, each of which is representative of the transmissivity of successively scanned elemental areas of a corresponding one of the separation transparencies. The relative positions of the scanning light source, the bank of lenses and the set of color separations are readily adjustable, thereby permitting the apparatus to scan color separation transparency sets of different dimensions.

3,800,072
METHOD AND APPARATUS FOR ELECTRON BEAM CONTROL

Jean C. Lejon, 16, boulevard Soult, 75 Paris 16eme, France

Filed Oct. 16, 1972, Ser. No. 298,083
Int. Cl. H04n 9/16
U.S. Cl. 178—5.4 H 27 Claims

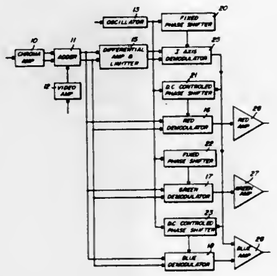


The beam of charged particles of a luminescent screen tube is displaced under the combined action of two orthogonal scans, the spot being constrained to follow guiding strips formed on the luminescent screen surface and responsive to the position of said spot by modulating the control of one of the two scans by means of an error signal which is deduced from the indications supplied by the guiding strips. By means of continuous correspondence control, the spot is initially guided over an entire line entrance surface towards the beginning of the path to be followed by said spot before it passes onto the screen proper.

3,800,073
AUTOMATIC HUE CONTROL AND METHOD

Charles J. Marik, Chicago; Bernard Shlachter, Morton Grove, and William H. Slavik, Palos Hills, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 3, 1972, Ser. No. 240,407
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 HE 11 Claims

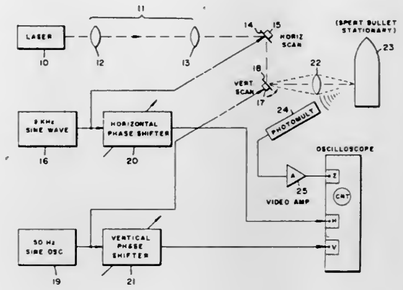


In a three-color television receiver utilizing red, blue and green demodulators, variable phase shifting networks are connected to supply to the red and blue demodulators reference signals with predetermined phases relative to the synchronizing signal. An I axis demodulator is utilized to sense a component of color along the I axis and shift the phase of the reference signals to increase the angle between the red and blue chrominance components from the red and blue demodulators when a component is present on the I axis.

3,800,074
APPARATUS FOR SCANNING THE SURFACE OF A CYLINDRICAL BODY

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert B. Nakich, Glendale, and Raymond C. Woodbury, La Canada, both of Calif.

Filed June 28, 1972, Ser. No. 266,911
Int. Cl. H04n 7/00
U.S. Cl. 178—6 6 Claims

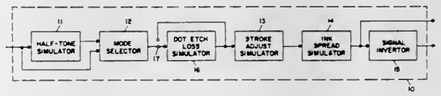


A laser scanning system for providing a two-dimensional display of a cylindrical surface, such as to display striae of a fired bullet. The cylinder is scanned along its axis by vibrating one mirror in the laser beam path, and is scanned in a direction normal to its axis by vibrating a second mirror in a direction normal to the first or by rotating the bullet. Scan control signals are adjusted in phase to produce a synchronized display of a video signal obtained from detection of scattered light from the surface thus scanned by a laser beam.

3,800,075
GRAPHIC ARTS PROCESS SIMULATOR MODIFIED FOR LETTERPRESS SIMULATION

Charles E. Page, Westbury, N.Y., assignor to Hazeltine Corporation, Greenlawn, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,326
Int. Cl. H04n 7/18
U.S. Cl. 178—6 3 Claims



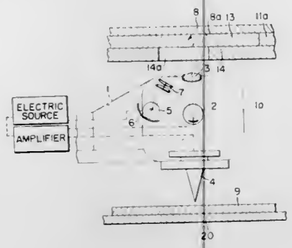
Disclosed is an improved graphic arts process simulator, which enables accurate simulation of a letterpress graphic arts process. Existing graphic arts process simulators generally include an analog signal processor in which various signal processing elements are used to process an electrical signal representative of a halftone transparency in accordance with the steps of a selected graphic arts process. The improvement described herein is a modified analog signal processor which simulates nonuniformities that normally occur in a letterpress graphic arts process and more specifically simulates the dot etch loss which normally occurs when a printing plate for letterpress printing is made from such a halftone transparency.

3,800,076

ELECTRIC DISCHARGE RECORDING SYSTEM HAVING A DUAL SCANNING AND RECORDING HEAD

Yutaka Koizumi, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 91,657, Nov. 23, 1970, abandoned. This application Dec. 6, 1972, Ser. No. 312,678
Claims priority, application Japan, Dec. 1, 1969, 44-96417
Int. Cl. H04n *1/24, 3/06*
U.S. Cl. 178—6.6 R **8 Claims**



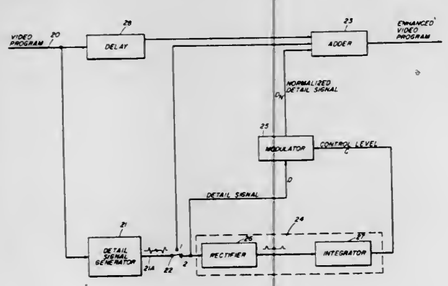
A high speed scanning device including a rotary holder equiangularly carrying a plurality of scanning heads each including an optical scanning system for scanning an original, a discharge electrode in spaced apart relation with a recording medium and a photoelectric effect element for transducing the light signals from the optical scanning system into electrical signals for controlling the intensity of the discharge produced between the discharge electrode and the recording medium. Upon rotation of the rotary holder, the discharge electrodes and photoelectric effect elements are successively connected to and disconnected from a common electric circuit outside of the rotary holder by a commutator-like switching system. In addition, easy magnification change is possible by changing the positions of the discharge electrodes relative to the optical scanning systems. A bulky original such as a book or the like may be copied.

3,800,077

AUTOMATIC SHARPNESS-ENHANCING EQUIPMENT FOR TELEVISION PICTURE SIGNALS

Clyde W. Smith, North Salem, N.Y., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Oct. 15, 1971, Ser. No. 189,573
Int. Cl. H04n *5/14*
U.S. Cl. 178—6.8 **12 Claims**



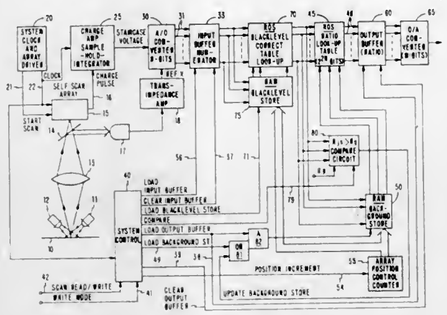
An apparatus for automatically generating normalized detail signals from a video signal. Detail signals representative of instantaneous variations in the luminance portion of the video signal are generated. A signal averaging means responsive to the magnitude of the detail signals is provided for generating a control level representative of the detail content of a relatively long duration of the video signal. A modulator responsive to the control level and to the detail signals produces the normalized detail signals.

3,800,078

DIGITALLY COMPENSATED SCANNING SYSTEM

William H. Cochran, Dover, and Gerald M. Heiling, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,336
Int. Cl. H04n *3/14, 5/30*
U.S. Cl. 178—7.1 **10 Claims**



A self-scanned photodiode array operating in the recharge current mode generates a serial video information output signal as light from a light emitting diode illuminator is reflected from the scanned document and imaged onto the photodiode array. A photodiode sensitivity and illumination variance compensation signal is generated during a write mode as the photodiode array scans a white background. The serial compensation signal thus generated is converted into an N bit binary code for each photodiode in the array. The N bit binary code is stored. Thereafter, when scanning printed or written information on the document during an operational mode, the serial video information signal is digitized as in the write mode and forms an address together with the stored digitized compensation bits for addressing a stored table of normalized contrast ratios in the form of M data bits. These M data bits are passed to an output buffer and converted to an analog signal equal to 1 minus the contrast ratio to provide a corrected serial video information signal.

Compensation for photodiode leakage current and periodically induced clocknoise is provided by initially scanning black or blocking light from the photodiode array. The resulting signal from the photodiode array is converted to an N bit binary code which is stored. The stored code is used in the same way as the stored code for photodiode sensitivity and illumination variations and addresses a black level correct value in a table look-up store. The data stored in this look-up table are effective subtractions of coherent noise from the serial video data and white background data prior to a contrast ratio table look-up.

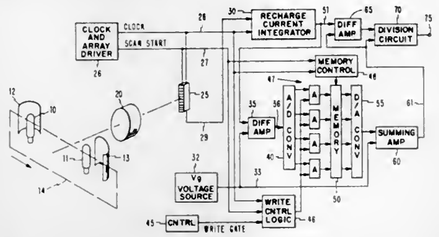
3,800,079

COMPENSATION FOR A SCANNING SYSTEM

William D. McNeil, and William S. Rohland, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,337
Int. Cl. H04n *5/30*
U.S. Cl. 178—7.1 **11 Claims**

A sensitivity profile of photodiodes forming a self-scanned photodiode array operating in the charge storage mode is obtained as the array scans a standard background or white level while in a non-operational or write mode. The serial output of the photodiode array is integrated and a predetermined grey level is subtracted to limit the resultant signal to the range affected by photodiode sensitivity variations and illumination non-uniformities. The resultant signal is digitized and stored under control of a write control signal. Compensation then takes place in an operational mode. The stored digital signals are converted to an analog signal and the grey level is added thereto. This resultant signal is then applied as a compensation signal to a differential amplifier and to a divider circuit. The serial uncorrected video information signal from the integrator is also applied to the differential amplifier whose output is applied to the divider circuit where the photodiode sensitivity and illumination variations are removed to provide a corrected video information signal.

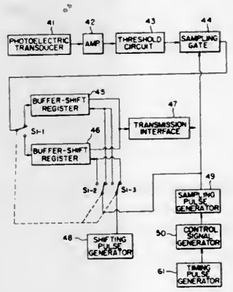


3,800,080

FACSIMILE DEVICE

Jyoichi Fuwa, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 10, 1972, Ser. No. 251,976
Int. Cl. H04n *3/08*
U.S. Cl. 178—7.1 **6 Claims**



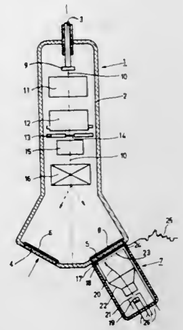
A facsimile device is provided which sends data signals onto a transmission line at a constant speed even though the scanning speed is varied along the scanning line. Video signals derived by scanning the subject copy are sampled, and the sampled data signals derived from each scanning are stored alternately into one of two buffer shift registers. While one of the two registers is storing the data signals, the other register send the data signals at a constant speed onto the transmission line. The sampling pulse train and the pulse train which is used for shifting the register which is storing the data signals are frequency modulated in accordance with the scanning speed of a scanning point on the subject copy so that the stored data is speed corrected at the time of storing.

3,800,081

DEVICE FOR RECORDING DIFFRACTION IMAGES

Karel Jan Van Oostrum, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,784
Claims priority, application Netherlands, Apr. 30, 1971, 7105978
Int. Cl. H04n *5/30*
U.S. Cl. 178—7.2 **12 Claims**



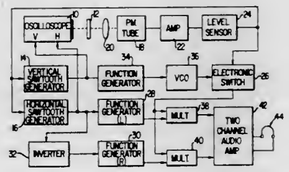
In a device for producing patterns to be identified in polar coordinates, the pattern is imaged on a target of a television camera tube which is centre-symmetrically scanned. The image signals derived from the television camera tube are integrated over adjustable time units, for example, over a complete scanning circle. Pulse series are obtained from these integrated image signals by a modulator, the amplitude of each pulse being correlated to the integrated intensity, its location in the series being correlated to the position of the scanning line in the image.

3,800,082

AUDITORY DISPLAY FOR THE BLIND

Raymond M. Fish, Bethesda, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 27, 1972, Ser. No. 301,417
Int. Cl. H04n *5/30*
U.S. Cl. 178—7.2 **15 Claims**



A system for providing an auditory display of two-dimensional patterns as an aid to the blind includes a scanning device, such as a slow scan television camera, for producing first and second voltages respectively indicative of the vertical and horizontal positions of the scan and a further voltage indicative of the intensity at each point of the scan and hence of the presence or absence of the pattern at that point. The vertical position of the scan is represented aurally by the frequency of the tone heard, the first voltage being used to control the frequency output of a VCO. The horizontal position of the scan is represented aurally by the interaural difference between two tones presented so that a point on the left side of a pattern is indicated by a relatively loud sound in the left ear. The voltage related to scan intensity controls transmission of

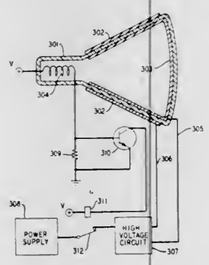
the sounds to the subject so that the subject knows that a portion of the pattern is being encountered by the scan when a tone is heard, the subject determining the position of this portion of the pattern in space by the frequency and interaural difference information contained in the tone.

3,800,083

VOLTAGE CUTOFF CIRCUIT FOR IMPLODED PICTURE TUBE

Arden Bernard Wright, Ocean Twp., Monmouth County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1972, Ser. No. 282,871
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.5 R **4 Claims**



A resistor is connected in series with the heater coil of a kinescope tube. Hence, when the tube implodes and the temperature change causes the heater resistance to decrease, the current in the resistor increases. The base-emitter junction of a transistor is connected across the resistor such that the transistor conducts when the current in the resistor increases due implosion. Conduction of the transistor energizes a relay control in its collector circuit, which in turn opens a normally closed switch in the power supply circuitry. Thus, implosion causes the ultor power to be turned off.

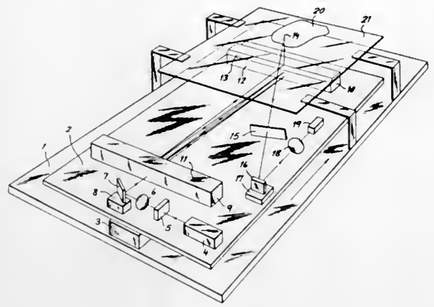
3,800,084

SYSTEM FOR SCANNING PLANAR IMAGES WITH COHERENT LIGHT FOR FACSIMILE REPRODUCTION VIA TELEPHONE CONNECTION

Erik Vrenko, Ljubljana, Yugoslavia, assignor to Iskra-Zavod Za Avtomatizacyo V Zdruzenem podjetju, Iskra, Yugoslavia

Filed July 22, 1971, Ser. No. 165,290
Claims priority, application Yugoslavia, July 27, 1970, 1894/70
Int. Cl. H04n *1/10*
U.S. Cl. 178—7.6 **6 Claims**

A facsimile system, designed for the transmission of images by a telephone connection, includes a scanner in which a laser beam is focused upon a planar image and the diffuse reflection thereof is refocused into a secondary beam directed onto a photoelectric transducer generating an output signal. The light spot formed by the beam is swept across the image by an oscillating mirror which is synchronized with a similar mirror in the path of the reflected light in order to make the angle of incidence of the secondary beam upon the transducer independent of the sweep. In order to make the output voltage of the transducer a linear function of image brightness independent of the position of the light spot, a light gate of varying transmissivity is interposed in the path of the reflected radiation; this light gate may be a semitransparent screen of nonu-



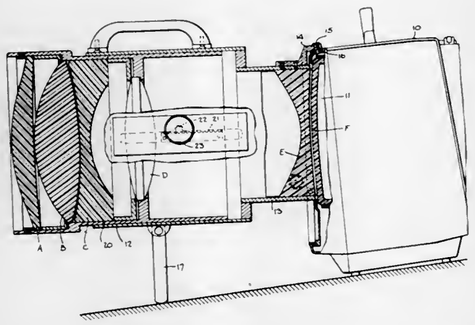
niform transparency or a shield with a gap of nonuniform width. An analogous arrangement at the receiving end reproduces the original image.

3,800,085

CONVERTIBLE DIRECT VIEWING/PROJECTION T-V SYSTEM

Maris Ambats, 480 Broome St.; Thomas D. Shannon, 486 Broadway, and Walter Joseph DeMaria, 27 Howard St., all of New York, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,197
Int. Cl. G02b *13/08*; **H04n** *5/74*
U.S. Cl. 178—7.91 **8 Claims**



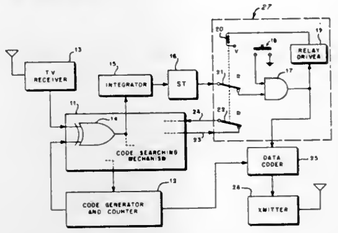
A converter attachable to a standard television set whereby the set, when the converter is disconnected, may be directly viewed in the usual manner, but when the converter is operating, functions to produce a properly-oriented bright image in an enlarged scale on a remote screen. The converter consists of an optical accessory mountable over the front face of the set and an inverting switch connected to the vertical deflection circuit of the set. The optical accessory includes a housing that masks the face of the cathode ray display tube, the housing containing a high-speed objective. The objective is constituted by a field flattener lens fixedly positioned adjacent the outwardly curved face of the cathode ray tube and serving optically to flatten the curved field on the cathode ray screen, and a movable lens barrel for projecting the flattened image field onto a remote screen. The barrel is axially shiftable relative to the field flattener lens for purpose of focusing the projected image at various distances for different screen dimensions. An inverting switch, when activated, causes the luminous image appearing on the cathode ray screen to invert and to be reversed whereby the image projected on the remote screen is properly erected.

3,800,086

AUTOMATIC SYNC DETECTOR

Joseph B. Lyons, Jr., and Francis P. Darreff, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 30, 1964, Ser. No. 400,609
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 R **3 Claims**



1. An automatic synchronization means in combination with a code searching mechanism for synchronizing a generated code sequence with a received code sequence, comprising:

a first code generator for providing a first code sequence; a first code searching mechanism receiving said first code sequence and the received code sequence, said mechanism comparing said first generated code sequence bit by bit with said received code sequence and for issuing a signal output of one type upon matching of said bits and the opposite type upon mismatch;

means for integrating the output of said first code searching mechanism for issuing a signal proportional to the degree of correlation of said code sequences;

means for sensing correlation above a predetermined level on said integrating means and for issuing a correlation signal in response thereto, said sensing means issuing a non-correlation signal when the signal from said integrating means is below said predetermined level;

a data coder receiving said first generated code sequence; and

means responsive to a correlation signal from said sensing means for interrupting said first code search mechanism, said means responsive to a correlation signal including:

a first AND gate connected to receive said correlation signal;

a second AND gate connected to interrupt the operation of said first code searching mechanism in response to an inhibiting signal;

a third AND gate having an input connected to the output of said first AND gate for issuing an output to said data coder;

a flip-flop having an input connected to the output of said third AND gate;

means providing a signal to another input of said flip-flop for initially enabling said first and second AND gates;

said flip-flop issuing said inhibiting signal to said second AND gate upon incidence of a correlation signal, whereby the operation of said first code searching mechanism is interrupted.

3,800,087

DEFORMABLE ELECTRONIC COMPONENTS AND CIRCUITS

Boris Rybak, 35, Avenue du 6 Juin, Caen, France

Filed May 11, 1972, Ser. No. 252,294
Claims priority, application France, Mar. 16, 1972, 72.09119
Int. Cl. H04m *1/00*
U.S. Cl. 179—1 R **27 Claims**

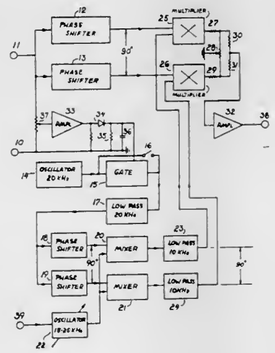
Electric component of small overall size and low weight, the characteristic value of which is variable in that it is carried by a deformable substratum; the component is in conductivity relation with other elements through deformable conductors and terminals; the component may be an elementary one such as resistance, capacitor, solenoid, photo-sensitive material and leads to complete circuits such as switches, rectifiers, pression-detectors, microphones and the like, while said conductors and terminals may namely be used in the tension feeding of artificial pacemakers.

3,800,088

APPARATUS FOR PRODUCING SPECIAL AUDIO EFFECTS UTILIZING PHASE SHIFT TECHNIQUES

Harald E. W. Bode, 1344 Abington Pl., Tonawanda, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,421
Int. Cl. H03h *7/00*
U.S. Cl. 179—1 J **5 Claims**



This disclosure deals with significant innovations on an electronic apparatus for producing special effects by shifting the frequencies of audio signals through the use of the phase shifter technique for single sideband production. These innovations or the combination thereof consist of (1) the use of a beat frequency oscillator with two outputs in 90° phase relationship to facilitate frequency shifts of any amount and sign, exceeding the limitations of previously known phase shifter type audio frequency shifters by being capable of producing detuning effects down to and through zero frequency shift with a transition into sideband reversal, (2) the inclusion of an improved cascaded wideband audio frequency phase shifting circuit, (3) the addition of an inverse phase output circuit for the simultaneous production of an additive and a subtractive frequency shift, and (4) the exploitation of known means for making the beat frequency local oscillator voltage controllable.

3,800,089

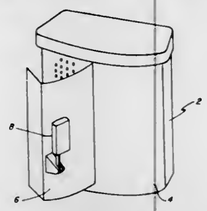
HANDS-FREE EMERGENCY TELEPHONE SYSTEM

Willis C. Reddick, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,981
Int. Cl. H04m *1/02*
U.S. Cl. 179—1 HF **5 Claims**

An all weather emergency-reporting telephone call box employing a hands-free communication system is provided. The call box uses a speaker and microphone coupled through electronic circuits which provide hands-free operation for voice

reception and transmission. The housing is formed of heavy material in a configuration selected to minimize the opportu-



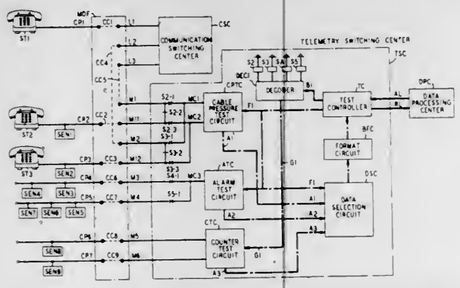
nity for vandalism. Direct communications access to the emergency station can be gained by opening a door which operates a micro-switch and prepares the system for hands-free operation.

3,800,090

COMMUNICATION AND TELEMETRY ARRANGEMENT

Philip Matena, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 27, 1972, Ser. No. 275,778
Int. Cl. H04m *1/00*
U.S. Cl. 179—2 A **16 Claims**



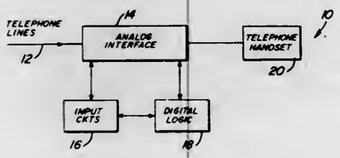
A telemetry arrangement for selectively interrogating sensing devices attached to both telephone lines and dedicated lines. In compliance with control information from a data processor, a separate telemetry switching network, disassociated from a regular communication switching network, temporarily disconnects a designated line from the switching network and connects it to a monitoring circuit. This monitoring circuit receives telemetry data from a sensing device attached to the line and conveys this data to the data processor.

3,800,091

SOLID STATE REMOTE UNIT FOR DATA TRANSMITTING SYSTEM

Roger C. Glidden, Wenham, and Dunne Marshall, Lexington, both of Mass., assignors to David H. Scott, Wenham, Mass.

Filed May 12, 1972, Ser. No. 252,747
Int. Cl. H04m *1/00*
U.S. Cl. 179—4 **9 Claims**



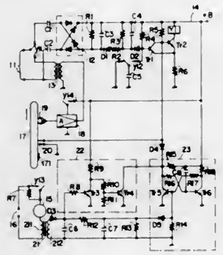
Condition monitoring switch closure triggers input circuitry to turn on an analog interface between telephone lines and a solid state digital logic through which a preselected telephone number is dialed and coded tone bursts are transmitted identifying station location and switch closure. The programmed operational cycle of the logic is repeated until specific return tones on the telephone lines are detected to cause power shutdown and restoration of the system to an inactive state. All power for the system is derived from the telephone lines.

3,800,092

TELEPHONE AUTO-ANSWERING DEVICE

Akira Konno, Tokyo, and Hiroshi Mizuno, Nagareyama, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed June 4, 1971, Ser. No. 150,156
Claims priority, application Japan, June 5, 1970, 45-48550
Int. Cl. H04m *1/64*
U.S. Cl. 179—6 R **3 Claims**



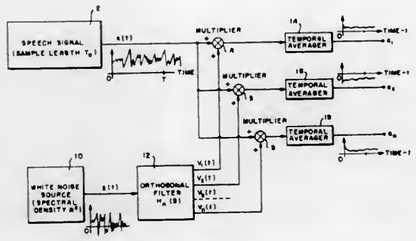
Disclosed is a telephone auto-answering device which includes an electric motor for moving a magnetic tape. Through a motor coil minute current, insufficient to rotate the motor, flows when the device is in a stand-by state, while rated current flows when it is desired to move the magnetic tape. A detecting circuit is provided for detecting the flow of current to cause the device not to perform its answering operation when neither the minute current nor rated current is detected.

3,800,093

METHOD OF DESIGNING ORTHOGONAL FILTERS

Alfred A. Wolf, RFD 3, Box 327, Annapolis, Md.

Filed Oct. 20, 1971, Ser. No. 191,003
Int. Cl. H04b *1/66*
U.S. Cl. 179—15 BC **4 Claims**



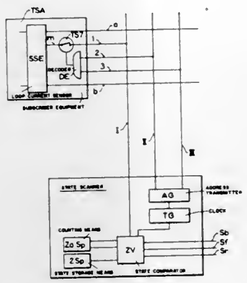
A method of designing an orthogonal filter for use in a speech synthesizing system wherein the filter is constructed from a series of linear filter sections. The poles in the complex plane of any section of the filter are cancelled by the zeros of the next section.

3,800,094

CENTRALLY CONTROLLED TELEPHONE SYSTEM HAVING MEANS FOR SENSING AND EVALUATING CHANGES OF THE STATES OF LOOPS

Michael Schwarzer, Hofheim, Tannus, Germany, assignor to Telefonbau und Normalzeit GmbH, Frankfurt/Main, Germany

Filed Mar. 14, 1972, Ser. No. 234,629
Claims priority, application Germany, Mar. 17, 1971, 2112872
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 FG **4 Claims**



A telephone system having a central station includes means for sensing and evaluating the states of loops of subscribers. The states of the loops of subscribers are scanned periodically, and compared with their states during a preceding scanning cycle. This comparison is achieved by a state comparator. Three kinds of information are established in regard to the state of a loop of a subscriber, i.e., information relating to the present state of the loop of a subscriber, information relating to the state of the loop of the same subscriber during the preceding scanning cycle, and information relating to the duration of the state of the loop that had been determined during the preceding scanning cycle. If a change of state occurred, the state comparator determines by means of appropriate circuitry whether a holding operation, breaking of a connection, or interruption of predetermined duration of a loop is involved. The state comparator then transmits an appropriate signal to the central station and its central control unit. A state storage means is provided for storing information relative to the states of the loops of the individual subscriber stations during one scanning cycle. The system further includes a counting storage means for storing information relating to the duration of the states of the loops. The output of a plurality of AND-gates is transmitted to the central control unit of the central station. Each of these AND-gates has three inputs, i.e., an input being the output of the aforementioned state storage means, an input derived from one of a plurality of state lines connected to the subscriber stations, and an input derived from said counting storage means by the intermediary of a decoder.

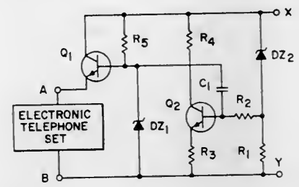
3,800,095

POWER SUPPLY CIRCUIT FOR AN ELECTRONIC TELEPHONE SET

Michael C. J. Cowpland, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Calif.

Filed Feb. 23, 1973, Ser. No. 335,038
Claims priority, application Canada, Aug. 27, 1971, 121578
Int. Cl. H04m *19/00*
U.S. Cl. 179—77 **14 Claims**

This invention relates to a power supply having means whereby current draw through a network feeding the power supply is initially at a relatively high value when a load is placed across the output of the power supply, the current draw dropping over a predetermined time period to a substantially



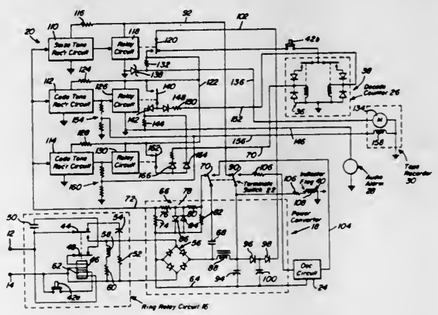
constant relatively low value. As will be explained the invention has particular applicability to, but is by no means limited to the field of telephony.

3,800,096

TONE DATA RECEIVER

Roger C. Glidden, Wenham, Mass., assignor to David H. Scott, Wenham, Mass.

Continuation-in-part of Ser. No. 163,246, July 16, 1971, Pat. No. 3,691,593, which is a continuation-in-part of Ser. No. 851,878, Aug. 21, 1969, Pat. No. 3,594,508. This application Sept. 8, 1972, Ser. No. 287,258
Int. Cl. H04m *11/04*
U.S. Cl. 179—84 VF **7 Claims**



A coded message receiver powered solely by energy withdrawn from telephone lines to which it is connected, monitors the lines and responds to a plurality of different signals of predetermined frequencies transmitted after the receiver station is dialed. Coded signal pulses transmitted at certain of said frequencies are registered by visual and audible indicators and recorded on tape only when transmitted simultaneously with a guard tone signal at another frequency. A terminate switch is actuated to disable the signal responsive monitors and signal registers as well as to transmit a return signal to the telephone lines.

3,800,097

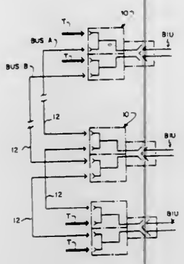
BUS SYSTEM FOR INTERCONNECTING SYSTEMS OF A COMMUNICATION SWITCHING SYSTEM

John Maruscak, and Sanat K. Roy, both of Brockville, Ontario, Canada, assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Continuation-in-part of Ser. No. 255,485, May 22, 1972. This application Sept. 15, 1972, Ser. No. 289,501
Int. Cl. H04q *1/02*
U.S. Cl. 179—98 **5 Claims**

A bus system arranged such that the number of interconnection points between subsystems or modules are substantially reduced so that interfacing costs likewise are reduced. The multiple for continuing the bus is located on an interface

connector assembly which provides an interfacing between the bus cable and the subsystem or module, so that the continuity of the bus can be maintained, regardless of the system status of any subsystem or subsystems. Normally, with other similar bus systems, the continuity of the bus is disrupted if a subsystem is taken out of service. Furthermore, unlike many



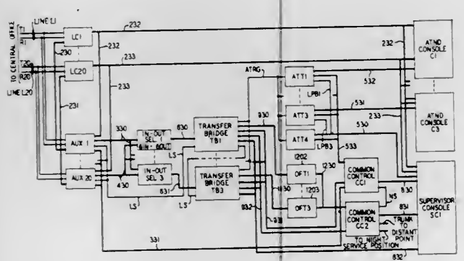
other bus systems, the bus can be extended in vertical and/or horizontal directions. The bus system also is such that the bus can be easily terminated by simply inserting a terminator card on the interface connector assembly, or it can be extended by withdrawing the terminator card and plugging in a bus jumper cable with a terminator card at the last module.

3,800,098

KEY TELEPHONE SYSTEM TRANSFER ARRANGEMENT

John Grover Evans, Bradley Beach, and Charles Ernest Morse, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 12, 1972, Ser. No. 262,013
Int. Cl. H04m *3/42*
U.S. Cl. 179—99 **23 Claims**



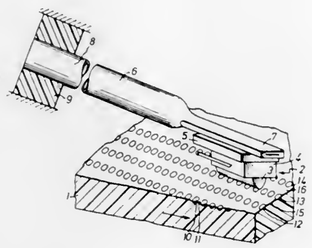
In situations where a large number of lines terminate at a key telephone station such as occurs when the station is used for call director purposes, it is often necessary to transfer a call incoming on one line to some other line terminating at that station. A scanning circuit is arranged to operate in response to a signal from the station to detect and mark the line currently connected to that station. When the currently active line is marked, the pickup key associated with an idle line is operated and a connection is established to a called station. The original incomng marked line is then bridged to the selected line and the station may be removed from the connection.

3,800,099

STORING AND REPRODUCING INFORMATION AND CARRIER THEREFOR WITH ZONES OF DIFFERENT DEFORMATION CHARACTERISTICS

Gerhard Dickopp; Helmut Batsch, both of Berlin, and Wilhelm Runge, Ulm, Danube, all of Germany, assignors to Ted Bildplatten Aktiengesellschaft AEG-Telefunken TELDEC, Zug, Switzerland

Filed Mar. 31, 1972, Ser. No. 239,960
Claims priority, application Germany, Mar. 31, 1971, 2115480; Mar. 9, 1972, 2211389; Mar. 9, 1972, 7209047
Int. Cl. G11b *11/06;* **H04n** *5/76*
U.S. Cl. 179—100.1 A **23 Claims**



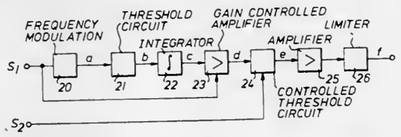
An information carrier for use in a signal reproducing system in which a pressure-responsive pickup bears against and compresses the carrier while traveling along an information-containing path on the carrier surface, the pickup being substantially immovable in the direction in which it bears against the carrier and producing an output proportional to the reaction force exerted by the carrier on the pickup, information being stored along the path in the form of zones of differing mechanical hardness. Such carrier can be produced by applying a suitable radiation in an appropriate intensity pattern to a suitably deformable material whose hardness can be modified by such radiation.

3,800,100

METHOD FOR STORING AND PLAYING BACK SIGNALS ON A CARRIER

Wilhelm Runge, Ulm/Donau, Germany, assignor to TED Bildplatten Aktiengesellschaft AEG-Telefunken TELDEC, Zug, Switzerland

Filed July 3, 1972, Ser. No. 268,553
Claims priority, application Germany, July 3, 1971, 2133130
Int. Cl. G11b *3/74;* **H04n** *5/76*
U.S. Cl. 179—100.4 C **3 Claims**



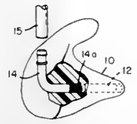
In a signal storage system in which signals are stored in the form of spatial undulations in a resiliently compressible surface and played back by compressing the undulation peaks with a substantially motionless pressure responsive transducer, the transducer output having a component whose frequency represents the frequency at which successive undulation peaks are scanned, a second signal is recorded in the form of variations in the ratio of undulation peak length to total undulation length.

3,800,101

HEARING AID DEVICE

Humbert Milani, 1209 Willow St., San Jose, Calif.

Filed July 26, 1972, Ser. No. 275,324
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 E **3 Claims**



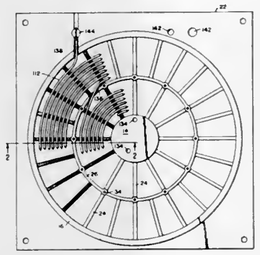
A hearing aid device comprising an ear insert or ear mold which has a hole formed therethrough communicating with the channel in the wearer's ear. A precision metal fitting or adapter is made of tubular material and is installed in the outer end of said hole by heating the fitting or adapter and sweating it into said hole thereby eliminating the use of plastic tubing in the ear mold and the use of cements or adhesives. A plastic tube leading to the conventional hearing aid amplifier is attached to this fitting. In one embodiment of this invention the fitting or adapter is provided with a vented, threaded arm with means to open or close the vents thereof to facilitate tuning of the hearing aid channel and release air pressure therefrom.

3,800,102

ELECTROSTATIC TRANSDUCER AND METHOD AND MEANS FOR MAKING SAME

Arthur A. Janszen, Belmont, Mass., assignor to Electrostatic Research Corporation, Salem, Mass.

Filed June 28, 1971, Ser. No. 157,191
Int. Cl. H04r *19/00*
U.S. Cl. 179—111 R **7 Claims**



An electrostatic loudspeaker unit of the push-pull type employing grids of spaced insulated wires disposed on each side of a flexible diaphragm. The electrode grids are in the form of a flat spiral so as readily to accommodate effects of variations in temperature without causing the wires to move out of their designed plane. The electrode grids are preformed using a special tool, a part of which is utilized to mount the spiral electrode in the support frame with a high degree of precision.

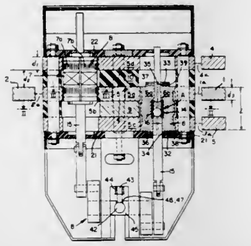
3,800,103

POLARITY REVERSING SWITCH

Ernst Hardi-Kern, Willigen; Max Koch Stager, Wurenlingen, and Rudolf Neidecker, Basel, all of Switzerland, assignors to Multi-Contact, Basel, Switzerland

Filed Dec. 27, 1972, Ser. No. 319,155
Claims priority, application Germany, Dec. 29, 1971, 2165389; Sept. 20, 1972, 2246136
Int. Cl. H01h *9/00, 15/10*
U.S. Cl. 200—1 V **24 Claims**

A polarity-reversing switch comprising first and second contacts, which need not be parallel to one another, lying in a common plane ane provided with respective openings which are aligned with the openings of contacts disposed above and below, this common plane so that switch elements can be received in the aligned openings. The switch elements are



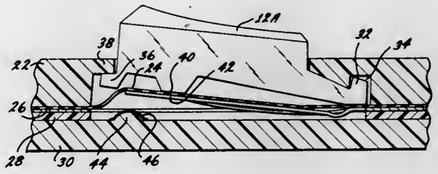
mechanically coupled for mutually reciprocal motion perpendicular to the planes of the contacts. Each of the switch elements carries a plug which is geometrically similar to the openings and snugly received therein.

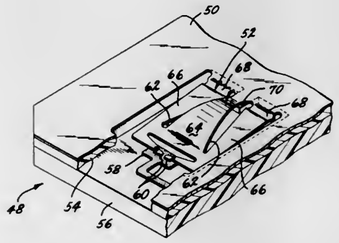
3,800,104

LOW PROFILE KEYBOARD SWITCH ASSEMBLY WITH SNAP ACTION CANTILEVER CONTACT

Wallace A. Lien, Palos Verdes Estates, and Mathew Pobog, Newport Beach, both of Calif., assignors to Becton, Dickinson Electronics Company, Ritherford, N.J.

Filed Nov. 13, 1972, Ser. No. 306,303
Int. Cl. H01h *13/44*
U.S. Cl. 200—5 A **12 Claims**





A snap-action switch is formed from a thin resilient sheet that is elastically stressed into a three-dimensional configuration. One or more bi-stable segments are provided wherein relative movement of the end of a bi-stable segment causes a snap action into a reversely-curved configuration. Switch contacts are only engaged or disengaged after the switch has snapped into a stable configuration.

3,800,105

ROTARY SWITCH ASSEMBLY WITH CONDUCTIVE ELASTOMERIC MEDIUM BRIDGING FIXED CONTACTS

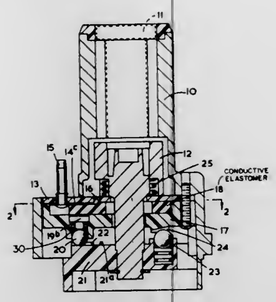
Derek Thornley, Nelson, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Oct. 10, 1972, Ser. No. 296,156

Claims priority, application Great Britain, Oct. 9, 1971, 47102/71

Int. Cl. H01h *21/80*

U.S. Cl. 200—11 C 7 Claims



An electrical switch having a plurality of fixed contacts which are abutted by a layer of resilient electrically insulating material loaded with electrically conductive particles so that parts of the layer which are compressed become electrically conducting. A cam element rotatable by a cylinder lock mechanism urges selected studs into engagement with the layer to effect the desired electrical connections between pair of adjacent contacts.

3,800,106

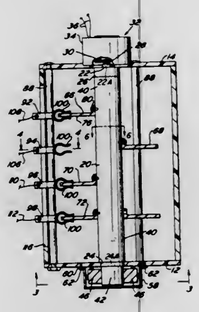
KNIFE BLADE SWITCH ASSEMBLY WITH ADJUSTABLE CONDUCTING BLADES

James Simmons, 5957 Woodbine Ave., Philadelphia, Pa.

Filed Mar. 9, 1973, Ser. No. 339,804

Int. Cl. H01h *21/54*

U.S. Cl. 200—15 9 Claims



A power control device comprising a housing in which an electrically conductive shaft rotates through a cycle in a predetermined time interval. The shaft rotatably supports a plurality of radially outwardly directed conductive vanes. Each of the vanes engages a connector during a portion of its cycle so that a circuit is completed therethrough. Each connector is connected to a separate circuit so that the circuit can be energized during the cycle of rotation of the shaft.

3,800,107

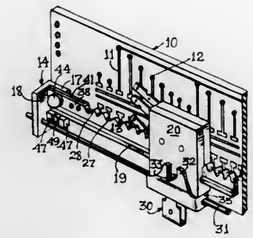
SLIDE SELECTOR SWITCH

Stanford M. Heide, Kenosha, Wis., assignor to Chicago Dynamic Industries, Inc., Chicago, Ill.

Filed Jan. 19, 1973, Ser. No. 325,085

Int. Cl. H01h *15/02*

U.S. Cl. 200—16 D 4 Claims



A slidable displaceable switch member that is selectively positioned in a plurality of positions to electrically connect particular groups of conductors in accordance with the position selected, including an adjustable detent for positive positioning of the switch member relative to the group of conductors selected

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3,800,108

DOOR SWITCH FOR ELECTRICAL APPARATUS

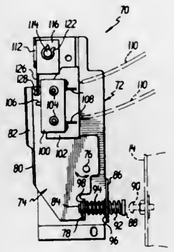
Takashi Inagawa, Ichinomiya, Japan, assignor to Tokyo Shibaura Electric Co. Limited, Tokyo, Japan

Filed Nov. 10, 1972, Ser. No. 305,362

Claims priority, application Japan, Nov. 10, 1971, 46-104799

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.62 3 Claims



A door switch designed primarily for use with an electrical apparatus or appliance and having a double action safety operating structure is disclosed and includes a switching plate which is movable by the opening and closing of a door of the apparatus, a stopper which holds the switching plate in a predetermined position when the door is closed, means for releasing the holding of the switching plate by the stopper and a relay which begins to operate following the releasing movement of the switching plate.

3,800,109

MANUAL CONTROL FOR GAS AND ELECTRIC CONTROLLED APPARATUS

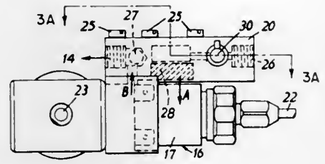
Eric McGowan, Shepperton, England, assignor to United Gas Industries Limited, London, England

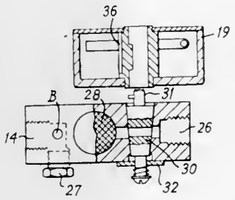
Filed July 17, 1972, Ser. No. 272,639

Claims priority, application Great Britain, July 24, 1971, 34826/71

Int. Cl. H01h *9/06*

U.S. Cl. 200—61.86 5 Claims





A control for selecting the power source for a refrigerator capable of being powered from gas or one of two different electrical supplies has electrical switches mounted adjacent a gas manifold containing a gas cock. A common tool engages both the switches and the gas cock to effect either turning the gas cock on and both the switches off or one of the switches on and the gas cock off.

3,800,110

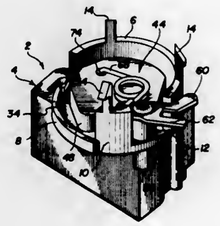
TOGGLE SWITCH

Bruno Baumanis, River Forest, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Feb. 12, 1973, Ser. No. 331,776

Int. Cl. H01h *5/14, 21/08*

U.S. Cl. 200—67 C 7 Claims



A toggle switch comprises a housing with a toggle switch mechanism therein located on one side of a transverse wall structure of the housing. The switch mechanism includes a sector pivotally mounted on the housing and carrying a movable contact for engagement with fixed contacts in the housing. The sector has a surrounding skirt that slides on the transverse wall structure whereby the fixed and movable contacts are substantially enclosed. The plastic material forming the enclosure is of a non-inflammable type having a high resistance to arcing. A groove between the fixed contacts increases the arc path resulting from surface buildup of conductive material removed from the contacts due to the arcing.

3,800,111

ELECTRIC SWITCHING DEVICE COMPRISING INSULATING PARTS REINFORCED WITH POLYVINYL ALCOHOL FIBRES

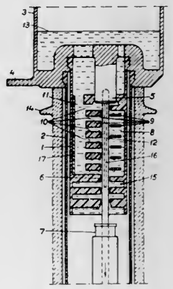
Goran Holmstrom, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 14, 1972, Ser. No. 226,048

Claims priority, application Sweden, Feb. 22, 1971, 2205/71; Feb. 19, 1972, 563/72

Int. Cl. H01h *33/04*

U.S. Cl. 200—144 C 6 Claims



An electric switching device with insulating parts of mouldings, particularly extinguishing chamber plates in an arc extinguishing chamber, such mouldings being formed of resin binder reinforced with fiber material which is at least primarily fibers of polyvinyl alcohol or acetalised polyvinyl alcohol. The binder is an unsaturated resin converted into polymerised form.

3,800,112

PUSH-PULL SWITCH HAVING SELF-BIASING ELASTOMERIC MATERIAL CONTACTS WITH DISCRETE CONDUCTIVE PARTICLES DISPERSED THEREIN

Gideon A. Du Rocher, Mt. Clemens, Mich., assignor to Essex International Inc., Fort Wayne, Mich.

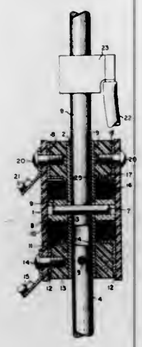
Division of Ser. No. 851,343, Aug. 19, 1969, Pat. No. 3,653,237. This application Mar. 23, 1972, Ser. No. 237,297

Int. Cl. H01h *15/24, 1/02*

U.S. Cl. 200—161 8 Claims

A push-pull switch having a pair of axially aligned, extensible and retractable links and a pair of resilient, normally non-conductive switching members one of which may be com-

pressed and rendered conductive in response to extension of the links and the other of which may be compressed and rendered conductive in response to retraction of the links. The



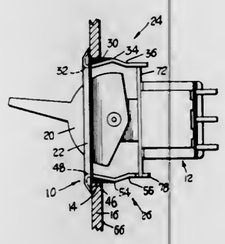
resilience of the compressible switching members normally maintains the links in such positions that neither of the switching members is conductive.

3,800,113

PANEL MOUNTED BEZEL FOR ELECTRICAL SWITCHES

Robert E. Sheahan, Woodbridge, Conn., assignor to J-B-T Instruments, Inc., New Haven, Conn.

Filed June 27, 1973, Ser. No. 373,929
Int. Cl. G12b *9/10*
U.S. Cl. 200—295 **7 Claims**



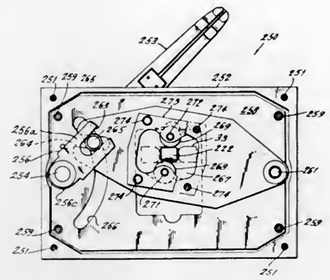
A bezel for mounting an electrical switch on a panel in a manner that the switch can be readily installed and removed from the front of the panel. The bezel comprises a substantially rectangular mounting flange having an opening to receive with clearance the operating member of the switch, and a pair of brackets integral with the flange and extending rearwardly at right angles to the plane thereof. Each bracket has two outer strips and also an inner strip interposed between and connected to the outer strips at a location removed from the junction of the bracket and the mounting flange. The outer strips have reverse bends which cause the brackets to be cammed inwardly when the bezel is inserted into the mounting hole of the panel. The inner strips also have reverse bends which enable free portions thereof to engage opposite edge portions of the panel hole. and further have notches to provide for a bending action by which the bezel is, in effect, virtually locked in place after its insertion. Means including a switch mounting plate are provided for securing the switch to the free ends of the brackets, thus providing a very flexible arrangement for repair or replacement of the switch, if ever required.

3,800,114

FORCE TRANSFER MEANS FOR OPERATION OF A CIRCUIT BREAKER INCLUDING ROLLERS ON AN AUXILIARY OPERATOR AND THE CIRCUIT BREAKER HANDLE

Albert Strobel, Cherry Hill, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 27, 1972, Ser. No. 275,507
Int. Cl. H01h *3/02*
U.S. Cl. 200—330 **5 Claims**



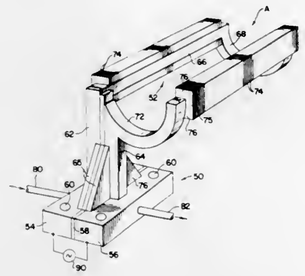
An auxiliary mechanism for operating a circuit breaker handle is provided with a lever carrying spaced straight rollers that engage a handle mounted straight roller positioned therebetween, with the axis of the handle roller being at right angles to the axes of the lever mounted rollers. The lever and handle pivot are in perpendicular planes, and the axis for the handle roller is at right angles to the plane of movement for the handle.

3,800,115

METHOD FOR INDUCTIVELY HEATING AN ELONGATED, SLOTTED WORKPIECE

John F. Cachat, Cleveland, Ohio, assignor to Parker-Ohio Industries, Inc., Cleveland, Ohio

Division of Ser. No. 177,963, Sept. 7, 1971, abandoned. This application Dec. 8, 1972, Ser. No. 313,505
Int. Cl. H05b *5/08*
U.S. Cl. 219—10.43 **1 Claim**



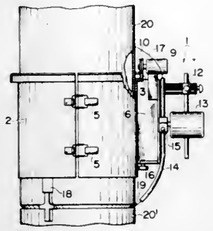
A method and apparatus for inductively heating an elongated slotted tube preparatory to subsequent forming of said slotted tube comprising providing an inductor having a pair of parallel spaced apart heating conductor legs having a length at least as long as the length of the slot. The slotted tube is positioned between the conductor legs so that the side walls of the slot are positioned immediately adjacent and parallel to one of the legs. The inductor is then conventionally energized as the tube is rotated about its longitudinal axis to effect the desired heating.

3,800,116

APPARATUS FOR AUTOMATICALLY WELDING PIPE JOINTS FOR CYLINDRICAL MEMBERS SUCH AS STEEL PIPE PILES

Tohachiro Tanaka, Nagareyama; Kenichi Ishii, Tottori; Seiya Sasaki, Kawachinagano, and Hiromi Shiraishi, Minoo, all of Japan, assignors to Sumitimo Metal Industries Limited, Osaka City and Construction Company Limited, Sakai City, Osaka Prefecture, both of, Japan

Filed Dec. 28, 1971, Ser. No. 212,909
Claims priority, application Japan, Dec. 29, 1970, 45-137999[U]; May 27, 1971, 46-43786[U]; July 29, 1971, 46-68043[U]; June 1, 1970, 46-38441[U]
Int. Cl. B23k *9/02*
U.S. Cl. 219—60 A **6 Claims**



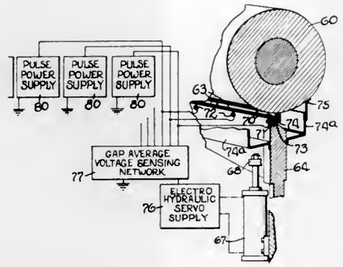
This invention relates to an automatic welding apparatus wherein irrespective of whether a cylindrical member such as steel pipe pile is upright or inclined a welding machine body can be easily fitted to the cylindrical member through a fastening supporter which is free to open and close, supports the cylindrical member and serves as a rail for running the welding machine and therefore not only the operating time can be reduced but also a favorable bead can be obtained by providing a self-running welding machine with single or plurality of welding electrode heads.

3,800,117

EDM APPARATUS FOR FINISHING ROLLS

Alex Lennart Anderson, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Continuation-in-part of Ser. No. 781,388, Dec. 5, 1968, abandoned. This application Sept. 15, 1971, Ser. No. 180,551
Int. Cl. B23k *9/16;* **B24b** *5/00*
U.S. Cl. 219—69 V **10 Claims**



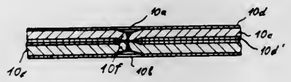
Rolling mill rolls, such as the final rolls for a sheet cold rolling operation, are machined by electrical discharges in a lathe-type machine with a roll length electrode tool. High areas of the roll shape the adjacent surface of the electrode tool, either by a mechanical or electrical wear-in operation, so that such surface substantially complements the desired final roll contour. The shaped electrode tool is subsequently used for electrical discharge machining (EDM) the roll to the level of the lowest roll portions so as to impart a very uniform matte texture to the roll surface and provide a roll with substantially perfect cross-sectional circularily. If the machining is carried out with a segmented electrode tool, the tool is preferably moved slightly from time-to-time axially of the roll during at least the final stages of the machining process. Following the machining, the roll may be used without further processing as an improved substitute for rolls textured by the conventional shot blasting technique or it may be ground to a bright polish.

3,800,118

RESISTANCE WELDING OF SHEET METAL COVERED WITH NON-METALLIC LAYERS

Johann Karl Wefers, Kleinblittersdorf, and Otto Alfred Becker, 59 Robert Koch Strasse, Saarbrucken, both of Germany, assignors to said Becker, by said Wefers

Continuation of Ser. No. 668,414, Sept. 18, 1967, abandoned. This application Jan. 8, 1971, Ser. No. 105,090
Claims priority, application Germany, Sept. 2, 1967, 94270; May 26, 1967, 92707; Apr. 24, 1967, 92210; Feb. 27, 1967, 91404; Feb. 11, 1967, 91162; Feb. 6, 1967, 91065; Jan. 7, 1967, 90625; Dec. 10, 1966, 90240; Nov. 22, 1966, 89932; Nov. 15, 1966, 89848; Nov. 11, 1966, 89773; Sept. 21, 1966, 89001; Great Britain, Sept. 8, 1967, 41049/67
Int. Cl. B23k *9/28*
U.S. Cl. 219—91 **15 Claims**



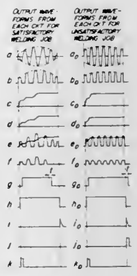
A machine for the spot or roller seam-welding of sheet metal pieces covered with layers of non-metallic material by removing the layer from the zones to be welded and subsequently applying a rust-protective layer over the welding zone, an upright structure, a transport track for the sheet metal pieces mounted therein, an upper and a lower rail arranged transversely of said track vertically movable on said structure, a series of milling machines attached to the rails, and a lever mechanism pressing said milling machines on sheet metal pieces lying on the transport track.

3,800,119

RESISTANCE WELDING MONITOR

Ichro Kuroda, Toyonaka, and Hiroshi Asami, Osaka, both of Japan, assignors to Izumi Denki Company Limited, Osaka, Japan

Continuation of Ser. No. 187,663, Oct. 8, 1971, abandoned. This application June 8, 1973, Ser. No. 368,541
Claims priority, application Japan, Oct. 12, 1970, 45-89943
Int. Cl. B23k *11/24*
U.S. Cl. 219—109 **4 Claims**



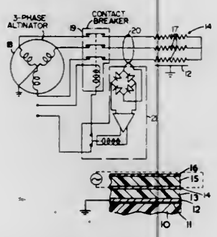
A resistance welding monitor comprises a half-wave amplifier for half-wave amplifying the voltage across the electrodes of a resistance welder at the time of welding, a memory circuit

for storing the maximum value of the output waveform from the half-wave amplifier, and an operating circuit for calculating the output from the memory circuit on the basis of a predetermined constant in order to decide whether the welding operation is satisfactory or not. A comparator-detector circuit compares the output of the operating circuit with that of the half-wave amplifier to detect only a positive wave, and a delay circuit is provided for smoothing and delaying the output from the comparator-detector circuit. The output from the detector circuit is applied to a decision circuit which in turn develops an alarm pulse through a reference pulse generator circuit on receipt of the output from the half-wave amplifier, and the alarm pulse is passed on to actuate an alarm circuit only when the output from the delay circuit is applied to the operating circuit, thereby detecting an unsuccessful welding result, simplifying the welding operation under various welding conditions.

3,800,120
FLUX CORED ELECTRODE
Donald C. Helton, 305 Tri Hill Rd., York, Pa., and Robert C. Steveling, 426 N. George St., Hanover, Pa.
Filed May 26, 1972, Ser. No. 257,395
Int. Cl. B23k *35/22*
U.S. Cl. 219—146 **11 Claims**

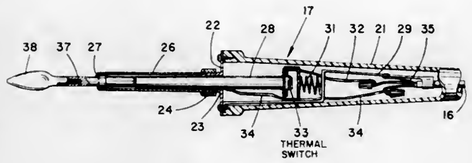
A continuous welding electrode for vertical or overhead welding consisting of a steel sheath and a flux core wherein the flux core ingredients produce a slag of high viscosity at, and just below, welding temperatures.

3,800,121
ELECTRICAL HEATING APPARATUS FOR REDUCING OR PREVENTING THE FORMATION OF ICE ON AIRCRAFT PARTS
Michael Gordon Ellis Dean, 53 Cannon Ln., and Brian James Saunders, 42 Gayland Ave., both of Luton, Bedfordshire, England
Filed Mar. 22, 1972, Ser. No. 237,031
Claims priority, application Great Britain, Apr. 8, 1971, 9162/71
Int. Cl. H05b *1/02*; **B64d** *15/12*; **H02h** *1/02*
U.S. Cl. 219—202 **4 Claims**



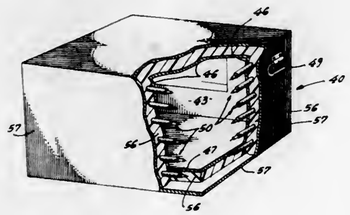
An electrical heating apparatus for reducing or preventing the formation of ice on aircraft parts having a non-metallic external surface includes a metallic layer forming an electrical resistance heating element. The metallic layer is sandwiched beteen a pair of coextensive layers of electrical insulation and is secured in covering realtion to a conducting layer attached to the non-metallic external surface of the aircraft part to be protected. The conducting layer is isolated from the metallic heating element layer and is suitably grounded. A non-metallic protective covering layer is applied over the exposed surface of the insulation layer remote from the conductive layer. Electrical fault detecting means are provided for detecting insulation breakdown and possible arcing between the heating element layer and the electrically conducting layer. The fault detecting means includes means for disconnecting the heating element layer from its power source when a fault condition does occur.

3,800,122
SELF-HEATING WAX MODELING SPATULA
Everett L. Farmer, 12970 Cranston Ave., Sylmar, Calif.
Filed Jan. 17, 1973, Ser. No. 324,252
Int. Cl. H05b *1/00*
U.S. Cl. 219—239 **10 Claims**



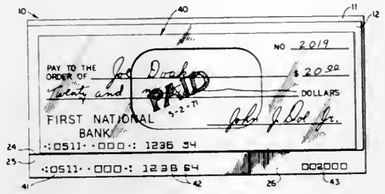
A self-heating wax modeling spatula is disclosed, having disposed within a handle an electrc heating element with a thermal controlled switch, which turns on the current when the element cools below a predetermined temperature and turns off the current when the element heats above a predetermined temperature. The working tip is thermally connected to the heating element through a heat conductor of a known heat conductivity rate, so that the working tip is maintained between upper and lower temperature limits that are closer than the thermal controlled switch is capable of maintaining the heating element. The heating element, the heat conductor, and the working tip being separate items and are biased, in turn, against one another in butting relationship by a suitably disposed spring means to allow heat flow. To further bring the upper and lower temperature limits together at the working tip, the tip is made of a metal that has a relatively high density, is non-corrosive and is a good heat conductor.

3,800,123
COOKING AND HOLDING OVEN
Jerry D. Maahs, Milwaukee, Wis., assignor to M&M Enterprises, Inc., Milwaukee, Wis.
Filed Jan. 19, 1973, Ser. No. 324,958
Int. Cl. F27d *11/02*
U.S. Cl. 219—407 **2 Claims**



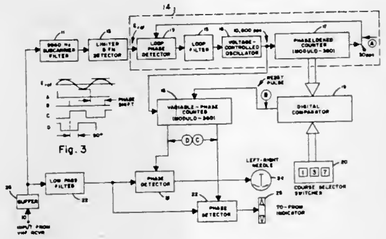
An improved cooking and holding electric oven is provided which has walls surrounded by one or more electric heating cables. Each cable is formed of electric resistance wire which is surrounded by insulation and appropriate metallic shielding. The oven is controlled by an electric circuit so that it is caused initially to enter a preset, relatively high temperature roasting or baking cycle, and then to drop automatically to a preset lower holding temperature after a preset time interval.

3,800,124
ENVELOPE FOR MUTILATED CHECKS
John E. Walsh, Tucker, Ga., assignor to Labor Saving Devices, Inc., Smryna, Ga.
Filed Aug. 23, 1971, Ser. No. 173,987
Int. Cl. B42d *15/00*; **G06k** *19/04*
U.S. Cl. 235—61.12 R **9 Claims**



An envelope for mutilated checks fabricated from two sheets of transparent thermoplastic material and including an opaque bottom margin for receiving magnetic ink characters or optical characters, and with each panel defining an opening therein. Checks are placed in the envelope above the bottom margin and passed through automated check microfilming, sorting and cancelling equipment.

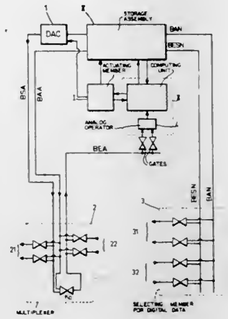
3,800,125
OMNI-CONVERTER WITH DIGITAL PHASE SHIFTER
Edward J. Cleary, Jr., Seattle, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 24, 1972, Ser. No. 300,029
Int. Cl. G01s *1/26*; **G06f** *15/50*
U.S. Cl. 235—150.2 **9 Claims**



A VHF omnidirectional range converter wherein digital logic replaces the analog circuitry heretofore used in the phase shifter and related portions of the converter.

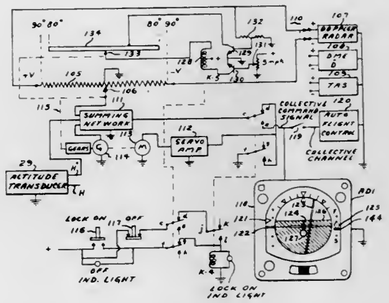
3,800,126
AUTOMATIC ELECTRONIC DEVICE OF UNIVERSAL USE
Jean-Francois Therond, Neuilly; Jean Mermet, Grenoble; Jean-Pierre Barret, Chambourcy, and Jacques Cretin, Paris, all of France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil-Malmaison, France
Filed May 3, 1972, Ser. No. 249,778
Claims priority, application France, May 3, 1971, 71.15912
Int. Cl. G06j *1/00*
U.S. Cl. 235—150.5 **6 Claims**

Automatic electronic device comprising an actuating member, a temporary storage unit, in relation with a computing unit and with various peripheral units producing analog and digital signals, a unit of said actuating member for dispatching to selected elements of the device of micro-instructions each formed of binary digit groups, one for coding and the others assigned to elementary orders, comprising means for separately storing said order groups, each connected to at least one transfer register assigned to a unique and specified function, a decoding element for the coding group, means for controlling the transfer of the order groups



to at least one register in accordance with the decoded value of the coding group, said registers producing signals for controlling all the elements of the device.

3,800,127
VERTICAL RATE REFERENCE COMPUTER FOR CONTROL OF A VTOL OR STOL AIRCRAFT AT A CONSTANT FLIGHT PATH ANGLE
Siegfried Knemeyer, Yellow Springs, and Genese L. Fileccia, New Carlisle, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sept. 11, 1972, Ser. No. 288,212
Int. Cl. B64c *13/50, 19/00*
U.S. Cl. 235—150.22 **6 Claims**

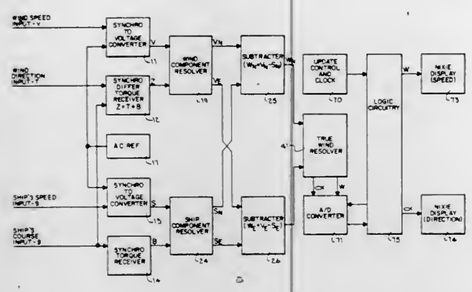


A computer which derives the sine of the angle between a desired flight path and the horizontal, and thereafter derives the product of the sine and the velocity vector of the aircraft as a reference vertical rate which the aircraft must maintain to hold the flight path angle constant. The actual vertical rate of the aircraft is continuously compared with the reference rate to obtain a vertical rate error signal. The error signal may be visually displayed on a suitable attitude director indicator to permit the pilot to manually hold the vertical rate at the value required to maintain a constant flight path angle, or it may be applied to the automatic flight control system of the aircraft for automatic control of the vertical rate. For VTOL aircraft the error signal is applied to the vertical thrust control channel of the automatic flight control system, which for helicopters is the collective channel, while for STOL aircraft the error signal is applied to the pitch axis channel of the autopilot.

3,800,128
TRUE WIND SPEED COMPUTER

Thomas R. Kurk, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 14, 1972, Ser. No. 341,000
Int. Cl. G06g *7/78, 7/22*
U.S. Cl. 235—151.32 3 Claims

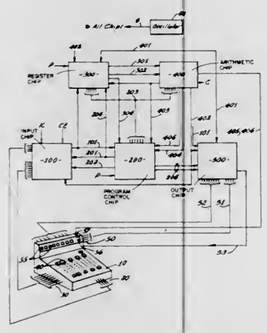


An analog computer for calculating and displaying in digital form the speed and direction of true wind for a ship. Ship's speed and course and wind speed and direction are provided as inputs to a computer which calculates true wind speed by vectorially subtracting ship's velocity from wind speed. The subtraction is accomplished by electronic differential amplifiers which provide true wind speed in Cartesian coordinate form. These Cartesian coordinates are converted into polar coordinates which are then fed into an analog to digital converter so that a readout can be displayed in digital form.

3,800,129
MOS DESK CALCULATOR

Richard H. Umstattd, Canoga Park, Calif.; assignor to Electronic Arrays, Inc., Woodland Hills, Calif.

Filed Dec. 28, 1970, Ser. No. 101,769
Int. Cl. G06f *7/38*
U.S. Cl. 235—156 19 Claims

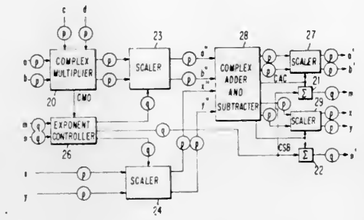


A 5-MOS chip desk calculator wth input switching matrix which is periodically interrogated for inputting, and display control for outputting. The chips are designed for minimum interchip connection. Information is inputted via a keyboard and switching matrix, which is continuously interrogated by a recycling counting process. Number ranges are used to distinguish between command entries and digit entries. Entered arithmetic commands are executed after entry of the next command, figures are stored as entered. Special provisions are made for decimal point setting and entry.

3,800,130
FAST FOURIER TRANSFORM STAGE USING FLOATING POINT NUMBERS

Lloyd William Martinson, Haddonfield, and Richard James Smith, Delran, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed July 9, 1973, Ser. No. 377,312
Int. Cl. G06f *7/48, 15/34*
U.S. Cl. 235—156 6 Claims

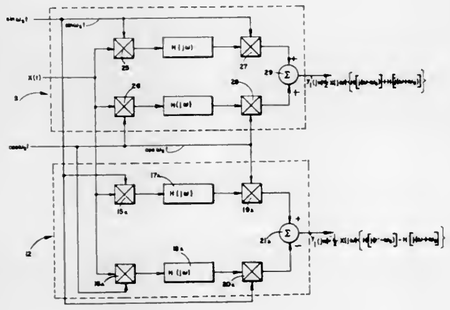


System for performing complex Fourier operations of multiplying a fixed complex number by a floating point complex number and adding to the resulting product another floating point complex number.

3,800,131
HILBERT TRANSFORMER

Stanley A. White, Yorba Linda, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 27, 1972, Ser. No. 238,213
Int. Cl. G06g *7/26*
U.S. Cl. 235—197 5 Claims

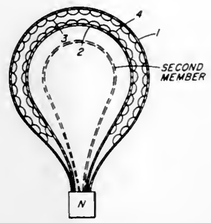


The present inventive transformer is comprised of a first and second channel with the first channel transforming an input signal by a desired function and providing as an output the transformed input signal. A second channel transforms the input signal by an identical function and provides an output signal which is identical to the output signal from the first channel except that all frequency components of the signal in the second channel are phase shifted by 90° with respect to the signal in the first channel.

3,800,132
NOVEL CHEMICAL LIGHTING DEVICE

Robert H. Postal, Clifton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Nov. 1, 1972, Ser. No. 302,707
Int. Cl. F21r *9/16*
U.S. Cl. 240—2.25 13 Claims

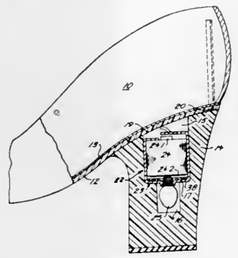


A fluid-pliable device having the capacity upon fluidation to accrete to a predetermined luminous corporeate. The device incorporates the use of chemiluminescent substances which are initially in a non-reactive state where upon activation, a luminous film is captured between diametrically interfacing surfaces.

3,800,133
ILLUMINATED SHOE

Henri Joseph Duval, 224 Second St., New Westminster, British Columbia, Canada

Filed Apr. 19, 1973, Ser. No. 352,591
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 W 1 Claim



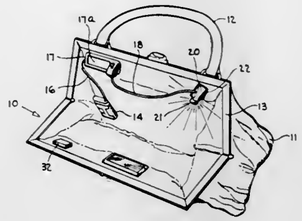
An illuminated shoe having a heel provided with an upwardly opening cavity which is covered by a springy insole portion. The cavity accepts an illumination assembly including an electric light bulb connectable in circuit, through a normally open pressure switch, with a dry cell battery. The switch is adapted to be closed by the springy insole when the latter is deflected under pressure of a wearer's heel so as to effect intermittent energizing of the light bulb whenever heel pressure is applied.

3,800,134
ILLUMINATED HANDBAG APPARATUS HAVING WALK ALONG LIGHT

Stanley C. Castaldo, 224 Second St., Apopka, Fla.

Continuation-in-part of Ser. No. 74,955, Sept. 24, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 209,676
Int. Cl. A45c *15/06*
U.S. Cl. 240—6.45 P 10 Claims

A handbag apparatus whose interior is provided with an illumination means, involving the use of a small lamp or bulb unit connected by an elongate flexible conductor to a switch unit that is in turn connected to a battery unit or source. The switch unit may function to turn on the lamp or bulb automatically when the handbag is opened, and then to turn the lamp off when the handbag is closed. The lamp or bulb may be regarded as part of an illumination means involving a light assembly or bulb unit that can be detachably connected to the inside of the handbag, from which location it can be easily removed and re-attached to the exterior of the handbag for

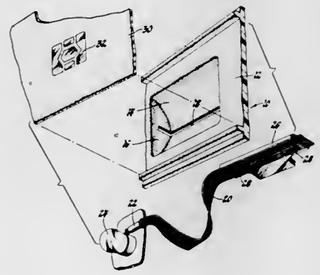


serving as a light source, such as for guiding a lady's footsteps after dark. The switch unit may be provided with a manually-operated switch used alone or in series with the automatically operated switch, that makes it conveniently possible to disable the automatically-operating illumination arrangement, so that battery energy can be conserved during daylight hours, and when the handbag is to remain open for a protracted length of time.

3,800,135
FIBER OPTIC DISPLAY PANEL ILLUMINATOR

Charles W. Ramsey, Niles, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 11, 1973, Ser. No. 369,096
Int. Cl. B60q *3/04*
U.S. Cl. 240—8.16 3 Claims



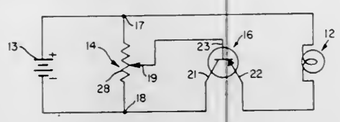
A display panel such as an automobile instrument panel is formed with a reflectively coated concave depression in an area where illumination of a legend or other device is required. The depression is slotted to afford insertion of a fiber optic ribbon which extends through the depression, which ribbon is remotely energized by a lamp to illuminate the depression. A clear plastic envelope for supporting the ribbon within the depression is assembled to the ribbon and the assembly is inserted into the slot from the rear of the instrument panel such that the slot holds the supporting envelope in place. A plurality of resilient tabs on the envelope engage the depression adjacent the slot to prevent removal of the assembly from the depression. An applique bearing a translucent legend or design covers the illuminated depression.

3,800,136

VARIABLE INTENSITY BATTERY OPERATED LIGHT

Andrew C. Edelson, 10832 Charnock Road, Los Angeles, Calif.

Filed Sept. 28, 1972, Ser. No. 293,037
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.6 SD **1 Claim**



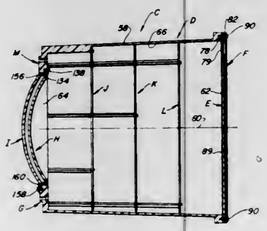
An adjustable light intensity circuit is provided for use with a flashlight, a car or boat light, or any other device or vehicle employing a battery operated light.

3,800,137

SIGNAL LIGHT ADAPTER

Gary D. Fredell, East Moline, Ill., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,389
Int. Cl. F21v *13/04*
U.S. Cl. 240—41 R **19 Claims**



An adapter for a conventional signal light converts the conventional light into a programmable signal light such as that which appears to be illuminated only from selectively variable limited viewing areas. A housing, attachable to the frame of a conventional signal light, secures a transparent condensing lens and a transparent image plate, the latter having an image surface being located substantially at the focus of the former. A diffusing plate is releasably secured to the housing rearwardly of the image plate. The diffusing plate, which may be a combination color plate and diffusing plate, can be removed to provide easy access to the image surface so that one may view the image projected on the image surface. Selected areas on the image surface may be masked to block selected portions of the image plate. This programs the signal light so that illumination of the light may be seen only from within the area, forward of the light which correspond to the unmasked area seen on the image surface.

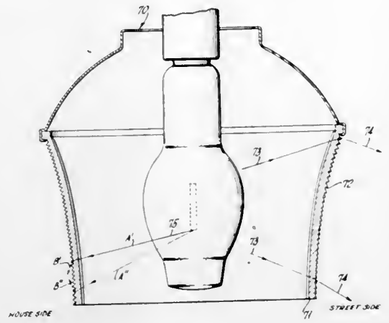
3,800,138

POSITIVE PRISMATIC LIGHT SHIELD

Jan Shadwick, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.

Continuation of Ser. No. 1,683, Jan. 4, 1970, abandoned. This application July 27, 1972, Ser. No. 275,606
Int. Cl. F21v *5/00*
U.S. Cl. 240—106 R **1 Claim**

A street lighting luminaire refractor including a light refracting sector and a light shielding sector. The light shielding sector includes a plurality of exterior prisms for preventing the passage of light through the light shielding sector and interior flutes for uniformly distributing light along and between the prisms.

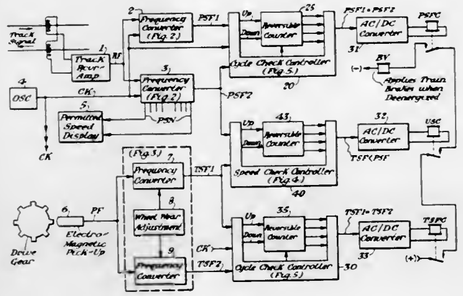


3,800,139

DIGITAL SPEED CONTROL APPARATUS FOR VEHICLES

Thomas D. Clark, Monroeville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed July 3, 1972, Ser. No. 268,663
Int. Cl. B60l *15/00*
U.S. Cl. 246—182 C **8 Claims**



An allowed speed signal received from an off-vehicle source and an actual speed signal generated on-board are each converted from their original form to a signal having a relatively high frequency proportional to the represented speed. Each conversion is dual channel to produce two outputs, for the same signal, which are compared in digital cycle checking apparatus for identical frequencies to assure the validity of the frequency conversion and thus the speed signals. One frequency signal from each pair is compared in another digital cycle checking apparatus to determine if an over or under train speed condition exists. Each cycle checking means periodically simulates an improper comparison, after which the correct condition must be detected to provide a continued output. Thus the validity of the cycle check operations is assured.

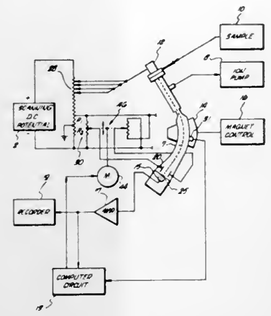
Each of the frequency pairs must check equal and a train underspeed condition detected to produce the complete set of output signals which allow train movement to continue.

3,800,140

FOCUSING PLATE FOR MAGNETIC MASS SPECTROMETER

Wilson M. Brubaker, 1954 Highland Oaks Dr., Arcadia, Calif.

Filed May 5, 1972, Ser. No. 250,686
Int. Cl. H01j *39/34*
U.S. Cl. 250—299 **9 Claims**



A magnetic mass spectrometer including an ion source with electrodes to provide an acceleration of an ion beam is described. A magnetic analyzer disperses the beam according to the mass of the individual ions with a collector located downstream for providing a measure of the magnitude of the ion beam for a selected mass. An electric field generating means which may include three sets of deflector plates is positioned adjacent the collector for attenuating or compensating for aberrations of the ion image, for example, the aberrations which results from the non-uniformity of the magnetic field in the region near the magnet boundary. The deflection voltage applied to the deflector plates may be a set ratio of the accelerating voltage and depends upon the size and placement of the plates and the distance of ion beam travel after deflection along with its lateral displacement.

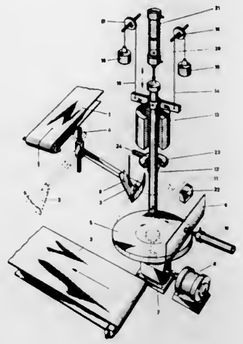
3,800,141

METHOD AND A DEVICE FOR MEASURING A MOISTURE CONTENT OF GRANULAR INORGANIC MATERIAL

Joseph A. Beumer, Haarlem; Carl E. Jansen, Aerdenhout, and Herman Radstake, Uitgeest, all of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens En Staalfabieken N. V., Ijmuiden, Netherlands

Filed Feb. 22, 1972, Ser. No. 228,090
Claims priority, application Netherlands, Feb. 25, 1971, 7102538
Int. Cl. G01n *23/00*
U.S. Cl. 250—391 **7 Claims**

In pelleting moist ore flour, for example, accurate measurement of moisture content of the sticky mass of material is necessary. This is effected by moving samples from the stream of material, piling them into a conical pile on a rotating table about 1 meter in diameter to form a pile having an inscribed spherical volume of about 30 cm radius, inserting a neutron-gamma ray-measuring probe into the center of the pile, making the measurement, removing the probe, and sweeping the pile from the table to enable repetition of said steps. Material adhering to the probe may be displaced therefrom as it is withdrawn from the pile. Suitable apparatus for so doing is also disclosed.



3,800,142

METHOD OF VERIFYING THE AUTHENTICITY OF A DOCUMENT AND IDENTIFIABLE DOCUMENT PRODUCED THEREBY

William A. Harshaw, II, 6020 Deer Run Dr., Chagrin Falls, Ohio

Filed Jan. 5, 1972, Ser. No. 215,655
Int. Cl. G01t *1/11*
U.S. Cl. 250—337 **10 Claims**

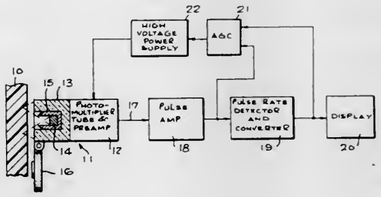
The invention disclosed herein pertains to a means of verifying the authenticity of a document, identification card, or any object for which a means of establishing authenticity is desired, whereby such document, I.D. card or other object, hereinafter referred to generically as "document," is treated with a suitable thermoluminescent phosphor in a coded manner and for subsequent verification is exposed to a means for detecting the presence of said thermoluminescent phosphor and for deciphering the message thereby embodies in such document.

3,800,143

AGC FOR RADIATION COUNTER

Jack B. Fishman, Pasadena, and William E. Mutschler, Leverne, both of Calif., assignors to Nucleonics Development Company, Monrovia, Calif.

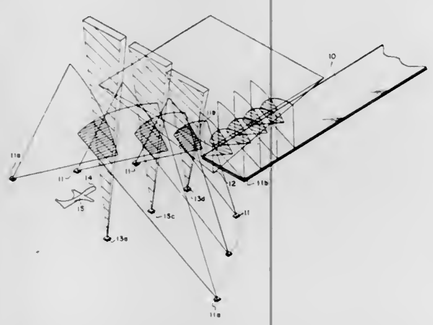
Filed Feb. 16, 1972, Ser. No. 226,801
Int. Cl. G01j *39/18*
U.S. Cl. 250—363 **4 Claims**



Apparatus for detecting nuclear radiation from a source not absorbed by target material, in order to measure density or

thickness of the material, employs a process for detecting radiation particles which converts the energy level of the particles to pulse height, through a photomultipler tube, one pulse for each separate particle detected, and develops an AGC signal for stabilizing the gain of the conversion system, through the high voltage power supply of the photomultiplier tube, by effectively comparing the pulse rate of a low level threshold detector, used to reject noise pulses in the conversion system, with come multiple R of a higher level threshold detector, where R is the anticipated ratio of low energy level particles to high energy level particles predetermined from an energy level spectrum or histogram of the source. The multiple R is introduced by dividing the lower-level rate by the product RN while the upper level rate is divided by N, where N is an arbitrary integer.

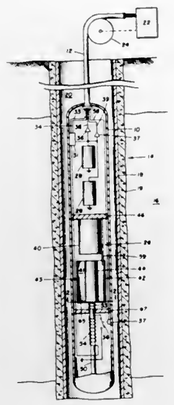
3,800,144
NUCLEAR GUIDANCE SYSTEM FOR CONTROLLING AIRCRAFT LANDINGS
Roderick A. Dennis, 1516 Xavier, Denver, Colo.
Filed Feb. 19, 1971, Ser. No. 116,932
Int. Cl. G01t *1/16*
U.S. Cl. 250—362 **21 Claims**



There is disclosed a nuclear guidance system for positively controlling aircraft landings even under zero visibility conditions. The system provides three series of radiation beacons indicating glide path, distance-to-go, and altitude information. A relatively simple, economical detection system on board the aircraft sorts the information into its appropriate categories and through instruments displays the plane's position relative to the landing area.

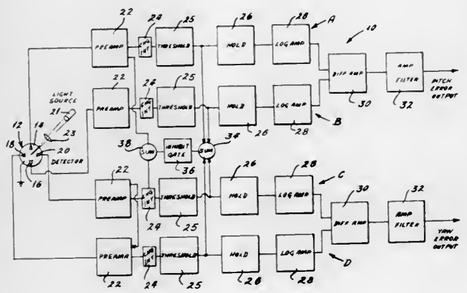
3,800,145
METHOD AND APPARATUS FOR RADIOACTIVE WELL LOGGING
Richard L. Caldwell, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed May 19, 1972, Ser. No. 255,112
Int. Cl. G21g *3/00*
U.S. Cl. 250—253 **7 Claims**

A radiation source for use in radioactive well logging and logging methods employing such source. The source comprises emitter and target components which are movable relative to one another. Both components may take the form of concentrically disposed inner and outer casings or sleeves. Each component includes a plurality of laterally spaced surfaces with those of the emitter component containing an emitter material and those of the target component containing a target material which is characterized by the emission of primary radiation in response to exposure to radiation from the emitter material. Means are provided for moving the emitter



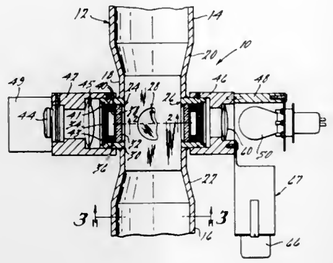
and target components to an active position in which complementing surfaces are adjacent one another to provide for the emission of primary radiation and an inactive position in which the surfaces are displaced longitudinally from one another.

3,800,146
PULSE OPTICAL RADIATION TRACKER
Lloyd E. Brunkhorst, Florissant; Theodore G. Carr, Manchester, and James E. Dueker, Florissant, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.
Filed May 10, 1973, Ser. No. 359,110
Int. Cl. G01j *1/20;* **H01j** *39/12*
U.S. Cl. 250—211 **24 Claims**



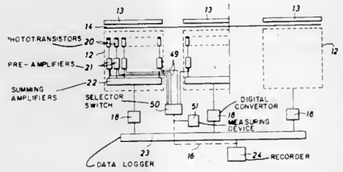
A pulse radiation tracker for producing pitch and yaw output information with respect to an object being located, tracked, or guided, said tracker including optical detector means responsive to detectable radiations emitted from the object or target, and circuit means for generating output signals to respresent pitch and yaw errors, respectively.

3,800,147
TURBIDIMETER WITH FORMED FLOW CHAMBER
James J. Shea, Dearborn Heights, and Samuel S. Ochodnicky, Detroit, both of Mich., assignors to Gam Rad, Inc., Detroit, Mich.
Filed Jan. 22, 1969, Ser. No. 792,941
Int. Cl. G01n *21/26*
U.S. Cl. 250—564 **4 Claims**



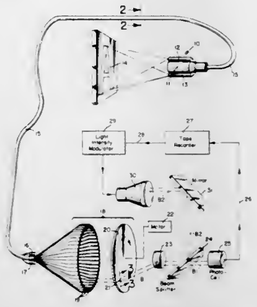
A turbidimeter utilizing a low cost flow chamber made from tubing and including a necked down portion having a plurality of flat sides for facilitating mounting of various sensing components and including a novel consturction for automatically compensating for color in low turbidity applications.

3,800,148
DEVICE FOR SENSING A MOVING SHEET MATERIAL FOR IMPERFECTIONS
Etienne Marie DeCock, Hamme, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium
Filed May 19, 1972, Ser. No. 255,087
Claims priority, application Great Britain, May 21, 1971, 16,348/71
Int. Cl. G01n *21/30*
U.S. Cl. 250—562 **6 Claims**



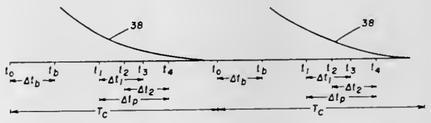
A device for sensing a moving sheet for imperfections. The device comprises a plurality of light sources and corresponding photocells for receiving the radiation thereof after reflection from or transmission by the sheet. Each photocell has its own pre-amplifier which is provided with automatic gain control means which controls the pre-amplifier in such a way that the average output signal thereof remains equal to a pre-determined value. The device is insensitive to incorrect mounting of the photocells relative to the light sources and insensitive to spreadings in the characteristics of the electric components, and a change from a more specular material being sensed to a more diffuse material does not require a re-adjustment of the device.

3,800,149
ELECTRO-OPTICAL INFORMATION CONVERSION SYSTEM USING FIBER OPTICS
Paul Wentworth Lang, Hollywood, Calif., assignor to Michael M. du Pont, Los Angeles, Calif.
Filed Jan. 29, 1973, Ser. No. 327,593
Int. Cl. G01n *21/30;* **G02b** *5/14;* **H04n** *3/16*
U.S. Cl. 250—205 **3 Claims**



An optical image is projected onto first ends of fiber optics, the second ends of the fiber optics being fanned out into an annular ring. A scanning disc having an opening successively picks up light from each second end of the fiber optics over a complete revolution, the light selected and passed through the opening in the disc being detected by a photocell to generate an electrical signal which may be stored on a magnetic tape. The optical scene may be reconstructed by modulating a light source with the electrical signal and passing the modulated light through the opening in the disc as it scans the fanned out second end of the fiber optics. The optical image is then reproduced at the first ends of the fiber optics from whence it may be projected onto a screen.

3,800,150
METHOD AND APPARATUS FOR RADIOACTIVE WELL LOGGING EMPLOYING PARTIALLY OVERLAPPING TIME WINDOWS FOR DETECTION OF RADIATION
Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed May 9, 1972, Ser. No. 251,629
Int. Cl. G01v *5/00*
U.S. Cl. 250—262 **18 Claims**



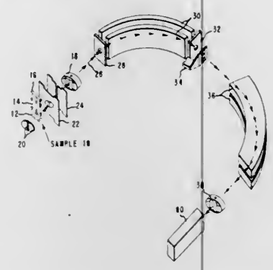
Methods and apparatus for radioactive well logging in which the formation is irradiated with bursts of primary radiation and the resulting secondary radiation is measured by employing partially overlapping detection windows. The invention may be employed in thermal neutron decay logging with the measurements obtained during the partially overlapping time windows employed to derive a decay parameter of the thermal neutron population developed in a formation as a result of bursts of fast neutrons. In addition radiation attendant to the thermal neutron population may be detected over a third time interval and employed to derive a background correction factor, and also to provide an indication of the porosity of the formation.

3,800,151

METHOD FOR ADJUSTING THE ION BEAM HEIGHT IN A MASS SPECTROMETER

Charles W. Hull, Sierra Madre, and Robert K. Whitley, Pasadena, both of Calif., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 8, 1971, Ser. No. 151,079
Int. Cl. H01j *39/34*
U.S. Cl. 250—283 7 Claims



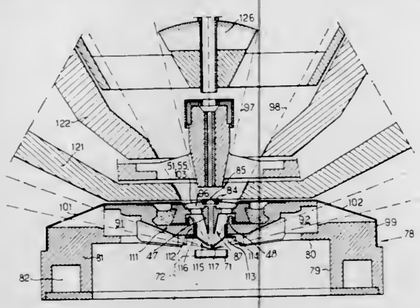
An adjustable mass spectrometer aperture permitting the selection of either the portion of the ion beam with a minimal off mid-plane aberration or a larger portion of the beam when high resolution is not required. The location of the aperture may be adjusted with respect to the mid-plane. Additionally, the entire beam may be intercepted for metastable ion energy spectrometry.

3,800,152

ELECTRON ANALYSIS APPARATUS WITH HEAT-PROTECTIVE SHIELD MEANS SPACEDLY OVERLYING A SAMPLE SUPPORTING SURFACE

Bernard M. Daigne, Chatillon, and Francois M. Girard, Paris, both of France, assignors to Office National D'Etudes Et De Recherches Aerospatiales, Chatillon, France

Filed Dec. 10, 1971, Ser. No. 206,601
Claims priority, application France, Dec. 11, 1970, 70.44739
Int. Cl. G01n *23/22*
U.S. Cl. 250—310 7 Claims



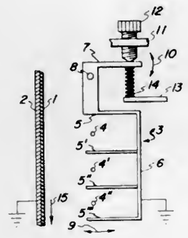
To enable visual observation and X-ray analysis of a sample irradiated by an electron beam, a heat-protective assembly overlying a sample-supporting surface includes an enclosure with a central window for the electron beam, a surrounding annular window for light rays and a pair of lateral windows for X-rays emanating from the sample. An inner shield has a frustoconical body, with generatrices converging toward the supporting surface, which gives passage to both the light rays and the electron beam while screening an area surrounding the annular light-transmissive window of the enclosure without, however, blocking the passage of the X-rays. A set of deflecting plates for the electron beam is mounted on the inner shield, between its frustoconical body and a diaphragm forming the central window, in a zone between the paths of the light rays and the electron beam.

3,800,153

ELECTROPHOTOGRAPHY CHARGING DEVICE

Seiji Matsumoto; Shigeru Tezuka, and Shinichi Tanaka, all of Tokyo, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1972, Ser. No. 319,117
Int. Cl. G03g *15/02*
U.S. Cl. 250—325 4 Claims



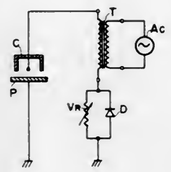
A fulcrumed charging electrode to accurately space a corona generator wire or wires from a photoconductive surface for charging the same. The corona wire and associated shield are pivoted about an axis parallel to the wire and several specific means are shown for effecting the desired pivot action and adjustment.

3,800,154

METHOD AND APPARATUS FOR FORMING A UNIFORM SURFACE POTENTIAL ON PHOTOSENSITIVE MEMBER

Susumu Tanaka, 150-20, Fikaihatayama-cho, Sakai, Japan

Filed Sept. 29, 1971, Ser. No. 184,867
Claims priority, application Japan, Oct. 2, 1970, 45-86860
Int. Cl. G03g *13/02, 15/02*
U.S. Cl. 250—326 3 Claims



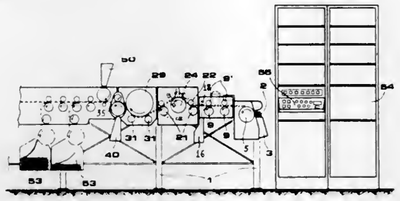
A dielectric member is charged by rectifying part of either the positive or negative current output of a corona discharge device by applying the rectified output current to at least one corona wire mounted in spaced relationship with respect to the dielectric member. The positive or negative current is varied so that the effective current in the dielectric member is substantially zero whereby the surface potential of the dielectric member is made uniform. The means for controlling the output current of the corona discharge device is a parallel connection of a variable resistance and a diode.

3,800,155

AUTOMATIC USED BANKNOTES SELECTING MACHINE

Franco Potenza, Via Visconte Di Modrone 27, 20122 Milan, Italy

Filed May 31, 1973, Ser. No. 365,588
Claims priority, application Italy, May 31, 1972, 25071/72
Int. Cl. B07c ; G01n *21/30*; G07f *1/06*
U.S. Cl. 250—557 13 Claims



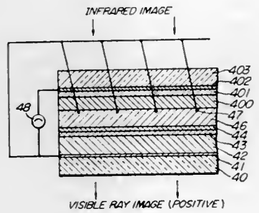
An automatic used banknotes selecting machine, including a container for the banknotes, provided with an inclined surface, a suction device for picking up the individual banknotes from said container, cooperating with a shaped head, guides provided with pairs of rollers and pairs of superposed tracks, a feeling device for checking the thickness of the banknotes having an irregular thickness, in a separate container, an electronic apparatus, adapted to check the fluorescence of the banknotes, a photoelectric cell device adapted to measure the length of the banknotes, two pairs of belts, driven by a plurality of toothed wheels, journalled in vertical plates, an apparatus provided with a piezoelectric head for detecting and counting the rougness of the banknotes' printed designs, a photometric device for checking the watermark of the banknotes; an apparatus affecting the stretching and the alignment of the banknotes, an electronic, apparatus, connected to a pair of photometers, combined with a scanning head, inspecting the sample banknote and the banknote to be examined, respectively, at both faces of the banknotes themselves, a reading head for reading the serial numbers, consisting of a common reader of optical characters, a multi-case selecting device, in the cases of which there are conveyed both regular banknotes and banknotes selected as to their various defects.

3,800,156

INFRARED IMAGE CONVERTING DEVICE

Tadao Kohashi, Yokohama, and Tadao Nakamura, Kawasaki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 659,703, Aug. 10, 1967, abandoned. This application June 1, 1971, Ser. No. 149,084
Claims priority, application Japan, Aug. 15, 1966, 41-54083; Oct. 27, 1966, 41-71312
Int. Cl. G01j *1/02*
U.S. Cl. 250—330 14 Claims



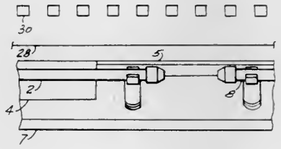
An infrared image converting device is provided with an infrared photoconductivity quenching layer and at least one electroluminescent layer, the latter layer representing a spectral luminescent energy curve which overlaps the spectral photoconductivity curve of the former layer at least partly in the wavelength range. The layers are disposed in such a manner that the luminous output from said latter layer is fed back to said former layer decreasingly with the increasing intensity of input infrared rays, thereby increasing the quenching effect.

3,800,157

WEB INSPECTION APPARATUS

Gordon W. Nichols, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed Nov. 28, 1972, Ser. No. 310,144
Int. Cl. B01t *1/16*
U.S. Cl. 250—353 4 Claims



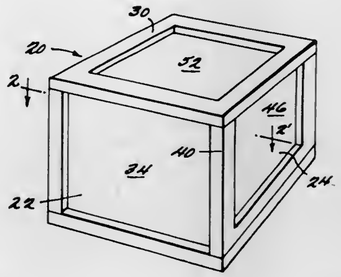
An infrared radiance measuring apparatus employed to measure defects in a moving continuous web substrate. A series of line filament lamps are in circuit relationship with a single channel photo detector and a signal amplifier as well as a photo transistor with a voltage follower to enable the radiance from the lamps to modulate in response to defects in the substrate being monitored. The instantaneous changing voltage as measured in response to an instantaneous change of light is noted on a suitable recording device.

3,800,158

MAGNETIC SHIELD FOR CHARGED PARTICLES

Gregory Grosbard, 353 W. 19th St., New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,340
Int. Cl. G21f *3/00*
U.S. Cl. 250—515 12 Claims



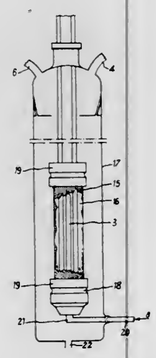
A magnetic field and charged particle shield comprised of a plurality of permanently magnetized elements. In one embodiment, each element resembles a truncated pyramid with the pyramid base representing one pole and the top of the other pole and the elements are connected together to form a cube in which one or more sides may be missing to provide a guide for deflected particles. Each element preferably has a lip along one edge thereof so that the structure has either a male exten-

sion or female depression on each of its sides which mates with a depression or extension of another structure so that a wall can be constructed using such structures as building blocks. In a further embodiment, two extending flexible sheets having opposing surfaces of different magnetic polarity are connected together so that a surface of each is substantially parallel and adjacent surfaces have the same polarity.

3,800,159
PHOTOCHEMICAL APPARATUS

Georges Lucas, Paris, France, assignor to Societe Anonyme dite: Societe Nationale Des Petroles D'Aquitaine, Paris, France

Filed Feb. 29, 1972, Ser. No. 230,373
Claims priority, application Great Britain, Mar. 1, 1971, 71.06963
Int. Cl. B01j *1/10*
U.S. Cl. 250—527 **7 Claims**



A process for photo-oximating cycloalkanes by means of a gaseous nitrosating agent, in which the agent if fed into a radiation zone, without any cycloalkane present, the activated radicals are transferred immediately to an adjoining reaction zone containing the cycloalkane, and the oxime is provided in this reaction zone and drawn off.

The radiation zone is separated from reaction zone by a perforated or gas-permeable partition, such as an electroformed grid made from a corrosion-resistant metal or alloy.

Pressure is maintained in the radiation zone by means of a gas vehicle carrying the gaseous nitrosating agent, ensuring immediate transfer of the activated radicals and preventing any of the liquid phase in the radiation zone from leaking in.

3,800,160
METHOD AND APPARATUS FOR COUNTING THE NUMBER OF INDIVIDUAL FILAMENTS COMPOSING A MULTIFILAMENT YARN

Kazutomo Ishizawa, Osaka; Tohru Kolde, Kobe; Tamotsu Kondo, Hirakata, and Katsumi Miyawaki, Hofu, all of Japan, assignors to Kanedo Ltd., Tokyo, Japan

Filed Aug. 25, 1972, Ser. No. 283,789
Claims priority, application Japan, Sept. 4, 1971, 46-68318
Int. Cl. G02b *23/10*
U.S. Cl. 250—219 S **12 Claims**

Method and apparatus for counting number of individual filaments having circular cross sections and composing a bright or dull multifilament synthetic yarn. The individual filaments are aligned on a flat surface of a transparent member without intervened space between any adjacent two filaments. A light is projected perpendicularly to the aligned individual filaments through the transparent member and a real image of bright lines created by the above-mentioned light projection as well as a condensing function of the individual filaments is focused upon a screen. The number of bright lines in the real

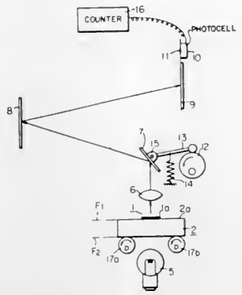
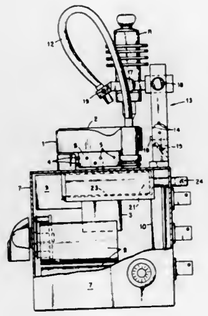


image is counted. The result obtained by this counting represents number of individual filaments composing the multifilament yarn.

3,800,161
PORTABLE DYNAMIC MULTISTATION PHOTOMETER-FLUOROMETER

Charles D. Scott, Oak Ridge, and Eddie L. Collins, Jefferson City, both of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 19, 1972, Ser. No. 316,628
Int. Cl. G01n *21/26*
U.S. Cl. 250—564 **9 Claims**

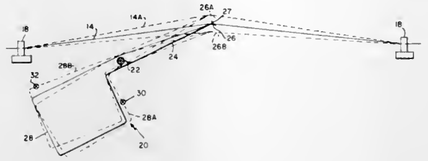


A compact fast analyzer having a self-contained power supply is provided for simultaneously determining concentrations in a multiplicity of discrete samples using either photometric or fluorometric measurement techniques and rotors defining rotary cuvette systems. A multi-position pivoted optical head assembly supports means for directing light into sample holding cuvettes as they rotate. The optical head assembly selectively positions the means for directing light at an appropriate angle depending upon whether photometric or fluorometric measurements are being made. Means, selectively operable during a fluorometric measurement, for transmitting fluorescence emitted by samples within the cuvettes to a photodetector is also supported and selectively positioned by the opitcal head assembly. Means, selectively operable during a photometric measurement, is provided for transmitting light which passes through the cuvettes during a photometric measurement to the same photodetector.

3,800,162
FILAMENT TENSION DETECTOR

Arthur M. Lueck, East Setauket, and Edward A. Youch, Stony Brook, both of N.Y., assignors to Quantum Sensing Incorporated, Bohemia, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,858
Int. Cl. G01d *5/34*
U.S. Cl. 250—219 S **13 Claims**



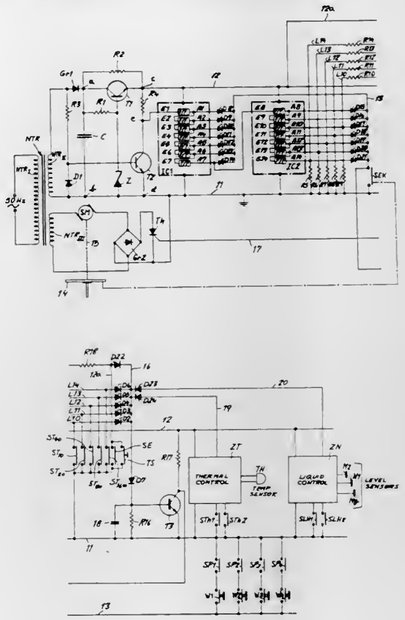
Apparatus for monitoring tension in filamentary materials capable of exerting a control function when the tension falls outside of predetermined limits. The detector comprises a centrally pivoted arm having at one end a rider over which the filament passes, and at the opposed end a flag of predetermined size and mass. The detector has an unbalanced mass sufficient to deflect the filament a specified number of degrees under proper conditions of tension; an increase in filament tension raises the flag and a decrease in tension lowers the flag. In either event one of two light beams is broken, causing a light sensor to energize the desired control function. The invention also functions as a continuity or broken-filament detector, inasmuch as this is the equivalent of zero tension. In an alternative embodiment, the light beams may be replaced with electrical conductors and movement of the pivot arm utilized to close an electrical circuit and energize the desired control function.

3,800,163
ELECTRONIC PROGRAMMER FOR AUTOMATED EQUIPMENT

Erich Scheer, Peterzell/Schwarzwald, Germany, assignor to Kundo Kieninger & Obergbell, Schwarzwald, Germany

Filed Oct. 24, 1972, Ser. No. 300,326
Claims priority, application Germany, Oct. 23, 1971, 2152903
Int. Cl. G05b *19/06*
U.S. Cl. 307—115 **10 Claims**

A multistage binary frequency divider steps down the frequency of an alternating-current source, such as a commercial or municipal power-supply network, to provide a plurality of output leads carrying square waves of harmonically related pulse cadences. These output leads are connected in parallel, through a diode matrix, to the input circuit of a transistor which controls the energization of a drive motor for a contact-carrying platter. With the period of the longest square wave exceeding the maximum standstill interval of the drive motor during a program cycle, the duration of each standstill interval can be selected in, say, 10-second increments between a fraction of a minute and several minutes. This is done by selectively short-circuiting different combinations of output leads in the various operating positions of the platter, the unshorted output leads maintaining the transistor conductive for a time equaling the combined width of their respective square-wave pulses. Thereafter, the transistor is cut off and fires a thyristor in series with the drive motor. Other platter-controlled contacts in series with respective manually controlled switches can short out the entire frequency divider in certain phases of

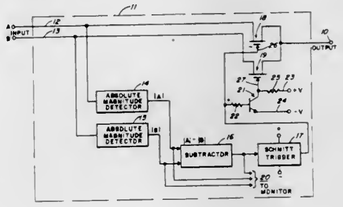


the program cycle to allow skipping a part of the program. The frequency divider is also shorted during rotation of the platter by a contact whose closure resets all its binary stages to zero.

3,800,164
REDUNDANT LOGIC CIRCUIT

Frederic L. Miller, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 2, 1969, Ser. No. 790,511
Int. Cl. H01j *19/82*; G06f *11/08*
U.S. Cl. 307—204 **7 Claims**



This invention is directed to a redundant logic system having a plurality of input channels and a single output channel. The system initially senses and compares the absolute magnitude of two of the input channels. When the magnitudes are identical, a switch is initiated in one of these channels to connect it to the output channel. When one of the channels fails, the compared output of the absolute magnitude detectors is utilized to insure that the channel which has failed is disconnected and that the operating channel is connected to the output channel. The fail-operational capacity may be increased in

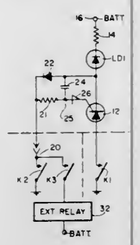
a cascade fashion by utilizing the single output of the first channel together with another input channel. Monitoring means are also provided to detect where failures have occurred.

3,800,165

ELECTRONIC PULSE STORAGE DEVICE

Frank Cinkus, and Richard E. Buchner, both of Milan, Tenn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,208
Int. Cl. H03k *17/72*
U.S. Cl. 307—238 **6 Claims**



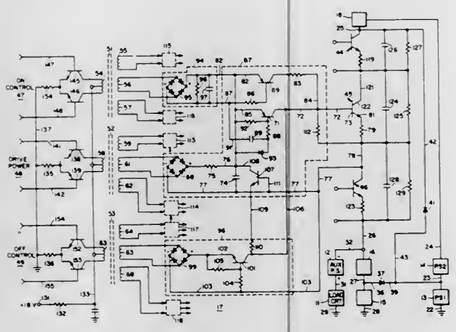
Disclosed is an electronic pulse storage device which stores direct current pulses for non-destructive read-out. The device is comprised of an SCR storage circuit arrangement for each pulse to be stored. The circuit is designed for use in a system subject to noise and transients. The circuit is particularly adaptable for use in telecommunication systems for receiving and storing decoded dial pulses either within the system or from an outside line. In such cases, the storage line is subject to considerable noise and high level transients which are prevented from falsely activating the storage circuits.

3,800,166

HIGH VOLTAGE SOLID STATE SWITCHING TECHNIQUES

Frederick G. Keiner, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 3, 1972, Ser. No. 268,498
Int. Cl. H03k *17/00*
U.S. Cl. 307—241 **24 Claims**



A high voltage solid state switching technique and apparatus are disclosed for supplying an essentially capacitive load which may operate at several different voltage levels. The technique provides rapid switching from low levels to high levels and vice versa. Switch sections are connected in various combinations with one or more power supplies to achieve the different levels. The voltage between levels is greater than the blocking voltage of the individual transistors used so that several transistors are stacked in each switch section to provide the necessary standoff voltage capability.

The transistors in each switch section are turned on or off together and when turned on a momentary hard drive is provided so that the capacitance of the load may be rapidly charged or discharged depending upon whether the voltage is being raised or lowered. After a predetermined time the hard drive is discontinued and a regular drive is maintained.

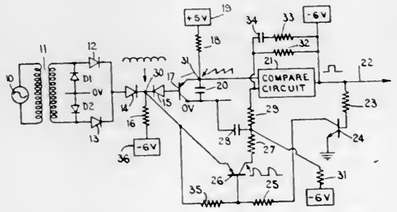
Whenever a voltage level is changed there is momentary turn off of all of the transistors before any are turned on to allow the stored charge in each transistor to decay. Then, when certain switch sections are turned on there are no short circuits of the power supplies due to the delayed turn off of other switch sections.

3,800,167

CIRCUITS FOR PRODUCING CONTROLLED PULSES

Stephen Clifford Smith, Stoke-on-Trent, England, assignor to International Computers Limited, London, England

Filed Oct. 30, 1972, Ser. No. 301,786
Claims priority, application Great Britain, Nov. 2, 1971, 50786/71
Int. Cl. H03k *1/18, 5/04*
U.S. Cl. 307—265 **3 Claims**



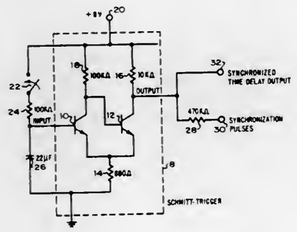
A circuit for producing controlled pulses includes switch means for sampling a full wave rectified a.c. signal, the switch means passing a portion of each half cycle to an averaging circuit means to compare the output of said averaging circuit with a ramp voltage, the comparison means producing an output pulse upon said ramp voltage exceeding the output of said averaging circuit and feed back means responsive to said output pulses for controlling the operation of said switch.

3,800,168

SYNCHRONIZED TIME DELAY CIRCUIT

David S. Cochran, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 20, 1972, Ser. No. 245,999
Int. Cl. H03k *3/15, 17/26*
U.S. Cl. 307—290 **4 Claims**



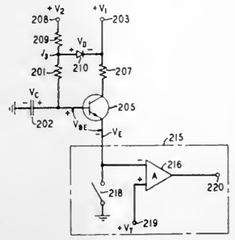
A Schmitt trigger flip flop is configured at its input with a resistor-capacitor integrating network connected to a switchable voltage source and at its output for receiving external synchronizing pulses to provide a unilateral output pulse delayed in time from the application of input voltage and in synchronization with one of the external synchronizing pulses.

3,800,169

TIMING CIRCUIT INCLUDING TEMPERATURE COMPENSATION

Wilfredo Diaz, New York, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1972, Ser. No. 308,663
Int. Cl. H03k *19/14*
U.S. Cl. 307—310 **7 Claims**



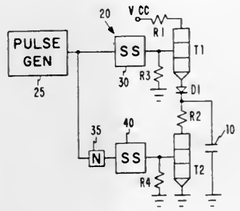
Pulse signals having desired time intervals are generated, in part, by employing a resistor-capacitor series circuit. The potential developed across the capacitor drives a transistor emitter-follower amplifier. Variations in the signal developed at the emitter-follower output and, hence, in the pulse signals derived from that output are caused by variations in the transistor base-to-emitter potential because of changes in temperature. These variations are minimized by employing a diode to "clamp" the potential applied to the RC series circuit so that it varies substantially as the base-to-emitter potential.

3,800,170

LOW POWER DISSIPATION HIGH VOLTAGE CRYSTAL DRIVER

Norman D. Kline, and Russell J. Weinschenk, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1973, Ser. No. 342,108
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.1 **5 Claims**



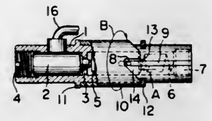
A high voltage crystal driver is operated by a control pulse having a predetermined repetition rate which fires a first singleshot multivibrator to turn on a first silicon controlled rectifier (SCR) to charge the crystal. A resistor in the anode circuit of the SCR limits the dv/dt and sets the maximum current in the first SCR. The pulse width of the control pulse is greater than the period of the first singleshot multivibrator and the fall of the control pulse is used to fire a second singleshot multivibrator which turns on a second SCR to provide a discharge path for the crystal. A resistor connected in the anode circuit of the second SCR limits the current therein and the dv/dt.

3,800,171

DEVICE FOR GENERATING HIGH VOLTAGE

Akira Ishii, and Kaneichi Kondo, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Oct. 18, 1972, Ser. No. 298,492
Claims priority, application Japan, Oct. 25, 1971, 46-99300[U]
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.7 **6 Claims**



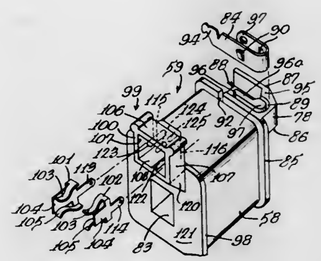
A hammer biased to move toward a piezoelectric ceramic element, is provided in a holder having a piezoelectric ceramic element. Pins are provided on the outer periphery of a hammer in the rectangular direction against the axis thereof, and said pins are projected out of said holder through long grooves provided in an axial direction on the outer peripheral wall of said holder. A cylindrical driving ring is rotatably provided on the outer peripheral surface of said holder at the centre thereof. On one end surface of said driving ring, a series of saw-teeth are cut, and the tapered surfaces of said saw-teeth are brought into contact with said pins. When said driving ring is rotated, the hammer makes a reciprocal movement, and strikes the piezoelectric ceramic element, and high voltage can be repeatedly produced from said piezoelectric ceramic element.

3,800,172

HAIR CLIPPER HAVING BLADE ILLUMINATION AND FIELD WIRE STRAIN RELIEF

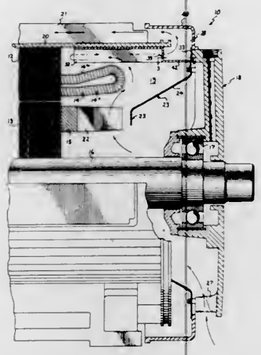
Robert Lee Artin, and Robert Paul Petroske, both of Menomonee Falls, Wis., assignors to John Oster Manufacturing Co., Milwaukee, Wis.

Division of Ser. No. 138,719, April 29, 1971. This application Nov. 10, 1972, Ser. No. 305,367
Int. Cl. H02k *11/00;* **H01f** *15/10;* **H01r** *9/08*
U.S. Cl. 310—50 **5 Claims**



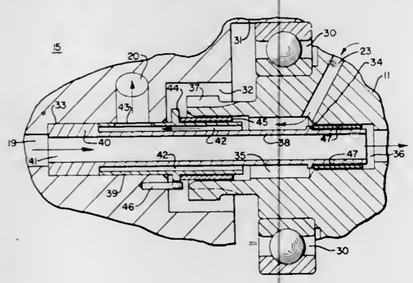
A hair clipper having a vibratory motor with a laminated field core is formed on a plastic bobbin which has a snap-in lamp socket projecting therefrom. The vibratory motor is enclosed in a plastic housing which has a transparent panel that is positioned so that the lightbulb which is inserted in the light socket will be positioned to illuminate the cutting blades. The laminated field core is positioned with its longitudinal axis running parallel to the longitudinal axis of the housing of the clipper so that a housing with an elongated shape is provided.

3,800,173
DYNAMOELECTRIC MACHINE HAVING IMPROVED VENTILATION
George M. Rosenberry, Jr., Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Sept. 19, 1972, Ser. No. 290,342
Int. Cl. H02k *9/00*
U.S. Cl. 310—59 **12 Claims**



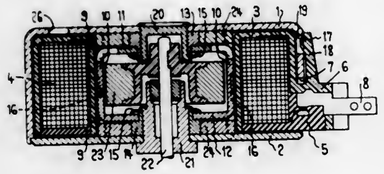
An open ventilation dynamoelectric machine is described wherein cooling air is directed across the radially inner and outer sides of the stator end turns before being exhausted from the end of the machine adjacent the end turns to pass axially down the motor frame. In one embodiment of the invention, the rotor fans propel the cooling air across the radially inner side of the end turns to an annular air deflector, e.g., of a corrugated design, situated in a circumferential attitude about the end turns to direct at least a portion of the air axially inward across the radially outer side of the end turns before the inwardly directed air is turned to axially return to an exhaust orifice adjacent the end of the stator frame. Also disclosed is a machine wherein the cooling air is divided into two diverse streams with one stream being directed across the radially outer side of the end turns for exhaust through axially inner apertures while the other stream is passed through axially outer openings between the frame and the end shield. The streams then are combined to flow axially down the machine frame.

3,800,174
LIQUID TRANSFER ASSEMBLY FOR A LIQUID COOLED DYNAMOELECTRIC MACHINE
John L. Butterfield, and Glen E. Gathers, both of Erie, Pa., assignors to General Electric Company, Wilmington, Mass.
Filed Apr. 9, 1973, Ser. No. 349,059
Int. Cl. H02k *1/32*
U.S. Cl. 310—61 **5 Claims**



The invention here described relates to an assembly for transferring a cooling liquid such as oil, for example, into and out of the rotating elements of a dynamoelectric machine. The assembly includes a pair of concentric oil transfer tubes mounted between a stationary housing and a rotating hollow shaft. One of the tubes communicates with the interior of the hollow shaft to furnish cooling oil from a pump or any other suitable source of oil to the interior of the rotating shaft. A second concentric tube communicates with an oil return hole in the shaft wall to distribute the circulating oil to the remainder of the housing. A pair of abrasion resistant, non-metallic sleeves are mounted between the individual oil feed tubes and the wall of the rotating shaft to provide an oil seal between the stationary tubes and the rotating shaft. The non-abrading, non-metallic sleeves may be fabricated of a plastic impregnated roving and are dimensioned to leave a minute, but definite clearance between the wall and the sleeve. The combination of the viscous oil and the sleeve produce a good oil seal, while at the same time, producing a very effective, abrasion resistant running fit. By virtue of the slight clearance between the sleeves and the tube, it is also possible to accomodate small variations in tolerance and alignment, resulting in important manufacturing and assembly improvements.

3,800,175
REVERSIBLE SYNCHRONOUS MOTOR
Hans Plotscher, Murten, and Hermann Gerber, Courgevaux, both of Switzerland, assignors to SAIA A.G. Fabrik elektrischer Apparate, Fribourg Canton, Switzerland
Filed Oct. 17, 1972, Ser. No. 298,270
Claims priority, application Switzerland, Oct. 21, 1971, 15377/71
Int. Cl. H02k *21/12*
U.S. Cl. 310—164 **13 Claims**

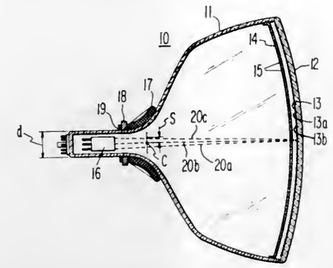


A synchronous motor having at least one group of main stator poles and at least one group of shaded auxiliary stator poles, the relative position of said main poles and auxiliary poles and the phase shift of the magnetic flux in the auxiliary poles determining the rotating direction of the rotor. The stator is made in two parts whereof the one carries the main poles while the other carries the auxiliary poles, and these stator parts may be rotated relatively to each other by an electrical angle corresponding to double the phase shift of the flux in the auxiliary poles, in order to preselect the rotating direction of the rotor.

3,800,176
SELF-CONVERGING COLOR IMAGE DISPLAY SYSTEM
Josef Gross, Princeton, and William Henry Barkow, Pennsauken, both of N.J., assignors to RCA Corporation, New York, N.Y.
Filed Jan. 14, 1972, Ser. No. 217,772
Int. Cl. H01j *29/46, 31/00*
U.S. Cl. 313—69 C **6 Claims**

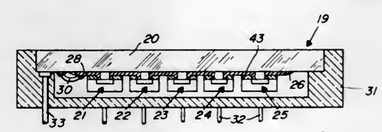
A color television display system is described which requires no dynamic convergence apparatus for small and medium size screen color picture tubes and which requires relatively simple dynamic convergence apparatus for large screen color picture tubes. The color picture tube includes an electron gun assembly for producing three adjacent horizontal in-line coplanar beams. The electron gun assembly includes a common three-aperture beam forming electrode for establishing precise alignment of the beams. The beams are substantially converged at all points in the scanned raster as they are

deflected by a deflection yoke providing negative horizontal isotropic astigmatism and positive vertical isotropic astigmatism. The gun assembly includes magnetic shield members disposed around the two outside beam paths to shield those beams from a portion of the deflection field so that the rasters



scanned by the three beams are of the same size. In addition, the color picture tube includes a faceplate having repeating groups of three different color phosphor strips and an aperture mask including a plurality of elongated slit apertures disposed adjacent the phosphor strips to enhance the light output from the picture tube.

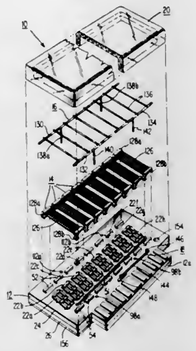
3,800,177
INTEGRATED LIGHT EMITTING DIODE DISPLAY DEVICE WITH HOUSING
Malcolm J. Russ, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 20, 1971, Ser. No. 209,838
Int. Cl. H05b *33/02*
U.S. Cl. 313—108 D **5 Claims**



There is disclosed an integral light display comprising a matrix of light emitting diodes in an integral structure which is scannable to produce an alpha numeric character display. The light emitting diodes are arranged in a plurality of rows and columns with the anodes of each diode connected by row address lines and the cathodes of each column being common, so as to be connectable to column address lines. A strobing format logic address system is provided for lighting the individual diodes to emission for producing an alpha numeric character or graphic display. The integral structure includes the transparent faceplate for the finished packaged device.

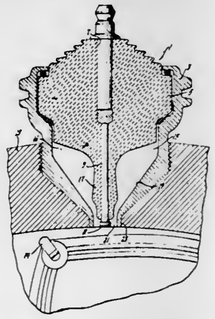
There is also disclosed a method of making the foregoing integrated light display, which includes the steps of forming the anodes of the light emitting diodes in a semiconductor substrate of a type opposite to that forming the conductivity of the anodes, preferably by diffusion. Anode connecting row address lines are then formed interconnecting rows of anodes, the contacts to the anodes being of annular form to provide an opening for the light emitting from the junction of the light emitting diode. After transparent faceplate is secured over the surface of the substrate and the row address lines, the substrate is then etched into a plurality of sections to separate the cathodes of the light emitting diodes into a plurality of columns. The backside of the substrate may be thinned prior to separation into the column lines to provide better electrical connection to the cathodes of the light emitting diodes. The package of the light emitting diode array is completed by securing the faceplate of the array into a suitable housing.

3,800,178
MULTI-INDICIA DISPLAY DEVICE
Patrick Louis Farina, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.
Filed June 14, 1972, Ser. No. 262,486
Int. Cl. H01j *61/66, 63/02*
U.S. Cl. 313—108 R **13 Claims**



A multi-indicia display device includes a rigid base plate made up of a plurality of sheets of an electrical insulating material laminated together. Electrodes are mounted on the base plate. One of the electrodes is a metal layer coated on the base plate forming a plurality of separate but identical indicia, each indicia comprising a plurality of sections. Metal layer termination pads are coated on the front and back surfaces of the base plate along one edge thereof. Metal film electrical circuitry is coated on the surfaces of the sheets of the base plate and extend through holes in the sheets to electrically connect the electrodes to the termination pads. A transparent cover is mounted on the base plate and extends over the electrodes.

3,800,179
SELF-CLEANING SPARK PLUG
Paul J. Louzecky, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 2, 1972, Ser. No. 294,476
Int. Cl. H01t *13/14*
U.S. Cl. 313—118 **1 Claim**



An improved spark plug adapted for use in rotary engines in order to eliminate misfiring in the engine caused by shorting of the electrodes as a result of the build up of oils, carbon and other products of combustion on the electrodes, comprising an insulator and center electrode assembled in conventional manner within a metal shell, the lower end of which cooperates with the center electrode to form a sparking gap, the gap being located in the restricted cross-section outlet of a combustion cavity formed within the lower end of the shell between the inner wall surface of the shell and the outer sur-

face of the insulator, the combustion cavity having a volume of from 1-3% of the volume of the engine combustion chamber and the outlet area being such as to produce an exiting combustion gas velocity from the cavity upon ignition of the fuel-air mixture therein such as will maintain the electrodes in a clean condition

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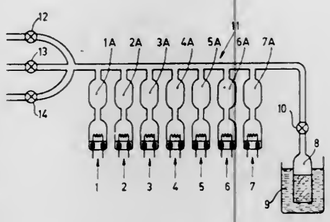
3,800,180
HALOGEN INCANDESCENT LAMP CONTAINING BROMINE AND PHOSPHORUS

Dirk Jules Remi De Fraeye, Emmasingel, Eindhoven, Netherlands, and Leo Lens, Pater Perguylaan 6, 3030 Heverlee, Belgium

Filed Apr. 23, 1973, Ser. No. 353,673
Claims priority, application Netherlands, Apr. 22, 1972, 7205485
Int. Cl. H01k *1/52*
U.S. Cl. 313—222 **2 Claims**

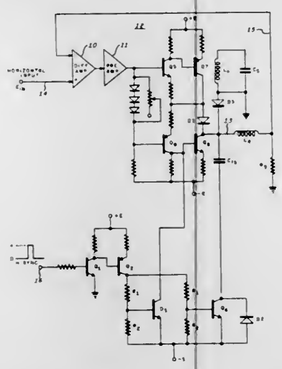


A halogen incandescent lamp which contains phosphorus tribromide or its dissociation products.

3,800,181
CATHODE RAY TUBE HIGH SPEED ELECTROMAGNETIC DEFLECTION FLYBACK CIRCUIT

James M. Spencer, Jr., Phoenix, Ariz., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,475
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **7 Claims**

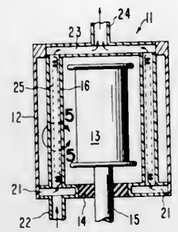


A cathode ray tube electron beam resonant flyback deflection circuit including a diode and an auxiliary inductive coil arranged in combination with the tube deflection coil and flyback capacitor such that energy is supplied to both the deflection coil and auxiliary coil during a line scan where upon activation of beam retrace interval the energy stored in both the deflecton coil and the auxiliary coil is initially transferred to the capacitor and thereafter transferred back to the deflection coil only. This action causes the deflection coil current to return to its starting condition in readiness for the next scan line in less time than would occur without the availability of the auxiliary coil energy being transferred to the deflection coil.

3,800,182
HEAT TRANSFER DUCT

Andrew S. Wilczek, Beverly, Mass., assignor to Varian Associates, Palo Alto, Calif.

Filed Jan. 10, 1973, Ser. No. 322,315
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **7 Claims**

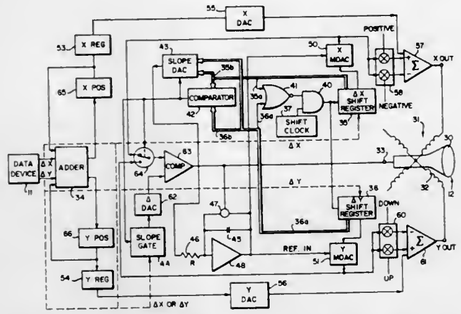


A heat transfer duct, such as a cooling duct, for use in cooling the slow wave circuit of a microwave tube includes a heat transfer structure disposed within the duct for improving the thermal transfer between the fluid and the inside walls of the duct. The heat exchanging structure comprises a strand of thermally conductive material wound into a first coil of relatively small diameter. That coil in turn is wound into a larger coil which in turn is wound into still a larger coil to form a coiled-coiled-coil geometry within the duct.

3,800,183
DISPLAY DEVICE WITH MEANS FOR DRAWING VECTORS

Leonard F. Hallo, Stow, and Herve E. Lavoie, Gardner, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed June 8, 1972, Ser. No. 260,897
Int. Cl. H01j *29/70*
U.S. Cl. 315—18 **5 Claims**

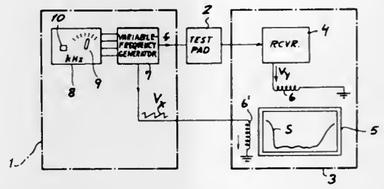


A system for displaying (straight lines) of variable length and angle on a cathode ray tube with the beam deflection rate being substantially constant regardless of line length or angle. Each line is defined by its starting point and deflection components Δ X and Δ Y) along axes in a rectangular coordinate system. Two binary numbers identify the deflection components. Both numbers are shifted to the left in respective Δ X and Δ Y registers until a "one" in one of the numbers reaches the leftmost stage in its register. This number corresponds to a deflection component along the "major" axis, i.e., the axis with the larger deflection. X and Y multiplying digital-to-analog converters receive a common ramp voltage and the respective shifted numbers. The larger number, after being shifted, controls the ramp voltage slope so an output signal from the multiplying digital-to-analog converter associated with the major axis has a constant slope when any length line is drawn. Hence, all lines are drawn with the same constant velocity component along the major axis.

3,800,184
OSCILLOSCOPIC SYSTEM TO DETECT DISTORTION DUE TO TRANSIENTS

Peter Harzer, Eningen, and Karl Benzel, Dettingen, both of Germany, assignors to Wandel & Goltermann, Reutlingen, Germany

Filed Nov. 30, 1971, Ser. No. 203,280
Claims priority, application Germany, Dec. 2, 1970, 2059225
Int. Cl. H01j *29/70*
U.S. Cl. 315—26 **10 Claims**

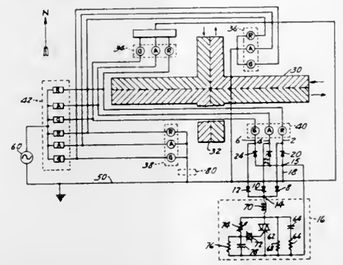


An oscillator of variable operating frequency, working into an object whose transmission characteristics (e.g. attenuation) for a range of frequencies are to be visualized on the screen of a cathode-ray tube, is controlled by a modulating voltage from a sawtooth-wave generator also feeding the horizontal-sweep circuit of the tube. A manual switch, when tripped, momentarily lowers the cadence of the sawtooth-wave generator, either one or more times per cycle or during alternate cycles, to enable visual ascertainment of any distortion of the oscilloscopic trace due to transients.

3,800,185
CONTROL CIRCUIT HAVING LOAD AND POWER SOURCE ISOLATION

William J. E. Anton, Newport; John E. Collins, North Hudson, and Peter A. Lind, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 15, 1972, Ser. No. 289,444
Int. Cl. H05b *37/02*
U.S. Cl. 315—153 **2 Claims**

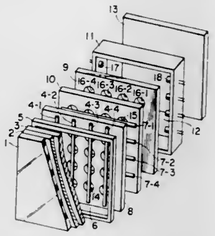


A single proportional type control unit having a gated semiconductor switching device controlled by a single condition responsive impedance can be connected to one or more loads or to one or more power sources. Diodes are arranged to provide load and power source isolation. The circuit, for example, is connected in a traffic light control system to control the intensity of more than one lamp in a single traffic signal face for a traffic phase having more than one traffic signal face. One circuit provides control of the intensity of the lamps for one-half of each cycle of the A.C. source connected to the control circuit. A modified circuit provides full cycle control of the lamps connected to the control circuit. The condition responsive impedance for such use is light responsive.

3,800,186
DISPLAY DEVICE

Mikiya Yamane, Kunitachi; Selichi Murayama, Kokubunji; Tsoyoshi Seko, Musashimurayama; Tetsunori Kaji, Kokubunji; Masashi Mizushima, Hachioji; Shinichi Shinada, Kokubunji, and Tsune Miyashita, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,590
Claims priority, application Japan, Feb. 16, 1972, 47-15561
Int. Cl. H04n *3/16*; **H05b** *37/00*
U.S. Cl. 315—169 TV **6 Claims**

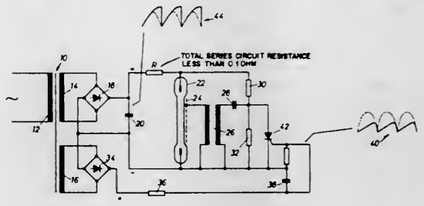


A display device comprising means having a plurality of pairs of discharge electrodes and defining a discharge space for producing electrons by discharge, a plurality of first control grids disposed in parallel with one another for controlling the electron beam emanating from the discharge space, a plurality of second control grids disposed in parallel with one another in perpendicularly crossing relation with the first control grids, means for accelerating the electron beam controlled by these first and second control grids, a phosphor luminescing in response to the impingement of the accelerated electron beam thereagainst, voltage supplying means for supplying a discharge voltage to the discharge electrodes for causing intermittent discharge in the discharge space, and means for applying a scanning pulse voltage and a pulse modulated signal to the first and second control grids respectively upon cessation of the discharge.

3,800,187
FLASH LIGHTING ARRANGEMENT

Wolfgang Ludloff, Porz-Westhoven, Germany, assignor to Multiblitz Dr. Ing. D.A. Mannesmann GmbH & Co. KG, Porz-Westhoven, Germany

Filed Apr. 25, 1972, Ser. No. 247,318
Claims priority, application Germany, Apr. 28, 1971, 2120777
Int. Cl. H05h *37/10*
U.S. Cl. 315—241 S **4 Claims**



For generating short-wave radiation flashes an electron flash tube is operated with such a small resistance in the

discharge circuit that the peak current of the discharge is substantially defined only by the flash tube the resistance of the remaining discharge circuit being negligible. The tube contains a dead space and is preferably operated stroboscopically at a frequency in the order of magnitude of the main frequency.

3,800,188

CONTROLLABLE ELECTRIC DISCONNECTION DEVICE FOR THE PROTECTION OF UNDER-AND OVER REVOLUTIONS OF A SHAFT

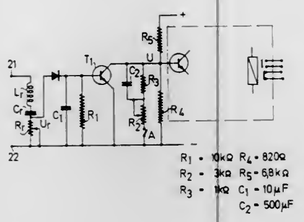
Richard Wilke, Am Weissenfeld 4, Schwelm, Germany

Filed Feb. 23, 1973, Ser. No. 335,330

Claims priority, application Germany, Feb. 25, 1972, 2209001

Int. Cl. H02h *7/06*

U.S. Cl. 317—9 R **1 Claim**



A controllable electric disconnection device for the protection from overpassing and underpassing the number of revolutions of a shaft, which comprises a generator disposed immovably in space and effective electromagnetically. An iron ring is rigidly disposed on the shaft, and corrugated on its periphery as well as rotating with the shaft. The generator produces impulses. An electric tension-resonance circuit amplifying the impulses. An amplifier follows the circuit. The impulses produced in the generator is emitted by means of a two-veined cable to the electric-resonance circuit and by means of the amplifier releasing certain electric switching proceedings, when the impulses due to overpassing and underpassing, respectively, of the number of revolutions of the shaft, overpass and underpass, respectively, the impulse-frequency. An electric switching-selector-repeater, which permits effectiveness only upon reaching the nominal number of revolutions of the shaft to be observed. The generator produces a sinus curve poor in its upper waves and comprises a double permanent magnet system independent from the direction of rotation with a telephone receiver coil disposed between the magnets and a soft iron sheet metal core arranged in the coil, which, angularly bent on both sides, engages sides of the magnets remote to a generator wheel. The parts are immovably embedded in synthetic material. The iron ring has outer pointed prongs and inner rounded waves such, that the distance between each pair of adjacent prongs is equal with the distance between the inner lower end of the rectangular magnets and the center of a medium soft iron pole shoe. The tension resonance circuit for amplification of the impulses have a controllable ohmic loss resistance, the useful tension of which switches through a following transistor by means of a rectifier and an RC smoothing member, the latter switching on a relay by means of a differential amplifier, the contacts of the relay causing the energy feed for the rotating shaft. A permanent "One-Contact" producing during the starting procedure of the rotating shaft by a series connection of two resistances and a condenser a substitute tension, switching through the transistor and becoming ineffective and producing again the substitute tension after opening and closing, upon response of the disconnection devise. A bi-metal-temperature keeper adapted to realize a temperature observation of the rotating shaft and its machine parts, and the bi-metal temperature-keeper is disposed in series with the frequency generator and the tension resonance circuit.

3,800,189

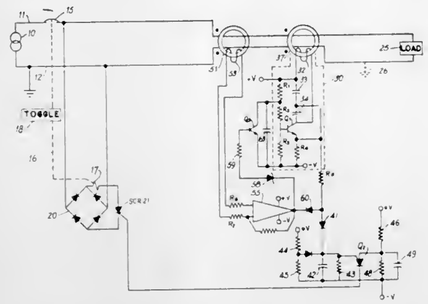
APPARATUS FOR DETECTING A GROUND CONNECTION ON LOAD SIDE OF NEUTRAL CONDUCTOR

James R. Montz, Two Rivers, Wis., assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 28, 1972, Ser. No. 310,184

Int. Cl. H02h *3/16*

U.S. Cl. 317—18 D **10 Claims**



An improper or undesired second ground connection on the load side of the neutral conductor of an electrical supply system is detected by coupling an oscillator to the neutral conductor and to at least one other conductor of the supply system in a balanced mode. In the absence of said improper or undesired second ground, oscillator signals cancel on the two conductors. When said second ground is present, oscillator current flows therethrough and the impedance change in the grounded neutral conductor is reflected back to the oscillator tank circuit to change the output signal of the oscillator. Change in output signal is detected and actuates circuit breaker to disconnect the supply system.

3,800,190

COOLING SYSTEM FOR POWER SEMICONDUCTOR DEVICES

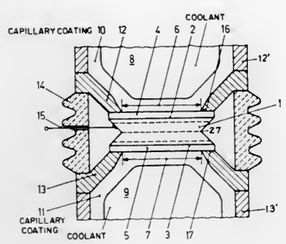
Alois Marek, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Continuation of Ser. No. 194,404, Nov. 1, 1971, abandoned. This application May 25, 1973, Ser. No. 364,043

Claims priority, application Switzerland, Nov. 2, 1970, 16185/70

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **16 Claims**



Efficient cooling is facilitated in the present power semiconductor arrangement by means of thin surface contact layers which, on the one side, are in area contact with the current

conducting surfaces of a semiconductor body and, on the opposite side, in heat transfer contact with a coolant and in electrical contact with the main terminals. The coolant may be circulated, for example, by the coaction of gravity and convection, or by so called heat pipe techniques. The contact layers are relatively thin and are made of materials having a good electrical and thermal conductivity. Preferably, the main terminals contact said surface contact layers above those semiconductor regions, where the smaller part of dissipation energy originates, whereas the coolant contacts said surface contact layers above those semiconductor regions, where the main part of dissipation energy originates during the current conducting state of the semiconductor element.

3,800,191

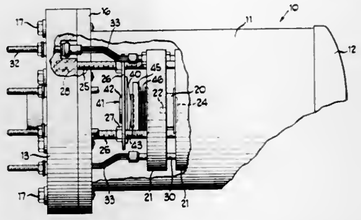
EXPANDIBLE PRESSURE MOUNTED SEMICONDUCTOR ASSEMBLY

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 26, 1972, Ser. No. 301,042

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**



A semiconductor assembly having a plurality of semiconductors seriately interposed between electricity conducting heatsinks with each semiconductor contacting at least one side of a heatsink, a spring forcibly pressing the semiconductors and heatsinks into engagement, and a liquid-containing load-equalizing bellows between the spring and a heatsink and operative to transmit the pressure of the spring to the heatsinks and semiconductors.

3,800,192

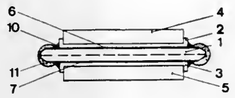
SEMICONDUCTOR CIRCUIT ELEMENT WITH PRESSURE CONTACT MEANS

Dieter Eisele, E. Ludwigstrasse; Klaus Weimann, Buerstaederstr. 97, both of Lampertheim, Germany, and Otto Schaerli, Muehlebergweg 2, Baden, Switzerland

Continuation-in-part of Ser. No. 170,027, Aug. 9, 1971, abandoned. This application July 30, 1973, Ser. No. 383,895

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **15 Claims**



The present semiconductor circuit elements employ pressure contact means for establishing the necessary contact between the semiconductor body proper and ductile electrodes. These contact means comprise contact discs and the ductile electrodes have outwardly directed rims into which the discs fit to symmetrically locate these discs relative to the center axis of the device. Means are also provided for holding the ductile electrodes in place.

3,800,193

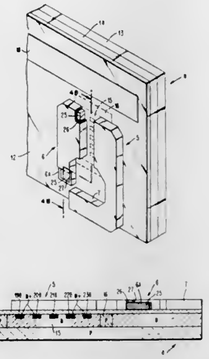
MAGNETIC SENSING DEVICE

Kanu G. Ashar, Wappingers Falls, and James Overmeyer, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 5, 1972, Ser. No. 285,990

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R **25 Claims**



A magnetic sensing head responsive to the magnetic flux variations of a relatively moving magnetic carrier in which a magnetic yoke or core is formed as a film coated on a semiconductor substrate, and having a gap disposed about a flux sensitive device to place it in series magnetic circuit. The flux sensitive device, such as Hall-effect element, magnetodiode, magnetoresistor and the like, is integrated with the semiconductor substrate as by being formed within a segment thereof.

3,800,194

PHOTOCONDUCTIVE TARGET OF AN IMAGE TUBE

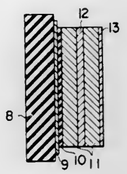
Eiichi Maruyama, Kodaira; Tadaaki Hirai, Koganei; Kiyohisa Inao, Hachioji, and Naohiro Goto, Machida, all of Japan, assignors to Hitachi, Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed Apr. 4, 1973, Ser. No. 347,663

Claims priority, application Japan, Apr. 7, 1972, 47-34359

Int. Cl. 250 *213;* **H01l** *15/00*

U.S. Cl. 317—235 R **6 Claims**

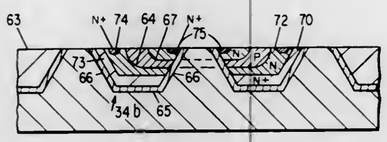


A target for an image pickup tube comprising a light-transmitting conductive layer supported on a light-transmitting substrate and a photoconductive layer with rectifying contact at least at one of its sides; in which the photoconductive layer has a portion 1,000 A or thicker which comprises a multiplicity of thin films of two or more different materials with different photoconductive characteristics, each having a thickness of not more than 100 A, the thin films of the different materials being laid alternately one on another.

3,800,195
METHOD OF MAKING SEMICONDUCTOR DEVICES THROUGH OVERLAPPING DIFFUSIONS

Uryon S. Davidsohn, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 66,163, Aug. 24, 1970. This application Aug. 9, 1972, Ser. No. 279,207
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R 4 Claims

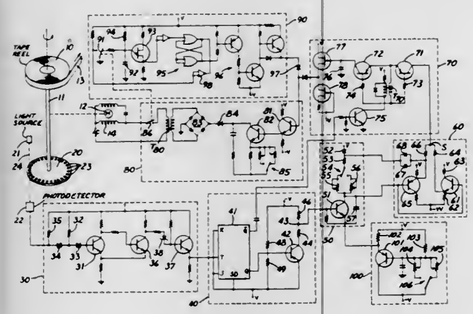


An integrated device and/or circuit and the method for making such is disclosed employing a plurality of fully insulated islands having plane walls. Selected diffusion steps are made overlapping certain of the islands and certain of the other diffusion steps.

3,800,196
ELECTRONIC CONSTANT-TENSION TAPE-HANDLING SYSTEM

Ernest F. Zimmermann, Buffalo Grove, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 1, 1972, Ser. No. 230,770
Int. Cl. H02d *5/32; B65h*
U.S. Cl. 318—6 7 Claims

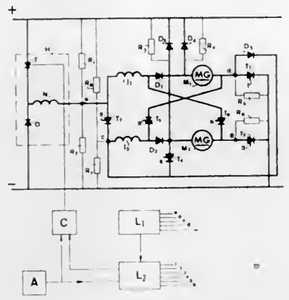


An electronic system for maintaining substantially constant tape tension in a tape transport having a motor-driven take-up and/or supply reel comprises an AC torque motor having an externally-variable torque characteristic for driving the tape-handling reel. An apertured disk is attached to the shaft that drives the reel and is positioned between a light source and a photodetector to develop a pulsed optical signal having a repetition rate that varies in accordance with the angular velocity of the reel. The photodetector converts the pulsed optical signal into a corresponding electrical signal. A ramp signal generator is responsive to the pulsed signal for generating a periodic signal with each cycle having a voltage that changes at a constant rate to an extreme or maximum value determined by the repetition rate of the pulsed signal. A sampling circuit applies the maximum voltage to a motor control circuit which regulates the armature voltage of the torque motor to thereby maintain the tension substantially constant as the radius of the tape on the reel varies.

3,800,197
STATIC SWITCHING SYSTEM FOR INSTANTANEOUSLY MAKING VARIOUS CONNECTIONS BETWEEN TWO D.C. MACHINES

Robert Mehta, Paris, France, assignor to Jeumot-Schneider, Paris, France

Filed Feb. 20, 1973, Ser. No. 334,144
Claims priority, application France, Feb. 18, 1972, 72.05470
Int. Cl. H02p *1/56*
U.S. Cl. 318—93 2 Claims

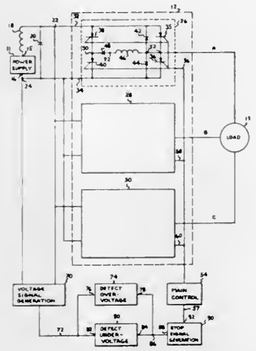


A static switching system for connecting two series-wound d.c. machines in motoring or generating operations, by simultaneously connecting them in series or in parallel. In order to make a new connection, the current in the machines is cut off. The potentials at various points with respect to the terminal are then kept steady in ascending order by means of resistors. A logic checks that this conditions is satisfied. Another logic selects which thyristors are to be turned on in order to make the desired connections. The invention is particularly useful in traction motors.

3,800,198
PROTECTION MEANS FOR PREVENTING OVERVOLTAGE AND UNDERVOLTAGE CONDITIONS IN POWER CIRCUITS

Carlton Eugene Graf, and Einar Aasen Skogsholm, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Aug. 16, 1971, Ser. No. 172,122
Int. Cl. H02p ; H02m
U.S. Cl. 318—227 11 Claims

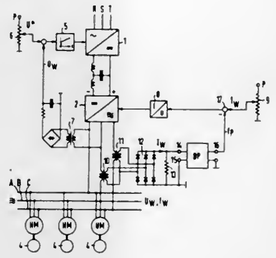


An electrical power system includes power conversion apparatus for receiving electric power from a source and supplying the electric power in converted form to a load and control apparatus for automatically stopping the operation of the power conversion apparatus in response to the departure of a selected operating parameter, such as input voltage to the power conversion apparatus, from a preestablished range having upper and lower limits. A signal representative of the operating parameter is sensed and utilized to produce an out-of-range signal only when the operating parameter departs from the preestablished range, the out-of-range signal being utilized in turn to stop the operation of the power conversion apparatus.

3,800,199
APPARATUS FOR THE ELECTRIC DAMPING OF OSCILLATIONS IN ROTATING FIELD MACHINES

Wolfgang Weigand, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed June 27, 1972, Ser. No. 266,641
Claims priority, application Germany, June 29, 1971, 2132179
Int. Cl. H02d *5/40*
U.S. Cl. 318—227 4 Claims

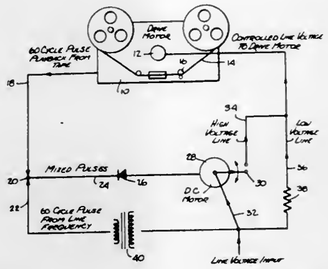


A circuit to dampen oscillations occurring in rotating field machines such as low friction hysteresis motor drives is disclosed. The circuit operates by detecting the frequency of oscillations occurring in the machines and regulating the frequency of the power fed to the motors to dampen the oscillations. The damping is produced by using a bandpass filter tuned to the frequency of the oscillations and subtracting this frequency from a predetermined frequency to thereby force the rotating stator field of the machines to track the oscillations of the machine's rotors.

3,800,200
MOTOR SPEED CONTROL DEVICE

Eugene N. Bunting, P.O. Box 337, Freeport, Bahamas

Filed June 12, 1972, Ser. No. 263,756
Int. Cl. H02p *5/28*
U.S. Cl. 318—228 3 Claims

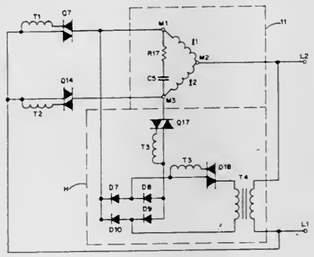


A system for accurately and quickly controlling the speed of a non-synchronous motor used for driving a magnetic tape having a known frequency signal recorded thereon. The frequency signal recorded on the tape is mixed with the reference frequency to produce a control signal related to the phase relation between the mixed frequency signals. The control signal is used to alternate the voltage amplitude of a 60 cycle current power supply to an AC non-synchronous induction motor for driving the tape. The power supply alternates between a high and a low voltage in relation to the phase relation between the mixed signals in a manner which alters the speed of the induction motor to almost instantaneously produce synchronism of the tape recorded frequency with the reference frequency. In addition to providing accurate reproduction of tape recorded frequencies, independent of factors such as tape stretch or shrinkage, and mechanical slippage, the system automatically phases the recorded tape pulses to the reference pulse to produce a situation similar to the phase relationship between a synchronous induction motor and the AC power frequency which is driving it.

3,800,201
ELECTROMECHANICAL VALVE POSITIONING APPARATUS

Alan R. Gaul, Mansfield, Mass., and Raymond Villier, Condé-sur-Noireau, France, assignors to Masoneilan International, Inc., Norwood, Mass.

Filed Aug. 28, 1972, Ser. No. 284,153
Int. Cl. H02p *1/42*
U.S. Cl. 318—283 11 Claims



An electromechanical valve positioning apparatus having a control circuit for driving a stepping motor to position a valve regulating flow of a medium within a conduit in response to a pair of input signals indicating respectively whether the valve should be opened or closed. The control circuit contains a pair of oscillating driving circuits for driving the motor in opposite directions, each driving circuit being operated in response to a respective input signal. Each driving circuit has an associated timing circuit for disabling it after its respective input signal has occurred for a predetermined period so that the motor is not driven for an indefinite period after the valve has reached an extreme or seated position. Preferably, each timing circuit includes a timing capacitor which is charged in response to its respective input signal and a unijunction transistor which is connected to the capacitor for firing a pulse when the capacitor has been charged to a predetermined level. Upon firing, each unijunction transistor gates an SCR for terminating operation of the associated driving circuit. The SCR remains in this state preventing driving of the motor until the other input signal is received indicating that the motor is to be driven in its other direction.

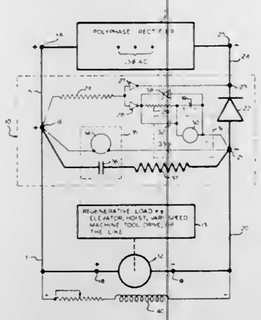
3,800,202
CEMF DEPENDENT REGENERATIVE BRAKING FOR DC MOTOR

Joseph V. Oswald, 2852 South Central Park Avenue, Chicago, Ill.

Continuation-in-part of Ser. No. 131,640, April 6, 1971, abandoned. This application Apr. 24, 1972, Ser. No. 246,731
Int. Cl. H02p *5/00*
U.S. Cl. 318—302 5 Claims

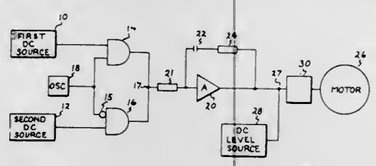
A regeneration control for a rectifier power supply serving a regenerative D.C. motor load, including means for sensing and

discriminating between levels of counter-electromotive-force developed by the motor and the electromotive force of the power supply. When the motor CEMF exceeds the no-load power supply EMF by a predetermined amount, a normally



open discharge circuit across the motor terminals is completed; the discharge circuit is restored to its normal open condition upon substantial equalization of the motor CEMF and the power supply EMF.

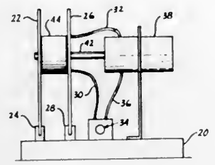
3,800,203
WAVE GENERATION CIRCUIT
Niels P. Pedersen, and John M. Shabel, both of Erie, Pa., assignors to General Electric Company, Erie, Pa.
Filed Dec. 29, 1972, Ser. No. 319,686
Int. Cl. H02p *5/16*; **H03k** *4/08*
U.S. Cl. 318—345 **6 Claims**



An electrical wave generation circuit for providing a modified saw-tooth wave which includes a means for effecting a substantially instantaneous change in the saw-tooth configuration upon the selective application of relatively positive and negative d.c. sources thereto in an alternating fashion. The circuit includes an integrating circuit having impedance means which serves to effect the instantaneous change in output signal.

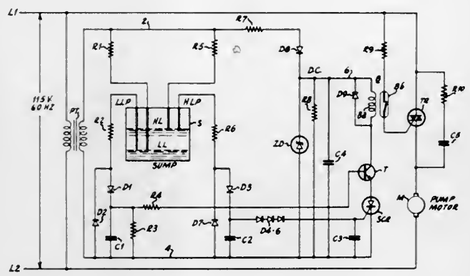
3,800,204
CONTACTLESS SELECTOR SWITCH
Phillip E. Kenney, Glen Ellyn, Ill., assignor to Ledex Inc., Dayton, Ohio
Filed Mar. 16, 1973, Ser. No. 342,182
Int. Cl. H02p *11/00*
U.S. Cl. 318—480 **15 Claims**

A contactless switch mechanism for successively energizing individual load devices selected from a plurality of load devices comprises confronting printed circuit boards, each making contact along one margin with a supporting chassis assembly which houses, or may have terminals for connection to, a source of operating power and which houses or may have terminal connections to the plurality of load devices. A first printed circuit board supports a plurality of continuously operating light-emitting devices, one light-emitting device for each load device, the light-emitting devices positioned in a predetermined array and each mounted to direct light toward the second printed circuit board. The second printed circuit board supports a plurality of light detector devices, one associated with each light-emitting device, and each responsive to light received from its associated light-emitting device. Each light detector is coupled to a solid state driver circuit responsive to the associated light detector to energize a load device coupled thereto. Each of the plurality of light-emitters is thus capable of causing energization of an associated load device without a mechanical movement such as normally



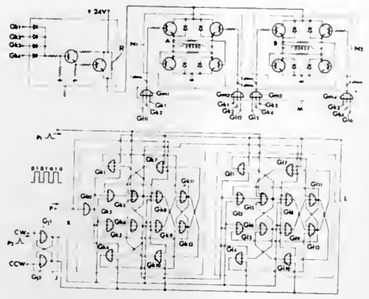
required for the closure of switch contact. Interposed between the confronting printed circuit boards is a light shield having a single aperture. Selection of individual loads to be energized from amongst the plural loads available for energization is accomplished by means of a stepping motor operated to advance the light shield along a predetermined course and through plural positions along said course, each of said plural positions aligning said aperture. With a single one of said light emitters so as to allow energization of a single load device.

3,800,205
SUMP PUMP CONTROL SYSTEM
David R. Zalar, Wales, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed May 15, 1973, Ser. No. 360,525
Int. Cl. G05b *13/00*
U.S. Cl. 318—482 **7 Claims**



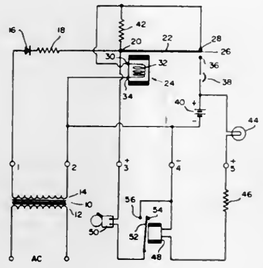
A solid state control system for starting a sump pump motor when the water rises up to high level probes and for stopping the sump pump motor when the water level drops below low level probes. The system is supplied with power from an A.C. line. A.C. is applied to the probes to avoid polarization and half-wave rectified current is taken from the probes circuits to operate a transistor and an SCR in series connection, the SCR being supplied with rectified, smoothed and regulated D.C. to enable use thereof as a latch to keep the motor running while the water level falls from the high level probes below the low level probes. For isolation, a reed relay is used to fire a triac in the motor circuit when the SCR conducts.

3,800,206
STEPPING MOTOR DRIVE CONTROL SYSTEM WITH COIL CURRENT ADJUSTMENT
Matatoyo Hinachi, Nagoya, and Toyoshi Mori, Gifu, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Prefecture, Japan
Filed Sept. 8, 1971, Ser. No. 178,730
Claims priority, application Japan, Sept. 9, 1970, 45-78639
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **11 Claims**



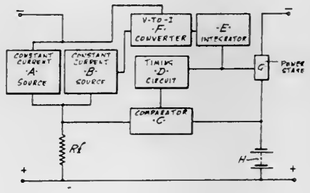
Drive control system for a 4-phase stepping motor which is rotated by attraction and repulsion actions between permanent magnets and pole pieces thereof, the pole prices being provided with exciting coils. A rotor step angle per input pulse is reduced to one half of that obtainable in the prior art step motor drive system by alternately energizing one coil and a pair of coils. With such a drive control system ununiformity of torque characteristic which is inherent to a system alternately energizing one coil and a pair of coils is avoided by increasing exciting current during a time when one phase coil alone is excited to be larger than exciting current per phase during a time when two phase coils are excited.

3,800,207
ALARM SYSTEM HAVING A RECHARGEABLE POWER PACK
Herbert Kott, Riveredge, N.J., assignor to Perma Pack, Inc., New York, N.Y.
Filed Jan. 24, 1972, Ser. No. 220,006
Int. Cl. H02j *7/04*; **G08b** *21/00*
U.S. Cl. 320—13 **7 Claims**



A rechargeable power supply for use in alarm systems such as burglar alarm systems. The supply includes a battery, means for providing a charging current to the battery, and a signal translating device. The signal translating device electrically couples the charging means to the battery in a pulsating manner until it charges to a specified minimum voltage and then electrically couples the charging means to the battery in a continuous manner until it charges toward full capacity. The signal translating device also electrically couples the battery to an output load terminal of the power supply when a load is being drawn by the power supply until the battery discharges below the minimum specified voltage. When the battery discharges below the minimum specified voltage the signal translating device disconnects the battery from the output load terminal and the charging means until the load is removed from the output load terminal.

3,800,208
BATTERY CHARGERS
James Adrain Macharg, 16, Elmfield Park, Gosforth, Newcastle Upon Tyne, England
Filed Nov. 8, 1972, Ser. No. 304,590
Claims priority, application Great Britain, Nov. 16, 1971, 53141/71; June 12, 1972, 27355/72
Int. Cl. H02j *7/04*
U.S. Cl. 320—20 **23 Claims**

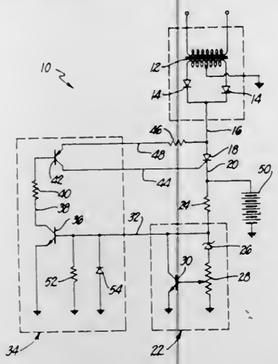


A controlled current battery charger in which the charging current is cycled between upper and lower limits at varying rates throughout the charging period dependent on firstly a comparison between a reference voltage which is itself varied between upper and lower limits and the battery terminal voltage, and secondly the integrated value of the ON/OFF ratio of the time that switch means, operable from the result of the comparison of the reference voltage with the battery terminal voltage, is actuated, said switch means having an ON time which is either a substantially constant value or is itself varied in accordance with its own integrated output, the reference voltage being varied also in accordance with the integrated output of the switch means. The integrated output from said switch means which is utilized firstly to vary the ON time of said switch means and secondly to vary the reference voltage may be inverted so as to provide one of four different types of charging cycles.

3,800,209
BATTERY CHARGER CIRCUIT
James P. Minear, 301 Lincoln St., Huntington Beach, Calif.
Filed Nov. 24, 1972, Ser. No. 309,265
Int. Cl. H02j *7/10*
U.S. Cl. 320—25 **2 Claims**

A circuit for use in charging a battery from a DC power source through an SCR can be constructed so as to utilize control means for controlling the flow of current through the SCR in response to the charge in the battery and voltage responsive means for preventing a voltage from being supplied to the control means from the battery when the voltage of the battery indicates that it is charged. In the disclosed circuit such a voltage responsive means employs a zener diode for detecting bat-

tery voltage and a transistor for grounding the connection between the battery and the control means. The disclosed



control means includes transistors for use in turning the SCR on and means for protecting against damage if the circuit is used with other than an intended battery.

3,800,210

SYSTEM FOR THE ELECTRIC SUPPLY OF A VARIABLE CAPACITIVE LOAD

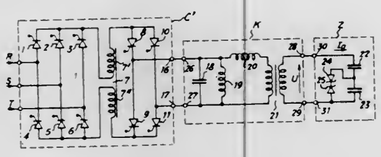
Georges Caussin, Montigny-sur-Loing, France, assignor to Jeumont-Schneider, Paris (Seine) and Trailigaz, Garges-Les-Gonesse (Val d'dise), both of France

Filed Mar. 15, 1972, Ser. No. 234,886

Claims priority, application France, Mar. 16, 1971, 71.09049

Int. Cl. H02m *7/42*; **C01b** *13/12*; **H01h** *7/08*

U.S. Cl. 321—9 R **3 Claims**



System for the electric supply of a variable capacitive load by means, for each of the phases of the load, of an independent inverter comprising controlled rectifiers such as thyristors, which is connected by its input terminals to a direct-current source, which may be a rectifier, and by its output terminals to the terminals of a matching network whose output terminals are connected to the load. The matching network is formed of a capacitor connected to the input terminals of the matching network, a transformer having a high magnetising current, a filtering circuit comprising two inductances of which one is connected in parallel with the same terminals as those of the capacitor and the other in series in the circuit connecting one terminal of the capacitor to the corresponding terminal of the primary winding of the transformer. The terminals of the secondary winding of the transformer are connected to the terminals of the load.

3,800,211

PARALLEL OPERATION OF PLURAL PWM INVERTERS

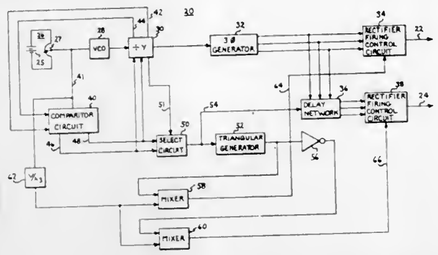
John Gaylord Tracy, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Mar. 23, 1973, Ser. No. 344,318

Int. Cl. H02m *1/12*

U.S. Cl. 321—9 A **9 Claims**

An adjustable dc to ac power conversion apparatus or inverter system employing a plurality of pulse width modulation inverter circuits in parallel are provided with means to vary the time ratio during which the inverter circuits are conductive and are further provided with means to adjust the phase relationship between each of the inverter circuits such that



with a step variation in the time ratio there is additionally provided an adjustment of the phase relationship between the inverter circuits to minimize any resultant phase shift in the system output.

3,800,212

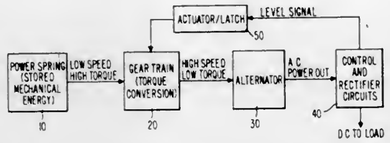
MECHANICAL-TO-ELECTRICAL CONVERSION SYSTEM

Richard P. Branco, Collegeville, and Clifford J. Bader, West Chester, both of Pa., assignors to Burroughs Corporation, Detriot, Mich.

Filed Feb. 26, 1973, Ser. No. 335,785

Int. Cl. H02p *9/04*

U.S. Cl. 322—28 **11 Claims**



The present disclosure describes an electro-mechanical energy conversion system which may be utilized as a long shelf-life energy source for the operation of micropower electronic devices. High conversion efficiency is achieved through the use of a load demand actuated energy metering system and capacitive storage means. An operative embodiment of the system employs electronic means for continuously sensing the level of electrical energy present in the storage means and for releasing a spring-driven miniature alternator to permit it to rotate when the level falls to a predetermined lower voltage limit. Mechanical means are employed to allow the alternator to rotate through a fixed angle and to terminate the powered rotation when this angle has been reached.

3,800,213

THREE AXIS TOROIDAL FLUXGATE TYPE MAGNETIC SENSOR

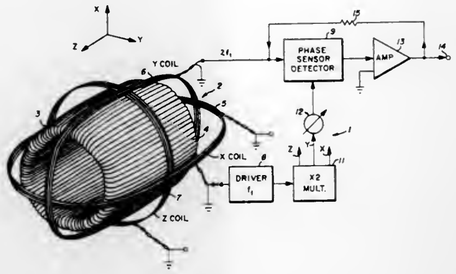
Louis H. Rorden, Menlo Park, Calif., assignor to Develco, Inc., Mountain View, Calif.

Filed Oct. 24, 1972, Ser. No. 299,696

Int. Cl. G01r *33/04*

U.S. Cl. 324—43 R **19 Claims**

A magnetically permeable core of a fluxgate type magnetic sensor has first, second and third sensing coils magnetically coupled to the core. Each of the sensing coils has a different magnetic axis for inducing therein three different time varying signal components of respective magnitudes corresponding to that component of the magnetic field vector to which the sensor is exposed and which is parallel to the magnetic axis of the respective sensing coil. In a preferred embodiment the magnetic axes of the sensing coils are mutually orthogonal and the core is a hollow cylinder approximately equal in diameter and length. The driving coil for producing a time varying permea-



bility in the core is wound on the core such that the magnetic axis of the winding is circular and entirely within the core. A pair of such three axes sensors are spaced apart on a holder and similarly oriented such that their respective outputs can be subtracted to derive three gradiometer outputs.

3,800,214

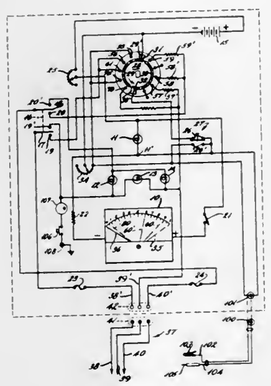
APPARATUS FOR TESTING ENERGIZED AND NON-ENERGIZED ELECTRICAL CIRCUITS

J. Murray O'Flynn, 1607 Miami Rd., Orlando, Fla.

Filed Jan. 31, 1972, Ser. No. 222,176

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **7 Claims**



An electrical testing device for determining the correct connection and faults in electrical circuits such as electrical wiring in buildings and equipment connected thereto. The device comprises an instrument having a measuring and indicating ammeter and a test connection cord comprising a plurality of conductors for connecting the device to circuits to be tested and adjustable resistors for controlling the internal resistance of the instrument and of the instrument and test cord combined. A plurality of switching means provides for connecting the ammeter and the adjustable resistances in circuit with an electrical energy source, such as a battery, for determining the continuity of the electrical circuits being tested and the nature and location of faults in the tested circuit and the equipment connected thereto.

3,800,215

METHOD AND APPARATUS FOR LOCALIZING PHASE-TO-PHASE AND PHASE-TO-GROUND FAULTS IN POWER LINES

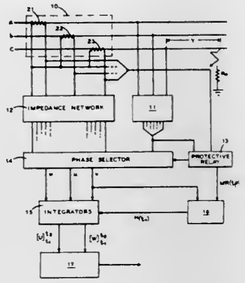
Michel Souillard, Pontenay-aux-Roses, France, assignor to Compteurs Schlumberger, Montrouge, France

Filed Nov. 17, 1972, Ser. No. 307,340

Claims priority, application France, Nov. 19, 1971, 71.41458

Int. Cl. G01r *31/08*

U.S. Cl. 324—52 **12 Claims**



Disclosed is a method for localizing phase-to-phase and phase-to-ground faults such as short circuits in a polyphase power line. The method includes the steps of deriving three voltages *u*, *v* and *w*, *u* being proportional to the voltage of the faulty line loop, *v* being a reference voltage across a resistor fed by a current proportional to the faulty current, and *w* being a reference voltage proportional to a voltage drop in a reference length of the faulty line loop measured across a reference impedance network fed by line currents. The voltages *u*, *y* and *w* are integrated for a time interval chosen such that the time integral of the voltages *v* is null at the end of said time interval. The integrated values of the voltages *u* and *w* obtained at the end of the time interval are stored and arithmetic operations are performed on the stored values to provide information as to the location of fault. An apparatus for implementing this method is also disclosed.

3,800,216

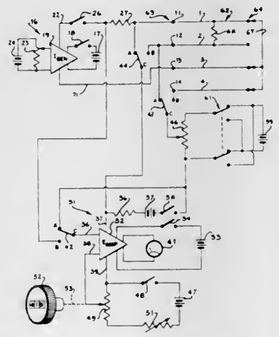
CABLE FAULT LOCATOR APPARATUS AND METHOD WITH REFERENCE VOLTAGE COMPARISON

Robert H. Hamilton, Portola Valley, Calif., assignor to Dynatel Corporation, Sunnyvale, Calif.

Filed Aug. 11, 1971, Ser. No. 170,721

Int. Cl. G01r *31/08*

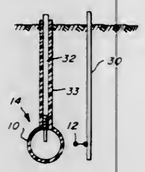
U.S. Cl. 324—52 **14 Claims**



Cable fault locator and method in which a calibrated current of constant magnitude is passed through a conductor to

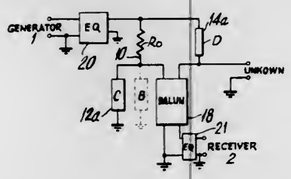
provide a known voltage drop per unit length. The drop across a desired portion of the conductor is compared with a reference voltage which is set by a dial calibrated in units of length. The length of the portion of the conductor under test is read directly from this dial. An ohmmeter and voltmeter are provided for discovering and analyzing faults in the cable, and an adjustable voltage source is provided for cancelling the effects of external voltages on the conductors. The entire system is incorporated in a compact highly portable instrument.

3,800,217
PIPELINE INCLUDING MEANS OF INDICATING THE EXISTENCE OF AND LOCATION OF A LEAK
Darrell J. Lowrance, Tulsa, Okla., assignor to Lowrance Electronics Mfg. Corp., Tulsa, Okla.
Filed Sept. 23, 1971, Ser. No. 183,206
Int. Cl. G01m *3/16;* **G01r** *31/12*
U.S. Cl. 324—54 **4 Claims**



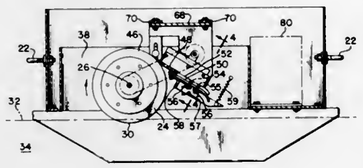
A pipeline including means of indicating the existance of and location of a leak, including a buried liquid carrying pipeline of nonconductive material, a bare conductor buried adjacent the pipeline, a conductive element in the pipeline providing conductivity with the fluid in the pipeline, voltage means providing electrical potential between the conductive elements and the conductor, and current measuring means in series of the voltage means, the conductive element and the conductor whereby a closed circuit is provided when a leak occurs in the line, the current detected by the current measuring means providing an indication of the distance from the conductive element to the leak.

3,800,218
R. F. IMPEDANCE BRIDGE FOR MEASURING REFLECTION COEFFICIENT
Jacob Shekel, Philadelphia, Pa., assignor to Jerrold Electronics Corporation, Philadelphia, Pa.
Filed Feb. 7, 1973, Ser. No. 330,275
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **8 Claims**



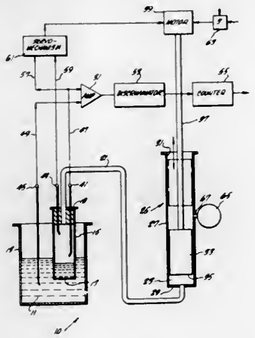
A bridge for measuring the reflection coefficient of a two-terminal load, in which the insertion loss between an input port and an output port is proportional to the reflection coefficient of the load connected to a third port, and the constant of proportionality is substantially independent of frequency; includes a balun, a first two-terminal network connected in one arm of the bridge, a second two-terminal network connected in the opposite arm of the bridge, and a resistance equal to the reference resistance in the arm opposite the port to which the load is connected. The impedance of the second network is the inverse, relative to the reference resistance, of the parallel combination of the first network and the additional impedance to ground caused by the connection of the balun.

3,800,219
METHOD AND APPARATUS FOR DETECTING OIL POLLUTION IN WATER
Theodore M. Fosberg, 1913 S.W. 167th, Seattle, Wash.
Continuation of Ser. No. 94,899, Dec. 3, 1970, abandoned.
This application Oct. 10, 1972, Ser. No. 296,335
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 R **11 Claims**



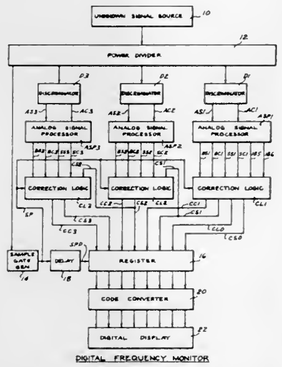
An apparatus which floats on the surface of the water in which oil pollution is to be detected. The apparatus comprises a collector wheel having an oleophilic perimeter surface (such as polyethylene); the bottom portion of this wheel dips below the surface of the water on which the apparatus floats, and as the wheel rotates its perimeter surface picks up water if no oil is present. However, if there is even a small amount of oil on the surface of the water, the wheel perimeter will become coated with oil to the exclusion of water. A collector blade removes the liquid from the wheel perimeter and directs it to a detecting surface having at least two spaced electrodes. A voltage is imposed across the electrodes, and when water is deposited on the detecting surface, it will cause a small current to be conducted. However, when oil is deposited on the detecting surface, no current flows between the electrodes and an alarm system is activated. An oscillating wiper keeps the scraper and detecting surface free of sludge or other impurities.

3,800,220
AUTOMATIC APPARATUS FOR COUNTING SUSPENDED PARTICLES IN LIQUIDS
Josef Thoma, Waldkirch, Germany, assignor to Fritz Hellige & Co., GmbH, Freiburg im Breisgau, Germany
Filed Dec. 15, 1972, Ser. No. 315,408
Claims priority, application Germany, Dec. 31, 1971, 2165836
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 CP **4 Claims**



An automatic apparatus is disclosed for counting suspended particles in liquids. The apparatus comprises a first vessel having a sample of test fluid contained therein. A second vessel is adapted to be partially immersed into the first vessel. An aperture is formed in the second vessel to enable the sample fluid to be drawn from the first vessel into the second. The size of the aperture is dimensioned to enable one particle at a time to pass therethrough during the fluid flow. A piston pump is connected via a conduit to the second vessel to draw the sample fluid from the first vessel, through the aperture and into the first vessel during its suction stroke, and to reverse the flow of sample fluid during the pressure stroke. Electrodes are positioned within first and second vessels to establish a current in the fluid contained in the two vessels. During the fluid flow, impedance variations are formed as the particles pass through the aperture. These impedance variations are transformed into countable electrical impulses by suitable electrical equipment. To ensure that the second vessel is completely evacuated at the end of each test cycle, an auxiliary air chamber is positioned adjacent the piston cylinder to introduce an additional amount of air during the pressure stroke of the pump.

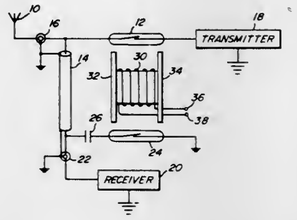
3,800,221
DIGITAL FREQUENCY METER
Hugh A. Hair, Liverpool, N.Y., assignor to Anaren Microwave, Incorporated, Syracuse, N.Y.
Filed May 26, 1972, Ser. No. 257,206
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 D **10 Claims**



A correlator means having two inputs, receives at one input the signal whose frequency is to be measured (the unknown signal) and at the other input the unknown signal delayed by a delay means of predetermined electrical length. The correlator means has two outputs which transmit, respectively, signals representing $\sin\theta$ and $\cos\theta$, where θ is the differential phase between the signals received at the two inputs and is a function of the electrical length and the frequency. The outputs of the correlator are connected to digitizing means which generate binary signals in accordance with the arithmetic signs of $\sin\theta$ and $\cos\theta$. There is also disclosed the parallel arraying of delay means – correlator means combinations to increase the resolution of the meter.

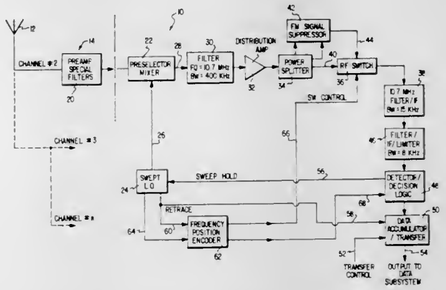
3,800,222
RADIO FREQUENCY SWITCH EMPLOYING REED SWITCHES AND A QUARTER WAVE LINE
Rolf E. Kowalewski, Palatine, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Sept. 7, 1972, Ser. No. 287,129
Int. Cl. H01p *1/10*
U.S. Cl. 325—23 **6 Claims**

An antenna switching relay for selectively switching an antenna to a transmitter or a receiver of a radio transceiver includes a pair of normally open reed switches and a quarter wave transmission line. In the receive mode, the reed switches are open and the antenna is connected to the receiver through the quarter wave transmission line. In the transmit mode, the reed switches are closed and the antenna is connected to the



transmitter through one of the reed switches, while the other reed switch shorts out the receiver end of the transmission line, thereby causing an open circuit to be reflected to the antenna terminal thereof.

3,800,223
AUDIENCE SURVEY SYSTEM
Hansel B. Mead, Melbourne, Fla., assignor to Teltronic Systems, Inc., New York, N.Y.
Continuation of Ser. No. 138,099, April 28, 1971, abandoned.
This application May 4, 1973, Ser. No. 357,177
Int. Cl. H04b *1/00*
U.S. Cl. 325—31 **17 Claims**

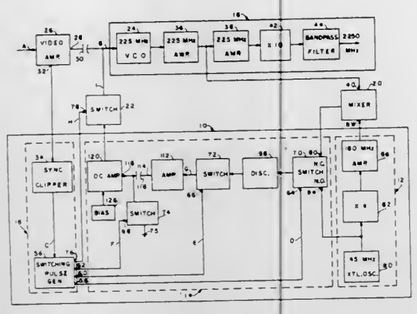


Disclosed is a monitor for ascertaining the listening habits of television receiver users. The monitor includes one or more channels provided with a single pass band window or slot that is swept at a constant rate but stopped when a television local oscillator signal enters the window. If the signal remains in the window for a predetermined time, the signal is counted and the sweep continued. As a result, the total sweep rate or time is variable. By switching in a signal suppressor when the swept oscillator output reaches predetermined frequencies, it is possible to work closer in to strong FM signals from FM broadcast stations.

3,800,224
AUTOMATIC FREQUENCY CONTROL FOR F. M. TRANSMITTER
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Martial A. Honnell, Auburn, Ala.
Filed Feb. 20, 1973, Ser. No. 333,912
Int. Cl. H04b *1/04*
U.S. Cl. 325—148 **7 Claims**

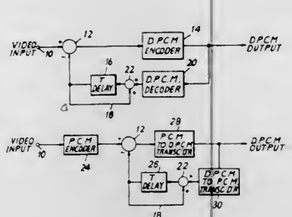
An automatic frequency control circuit for an F.M. television transmitter in which the frequency of the transmitter is sampled during what is termed the "back porch" portion of

the horizontal synchronizing pulse which occurs during the retrace interval, the frequency sample compared with the



frequency of a reference oscillator, and a correction applied to the frequency of the transmitter during this portion of the retrace interval.

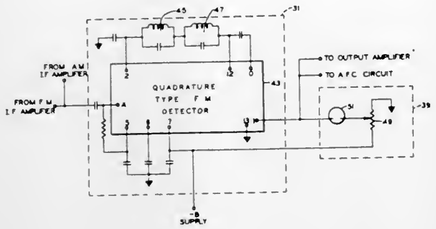
3,800,225
DIFFERENTIAL PULSE-CODE MODULATION
David John Meares, Sussex, England, assignor to The Marconi Company Limited and Standard Telephones & Cables Limited, both of London, England
Filed Sept. 19, 1972, Ser. No. 290,408
Int. Cl. H03k *5/08*; H04b *1/00*
U.S. Cl. 325—38 B **14 Claims**



An input signal which includes a high-frequency component of frequency f, such as a colour television signal having a colour subcarrier, is encoded by sampling the signal at a sampling frequency of Nf where N is a small integral ratio, typically 3, taking the difference between samples which are N samples apart, and encoding this difference with a non-linear quantizing scale. Preferably the sampling takes place as an initial step and thereafter the signals are processed digitally.

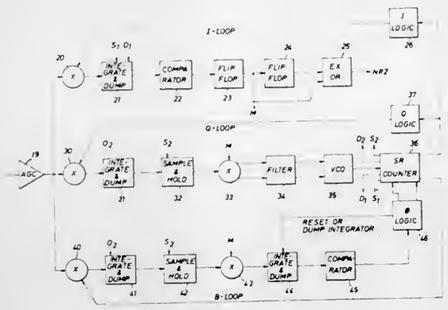
3,800,226
MULTIPLE FREQUENCY FM DETECTOR
Ernest Frederick Close, Fort Wayne, Ind., assignor to The Magnavox Company, Ft. Wayne, Ind.
Filed Jan. 7, 1971, Ser. No. 104,686
Int. Cl. H03d *3/24*
U.S. Cl. 325—315 **11 Claims**

In an AM-FM receiver an improved FM detector of the quadrature type is disclosed which has a plurality of phase-shifting resonant circuits allowing the FM detector to function as a frequency to voltage converter of the AM intermediate frequency signal as well as the FM intermediate frequency



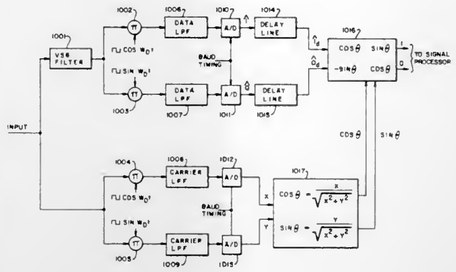
signal. This allows the easy implementation of all electronic tuning on either band as well as the provision of a zero-center meter to indicate the precision of manual station selection.

3,800,227
PULSE CODE MODULATED SIGNAL SYNCHRONIZER
Herbert S. Kobayashi, Webster, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed July 24, 1972, Ser. No. 274,360
Int. Cl. H04l *27/22*
U.S. Cl. 325—320 **10 Claims**



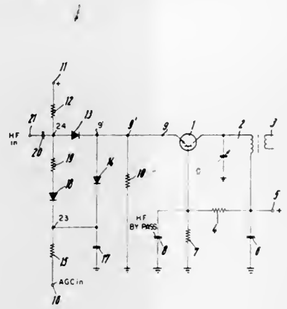
Disclosed is a bit synchronizer for a split phase PCM transmission including three loop circuits which respectively receive incoming phase coded PCM signals. In the first loop, called a Q-loop, a generated, phase coded, PCM signal is multiplied with the incoming signals, and the frequency and phase of the generated signal are nulled to that of the incoming subcarrier signal. In the second loop, called a B-loop, a circuit multiplies a generated signal with incoming signals to null the phase of the generated signal in a bit phase locked relationship to the incoming signal. In a third loop, called the I-loop, a phase coded PCM signal is multiplied with the incoming signals for decoding the bit information from the PCM signal. A counter means is used for timing of the generated signals and timing of sample intervals for each bit period so that the characteristics of the loops during the sample intervals are used as control signals during a phase locked condition as well as for reaching a phase locked condition.

3,800,228
PHASE JITTER COMPENSATOR
William F. Acker, Seminole, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Feb. 23, 1972, Ser. No. 228,551
Int. Cl. H04b *1/10*
U.S. Cl. 325—323 **26 Claims**



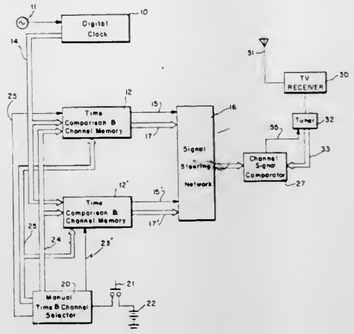
An automated REAL Time Equalized Modem (ARTEM) having a phase jitter compensator. Because a delay is involved in estimating a proper phase for demodulation, the data signals are delayed so that their delay is equal to the carrier phase estimation delay at the point where the final carrier phase correction is applied.

3,800,229
GAIN CONTROLLED HIGH-FREQUENCY INPUT STAGE HAVING A PIN-DIODE NETWORK
Johannes Backwinkel, and Eckhardt Greyer, both of Hildesheim, Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Germany
Filed May 24, 1972, Ser. No. 256,596
Claims priority, application Germany, May 26, 1971, 2126136
Int. Cl. H04b *1/28*
U.S. Cl. 325—381 **8 Claims**



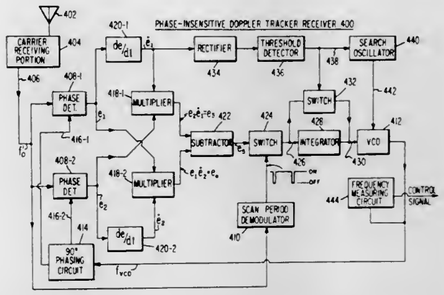
To decrease cross modulation in strong signal areas in TV tuners, a PIN-diode network is connected to the automatic gain control voltage and to a source, the PIN-diode network being connected with the d-c circuit of a pre-amplifier transistor in such a manner that the reference voltage for the PIN-diode network is stabilized by the transistor itself, derived from the emitter of the high-frequency, high-current transistor.

3,800,230
DIGITAL PROGRAMMER FOR RECEIVERS
Hillard W. Marks, Chicago, Ill., and John P. Molis, Los Angeles, Calif., assignors to Marks Brothers Productions, Inc., Culver City, Calif.
Filed Aug. 14, 1972, Ser. No. 280,424
Int. Cl. G11b *31/00*; H04b *1/06*
U.S. Cl. 325—396 **8 Claims**



A digital programmer for selecting one of a plurality of stations to be received by an electromagnetic wave receiver at a desired time. The programmer includes a digital clock, and a digital time comparator for each station or channel to be selected. The comparator will compare the preset time to the actual time received from the clock. Further, there is provided a selected channel memory for each station. The channel memory will generate a channel signal of the selected channel at the preset time. This channel signal is steered by a channel steering network into a channel comparator where it is compared to the actual station being tuned in. The tuner of the receiver is then energized to change stations or channels until the desired station has been tuned in.

3,800,231
DOPPLER TRACKER RECEIVER
John Harry Pratt, 1527 Tigertail Rd., Los Angeles, Calif.
Filed Mar. 15, 1973, Ser. No. 341,695
Int. Cl. H04b *1/16*
U.S. Cl. 325—420 **8 Claims**



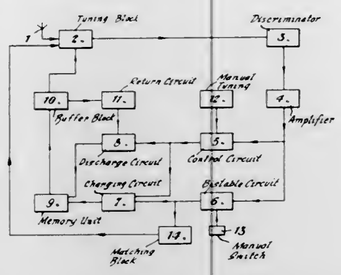
A doppler tracker suitable for use as an airborne receiver in a doppler scan microwave landing system. The tracker derives a tracking error signal for a phase-locked VCO which employs a phase-locked loop. The phase-locked loop derives a signal which is proportional to instantaneous frequency error, except during phase discontinuities which occur only momentarily at the end of a scan. By applying this derived signal as an input to an integrator through a normally open gate that is maintained closed during the occurrence of phase discontinuities, the output of the integrator manifests the tracking error signal.

3,800,232

AUTOMATIC TUNING DEVICES

Carmelo Zimatore, Via Del Nuoto, 10-Rome, and Sergio Troiani, Via Cassia, 929-Rome, both of Italy

Filed Mar. 22, 1972, Ser. No. 236,912
Claims priority, application Italy, Mar. 31, 1971, 49426/71
Int. Cl. H04b *1/34*
U.S. Cl. 325—470 **6 Claims**



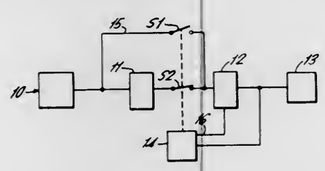
A capacitor memory in an automatic and manual control of a tuner eliminates local oscillator drifts.

3,800,233

ADJUSTABLE FREQUENCY PULSE GENERATOR

Pierre Sauthier, Bienne, Switzerland, assignor to Omega Louis Brandt & Frere, S.A., Canton of Berne, City of Bienne, Switzerland

Filed July 7, 1972, Ser. No. 269,617
Claims priority, application Great Britain, July 16, 1971, 33553/71
Int. Cl. H03k *21/36*
U.S. Cl. 328—49 **10 Claims**



In a pulse generator such as may be used in crystal controlled electronic time pieces, comprising an oscillator circuit coupled to a chain of successive frequency divider stages, to obtain output pulses substantially lower in frequency than the oscillator frequency, means are provided to periodically and temporarily bypass one of the frequency divider stages. The frequency correction made by such bypass arrangement may serve to correct for the error in oscillation frequency of a crystal controlling the oscillator circuit when such crystal is purposely ground to oscillate at slightly below a desired precise rate.

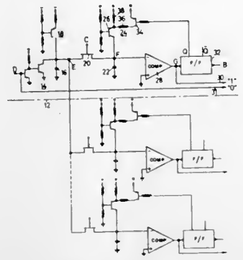
3,800,234

METHOD FOR IDENTIFICATION OF DIFFERENT TIME INTERVALS BETWEEN PULSES IN AN ELECTRICAL PULSE TRAIN AND A DEVICE FOR PERFORMING THE METHOD

Rune L. Myren, Solna, Sweden, assignor to Svenska Dataregister AB Triton Vagen, Solna, Sweden

Continuation of Ser. No. 819,202, April 25, 1969, abandoned. This application Dec. 6, 1971, Ser. No. 205,428
Int. Cl. H03k *5/20*
U.S. Cl. 328—112 **5 Claims**

A method and circuit for detecting two different time intervals between consecutive pulses of a pulse train includes a first counter to provide a count value which represents the elapsed time between two consecutive pulses in the pulse train, this value then being transferred to a second counter which counts backward a predetermined amount such that if the second



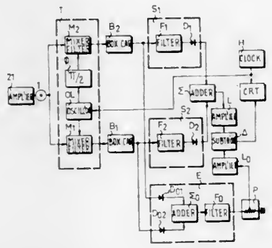
counter reaches the value zero, a first time interval is indicated, and if the second counter does not reach zero during the said predetermined amount, a second time interval is indicated.

3,800,235

COHERENCE DETECTING PROCESS AND DEVICE

Roland Carre, and Marcel Constant, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 31, 1972, Ser. No. 221,888
Claims priority, application France, Feb. 16, 1971, 71.05198
Int. Cl. H03b *3/04*
U.S. Cl. 328—133 **10 Claims**



In order to determine rapidly whether successively received pulses are coherent or not, the said pulses are processed simultaneously through two parallel channels, one of the channels forming the enveloppe of the pulses and the other one effecting an aperiodic detection of the pulses.

The level of the output signals of the two channels are compared, only coherent pulses giving rise to equal output signals.

3,800,236

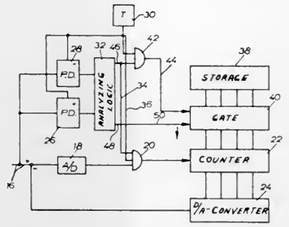
CIRCUIT ARRANGEMENT FOR BASE LINE COMPENSATION

Lothar Riethmuller, Oberuhldingen; Hans W. Kiefer, and Ernst Spreitzhofer, both of Nubdorf, all of Germany, assignors to Bodenseewerk Perkin - Elmer & Co. GmbH, Bodensee, Germany

Filed Feb. 7, 1973, Ser. No. 330,218
Claims priority, application Germany, Feb. 8, 1972, 2205793
Int. Cl. H03k *5/00*
U.S. Cl. 328—162 **1 Claim**

A circuit arrangement for compensating an input signal (of the type comprising successive peaks) relative to a drifting base line comprises: a peak detector including an integrator

which integrates the signal variation over successive short measuring intervals and is resettable to zero after each measuring interval and further including a comparator for comparing the integrator output with a reference level and supplying a peak recognition signal when the integrator value exceeds the reference level during a measuring interval; a counter into which pulses can be counted proportional to the deviation of the input signal from zero; a digital-to-analog converter by which the counter reading is converted to an analog correction signal which is algebraically added to the input signal for zero line compensation; and means for controlling the counting action in dependence of the peak recognition such that upon occurrence of a peak recognition signal, the



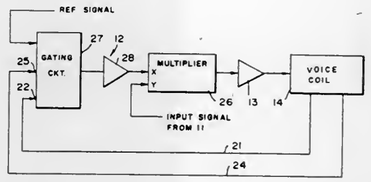
zero line compensation is stopped. The present improvement comprises: connecting the counter to a storage device to which the counter reading is transferred at the end of each measuring interval when the peak detector has not yet recognized a peak, and retransferring back to the counter the contents of the storage device (corresponding to the next to last measuring interval) upon the subsequent occurrence of a peak recognition signal. This effects base line compensation relative to the next to last previous counter value, so as to avoid systematic error which may otherwise be caused by failure to recognize the beginning of a peak in the immediately last previous interval to the one in which the peak signal value was sufficient to be determined by the peak detector.

3,800,237

GATED COMPRESSOR, DISTORTIONLESS SIGNAL LIMITER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Raymond C. Woodbury, La Canada, Calif.

Filed June 28, 1972, Ser. No. 266,912
Int. Cl. H03g *7/00*; **G06g** *7/16*
U.S. Cl. 328—168 **5 Claims**



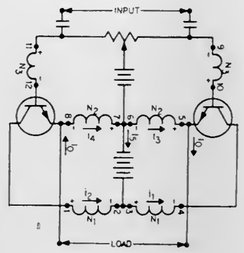
A distortionless gated compressor for limiting the amplitude of a signal so as not to produce undesired signal levels responsive thereto is disclosed. The gated compressor includes a distortionless multiplier which multiplies an AC signal from a factor defined by a DC control signal. The compressor includes a plurality of channels each responsive to a signal produced in response to the multiplier's output. As long as the signal, supplied to any channel, does not exceed a selected level for the particular signal, the output of a multi-input OR gate is constant, thereby resulting in the supply of a constant DC control signal to the multiplier. However, when the signal supplied to any channel exceeds a prescribed level, the level of the DC control signal is reduced to reduce the multiplier's output level and thereby prevent the signal applied to any channel from exceeding its prescribed level.

3,800,238

AUTO-TRANSFORMER COUPLED HYBRID CIRCUITS FOR TRANSISTOR AMPLIFIER STAGES

Fred H. Belcher, 43 Turf Ct., Webster Groves, Mo.

Filed July 12, 1971, Ser. No. 161,687
Int. Cl. H03f *3/26*
U.S. Cl. 330—15 **5 Claims**



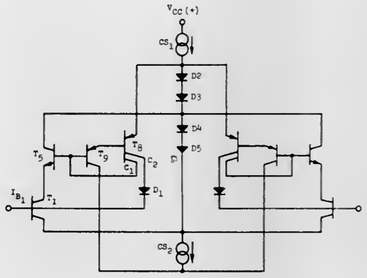
This invention pertains to an auto-transformer coupled output stage for transistor amplifiers, which utilizes a specially designed auto-transformer with split primary and secondary windings, bi-filarly wound, and input windings, incorporated in a push-pull circuit so as to minimize leakage inductance, phase shift, resistance losses, and capacitive coupling. The circuit is suited to Class A, AB, B, or C type operation. Three designs of transformers are described.

3,800,239

CURRENT-CANCELING CIRCUIT

Michael James Callahan, Jr., Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 24, 1972, Ser. No. 309,314
Int. Cl. H03f *3/14, 3/42, 3/10*
U.S. Cl. 330—40 **3 Claims**



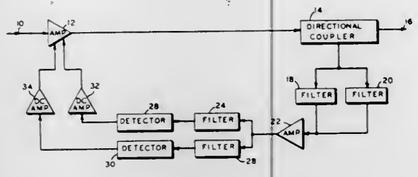
A current-canceling circuit coupled to the input of a differential amplifier stage nulls normal input currents resulting from base bias and leakage currents. H_{fe} match of only one pair of devices per input is required by utilizing a split collector transistor as a current source to supply compensation current to the input transistor.

3,800,240

AUTOMATIC GAIN CONTROL CIRCUITRY AND FILTER

Martin L. Zelenz, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 19, 1972, Ser. No. 263,921
Int. Cl. H03f 3/66
U.S. Cl. 330—52 5 Claims



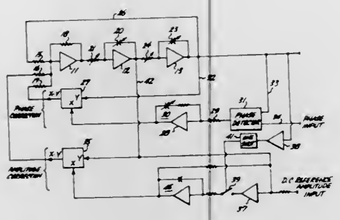
Circuitry for filtering and amplifying automatic gain control (AGC) pilot signals from a broadband signal is disclosed. Filters, each including a tapped winding with a series LC circuit connected to the tap, are tuned to the center frequencies of the pilot signals. The pilot signals are amplified, filtered again, and detected for use as AGC signals for a broadband amplifier.

3,800,241

VOLTAGE PEAK SAMPLED AMPLITUDE CONTROLLED PHASE SHIFT OSCILLATOR

Eugene V. Ochs, Everett, Wash., assignor to John Fluke Mfg. Co., Inc., Seattle, Wash.

Filed Sept. 20, 1972, Ser. No. 290,529
Int. Cl. H03b 3/02, 5/20
U.S. Cl. 331—45 9 Claims



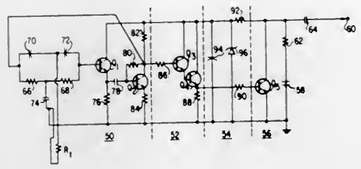
An amplitude controlled oscillator which is capable of generating a wide range of stable frequencies having a variable amplitude which may be accurately controlled. A series of amplifiers are connected so as to provide a standard feedback oscillator, the phase shift around the loop being 360° and the loop gain close to unity. The zero crossing of the oscillator output signal in the negative direction is first detected, which enables a gate by which the positive going peaks of the oscillator signal are sampled for a predetermined fixed period of time. This sampled voltage is then compared with a fixed DC reference voltage and any difference is used to increment an integrator, the output of which is fed back to the oscillator, ultimately stabilizing the oscillator amplitude at the value of the reference voltage.

3,800,242

TEMPERATURE COMPENSATED LIQUID METERING SYSTEM AND METHOD

Carl W. Zimmerman, and George V. Copland, both of Duncan, Okla.

Division of Ser. No. 106,997, Jan. 18, 1971, Pat. No. 3,699,320, and a continuation-in-part of Ser. No. 20,645, March 18, 1970, which is a continuation-in-part of Ser. No. 750,675, July 5, 1968, which is a continuation-in-part of Ser. No. 704,403, Feb. 9, 1968, abandoned. This application Jan. 28, 1972, Ser. No. 221,708
Int. Cl. H03b 5/26
U.S. Cl. 331—66 1 Claim



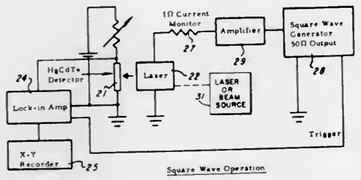
Method and apparatus for correcting a manifestation of fluid flow for variations in the temperature of the fluid to provide an indication of volume corrected to a predetermined temperature. A novel transducer is provided through the utilization of a thermistor in the shunt arm of a parallel-T oscillator.

3,800,243

DIODE LASER

Joseph S. Wrobel, Garland, and Robert Thomas Bate, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 19, 1971, Ser. No. 163,819
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 6 Claims



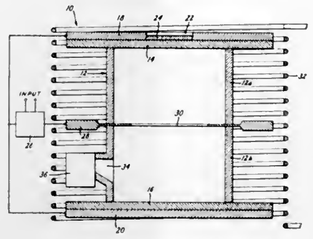
A semiconductor diode laser has been fabricated from a lead-germanium telluride cyrstal. For example, a $Pb_{0.95}Ge_{0.05}Te$ diode has been found to exhibit peak emission at a wavelength of 4.45μ. Compositional tuning of the device enables the selection of any desired peak emission wavelength within the approximate range of 2 to 6μ, which is useful for the spectroscopic determination of atmospheric gases and/or pollutants, including particularly carbon monoxide, carbon dioxide and nitric oxide.

3,800,244

RF RESONANCE ELECTRON EXCITATION

Thomas W. Karras, Berwyn, Pa., assignor to General Electric Company, New York, N.Y.

Continuation of Ser. No. 146,442, May 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 800,799, Jan. 23, 1969, abandoned. This application Jan. 16, 1973, Ser. No. 324,154
Int. Cl. H01r 3/00
U.S. Cl. 331—94.5 PE 2 Claims



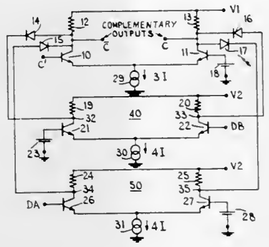
Apparatus and method for providing a resonant excitation of electrons to a predetermined narrow energy band using a magnetic and a DC electric field to form a confining region for electrons and an RF electrical signal for excitation of the electrons in the resonance mode. The DC and RF parameters and electrode configuration are predetermined so that the RF signal is in resonance with the natural frequency of electrons in the confining region when they are in a given energy range so as to produce a desired narrow electron energy distribution.

3,800,245

MODULATION CIRCUIT WHEREIN CLOCK SIGNAL IS MODULATED WITH FIRST AND SECOND MODULATION SIGNALS

Samir Basu, Stevenage, England, assignor to International Computer Limited, London, England

Filed Oct. 30, 1972, Ser. No. 301,787
Claims priority, application Great Britain, Nov. 2, 1971, 50784/71
Int. Cl. H03k 7/00
U.S. Cl. 332—9 T 9 Claims



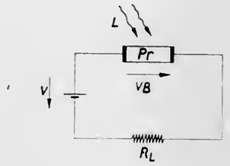
A signal modulation system in which clock signals can be modulated with first and second modulation signals which are applied to the clock signals through first and second switching circuits. A control means involving threshold devices is so responsive to the operation of the switching circuits that at any one time only one of the switching circuits is able to pass modulation signals to the clock signals.

3,800,246

CONTROL OF GUNN OSCILLATIONS BY LIGHT IRRADIATION

Berthold Bosch; Horst Pollmann, both of Ehrenstein, near Ulm, and Gerhard Schickle, Backnang/Wurttemberg, all of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Donau, Germany

Filed Nov. 10, 1966, Ser. No. 593,514
Claims priority, application Germany, Nov. 11, 1965, 29765; Feb. 18, 1966, 30485; Dec. 16, 1965, 30042; Dec. 24, 1965, 30163
Int. Cl. H03c 3/22; H03b 7/06
U.S. Cl. 332—16 R 12 Claims



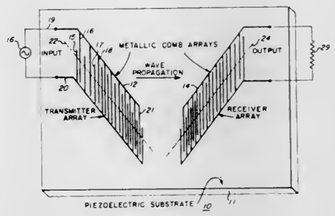
The present invention relates to a semiconductor probe operating on the semiconductor Gunn or volume effect, the probe preferably consisting of a III–V semiconductor of predetermined dimensions, wherein the probe has a negative resistance when there is applied to it a voltage which exceeds a critical voltage. When light having a wavelength which is smaller than that of the absorption edge is radiated onto the active semiconductor layer of a Gunn effect arrangement, a photo current arises which is added to the current which flows as a result of the applied d.c. bias through the semiconductor probe, and by using this photo current the negative resistance of the probe may be controlled.

3,800,247

SURFACE WAVE STRUCTURE

Roger H. Tancrell, Cambridge, and Paul C. Meyer, Newton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 23, 1971, Ser. No. 155,920
Int. Cl. H03h 7/30
U.S. Cl. 333—30 R 25 Claims

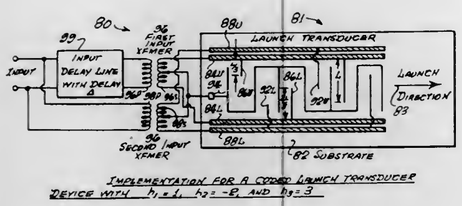


A surface wave electrode structure in which an apodized interdigital surface array is tilted with respect to the direction of propagation of the surface wave, for example, by having the individual digital fingers extend perpendicular to the direction of propagation but having the locus of their midpoints lie on a path at an angle to the direction of propagation.

3,800,248
UNIDIRECTIONAL SURFACE WAVE TRANSDUCER DEVICE

Jeffrey M. Speiser, and Harper John Whitehouse, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 31, 1972, Ser. No. 302,440
Int. Cl. H03h *9/02, 9/30, 9/26*
U.S. Cl. 333—30 R **15 Claims**



A set of interdigitated surface wave transducers comprising a launch transducer which transmits an acoustic wave in one direction only, rather than the usual two opposite directions, and a receiving transducer which receives an acoustic signal from one direction only, the direction from the launch transducer. An auxiliary delay line may also be used. The set of transducers may be configured in any of three different arrangements:

(1) A transversal filter where odd-numbered taps are driven directly and even-numbered taps are driven by the auxiliary delay line, for example, with a delay corresponding to the transit time across a unit spacing between adjacent interdigitations.

(2) A delay line comprising two pairs of transducers, using two propagation paths, one path for each pair, each pair including a launch and receive transducer, one pair of transducers being configured to correspond to one member of a Golay complementary pair, the other pair of transducers being configured to correspond to the other member of a Golay complementary pair.

(3) A two-path transversal filter which combines the main features of implementations (1) and (2).

ERRATUM

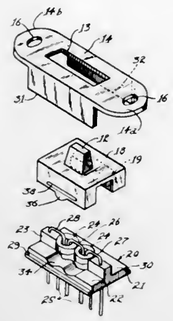
For Class 333—28 R see:
Patent No. 3,800,265

3,800,249
SWITCH CONSTRUCTION

George J. Bury, Lake Villa, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Mar. 8, 1973, Ser. No. 339,137
Int. Cl. H01h *3/50*
U.S. Cl. 335—2 **7 Claims**

The embodiment of the invention disclosed herein is directed to a switch construction which includes a base member which has a pair of slide surfaces. A cam surface formed as an integral part of one of the slide surfaces. A frame member is positioned over the base member and provides a cavity therein to receive a carrier member which supports a movable permanent magnet. The carrier member has a protrusion extending from one side thereof and forms a cam follower engagable with the cam surface. The carrier member is made of resilient material and has a slot formed over the cam follower member to provide an integral resilient support portion for the cam follower. The switch structure includes one or more closed magnetic core structures of the type having drive and sense lines passing therethrough and wherein

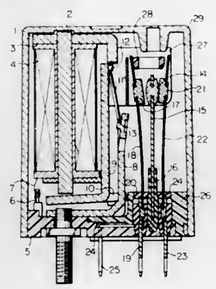


transformer coupling of signals between the drive and sense lines occurs only when the closed magnetic core structures are magnetically unsaturated.

3,800,250
ELECTROMAGNETIC RELAY

Tetsuo Mori, Hirakata; Takeshi Yuda, and Keiji Okahashi, both of Neyagawa, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 28, 1972, Ser. No. 284,136
Claims priority, application Japan, Sept. 1, 1971, 46-67703
Int. Cl. H01h *50/00*
U.S. Cl. 335—128 **9 Claims**



Electromagnetic relay having a balancing spring for the armature and engaged between an end of the armature and a stationary part of the electromagnetic device so that as the armature is attracted toward the core of electromagnetic device the force of said balancing spring will be reduced and entire spring load characteristic will be kept small.

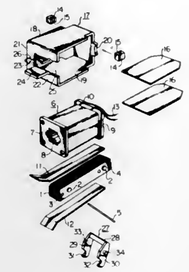
3,800,251
SMALL ELECTRO-MAGNETIC CONTACTOR

Yoshito Usui; Kenji Shiojima, both of Seto; Toshikatsu Hatakeyama, and Norio Sakao, both of Owari Asahi, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 30, 1971, Ser. No. 175,832
Claims priority, application Japan, Aug. 31, 1970, 45-76972; Aug. 31, 1970, 45-87555
Int. Cl. H01h *45/00*
U.S. Cl. 335—131 **3 Claims**

A small electromagnetic contactor of the type that a plurality of contacts are opened and closed by an actuator coupled to a movable plunger of electromagnetic device responsive to

energizing and deenergizing of the latter. The yoke of the electromagnetic device to which the plunger is electromagneti-

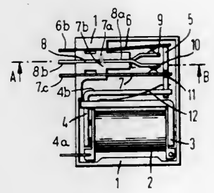


cally coupled is formed from a plate shape magnetic material so as to extend around the coil and plunger to form substantially a closed magnetic path.

3,800,252
ELECTRICAL SWITCHING DEVICE AND CONTACT ARRANGEMENT THEREFOR

Georg Aigner, Munich, Germany, assignor to Siemens AG, Berlin and Munich, Germany

Filed Apr. 12, 1973, Ser. No. 350,321
Claims priority, application Germany, Apr. 19, 1972, 2219135
Int. Cl. H01h *50/54*
U.S. Cl. 335—135 **5 Claims**

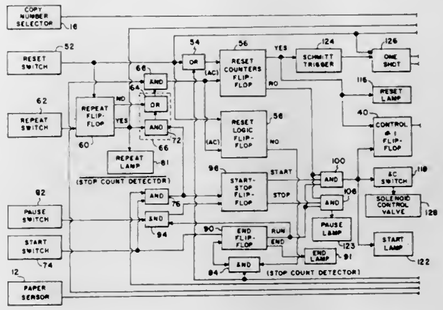


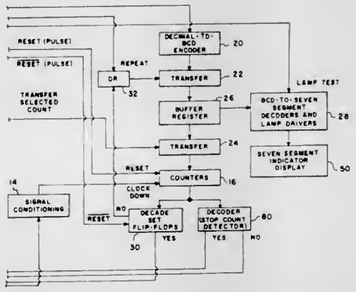
Contact arrangement for electrical switching device and electromagnet and armature for alternately moving two switch arms into contact-making and contact-breaking positions. Two spaced contact springs insulated from each other are clamped in a switch housing. A stationary center contact is disposed between the contact springs and has a bifurcated contact end in the form of two legs, one bent tong-like toward one contact spring and the other bent tong-like toward the other contact spring. The two contact springs are biased to engage the stationary contacts and are operated to accommodate one contact spring to engage one stationary contact as the other contact spring is disengaged from the other stationary contact, by a card-like operating member of insulating material carried on the end of the armature. The operating member has a slot intermediate its ends through which one contact spring extends and forms a support at its end opposite the armature for the other contact spring.

3,800,253
DIGITAL CONTROLLER FOR A BAUM FOLDING MACHINE

Wayne H. Bryant, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 1, 1972, Ser. No. 285,705
Int. Cl. G06f *15/46*; **G06m** *9/00*
U.S. Cl. 235—151 **12 Claims**





A digital controller for controlling the operation of a folding machine enables automatic folding of a desired number of sheets responsive to entry of that number into a selector. The controller preferably includes three decade counter stages for corresponding rows of units, tens and hundreds push buttons, each stage including a decimal-to-BCD encoder for converting the selected decimal number into BCD, a buffer register for storing the output of the encoder and a digital or binary counter. The BCD representation of the selected count for each digit is loaded into the respective decade down counters. Pulses generated by a sensor and associated circuitry are used to decrease the count in the decade counters. When the content of the decade counter reaches either 0 or 1, a solenoid control valve is actuated which interrupts operation of the machine. A repeat switch, when actuated, prevents clearing of the buffer registers so that multiple groups of the same number of sheets can be folded without reentering the number into the selector.

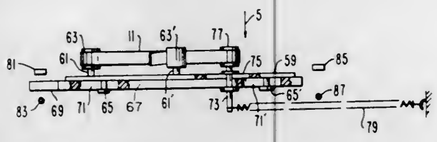
3,800,254
TAPERED SHUNT REED SWITCH

Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 52,635, July 7, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,361
Int. Cl. H01h *53/06, 36/00*
U.S. Cl. 335—205 **2 Claims**

A switching device for sensing the position of a displaceable member including a reed switch assembly having a magnet

and a pair of contacts within the normal magnetic field of the magnet, the contacts being capable of assuming a circuit closed or opened condition depending upon the flux density of the magnetic field, and further including a magnetic shunt of tapered shape forming part of the displaceable member and



insertable different distances into the space between the magnet and the contacts in response to movement of the member in one direction. Means is provided for moving the member in the shunt inserting direction, which movement is opposed by a spring of substantially constant elasticity for the extent of movement of the member.

3,800,255

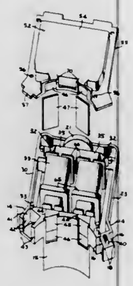
LOW COST CONVERGENCE APPARATUS WITH CATHODE RAY TUBE NECK TOLERANCE ACCOMMODATION

Andrew Highland, Chesapeake, Va., assignor to General Electric Company, Portsmouth, Va.

Filed July 15, 1968, Ser. No. 777,929

Int. Cl. H01f *1/00*

U.S. Cl. 335—212 **14 Claims**



In a cathode ray tube convergence apparatus, a plurality of housing units are circumferentially spaced about the neck of the cathode ray tube to form legs individually aligned with each of a plurality of electron guns corresponding to each of three colors of a color television receiver. Each of the housing units is connected to another of the housing units by connective members at the ends of a neck engaging portion including two radially spaced and tangentially extending surfaces which mate with similar surfaces on other housings to allow radial displacement of each of the housing units. Each of the pairs of radially spaced surfaces include radially projecting stop members associated therewith which provide limits on the radial displacement of the housing units with respect to the neck. A flexible annular clamp with radial guideways engages each housing unit and limits displacement to the radial direction.

3,800,256

ENERGY STORAGE AND SWITCHING WITH SUPERCONDUCTORS

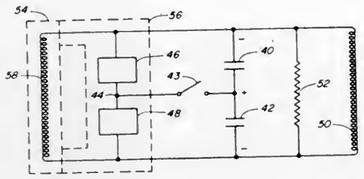
Richard L. Garwin, Yorktown Heights, N.Y., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 24, 1973, Ser. No. 354,042

Int. Cl. H01v *11/16*

U.S. Cl. 335—216 **3 Claims**

The disclosure relates to a superconducting energy storage and switching apparatus. A superconducting energy storing device, such as a coil, is surrounded and cooled by, for example, liquid helium. A switch comprising a material having relatively high resistivity when normal and superconducting at very low temperatures is electrically connected to the super-



conducting energy storage device. The switch is immersed in a dewar separate from the coil so that the temperature of the switch can be controlled independently of the temperature of the coil to provide electrical switching capability without loss of energy storing efficiency

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3,800,257

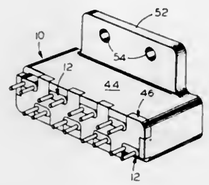
MULTICOIL SOLENOID ASSEMBLY

Clifford G. Schmitt, Canaan, Conn., assignor to Bicron Electronics Company, Canaan, Conn.

Filed Apr. 9, 1973, Ser. No. 349,069

Int. Cl. H01f *7/08*

U.S. Cl. 335—259 **8 Claims**



An assembly is provided which includes a housing for receiving a plurality of solenoids in mounting relationship therewithin. The housing is constructed in such a manner that the solenoids, when mounted therein are electrically independent one from another and are each adapted to be independently operated. Each of the solenoids includes a coil and a core plunger, the latter being actuated when the coil is energized. The solenoids are mounted in staggered relationship within the housing with the terminal pins of each solenoid protruding through openings provided therfor in one end wall of the housing, and with a portion of the core plunger of each solenoid passing through and being movable relative to an opening provided for this purpose in the other end wall of the housing. In its preferred embodiment, the assembly is designed to be readily mounted on a printed circuit card with the individual terminal portions passing through the printed circuit card and being soldered thereto.

3,800,258

PRESSURE-INDUCTANCE TRANSDUCER

John W. Moulds, Penfield, and Edwin C. Storey, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

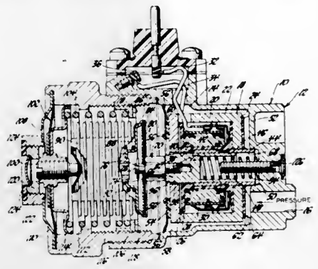
Division of Ser. No. 202,760, Nov. 29, 1971, Pat. No. 3,730,146. This application Jan. 22, 1973, Ser. No. 325,861

Int. Cl. H01f *15/16, 21/06*

U.S. Cl. 336—30 **7 Claims**

In an electronic fuel injection system, a transducer for converting a variable pressure signal to a variable inductive signal has a coil wound on a plastic spool and surrounded by a ferrite cup and cap. A nickel plated steel sleeve snaps into the spool

and supports a Teflon coated steel plunger which is tapered to provide a variable air gap with the ferrite cap. This assembly is resiliently supported in a housing and is operated through a bimetallic disc from an evacuated bellows responsive to the absolute pressure in the engine air induction passage. The bel-



lows is positioned by a diaphragm which also is responsive to induction passage pressure to provide power enrichment. Adjustments are provided for the idle, power cut-in, and wide open throttle points and for initial calibration of the transducer.

3,800,259

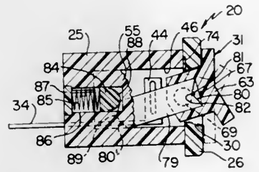
FUSING AND SWITCHING MEANS AND CIRCUIT MEANS CONTROLLED THEREBY

Robert B. Humphreys, Kettering, Ohio, assignor to Micro Devices Corp., Dayton, Ohio

Filed Oct. 27, 1971, Ser. No. 192,904

Int. Cl. H01h *85/00*

U.S. Cl. 337—10 **21 Claims**



A housing having a pair of spaced first and second contact members for respectively being interconnected in a desired electric circuit whereby the electrical circuit will not be completed unless the contact members are electrically interconnected together. A manually movable fuse member is carried by the housing and has one operating position relative to the housing where the fuse member makes electrical contact between the contact members and through the fuse part thereof so that the circuit will not only be completed by the fuse member, but also the circuit will be fused by the fused member. The fuse member when moved to another operating position thereof relative to the housing will break electrical contact between the contact members to open the circuit whereby the fuse member also acts as a manually operable switch for the electrical circuit.

3,800,260

ELECTRIC SWITCHES

Frederick Noel Woodger, Great Barford, England, assignor to Cutler Hammer Inc., Milwaukee, Wis.

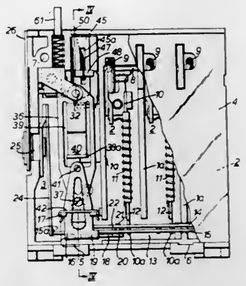
Filed Oct. 30, 1972, Ser. No. 302,268

Claims priority, application Great Britain, Jan. 11, 1972, 1123/72

Int. Cl. H01h *61/00*

U.S. Cl. 337—49 **16 Claims**

An electric switch comprises a movable contact carried by a snap-acting arm which is actuated by a trip lever, the trip lever being resiliently biased into contact with a fulcrum about which it may be rocked by an actuator arm to actuate the



snap-acting arm. The trip lever applies actuating pressure to the snap-acting arm through a pin extending from the trip lever.

3,800,261

DEVICE FOR REGULATING THE CURRENT STRENGTH FOR A THERMAL RELAY

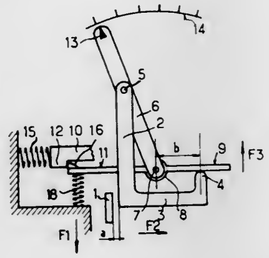
Christian Clement, Bezons, and Christian Blanchard, Nanterre, both of France, assignors to La Telemecanique, Nanterre, France

Filed Jan. 15, 1973, Ser. No. 323,675

Claims priority, application France, Jan. 14, 1972, 72.01369

Int. Cl. H01h *61/02*

U.S. Cl. 337—84 **4 Claims**



Device for simultaneously regulating the current strength and the sensitivity of a thermal relay.

A variable-ratio transmission is established between the heat-sensitive component and the triggering component by means of a transmission lever whose point of application is mobile; applicable to thermal relays associated with contactors.

3,800,262

FUSE CARTRIDGE

Jean-Pierre Cinquin, Lyon, France, assignor to "Lucien Ferraz & Cie", Lyon, France

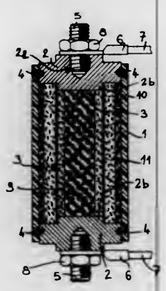
Filed Dec. 28, 1971, Ser. No. 213,150

Int. Cl. H01h *85/02*

U.S. Cl. 337—203 **10 Claims**

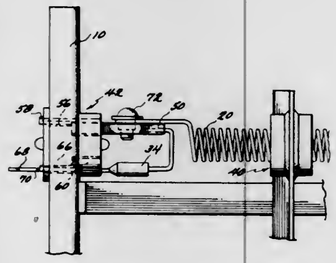
In a fuse cartridge of the kind comprising a tubular body, a pair of heads respectively disposed at the ends of this body to close same and to define therewith a non liquid-tight inner space, and fusible elements which connect the said heads with each other, there is provided within the latter pressure damping means to reduce the pressure peak which is applied to the outer body when the cartridge operates. These means may be in the form of a core and/or a sleeve of a flexible cellular

material with closed cells, or of a deformable container filled with a gas under an appropriate pressure, or of calibrated holes which connect the inner space of the cartridge with the



outside, the inner ends of such holes being covered by a grid which retains the arc quenching material in which the fusible elements of the cartridge are embedded. Such a cartridge is more particularly adapted for operation within an oil tank.

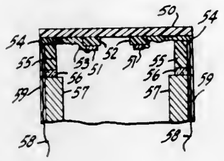
3,800,263
COMBINATION TERMINAL AND FUSE HOLDER ARRANGEMENT FOR AN ELECTRICAL CIRCUIT
George Edward Ammerman, and William McFarlane, both of Murfreesboro, Tenn., assignors to Heatcraft, Inc., Murfreesboro, Tenn.
Filed May 3, 1972, Ser. No. 249,791
Int. Cl. H01h *85/16*
U.S. Cl. 337—237 **4 Claims**



A combined terminal and fuse holder arrangement utilized in an electrical circuit, such as an open coil heater assembly. The terminal includes an insulator which supports a projecting arm having an aperture to receive a screw. The end of a circuit element is formed in a loop to hook about the body of the screw, the screw holding the element in electrical connection with the arm. The arm is bridged electrically through a fuse to a terminal contact which is also supported by the insulator.

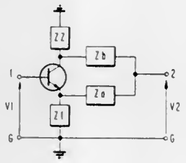
3,800,264
HIGH TEMPERATURE TRANSDUCERS AND HOUSING INCLUDING FABRICATION METHODS
Anthony D. Kurtz, Englewood, and Joseph R. Mallon, Jr., Woodridge, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.
Filed Mar. 14, 1972, Ser. No. 234,616
Int. Cl. G01l *1/22*
U.S. Cl. 338—2 **19 Claims**

A dielectrically isolated pressure transducer comprises a silicon diaphragm having on a surface thereof at least one piezoresistive sensor mounted in close proximity with a dielectric insulator, the diaphragm is secured about a non-active



peripheral area to an annular ring housing by a glass bond fabricated from a glass material having a low melting temperature when compared to ordinary glass.

3,800,265
ACTIVE TYPE GROUP-DELAY EQUALIZER
Takeshi Yoshioka, and Susumu Akiyama, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan
Filed May 18, 1972, Ser. No. 254,517
Claims priority, application Japan, May 20, 1971, 46-34559
Int. Cl. H03h *7/14*
U.S. Cl. 333—28 R **14 Claims**

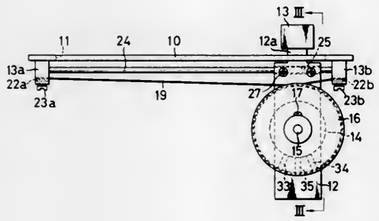


An improved active type group-delay equalizer having the transfer function

$$N = (AZ_b + AZ_a + B/CZ_b - DZ_a + E)$$

where A, B and D are functions of Z_1 and Z_2 for a given AZ_a and Z_b such that N = constant. Additional reduction in amplitude distortion is realized by selecting both Z_a and Z_b to have a reactive component.

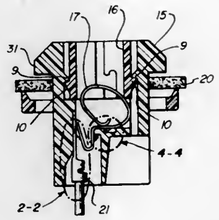
3,800,266
VARIABLE RESISTOR WITH LINEARLY MOVABLE MEANS FOR CHANGING THE RESISTANCE THEREOF
Kunihiko Murao, and Tsutomu Kawasaki, both of Tokyo, Japan, assignors to Teac Corporation, Tokyo, Japan
Filed Mar. 5, 1973, Ser. No. 338,196
Int. Cl. H01c *9/02*
U.S. Cl. 338—162 **12 Claims**



A variable resistor unit is provided which comprises a resistance element arranged in an annular configuration and a

contact arm turnable on a shaft in sliding contact with the resistance element. The variable resistor unit with its shaft is supported by a support plate which is movable linearly as directed by guide means including a guide rod. A pulley is fixedly mounted on the shaft of the variable resistor unit, and a string wrapped around the pulley extends crosswise therefrom to have its ends tightly retained at both extremities of the stroke of the support plate. Hence, as the support plate is moved linearly by means of a knob affixed thereto, the pulley is turned by the string to cause the corresponding change in the angular position of the contact arm relative to the annular resistance element of the variable resistor unit.

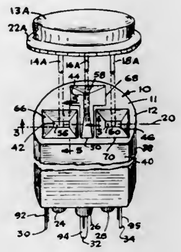
3,800,267
LAMP SOCKET
James Patton Burgess, Brighton; Melvin W. Polkinghorn, Livonia, and Stephen J. Brzozowski, Detroit, all of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed June 28, 1972, Ser. No. 267,130
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R **10 Claims**



Lamp sockets formed to have plastic bodies are provided for automotive applications. The principal plastic bodies are molded to receive and hold plastic bulb inserts which are sized to fit standard bayonet light bulbs. Spring contacts, to make connections to the light bulbs, are inserted in the principal plastic bodies and are held in place by tangs which contact molded areas of the plastic bodies. Other tangs provide connections from the spring contacts through windows in spade terminals connecting to a wiring harness. Ground connections are provided by ground contact straps embodying tangs and other elements which secure them to the principal plastic body. The ground contact straps permit completion of a ground connection through another tang to the wiring harness or, alternatively, through a ground tab to a metal wall.

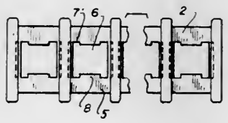
3,800,268
ELECTRICAL CONNECTOR FOR TRANSISTOR OUTLINE SEMICONDUCTOR DEVICE
Richard Bruckner, Chester, and John L. Tansky, Collingdale, both of Pa., assignors to Bunker Ramo Corporation, Oak Brook, Ill.
Filed May 31, 1972, Ser. No. 258,453
Int. Cl. H01r *13/62*
U.S. Cl. 339—66 M **4 Claims**

An electrical connector for semiconductor devices such as transistor outline devices with rearwardly extending leads is provided to accommodate devices having a variety of lead arrangements, wherein the connector includes an insulating base with a front face, a plurality of openings spaced apart along a common line and extending rearwardly through the base, one other opening laterally displaced from the common line with a deflection ramp extending between the common line and the other opening to accommodate either an in-line or staggered lead, the in-line openings including slots elongated parallel to the common line with the displaced opening including a slot elongated in a direction perpendicular thereto, and a plurality of contacts rearwardly mounted in the openings with lead-engagement portions covering the rear perimeter of the elongated slots and being laterally deflectable



by insertion of the leads, the contacts including stop portions rearwardly disposed from the engagement portions to block passage of the leads rearwardly beyond the base.

3,800,269
TERMINAL BLOCK AND CONNECTOR ASSEMBLY
Dominick P. Palombella, Norridge, Ill., assignor to Palmer Industries, Ltd., Chicago, Ill.
Filed Mar. 7, 1972, Ser. No. 232,438
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 R **2 Claims**

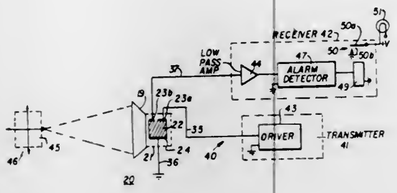


A terminal block and connector assembly including an elongated terminal block capable of supporting one or more electrical connector elements in respective sections. Each support section of the terminal block is separated from an adjacent one by a barrier wall which prevents electrical arcing and the like between terminal elements supported by the block. The connector elements are supported on the terminal block within openings which alternatively can receive a retention insert permitting the block to be attached to a support surface.

3,800,270
PIEZOELECTRIC ACOUSTICAL TRANSDUCER FOR TRANSMITTING AND RECEIVING
James R. Bailey, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.
Filed July 12, 1972, Ser. No. 271,019
Int. Cl. G01s *9/68*
U.S. Cl. 340—1 R **9 Claims**

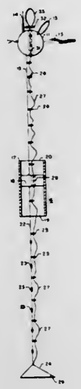
A piezoelectric acoustical transducer for operating simultaneously as an acoustical transmitter and an acoustical receiver includes a piezoelectric element having a pair of discrete conductive elements disposed on a first surface, serving as input and output electrodes, respectively, for the transducer and a common electrode disposed on a second surface

of the element; drive signals applied between the input and common electrodes effect the generation of acoustical signals



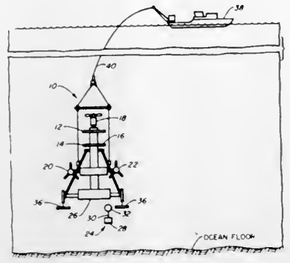
for radiation from the transducer, and acoustical signals impinging on the transducer produce output signals between the output electrode and the common electrode.

3,800,271
UNDERWATER SIGNALLING SYSTEM
Stephen L. Stillman, Jr., Hollis, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Mar. 9, 1973, Ser. No. 339,786
Int. Cl. B63b *21/00*; **H04b** *11/00*
U.S. Cl. 340—2 **9 Claims**



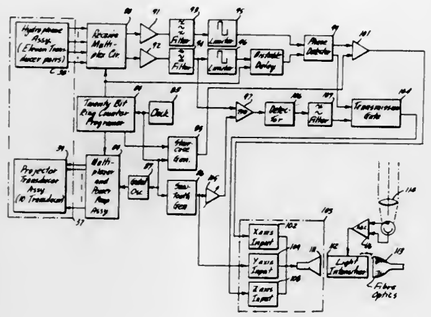
An underwater signalling system which can be retrieved and stored readily is described. The system includes a surface float connected by a compliant cable to an underwater housing having two hollow portions. A transducer cable, with transducers attached, extends from the housing and terminates in a drag member. Both cables are provided with a series of rings along their length fastened by their rims. A thin retrieving cable is fastened to the drag member and is threaded through the rings, the housing and through a passageway completely through the float and is terminated in a loop. To retrieve the system, the loop is engaged and raised whereupon the rings constrain the cables to form into loops which enter opposite ends of the hollow housing. The drag member engages the bottom of the housing and the float engages the top, thereby completely enclosing the cables and transducers. The assembly may then be lifted as a unit by the retrieving cable.

3,800,272
ROTATING ACOUSTIC SCANNER SYSTEM FOR POSITIONING OBJECTS ON THE OCEAN FLOOR
Robert D. Hitchcock, Ventura, and Richard J. Malloy, Ojai, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 8, 1972, Ser. No. 279,134
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **4 Claims**



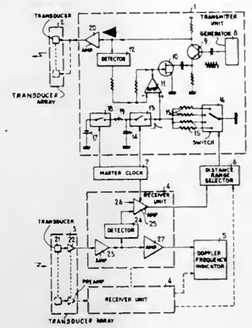
A pair of rotating sonar transducers are mounted on a support structure which is equipped with thruster units for effecting vertical and lateral motion of the system during deployment on the ocean floor. Position accuracy is obtained by deployment of a self-contained benchmark array which is used to establish a reference plot.

3,800,273
PORTABLE SONAR SYSTEM
Albert L. Rolle, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 6, 1970, Ser. No. 34,923
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **10 Claims**



The patent disclosure presented herewith is directed to an improved sonar system to be worn by swimmer-diver personnel having as its salient features an improved transducer assembly for establishing a plurality of investigative beam patterns; a phase detector arrangement for eliminating spurious echo returns; and a high resolution visual display adapted to be worn by the swimmer diver user of the system.

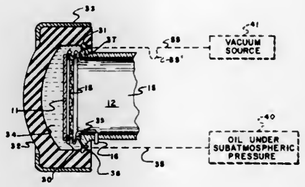
3,800,274
METHODS OF AND DEVICES FOR TRANSMITTING AND RECEIVING AS USED IN NAVIGATION SYSTEMS EMPLOYING THE DOPPLER EFFECT
Francois Peynaud, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Dec. 26, 1972, Ser. No. 318,659
Claims priority, application France, Dec. 31, 1971, 71.47765
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **8 Claims**



The invention relates to an intermittent emission navigation Doppler system designed to determine the speed of a marine vessel by measurement of the Doppler frequency. The method and the device for implementing it, make it possible to maintain the amplitude of the received signals reflected by the submerged surface and the volumetric reverberation constant by utilising a pulse train radiated toward said surface with pulses amplitude decreasing as a function of time.

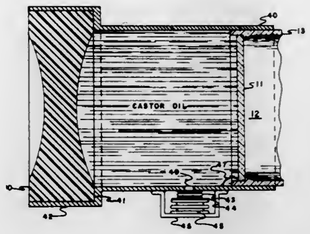
The invention is applicable primarily to navigation system using the Doppler effect.

3,800,275
ACOUSTIC IMAGE CONVERSION TUBE
Julius Hagemann, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sept. 2, 1960, Ser. No. 53,850
Int. Cl. H04b *11/00*; **H01j** *31/495*
U.S. Cl. 340—5 MP **3 Claims**



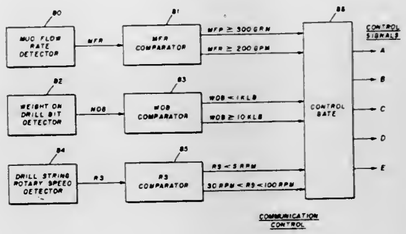
3. An underwater acoustic device comprising in combination an annular support member, a vacuum backed circular piezoelectric plate mounted on said support member, a substantially mechanically rigid wall element mounted on said support member and forming with the front face of said plate an enclosure, and an acoustic energy propagating liquid filling the free space within said enclosure, said liquid at all times being under a pressure no greater than atmospheric but not less than the vapor pressure of said liquid at the temperature of the water in which the device is to be utilized.

3,800,276
ACOUSTIC IMAGE CONVERSION TUBE
George T. Rishell, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Oct. 28, 1960, Ser. No. 65,873
Int. Cl. H04b *11/00*; **H01j** *31/495*
U.S. Cl. 340—5 MP **2 Claims**



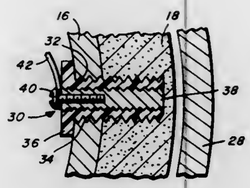
1. An underwater acoustic device comprising in combination a substantially rigid front wall member of sound transparent material, a rear wall member of piezoelectric material spaced back of said front wall member in generally parallel relation thereto and substantially coextensive therewith, said rear wall member comprising the front face of a cathode ray tube means joining said wall members together at their edges to form a fluid tight enclosure, a liquid filling said enclosure, a liquid filled reservoir in fluid communication with said enclosure means movable for varying the volume of said reservoir, and means responsive to changes in the ambient pressure for moving said volume varying means to change the volume of said reservoir as a direct function of changes in the ambient pressure.

3,800,277
METHOD AND APPARATUS FOR SURFACE-TO-DOWNHOLE COMMUNICATION
Bobbie J. Patton, Dallas; James H. Sexton, and John W. Harrell, both of Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.
Filed July 18, 1972, Ser. No. 272,838
Int. Cl. G01v *1/40*; **E21b** *41/00*
U.S. Cl. 340—18 LD **16 Claims**



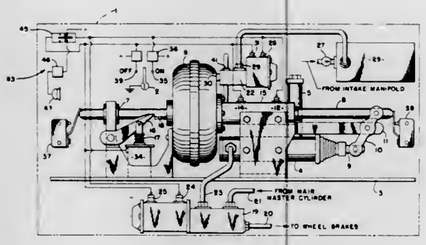
Downhole operations within a well borehole are controlled by utilization of various communication channels within the borehole. The conditions within these communication channels are detected downhole and are applied to downhole comparators. Whenever the condition with a communication channel is changed by an operator on the earth's surface so that it exceeds a reference value, the comparator provides an output signal. A control gate selectively combines the output signals from the comparators to provide control signals for utilization in the control of the downhole operations.

3,800,278
BRAKE LINING WEAR WARNING GAUGE
Sam Jaye, 16 Meadowgreen Ct., Santa Rosa, Calif., and Jon D. Erickson, 234 "A" St., South San Francisco, Calif.
Filed Aug. 22, 1972, Ser. No. 282,665
Int. Cl. B60t *17/22*
U.S. Cl. 340—52 A **8 Claims**



A device for warning an operator of a brake-equipped vehicle that the brake linings have become worn to a degree that they should be replaced. The device includes a novel and unique contact arrangement incorporated into the brake assembly which will complete an electric circuit to a flashing warning light when the ignition system is in the "on" position and the brake pedal depressed with the circuit including a relay for maintaining the warning light activated until the ignition switch is moved to the "off" position.

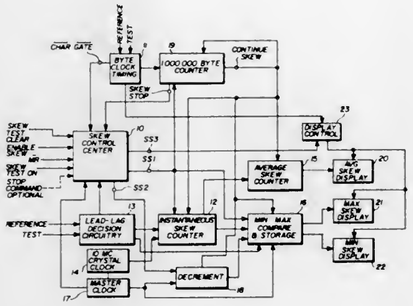
3,800,279
AUTO ANTI-THEFT SYSTEM
Herbert L. Thompson, 4098 E. 143rd St., Cleveland, Ohio
Filed July 24, 1972, Ser. No. 274,328
Int. Cl. B60r *25/00;* **H02g** *3/00*
U.S. Cl. 340—65 **10 Claims**



An auto anti-theft system or unit characterized in that when the key operated lock switch thereof is momentarily turned to On position, (1) a valve in the unit is actuated to a position blocking communication between the main master cylinder and the brake line leading to the wheel cylinders and opening communication between an auxiliary master cylinder in the unit and the brake line; and (2) the auxiliary master cylinder is actuated to firmly apply the brakes on all four wheels and latched in the brake applying position until the key is reinserted and momentarily turned to Off position whereat a latch member in the unit is actuated to release the auxiliary master and the brakes, and whereat the aforesaid valve is actuated to a position blocking communication between the auxiliary master cylinder and the brake line and opening communication between the main master cylinder and the brake line for normal operation of the hydraulic braking system. The system is further characterized in that it draws battery current only when the lock switch is momentarily turned to On or Off positions from a spring returned neutral position.

The system herein is still further characterized in that when it is in the On position a switch in the stop light circuit is opened to prevent draining of the battery; a switch in the starter solenoid circuit is opened to prevent starting of the engine; and a switch in a tilt switch alarm circuit is closed so that tilting of the car for towing or wheel removal sets off the alarm such as the auto horn or a separate siren.

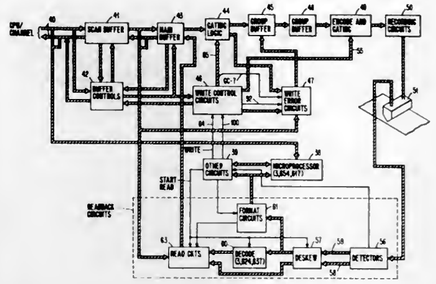
3,800,280
TIME SKEW MEASUREMENT CIRCUIT FOR MAG TAPE TRANSPORTS
Samuel T. Heffner, Villa Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Nov. 6, 1972, Ser. No. 304,280
Int. Cl. G06k *5/04*
U.S. Cl. 340—146.1 F **26 Claims**



A skew measurement circuit for determining the skew characteristics (i.e., the minimum, maximum and average skew) of a magnetic tape transport system is disclosed. The circuit includes an instantaneous skew counter for measuring the difference in arrival times at a tape head (i.e., instantaneous skew) between reference channel and test channel bits aligned in lateral registry across the tape to form informational bytes. An average skew counter comprising up/down decade counters is provided to total the instantaneous skew during a one million byte skew test so that the average skew may be determined by shifting the decimal point. The instantaneous skew is also coupled to a min/max comparison and storage arrangement where it is compared with previously stored minimum and maximum skew values, replacing the appropriate one in a storage register if it is found to be a new extreme. Because an atypical minimum or maximum may be stored due to conditions (e.g., tape binding, etc.) that are not characteristic of the transport system, a decrementing circuit is provided for decreasing the maximum stored value and increasing the minimum stored value at a predetermined rate. Accordingly, the legitimacy of the stored skew values may be insured by requiring that they be periodically refreshed.

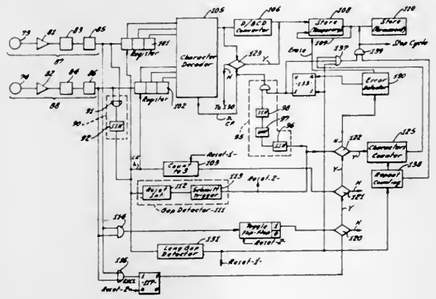
3,800,281
ERROR DETECTION AND CORRECTION SYSTEMS
Ernest W. Devore, Boulder, and John W. Irwin, Loveland, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 317,986
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **7 Claims**

Plural error detecting and checking codes are used to check segmented data sets. A first error code checks each segment independently and has a first error correcting capability. Additionally, other error codes having a lesser error correcting capability verify proper correction of the segments on each entire data set. A segment of the data set is reserved at least in part for the other error code residues. Such other error code residues are subjected to error correction by the first error



code, while the corrected error code residues verify proper correction of data and other error code residues by the first error correction code.

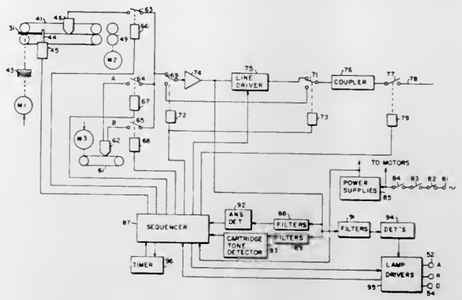
3,800,282
CODE READING SYSTEM
Norbert K. Acker, Konigstein/Taunus, Germany, assignor to Scanner, Inc., Houston, Tex.
Continuation of Ser. No. 818,030, April 21, 1969, abandoned. This application July 23, 1971, Ser. No. 165,078
Int. Cl. G06k *9/18*
U.S. Cl. 340—146.3 Z **12 Claims**



A device is disclosed for machine-reading information having random position and orientation and being comprised of characters which in parts are also man-readable. An image of such information is produced, centered and rotated. The characters are read during rotation in a serial and parallel-by-bit format. Representation of the characters is assembled from read signals and tested as to format.

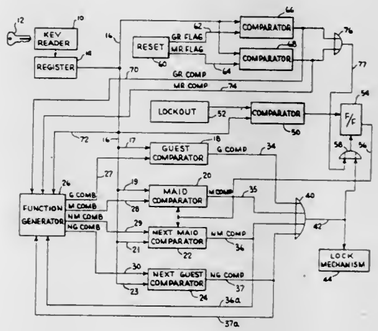
3,800,283
CREDIT VERIFYING UNIT
John L. Gropper, Long Beach, N.Y., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Nov. 12, 1969, Ser. No. 875,886
Int. Cl. G05b *1/00;* **G06k** *5/00;* **H04m** *17/02*
U.S. Cl. 340—149 A **14 Claims**

A system for verifying the credit of a customer at the point of sale is described which uses a standard credit card including a magnetic stripe on which the customer's identification number is recorded in dual tone form similar to the "touch-tone" system used by the telephone company. A small unit is located right at the point of sale, for example, on the counter of a retail store or adjacent the gasoline pumps of an automobile service station. When the card is inserted into the unit, the unit automatically dials the telephone number of the credit card company's central computer. When a connection has been made, the credit card is drawn along a simple magnetic read head which generates an audio signal which is coupled to the telephone line directly without the necessity for any encoding or decoding or alteration in form. The receipt of these



tones by the computer constitutes an interrogation whereupon the computer checks the customer's credit and generates an appropriate signal, preferably in the form of one or more audio tones, and returns it to the unit which displays the results by illuminating a suitable lamp which indicates that credit is approved or that credit is denied or that the merchant should pick up his telephone for other instructions.

3,800,284
ELECTRONIC COMBINATION LOCK AND LOCK SYSTEM
Fredric E. Zucker, Stamford; Alton B. Eckert, Norwalk; Bruce E. Hinman, Ridgefield, and Seymour Feinland, Stamford, all of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jan. 12, 1973, Ser. No. 323,098
Int. Cl. H04q *3/00;* **G06k** *7/06*
U.S. Cl. 340—149 R **18 Claims**

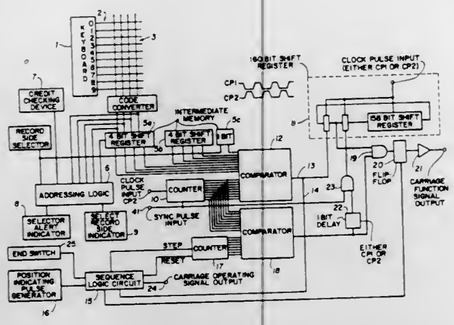


An electronic lock system utilizes a function generator at each access point to generate a pair of digitally encoded lock combinations, which, when matched by a digitally encoded lock combination borne by a key, permits access. One of the combinations, when matched, additionally controls the function generator to change the other combination to a next combination based on a pseudo-random number sequence. A central station utilizes a corresponding function generator to appropriately encode the various keys which constitute the sole communication link between the central station and plural access points.

3,800,285
SELECTING AND STORAGE CIRCUIT FOR JUKE BOX

Walter C. Peschke, Saratoga, and William R. Novak, Milpitas, both of Calif., assignors to NSM Apparatebau GmbH Kommanditgesellschaft, Bingen/Rhein, Germany

Filed Dec. 8, 1972, Ser. No. 313,517
Int. Cl. H04q *3/00*
U.S. Cl. 340—162 R 17 Claims

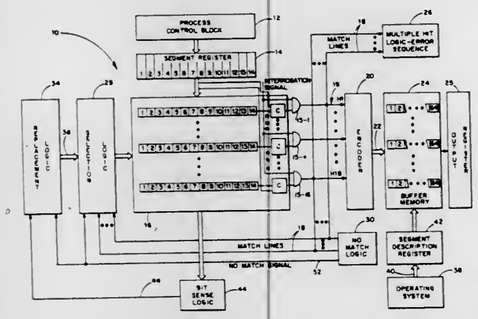


A system for controlling the operation of a juke box includes selection keys for producing a coded signal corresponding to a record to be played and a shift register for temporarily storing these signals. These signals are compared with the counting state of a clock pulse operated counter to produce a bit signal by coincidence, and this bit signal is entered into a given stage of a continuously circulating shift register also operated by the clock pulse. A second counter is stepped in response to the position of the juke box carrier, and the counts of the two counters are compared to produce a bit pulse for interrogating the given stage of the circulating shift register. If a bit is present at the given stage of the circulating shift register when the counts of the two counters are equal, a signal is produced for stopping the record carriage to effect the playing of the record.

3,800,286
ADDRESS DEVELOPMENT TECHNIQUE UTILIZING A CONTENT ADDRESSABLE MEMORY

James L. Brown, Chelmsford, and Richard P. Wilder, Jr., North Billerica, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 24, 1972, Ser. No. 283,617
Int. Cl. G11c *15/00*; G06f *1/00*
U.S. Cl. 340—172.5 12 Claims

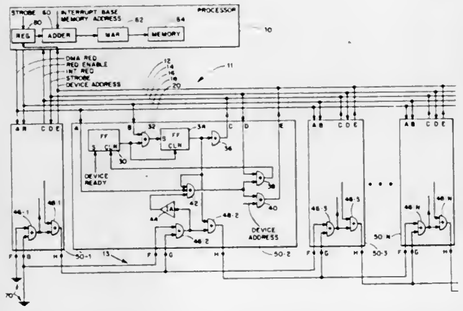


A content addressable memory is disclosed which provides for fast address development in a relatively addressed data processing system. The content addressable memory includes an associative memory, an encoder and a buffer memory. If the address provided to the associative memory had been previously stored in the associative memory, a signal is generated to the encoder which enables the actual address to be read from the buffer memory. If the address is not contained in the associative memory, actual address development through main memory is made. Additional features included in the content addressable memory are a replacement logic for indicating the next replaceable location in the associative memory and selection logic for determining the locations in the associative memory to be accessed.

3,800,287
DATA PROCESSING SYSTEM HAVING AUTOMATIC INTERRUPT IDENTIFICATION TECHNIQUE

Richard A. Albright, Winter Park, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed June 27, 1972, Ser. No. 266,759
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 10 Claims



A plurality of devices are coupled with a data processor over a common electrical bus. Each device makes its own interrupt request which is not seen by the processor until a request enable signal is generated therefrom. In response to the enable signal, the interrupt requesting device of highest priority provides its device address or identification to the processor. The device address which is independent of the type of the device, i.e., magnetic tape, disk, or teletype, etc., is augmented with a memory table base address in order to address the interrupt service routine for the interrupting device. The highest priority device is indicated by a priority network which in combination with the interrupt logic of each device, allows the devices to arbitrate amongst themselves, without the knowledge of the processor, to determine which device is to send its device address to the processor.

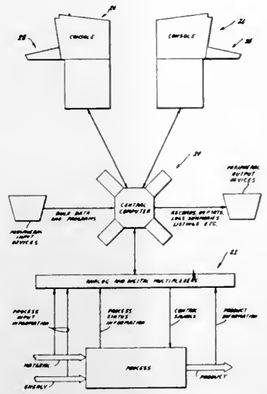
3,800,288
COMPUTER-DIRECTED PROCESS CONTROL SYSTEM WITH CRT DISPLAY

Douglas D. Russell, Wrentham, and Henry A. George, Mansfield, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Feb. 24, 1972, Ser. No. 228,983
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 8 Claims

An industrial process control system including a digital computer arranged in a time-share configuration to perform calculations respecting a plurality of process conditions, and to produce corresponding command signals for respective process operators such as valves and the like. The system includes an operator's console unit having a CRT display controlled by a recirculating refresh memory. Character words can be entered into the memory by a keyboard, or by the computer. The memory also carries control bits for each character word, signifying whether that word represents a protected or an unprotected character. If protected, it cannot be changed

from the keyboard. The processor can command data transfer operations to or from all unprotected locations, or alternatively can command data transfer operations to or from all locations, regardless of its protect status. Various displays can be called up on the CRT screen for interactive processing by the operator making use of the protected status of certain of the characters stored in the memory.



3,800,289
MULTI-DIMENSIONAL ACCESS SOLID STATE MEMORY

Kenneth E. Batcher, Stow, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed May 15, 1972, Ser. No. 253,388
Int. Cl. G06f *9/20*; G11c *7/00, 15/00*
U.S. Cl. 340—172.5 18 Claims

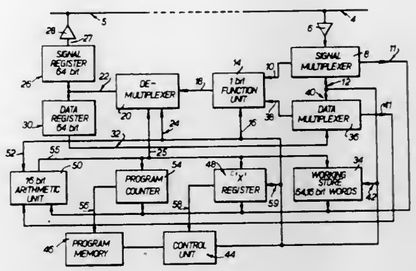
The invention relates to a novel memory organization which not only permits word-oriented accesses but also bit-oriented accesses and accesses with mixed orientations. In one operation it is possible to either read or write all bits of one word, or one bit of all words, or a few bits of many words, or many bits of a few words. The memory is comprised of widely-available random-access solid state memory modules. In essence, the invention operates with a unique ordering scheme to achieve the multi-access characteristic. The technique of the invention enables the use of large memory modules with very small pin counts because address lines are encoded and logic is utilized in selecting bits in accordance with the techniques of the invention. The technique is inexpensive and highly flexible.

3,800,290
DATA HANDLING APPARATUS

Allen H. Croxon, 24 Ousden Close, Cheshunt, Hertfordshire, England

Filed Aug. 17, 1972, Ser. No. 281,396
Claims priority, application Great Britain, Aug. 17, 1971, 38432/71
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 6 Claims

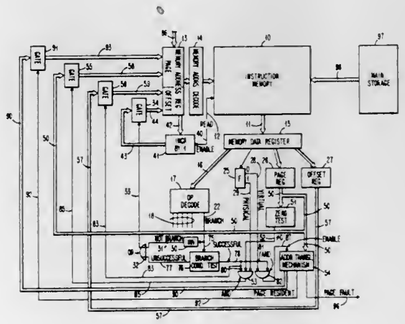
Data handling apparatus has input and output means connected to input and output signal lines, the input and output means comprising switching means enabling any one of the input lines and any one of the output lines to be selected. Data processing means is connected between the input and output means and enables any one of a predetermined set of operations to be performed on data received on any one or more of the input lines, the result being outputted on any one or more of the output lines. The data processing means operates under control of a stored program.



3,800,291
DATA PROCESSING SYSTEM MEMORY RELOCATION APPARATUS AND METHOD

John Cocke, Mount Kisco, N.Y., and David R. Helman, Saratoga, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 21, 1972, Ser. No. 291,103
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 9 Claims

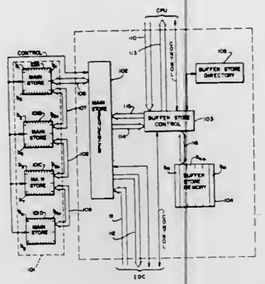


A data processing system having a virtual memory comprising pages which are relocatable between various levels of physical storage. The virtual memory primarily contains information comprising instructions arranged sequentially so that once a virtual address has been translated to the physical address in high speed memory, the physical address can be incremented to fetch the next sequential information. Branch instructions may branch to the address of information on the same or another page. The branch instruction includes an indicator as to whether the branch address is a physical address on the same or another page or a virtual address on another page. Only when a virtual address is encountered is the relocation table employed to convert the virtual address to a physical address and to load the page if necessary.

3,800,292
VARIABLE MASKING FOR SEGMENTED MEMORY

John L. Curley, Sudbury, Mass., and Wallace A. Martland, Nashua, N.H., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 5, 1972, Ser. No. 295,303
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 14 Claims

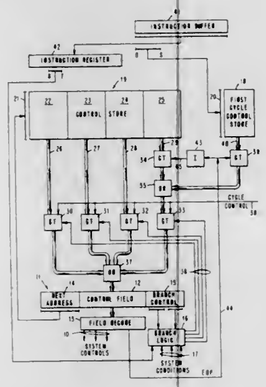


A variable masking technique and apparatus for simultaneously accessing under program control a variable number of bytes *b* of information stored in groups of *i* bytes per group in any of *n* modules of a storage device that is capable of operating in any of *m* storage modes. Storage is provided by a multi-level system providing multiple levels of storage comprising a high speed low capacity storage device (buffer store) coupled serially to successive levels of lower speed, high capacity storage devices including means for varying the number of bytes to be simultaneously accessed from any of the storage devices.

3,800,293
MICROPROGRAM CONTROL SUBSYSTEM

Thomas A. Enger, Wappingers Falls; Charles W. Evans, Jr., and Lance H. Johnson, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,961
Int. Cl. G06f *9/16*; G05b *19/22*; G06f *13/06*
U.S. Cl. 340—172.5 4 Claims

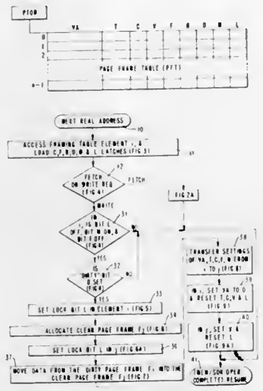


A microprogram control subsystem discloses two control stores, one of which is accessed and utilized only on the first cycle of a microprogram sequence utilized to execute an information handling system instruction. A portion of the operation code of the system instruction is used to address the first-cycle control store to provide access to a microinstruction having fewer binary bits than normal microinstructions, and is effective to direct access to the remainder of the microprogram sequence contained in the other control store.

3,800,294
SYSTEM FOR IMPROVING THE RELIABILITY OF SYSTEMS USING DIRTY MEMORIES

Francis Daniel Lawlor, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 13, 1973, Ser. No. 369,666
Int. Cl. G11c *11/00*; G06f *13/00*
U.S. Cl. 340—172.5 9 Claims



Enables any "dirty" hardware portion of main memory (i.e. "dirty" means causing correctable errors) in a computer system to be used for operations which read its contained data or program, as long as the content of the portion is not changed and an I/O copy of the identical content exists. The "dirty" condition indicates that the error correction capacity has already reached its limit for at least one unit of data in the memory portion. Whenever a change is required to be made in the content in a "dirty" portion, and before the change is permitted to be made, the invention automatically transfers the content to a "clean" hardware portion in the main memory (i.e. "clean" means causing no errors).

The "dirty"/"clean" condition of a portion of main memory is checked during every memory fetch operation, and a "dirty" bit is set if a correctable error is detected in any unit of data in the portion.

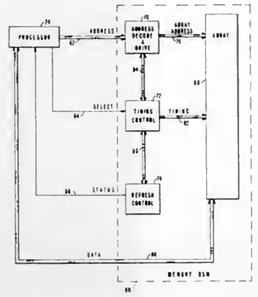
Hence the invention prevents an error from occurring to data which otherwise would be changed in a "dirty" portion where it is not correctable due to error correction capacity having been previously exhausted, and no I/O copy exists for the changed data. The invention forces all errors in changed data to occur in a "clean" portion where the errors are more likely to be correctable by available error correction.

3,800,295
ASYNCHRONOUSLY OPERATED MEMORY SYSTEM

Robert D. Anderson, Jr., Colchester; Gerold B. Hasler; Ralph W. Kirby, both of Burlington, and Kraig R. White, Milton, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,364
Int. Cl. G11c *7/00, 11/34*
U.S. Cl. 340—173 DR 5 Claims

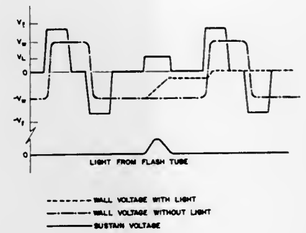
A memory system includes a plurality of dynamic storage memories, each controlled by its own independent refreshing means, and a processor capable of interacting with a selected memory when access to the selected memory through the processor is desired. This system allows the refresh interval for each memory to be adjusted independent of the system to the extent of the extrinsic capability of its individual characteristics.



3,800,296
OPTICAL WRITE-IN METHOD AND APPARATUS FOR A PLASMA DISPLAY PANEL

Larry Weber, Urbana, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

Filed Apr. 26, 1972, Ser. No. 247,837
Int. Cl. G11c *11/28*; H01j *15/00*
U.S. Cl. 340—173 PL 16 Claims



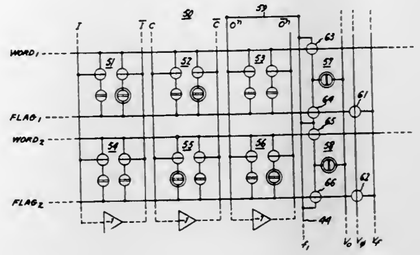
A method and apparatus for changing the states of gaseous discharge cells in a plasma panel including applying a light flash to the cells simultaneously during a discharge of the cells. Transferring an image to the plasma panel by applying a light flash corresponding to the image to the gaseous discharge cells simultaneously during a repetitive sustaining discharge of the cells.

3,800,297
NON-VOLATILE ASSOCIATIVE MEMORY

Joseph L. Mundy, and Constantine A. Neugebauer, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed June 3, 1972, Ser. No. 267,967
Int. Cl. G11c *11/40, 15/00*
U.S. Cl. 340—173 AM 14 Claims

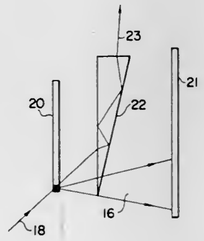
A non-volatile associative memory cell is disclosed that is suitable for use in universal logic systems, i.e., systems for generating arbitrary Boolean functions. The cell itself utilizes floating gate, field effect transistors for storing information in the form of avalanche injected electric charge. In one embodiment, the memory cell is erasable, in another embodiment, it is not. In an array of these memory cells, the AND function is obtained from the cells comprising a word and the OR function is obtained from cells connecting the words to a common access line. Provision is made for erasing the erasable memory cells singly or en masse.



3,800,298
HOLOGRAPHY MEMORY WITH ZERO-ORDER DIFFRACTION LIGHT REMOVED

Iwao Ogura, Higashikurme; Yoshihiro Onishi, Kokubunji, and Akira Arimoto, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 28, 1972, Ser. No. 276,171
Claims priority, application Japan, July 28, 1971, 46-55979
Int. Cl. G11c *5/02, 13/04*; G02b *27/22*
U.S. Cl. 340—173 LM 5 Claims

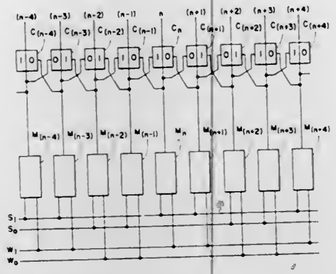


A holography memory apparatus has parallel prisms disposed between the hologram plate and the photosensitive array. A light beam is diffracted at the hologram plate as a coherent light beam and is incident on the hologram plate for holographic image reconstruction and is then passed through the prism. As a result, the zero-order diffraction light pattern is removed, thus preventing it from reaching the photo-sensitive array. Hence, evidently, the photo-sensitive array can be perfectly protected from destruction attributable to the zero-order diffraction light pattern.

3,800,299
MEMORY CELL ARRAY WITH MULTIPLEXED COLUMN SELECT LINES

Gyles Panther, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Quebec, Canada

Filed Feb. 6, 1973, Ser. No. 329,994
Claims priority, application Canada, Dec. 22, 1972, 159853
Int. Cl. G11c *7/00, 11/40*
U.S. Cl. 340—173 FF 6 Claims

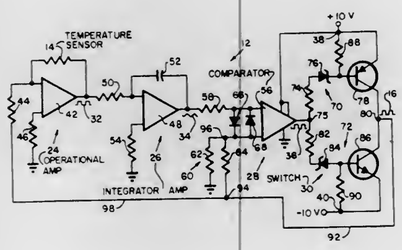


The invention relates to memory-cell arrays wherein the COLUMN SELECT lines are multiplexed so that for, say, the *n*th cell, the COLUMN SELECT lines associated with the $(n-1)$ and $(n+1)$ cells function as the BIT and $\overline{\text{BIT}}$ lines for the *n*th cell. Means for reading and writing into the cells of this array are also disclosed.

3,800,300
CONDITION RESPONSIVE SIGNAL PRODUCING DEVICE

Jack T. Van Oosterhout, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Dec. 23, 1971, Ser. No. 211,215
Int. Cl. G08c *19/16*
U.S. Cl. 340—207 R 4 Claims

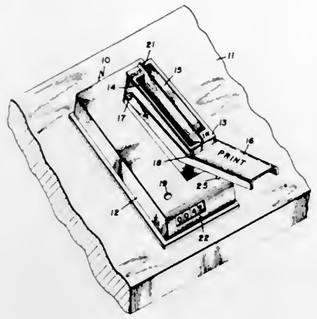


A circuit device for producing a signal indicative of a particular condition such as, for example, temperature, and for transmitting the signal to a remote location is disclosed herein and includes a circuit arrangement for producing an oscillatory output signal having a frequency indicative of the particular condition. This output signal, in addition to being transmitted, is fed back to the circuit arrangement for eliminating changes in its frequency which would otherwise be caused by fluctuations in the voltage supplies required for operating the circuit device.

3,800,301
TELEPHONE TIMER

Rudolph B. Danke, Petersham, Mass., assignor to Simplex Time Recorder Co., Gardner, Mass.

Filed Mar. 20, 1972, Ser. No. 236,358
Int. Cl. G07c *1/06*
U.S. Cl. 346—84 15 Claims

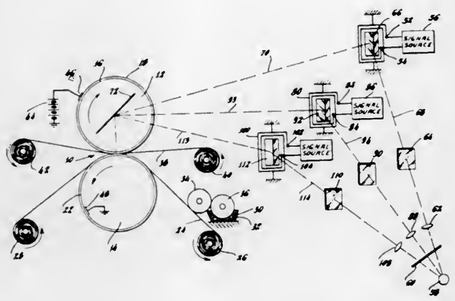


A time recorder for recording elapsed time by stamping on a card the starting and terminating times, including a slot into which the card is inserted and a striking hammer that swings transversely of the slot to press the card against a printing ribbon and a time stamp.

3,800,302
RECORDING OSCILLOGRAPH UTILIZING PHOTOELECTROPHORETIC TECHNIQUES

Leonard M. Carreira, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,651
Int. Cl. G01d *15/06*; G03g *13/18*
U.S. Cl. 346—109 1 Claim



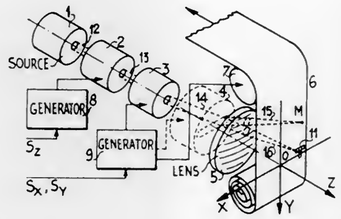
A multi-channel photorecording oscillograph comprises a means for transporting a polychromatic photoelectrophoretic recording medium in a predetermined direction through a recording station of the oscillograph and a means for projecting toward said medium at the recording station a plurality of different colored light beams thereby exposing the transported medium to a plurality of different colored light beams and forming color distinguishable traces thereon. This latter means includes an equal plurality of sensitive galvanometer coils each having a reflective body operatively coupled thereto for movement therewith and arranged for reflecting a light beam which is incident thereon and causing deflection of the light beam across the record medium in a direction generally normal to the direction of transport of the medium in accordance with the amplitude of an electrical signal which

is applied to the coil. Means are provided for developing the exposed photoelectrophoretic recording medium in order to provide a record of signal amplitude variations of the plurality of signals over an interval of time. With this arrangement each trace is formed of a distinctive color thereby rendering the traces associated with particular channels readily discernible.

3,800,303
ELECTRICALLY CONTROLLED GRAPHIC REPRODUCTION SYSTEM

Jean Edgar Picquendar, and Roger Torguet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 1, 1972, Ser. No. 230,642
Claims priority, application France, Mar. 5, 1971, 71.07612
Int. Cl. B41b *19/00*; H04r *3/10*
U.S. Cl. 95—4.5 R 16 Claims



The present invention relates to graphic reproduction systems capable of printing onto a photosensitive material or transferring to a substrate graphic forms such as those displayed upon the screen of a cathode-ray device.

According to the present invention there is provided a graphic reproduction system wherein the writing assembly comprises : a quasi-monochromatic light source, acousto-optical modulator means transmitting the radiant energy beam issuing from said source and acousto-topical means associated with anamorphotic means of prism-type, for deflecting the modulated beam emerging from said acousto-optical modulator means.

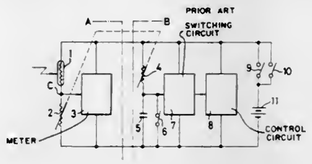
The invention allows the graphic reproduction of data displayed upon the screen of an arbitrary display device, as well as the distant graphic reproduction of arbitrary graphic forms.

3,800,304
ELECTRIC SHUTTER DEVICE HAVING AN EXPOSURE INDICATING CIRCUIT

Tatsuya Taguchi, and Yuichiro Konishi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1972, Ser. No. 236,704
Claims priority, application Japan, Mar. 24, 1971, 46-20592
Int. Cl. G03b *7/08*
U.S. Cl. 95—10 CE 25 Claims

In a shutter control, a photoresistive element whose resistance varies non-linearly with changes in incident light forms part of a voltage divider with a variable resistor. The voltage divider contacts the output of a meter. The resistor, in turn, forms part of an RC circuit that controls the timing of a shutter. Through a movable contact arm, the photoresistive element contacts one of a series of equally spaced tabs that connect to the resistor in a non-linear sequence corresponding to the non-linearity of the photoresistive element. Through a second movable contact arm, the capacitor contacts one of a second series at equally spaced taps that connect to the resistor in a second non-linear sequence. The second sequence corresponds in non-linearity to the non-linearity of a succession of shutter speed adjustments. Adjustments of the shutter speed moves both arms simultaneously so that when the meter

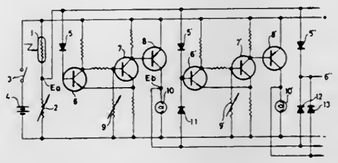


reads a predetermined value, the shutter speed corresponds to the light conditions. Adjustment of the film speed marker moves only the second arm.

3,800,305
EXPOSURE INDICATING DEVICE

Mitsutoshi Ogiso, Kawasaki, and Kiyoshi Takahashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 98,488, Dec. 16, 1970, abandoned. This application Sept. 7, 1972, Ser. No. 287,016
Claims priority, application Japan, Dec. 27, 1969, 44-451529[U]
Int. Cl. G03b *7/00*
U.S. Cl. 95—10 CE 11 Claims



In the device disclosed, a sequence of electronic switches each operates an indicator such as a lamp. Each switch is biased to operate at a higher voltage than the previous switch. The output of a photoconductor is applied to each of the switches. Each switch also receives the outputs of all the previous switches so that the lowest order "on" switch turns off the succeeding switches. According to a preferred embodiment of the invention each switch is a Schmitt trigger.

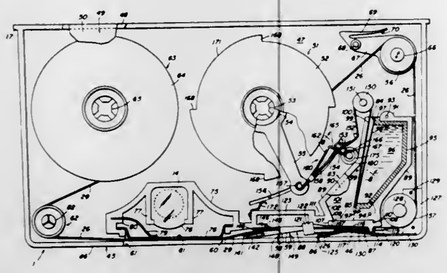
3,800,306
METHOD OF OPERATING A FILM HANDLING CASSETTE

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 227,080, Feb. 17, 1972. This application Jan. 31, 1973, Ser. No. 328,482
Int. Cl. G03c *1/00*
U.S. Cl. 95—13 14 Claims

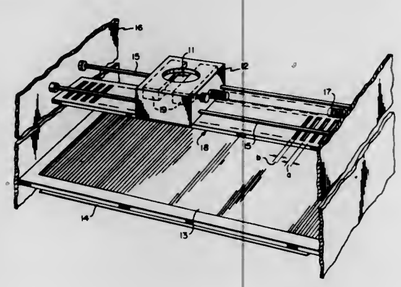
A photographic system, comprising a film cassette containing a strip of film, a supply of processing composition, and a

processor programmed to apply the processing composition to the film upon manipulation of the film in the cassette; and a film drive and projection system adapted to receive the cassette, and containing cyclic drive apparatus responsive to the



insertion of a cassette and to a signal produced by the cassette indicating whether or not the film has been processed for manipulating the film, to cause processing if the film has not been processed, and then to project it; or simply to project the film, if it has been processed.

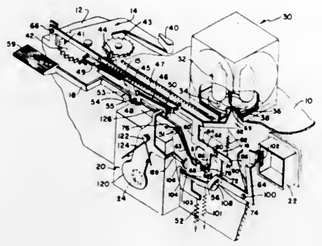
3,800,307
THREE DIMENSIONAL AUTOSTEREOSCOPIC PRODUCTION OF SELECTOR SCREEN IMAGES FORMED OF PERSPECTIVES TAKEN FROM DISCRETE POINTS OF VIEW
Robert M. Wechsler, 475 F.D.R. Drive, New York, N.Y.
Filed Apr. 6, 1972, Ser. No. 241,692
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 R **14 Claims**



A method of producing a three-dimensional autostereoscopic image of a scene is disclosed in which a static camera or a camera employing a discontinuous scan is used to obtain a plurality of perspectives of the scene taken from different points of view, such discrete points of view being separated in accordance with the teachings of the invention by at least a predetermined amount. A discontinuous scan camera is disclosed in which a single optical system is used to obtain the several perspectives from the different points of view.

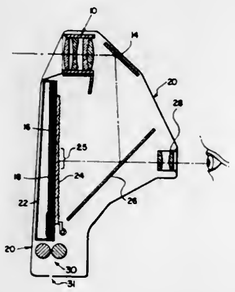
3,800,308
SYNCHRONIZING MECHANISM FOR FLASH FIRING AND SHUTTER ACTUATION
William Howard Horton, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 24, 1972, Ser. No. 299,972
Int. Cl. G03b *15/04*
U.S. Cl. 354—142 **5 Claims**

Photographic apparatus having a shutter mechanism and adapted for use with a flash device is provided with a mechanism for actuating the shutter and firing the flash device in synchronism. The mechanism stores energy in response to



depression of the camera body release, and releases the stored energy to cause shutter actuation in response to flash firing caused by continued depression of the camera body release.

3,800,309
EXPOSURE, VIEWING AND FOCUSING SYSTEM
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 2, 1972, Ser. No. 294,252
Int. Cl. G03b *19/12*
U.S. Cl. 354—152 **13 Claims**

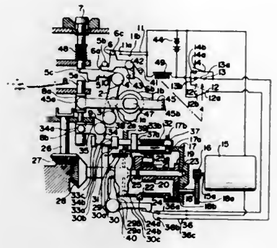


An exposure, viewing and focusing system for a camera utilizing a primary objective lens for all three functions and including a fixed, planar, semitransparent reflector for directing light from the objective lens toward a viewing plane, and a reflecting element having opposed reflecting surfaces movable between an exposure position adjacent the fixed reflector and a viewing position adjacent an exposure plane. One reflecting surface directs light from the lens toward the exposure plane when in the exposure position and the opposite surface is adapted, in the viewing position, to form an image which is visible through the semitransparent reflector.

3,800,310
ELECTRICALLY DRIVEN CAMERA MECHANISMS
Kaoru Umeda, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jan. 24, 1973, Ser. No. 326,941
Claims priority, application Japan, Jan. 25, 1972, 47-8717
Int. Cl. G03b *17/38*
U.S. Cl. 354—171 **8 Claims**

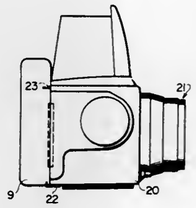
A mechanism is actuated by a single shutter button to control an electrically driven camera so as to select either a

manipulated or an electrically driven mode of photography. In manipulated photography the release member is actuated directly by the shutter button while in electrically driven photography a starting switch connected to an electric motor circuit is actuated by the shutter button. A differential gear



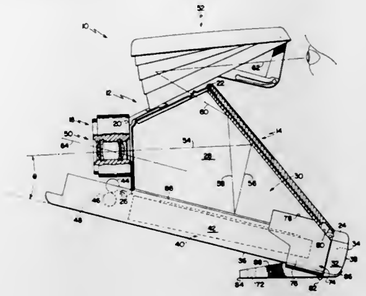
mechanism is driven by the output of the electric motor in dependence upon the variation in resistance of the film winding and the contacting resistance between a cam and a switching actuating lever for controlling the motor circuit to effect film winding and shutter release.

3,800,311
SELF-DEVELOPING SHEET FILM MAGAZINE FOR USE ON A ROLLFILM CAMERA
Kurt Ove Olsson, Goteborg, Sweden, assignor to Fritz Victor Hasselblad, Goteborg, Sweden
Filed Jan. 8, 1973, Ser. No. 322,046
Claims priority, application Sweden, Jan. 12, 1972, 483/72
Int. Cl. G03b *19/10*
U.S. Cl. 354—174 **5 Claims**



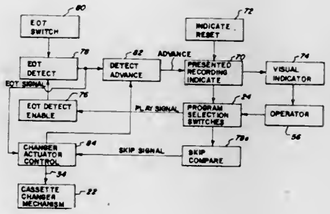
A camera having a housing and lens means defining a focal plane normally cooperating with a film magazine for roll film is provided with a further magazine for sheet film adapted to be detachably secured to the housing in replacement of the roll film magazine. The sheet film in the further magazine is disposed in a film plane parallel to and rearward of the camera focal plane when the further magazine is secured to the housing; and a glass plate is mounted on the further magazine between the sheet film plane and the camera focal plane for effectively displacing the focal plane of the camera rearwardly substantially to the film plane of the sheet film in the further magazine.

3,800,312
NON-FOLDING TRIPOD ADAPTER
Edison R. Brandt, Boca Raton, Fla., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Apr. 24, 1972, Ser. No. 246,808
Int. Cl. G03b *17/56*
U.S. Cl. 354—293 **11 Claims**



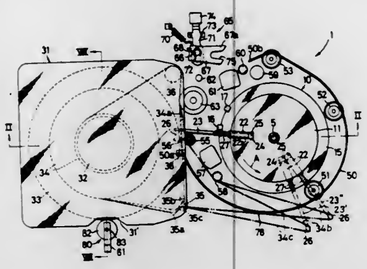
A non-folding adapter for use with a photographic camera having an optical axis in a nonparallel orientation with respect to a supporting base of the camera. The adapter permits a realignment of the camera's optical axis to a horizontal position such that it may be conveniently coupled with a conventional tripod or positioned on a flat surface.

3,800,313
PROGRAMMABLE CONTROL CIRCUIT FOR CASSETTE CHANGER
Joseph Karklys, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed June 11, 1971, Ser. No. 152,243
Int. Cl. G11b *23/12*
U.S. Cl. 360—69 **11 Claims**



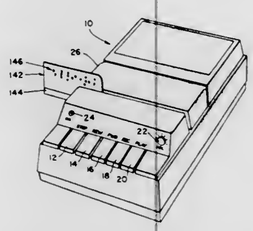
A programming circuit for controlling a cassette positioning mechanism of a cassette magnetic tape player so that preselected ones of a plurality of cassette tape sides are played automatically in sequence. An electronic counter indicates which of the tape sides is being presented at a position to be picked up by providing a count signal on one of a plurality of counter outputs corresponding thereto, and a programming selection switch coupled to each of the counter outputs is provided to select the recordings to be played. When the switch is in the play position, an end-of-tape detector circuit is enabled, and the recording on the tape side being presented is allowed to be played. At the completion of the playing of the tape side, the cassette positioning mechanism is actuated and the counter is advanced by one count in response to an end-of-tape signal from the detector.

3,800,314
MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS
Seiji Sato, Kanagawa-Ken, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 19, 1972, Ser. No. 254,918
Claims priority, application Japan, May 22, 1971, 46-35010
Int. Cl. G11b *5/00, 15/32*
U.S. Cl. 360—85 **19 Claims**



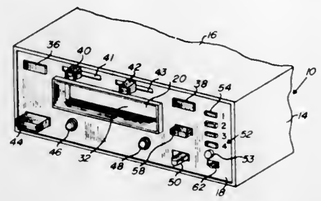
A magnetic recording and/or reproducing apparatus of the type in which, during recording or reproducing, the magnetic tape extending between supply and take-up reels is wrapped about at least a portion of the periphery of a guide drum for scanning of oblique record tracks on the tape by one or more rotary magnetic heads associated with the guide drum, is provided with a relatively simple automatic tape loading and unloading device that includes a tape engaging pin member engageable, in an inactive position, with the tape between the reels and being movable in an arcuate path about the drum to an operative position for withdrawing tape from the reels and wrapping a portion of the withdrawn tape on the drum periphery while another portion of the tape is engaged with fixedly positioned tape guiding members for holding such other portion of the withdrawn tape away from the guide drum. The tape guiding members preferably include a guiding element, desirably constituted by a rotated capstan, and with which the tape engaging pin member is aligned in its operative position where a tape shifting member acts to transfer the withdrawn tape from the tape engaging pin member to the rotated capstan or guide element.

3,800,315
CASSETTE TAPE RECORDER SENSORY ADAPTOR
Charles R. Budrose, Melrose, Mass., assignor to Bio-Dynamics Inc., Cambridge, Mass.
Filed Mar. 19, 1971, Ser. No. 126,040
Int. Cl. G11b *25/04, 25/06*
U.S. Cl. 360—88 **7 Claims**



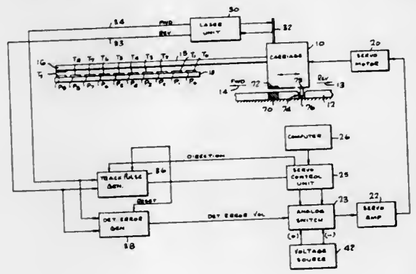
An educational device, particularly adapted for teaching the braille system of writing, includes a sensory adaptor having a guideway which operates to receive a card having representations of at least two of the perceptable senses, one of the representations being aural. The sensory adaptor is removably seated in a tape recorder adapted for interconnection with a magnetic tape cartridge in place of the cartridge. As the card is guided by sensors in the tape recorder, the aural representation is reproduced as intelligible sounds and the other representation is rendered available for interpretation.

3,800,316
RECORD CONTROL CIRCUIT FOR MULTI-TRACK CARTRIDGE TAPE PLAYER-RECORDER
Phillip J. Kuharchuk, Brookfield, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 22, 1971, Ser. No. 126,739
Int. Cl. G11b *5/44, 5/56*
U.S. Cl. 360—74 **5 Claims**



A control circuit for use in the record mode in a cartridge type tape player-recorder includes a sensor for sensing the conductive strip conventionally provided on a multi-track recording tape to define the ends of the tape tracks, for the purpose of energizing a relay which disables the tape drive motor to discontinue the recording process. A program switch connected to the circuitry may be positioned so that the tape drive is disabled in accordance with the sensing of the conductive strip, subsequent to the recordation of information on each set of tape tracks making up a recording channel or subsequent to the recordation of information on a set of tape tracks making up a predetermined one of the recording channels.

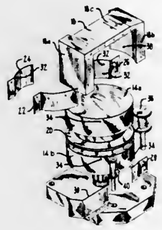
3,800,317
SERVO SYSTEM AND METHOD FOR POSITIONING AN ELEMENT AT PRECISELY SPACED POSITIONS
Frank W. Lin, San Jose, Calif., assignor to Caelus Memories, Inc., San Jose, Calif.
Filed July 31, 1972, Ser. No. 276,423
Int. Cl. G11b *5/52*
U.S. Cl. 360—78 **24 Claims**



A positioning servo system is disclosed, the function of which is to control the sequential positioning of an element at each of a plurality of defined positions, accurately spaced from one another, even though at each defined position the element's position may deviate therefrom. The system includes a device, such as a laser interferometer, which

produces a pulse for each known distance of travel of the element, such as a magnetic head. The system includes a main up-down counter which is reset to contain a selected number or count when the head is at a reference first position. The selected number is related to the number of pulses which the device produces when the head is moved a distance precisely equal to the distance between the first position and a second position at which the head is to be positioned. As the head is moved to the second position, the pulses from the laser interferometer change the count in the main counter. When the count reaches a known value a track pulse is produced, indicating the arrival at the second position. The track pulse causes the main counter to be reset to a count which is a function of the precise distance from the second position to a third position. Also, the track pulse activates an error generator to generate an error signal which is used to servo the head so as to minimize the deviation of its actual position from the second position. As the servoing takes place pulses are produced which affect the count in the main counter. Consequently, when the head is moved to the third position, a track pulse is produced when the head is precisely at the desired distance from the second position.

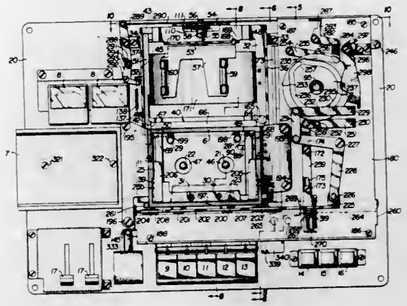
3,800,318
HELICAL TAPE GUIDE
Johannes K. Jantzen, Mountain View, Calif., assignor to International Video Corporation, Sunnyvale, Calif.
Filed Oct. 26, 1972, Ser. No. 301,062
Int. Cl. G11b *15/66*
U.S. Cl. 360—84 **3 Claims**



A helical tape guide around a stationary drum encasing a rotating scanner assembly, the tape guide has a plurality of curved plates arranged around and displaced from the drum and a series of spatially positioned pins projecting from the plates into corresponding holes in the drum, the pins being arranged in a helical path around the drum forming a guide path for the lead end of a tape leader threaded around the drum by a tape mechanism.

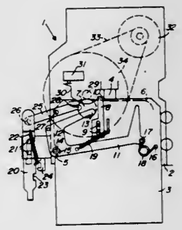
3,800,319
CASSETTE TYPE TAPE RECORDING AND REPRODUCING APPARATUS
Eisuke Fujimoto, and Yoshio Yoshikawa, both of Tokyo, Japan, assignors to Akai Electric Company, Limited, Tokyo, Japan
Filed Apr. 20, 1971, Ser. No. 135,630
Claims priority, application Japan, Apr. 20, 1970, 45-33616; June 15, 1970, 45-51772; Oct. 7, 1970, 45-88067
Int. Cl. G11b *23/12, 15/24*
U.S. Cl. 360—92 **13 Claims**

In a magnetic tape recording and reproducing apparatus utilizing cassettes in which the magnetic tape is wholly contained on two reels, the cassette is automatically turned over during or after the finish of recording or reproducing of the tape running in one direction to continue recording or reproducing of the tape running in the opposite direction, or the cassette is automatically discharged during or after the finish of recording or reproducing of the tape. A plurality of



cassettes which are loaded in the cassette type tape recorder are automatically and successively turned over one after another for recording or reproducing and then discharged. It is possible, therefore, to effect recording or reproducing of the tape running in one traveling direction and then in the opposite traveling direction.

3,800,320
TEMPORARY STOP DEVICE FOR CARTRIDGE TAPE PLAYER-RECORDER
Hajime Murakami, Iwaki, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan
Filed Jan. 20, 1972, Ser. No. 219,353
Int. Cl. G11b *25/06*
U.S. Cl. 360—93 **9 Claims**



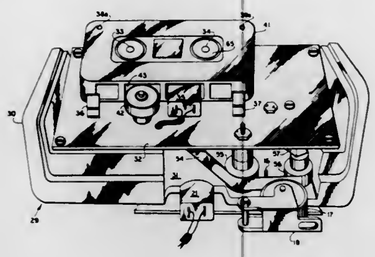
A temporary stop device or pause mechanism for use in a tape cartridge player-recorder includes a spring biased manually operated lever arm movable in accordance with the depression and release thereof into and out of engagement with a spring biased cartridge engaging arm of a cartridge locking mechanism to urge a cartridge inserted into the tape player-recorder away from a tape driving capstan and magnetic tape head, thereby to discontinue momentarily the recording or playing process, depending upon the mode of operation of the player-recorder. The latter is accomplished without affecting the operation of the tape drive mechanism and magnetic tape head.

3,800,321

MINIATURE CASSETTE ADAPTER APPARATUS AND CASSETTE TAPE RECORDER-REPRODUCER

Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.

Filed Jan. 24, 1972, Ser. No. 219,960
Int. Cl. G11b *23/04*
U.S. Cl. 360—94 **11 Claims**



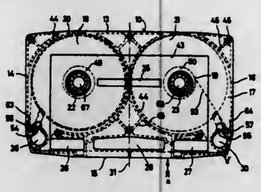
Adapter apparatus to be received within the cassette holder of a conventional cassette record-playback apparatus to permit miniature tape cassettes to be used in the record-playback apparatus, and record-playback apparatus useful with said adapter apparatus. The adapter apparatus is configured to be received within the location normally occupied by a tape cassette of standard size and configuration, and includes a receptacle into which a miniature tape cassette may be placed. The adapter includes drive apparatus which is selectively engaged to be driven by the capstan and pressure roller of the record-playback apparatus and which drives the forward takeup reel of the miniature tape cassette. One or more magnetic heads are provided in the adapter apparatus for engagement with the tape carried in the miniature cassette.

3,800,322

TAPE RECORDER AND MAGNETIC TAPE CASSETTE WITH MOVABLE TENSIONING AND BRAKE MEANS

Klaus Schoettle, Ludwigshafen; Joachim Hack, Frankenthal; Gustav Loewenberg, and Werner Hoffmann, both of Ludwigshafen, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Aug. 24, 1971, Ser. No. 174,471
Claims priority, application Germany, Aug. 25, 1970, 2041977; July 29, 1971, 2137939
Int. Cl. G11b *23/04, 19/22*
U.S. Cl. 179—100.2 Z **11 Claims**



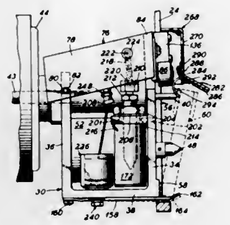
The invention relates to a magnetic tape cassette and a tape recorder for use with such a cassette. More specifically, the invention relates to the provision of movable means within the cassette, which means — in a first position — hold the magnetic tape taut and prevent movement of the reels in the cassette and — in a second position — release the magnetic tape and the reels, which may then be rotated by the tape recorder, the tape being guided only by means attached to the recorder. Magnetic head positioning means provided on the recorder are adapted to adjust the position of magnetic heads, which are rigidly mounted on a head plate which is movable relatively to the tape, to the desired position for recording and reproduction.

3,800,323

CASSETTE TAPE TRANSPORT WITH PIVOTALLY SUPPORTED UNIVERSALLY ADJUSTABLE HEAD AND UPRIGHT FRONT-MOUNTED CASSETTE

John P. Jenkins, Towanda, Ill., assignor to International Tapetronics Corporation, Bloomington, Ill.

Filed Mar. 24, 1972, Ser. No. 237,762
Int. Cl. G11b *15/18, 15/29*
U.S. Cl. 360—96 **6 Claims**



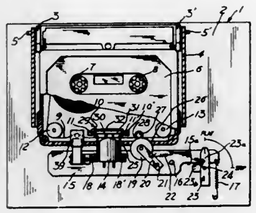
A swing arm supports a sound transducer head and a pinch roller for pivotable movement between three positions as follows: a recording and reproducing position in which both the head and pinch roller engage the tape, and tape speed is regulated by a capstan; a scanning position in which only the head engages the tape to enable monitoring it at speeds independent of the capstan; and an inactive position in which the head and pinch roller are both out of engagement with the tape. The swing arm is spring-biased toward the inactive position and is movable to either of the other positions by solenoids. A simplified adjustment, using only three adjusting screws, provides optimum zener, azimuth, and transversely-centered relationships between the head and tape. A cassette is mounted in an upright, fully visible and accessible operating position. Deflectible retaining members automatically engage the cassette and hold it in operating position.

3,800,324

MAGNETIC RECORDING AND REPRODUCING APPARATUS

Niro Nakamichi, Kodaira, Japan, assignor to Nakamichi Research Inc., Tokyo, Japan

Filed July 13, 1972, Ser. No. 271,486
Claims priority, application Japan, July 14, 1971, 46-61710[U]
Int. Cl. G11b *5/00, 15/32, 23/04*
U.S. Cl. 360—96 **9 Claims**



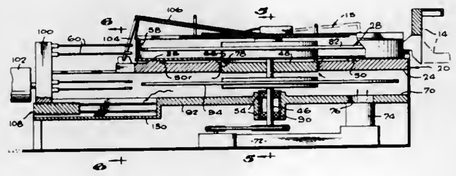
A magnetic recording and reproducing apparatus for use with a cassette including a pair of reels between which a magnetic tape is wound, comprising a magnetic head movable between an advanced position in which the magnetic head contacts the tape in the cassette and a retracted position in which the head is apart from the cassette, a capstan for feeding the tape in the cassette and a pinch roller arranged to associate with the magnetic head for forcing the tape against the capstan, said cassette having a non-operative position in which the cassette can be received into the apparatus and withdrawn therefrom and an operative position in which the cassette cooperates with the magnetic head and the pinch roller in the advanced position and the capstan to record on or reproduce from the tape in the cassette, said apparatus including a tension device adapted to resiliently apply tension on the tape in the cassette when the cassette is in the operative position, comprising a tension arm having an engaging portion for engaging the tape in an anti-frictional manner, said tension device associated with said magnetic head and said pinch roller so that when the said magnetic head and said pinch roller engage the tape, said engaging portion of said tension arm is forced against the tape and when said head and said pinch roller are disengaged with the tape, said engaging portion of said tension arm is apart from the tape.

3,800,325

DISC DRIVE FOR MEMORY DISC CARTRIDGE

Terrence J. O'Brien, San Jose, Calif., assignor to Callus Memories, Inc., San Jose, Calif.

Filed Aug. 14, 1972, Ser. No. 280,541
Int. Cl. G11b *1/02*
U.S. Cl. 360—98 **11 Claims**



A front loading disc drive in which a cartridge receiver pivotally mounted on the machine frame receives a standard memory disc cartridge and then lowers it so the memory disc of the cartridge rests on a drive spindle, wherein the cartridge receiver is a wire framework and the machine frame has raised precision surfaces for supporting the cartridge and has recesses between the precision surfaces into which the cartridge receiver is lowered so it drops away from the cartridge. The machine frame has a raised precision surface surrounding the spindle hole through while the spindle projects, and filtered air is blown under pressure thereunder so that only filtered air can leak into the central aperture of the cartridge. Another raised precision surface surrounds a filtered air outlet in the machine frame that lies under the cartridge air hole. Filtered air blown into the cartridge comes from a chamber beneath the cartridge, and an auxiliary memory disc is fixed to the spindle within this chamber so the auxiliary disc is bathed in filtered air.

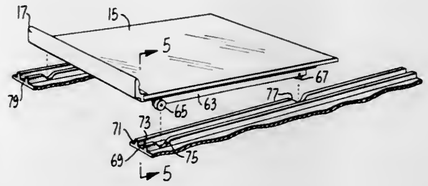
3,800,326

COMPUTER SYSTEM DISC DRIVE ACCESS STRUCTURE

Jay Brent Nilson, and Earl N. Bailey, both of San Jose, Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Sept. 20, 1972, Ser. No. 290,758
Int. Cl. G11b *1/02*
U.S. Cl. 360—98 **13 Claims**

A cabinet for a disc drive includes a base structure containing a disc pack drive mechanical mechanism and an electronic assembly on the top of the base structure containing the electronic logic circuitry with flexible cables interconnecting the electronic assembly with the base structure. The elctronic assembly is slidable over the top of the base structure to expose an opening to permit access for maintenance. Normally covered slots are provided in the top of the base structure for



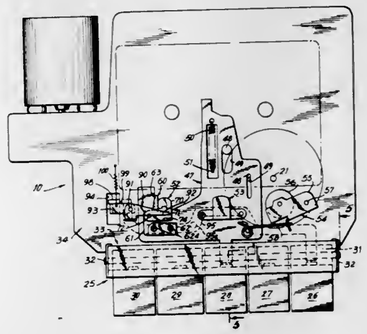
the interconnecting cables to pass as the electronic assembly is pushed forward on the base structure to expose the access opening. The covers on these slots are moved out of the way as the electronic assembly is moved forward. A magnetic disk pack receptacle within the base structure has an opening in its top which is covered by a flat cover having rollers that ride on tracks attached to the top of the base structure.

3,800,327

MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH ERASING HEAD AND A TAPE GUIDE MOUNTED ON A MOVABLE CARRIAGE

Shin Okita, Saitama, and Masaru Nakakita, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 3, 1972, Ser. No. 268,610
Claims priority, application Japan, July 10, 1971, 46-60665[U]
Int. Cl. G11b *15/29, 15/04, 23/04*
U.S. Cl. 360—105 **23 Claims**



An apparatus for recording and reproducing signals on a magnetic tape, preferably contained in a cassette, has magnetic recording and reproducing head means,a permanently magnetized erasing head and a tape guide all mounted on a carriage which is movable, upon selection of a recording or reproducing operation of the apparatus, from an inoperative position, in which the apparatus is adapted to receive the cas-

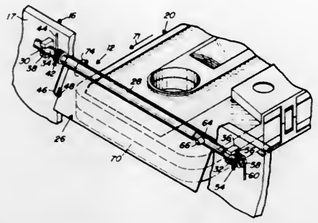
sette or other tape supply, to an operative position at which the recording and reproducing head means and the tape guide are engaged with the tape, and the erasing head is movable with respect to the carriage to also engage the tape when the recording mode of operation is selected and to be spaced from the tape, for avoiding the erasing of signals therefrom, when the reproducing mode of operation is selected.

3,800,328
TWO-WAY DOOR ASSEMBLY FOR A CASSETTE TAPE PLAYER

Alfred R. Harlan, Glendale Heights, and Ronald E. Petersen, Des Plaines, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 28, 1972, Ser. No. 248,508
Int. Cl. G11b *1/02, 23/04*; **E05f** *1/14*
U.S. Cl. 360—137 **7 Claims**

A two-way door assembly for a cassette tape player includes a door mounted at a first end for rotation about an independently rotatable support shaft. A first biasing spring is coupled to the door to bias the latter in a first rotational direction to a normally closed condition. A cassette inserted into the player tensions the first biasing spring. The spring returns the door to the closed condition subsequent to full insertion of the cassette into the player. When ejected, the movement of the cassette rotates the door in the opposite direction. A coupling pin



extending from the support shaft is engaged by the door to rotate the shaft against a second biasing spring to tension the latter. Once the cassette is ejected, the second biasing spring rotates the shaft and door to their normal conditions.

DESIGNS

MARCH 26, 1974

230,903
CANDY TABLET

John Ray Barnes, Warson Woods, Mo., assignor to Sunline, Inc., Crestwood, Mo.

Filed Oct. 2, 1972, Ser. No. 294,456
Term of patent 14 years
Int. Cl. D1—*02*
U.S. Cl. D1—12

230,904
FROZEN CONFECTION

Durant S. Abernethy, Kansas City, Mo., and Thomas R. Korchak, Shawnee Mission, Kans., assignors to Merritt Foods Company, Kansas City, Mo.

Filed July 7, 1972, Ser. No. 269,589
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—22

230,905
FROZEN CONFECTION

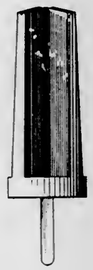
Sydney L. Bair, Jr., Overland Park, and Thomas R. Korchak, Shawnee Mission, Kans., assignors to Merritt Foods Company, Kansas City, Mo.

Filed July 7, 1972, Ser. No. 269,829
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—22

230,906
FROZEN CONFECTION

Sydney L. Bair, Jr., Overland Park, and Thomas R. Korchak, Shawnee Mission, Kans., assignors to Merritt Foods Company, Kansas City, Mo.

Filed July 7, 1972, Ser. No. 269,830
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—22



230,907
FROZEN CONFECTION
Sydney L. Bair, Jr., Overland Park, Kans., assignor to Merritt Foods Company, Kansas City, Mo.
Filed July 7, 1972, Ser. No. 269,852
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—22

230,908
FROZEN CONFECTION
Sydney L. Bair, Jr., Overland Park, Kans., assignor to Merritt Foods Company, Kansas City, Mo.
Filed July 7, 1972, Ser. No. 269,853
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—22

230,909
PANTS
Charles Avrich, Montreal, Quebec, Canada, assignor to Casual Togs, Inc., Montreal, Quebec, Canada
Filed July 24, 1972, Ser. No. 274,757
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28

230,910
PANTS
Charles Avrich, Montreal, Quebec, Canada, assignor to Casual Togs, Inc., Montreal, Quebec, Canada
Filed July 24, 1972, Ser. No. 274,758
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28

230,911
HELMET
Alex Ispas, Jr., Vista, Calif., assignor to Royal Dynamics Corporation, San Marcos, Calif.
Filed Feb. 17, 1972, Ser. No. 227,316
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232

230,912
PROTECTIVE HOOD
Everett Schaffer, Jr., 308 Barrett St., Fayetteville, N.C. 28306
Filed Feb. 2, 1972, Ser. No. 223,064
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

230,913
BOWLING GLOVE
Donald J. Carter, Tarzana, Calif., assignor of a fractional part interest to Frank Esposito, Eagle Pass, Tex.
Filed June 20, 1972, Ser. No. 264,473
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361

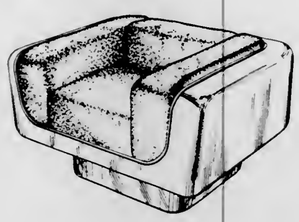
230,914
BUTTON TOPPER OR SIMILAR ARTICLE
Clarence D. Marer, Johnston, R.I., assignor to Swank, Inc., Attleboro, Mass.
Filed Feb. 2, 1972, Ser. No. 223,048
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—451

230,915
SEWING THIMBLE
Ann R. Fowler, 1239 B St., Hayward, Calif. 94541
Filed Nov. 8, 1972, Ser. No. 304,835
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—19 E

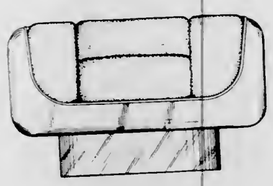
230,916
SHELF UNIT FOR A CHILD
Walter F. Rau, Sr., 211 Brookletts Ave., Easton, Md. 21601
Original design application Nov. 20, 1970, Ser. No. 26,089. Divided and this application June 9, 1972, Ser. No. 261,568
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—5

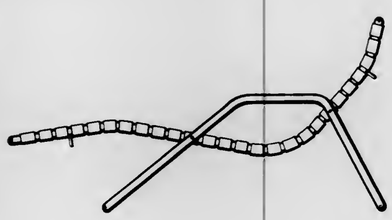
230,917
CHEST OR SIMILAR ARTICLE FOR A CHILD
Walter F. Rau, Sr., 211 Brookletts Ave., Easton, Md. 21601
Original design application Nov. 20, 1970, Ser. No. 26,089. Divided and this application June 9, 1972, Ser. No. 261,580
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—5

230,918
ARTICLE OF SEATING
William C. Andrus, Wyoming, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Mar. 10, 1972, Ser. No. 233,845
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26



230,919
CHAISE LONGUE
Marcel G. Bretos, 140 E. 28th St., New York, N.Y. 10016
Filed Aug. 24, 1972, Ser. No. 283,597
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—38





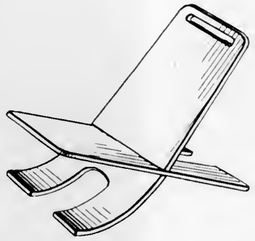
230,920
CHAIR
Morris F. Fisher, Carmel, Ind., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Jan. 20, 1972, Ser. No. 219,594
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—39

230,921
SWINGING LOUNGE
Roswell W. Bonnnell, R.D. 1, Box 193, Basking Ridge, N.J. 07920; Michael R. Krupsky, 20 Corsi Road, Bloomfield, N.J. 07003; and Richard Quelch, Armstrong Road, R.D. 3, Sussex, N.J. 07461
Filed July 24, 1972, Ser. No. 274,214
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—52

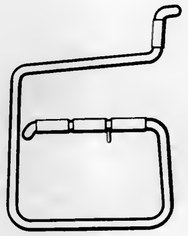
230,922
SEAT
Marilyn Lewis, Beverly Hills, Calif., assignor to Hamburger Hamlets, Inc., Beverly Hills, Calif.
Original design application Dec. 15, 1969, Ser. No. 20,495, now Patent No. 222,537. Divided and this application Mar. 1, 1971, Ser. No. 119,992
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—59

230,923
FOLDING EASY-CHAIR
Giancarlo Piretti, Bologna, Italy, assignor to Anonima Castelli S.p.A., Bologna, Italy
Filed Apr. 27, 1972, Ser. No. 248,345
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—65

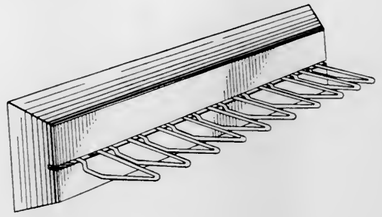
230,924
RECLINING CHAIR
Amos Rashbam, Chaim Ichud, Israel (% George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007)
Filed Aug. 9, 1972, Ser. No. 278,951
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—65



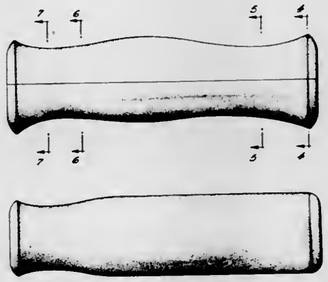
230,925
ARM CHAIR
Marcel G. Bretos, 140 E. 28th St., New York, N.Y. 10016
Filed Aug. 21, 1972, Ser. No. 282,650
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70



230,926
TIE AND BELT RACK
Dick Dillingham, 4309 Shady Hill Drive, Dallas, Tex. 75229
Filed Mar. 20, 1972, Ser. No. 233,407
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—118



230,927
WHEELCHAIR HANDGRIP
Bert Jacob Goletski, 5148 Russo St., Culver City, Calif. 90230
Continuation of abandoned design application Ser. No. 16,953, Apr. 30, 1969. This application Nov. 16, 1970, Ser. No. 25,990
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

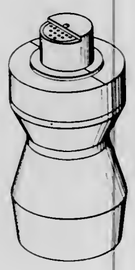


230,928
COMBINED CHEESE SLICER AND BOARD
Michael Lax, 68 E. 91st St., New York, N.Y. 10028
Filed June 23, 1972, Ser. No. 265,471
Term of patent 14 years
Int. Cl. D7—*01, 04*
U.S. Cl. D7—43

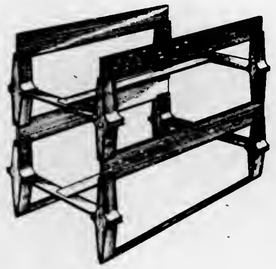
230,929
COASTER
Stephen S. Wang, 104 E. Berkley,
Arlington Heights, Ill. 60004
Filed Dec. 26, 1972, Ser. No. 317,956
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—45

230,930
COMBINED CARVING BOARD AND MEAT HOLDER
Herve Baribeau, Levis, Quebec, Canada, assignor to
Baribeau & Fils Inc., Levis, Quebec, Canada
Filed Sept. 5, 1972, Ser. No. 286,186
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—46

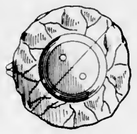
230,931
COMBINED SALT AND PEPPER SHAKER
James A. Sewell, 4437 Providence St.,
Houston, Tex. 77020
Filed June 13, 1972, Ser. No. 262,225
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—57



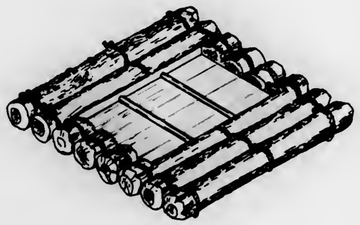
230,932
WINE RACK
John Izumi, 22W317 Glen Valley Drive,
Glen Ellyn, Ill. 60137
Filed July 18, 1972, Ser. No. 272,789
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—71



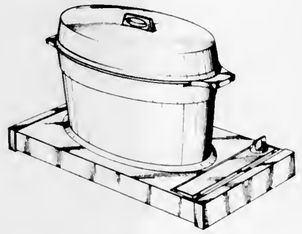
230,933
LETTUCE CRISPER
Wilfred J. Blease, Greenville, N.H., assignor to Pioneer
Plastics, Inc., Greenville, N.H.
Filed Feb. 29, 1972, Ser. No. 230,553
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—76

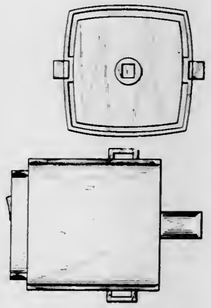


230,934
SOAP DISH OR THE LIKE
Harold F. McGruden, 4005 Cheyenne Ave.,
Hannibal, Mo. 63401
Filed Sept. 11, 1972, Ser. No. 287,679
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—89



230,935
COMBINED ELECTRIC COOKING BASE AND VESSEL
George Lloveras, New York, N.Y., assignor to
Cornwall Corporation, Boston, Mass.
Filed Mar. 30, 1972, Ser. No. 239,853
Term of patent 14 years
The portion of the term of the patent subsequent to
Jan. 15, 1988, has been disclaimed
Int. Cl. D7—*02*
U.S. Cl. D7—94





230,936
COATRACK FOR ATTACHING TO A STOOL
Ralph Pepper, 230—31 57th Road,
Bayside, N.Y. 11364
Filed Mar. 10, 1972, Ser. No. 233,869
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—116

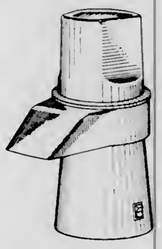
230,937
DRIVE UNIT FOR A BARBEQUE ROTISSERIE SPIT
William E. Bartasevich, Glenshaw, Pa., assignor to
Disston, Inc., Pittsburgh, Pa.
Filed May 5, 1972, Ser. No. 250,845
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—129

230,938
HANDLE FOR STEAK KNIVES
Thomas Lamb, 42 Mariomi Road,
New Canaan, Conn. 06840
Filed July 7, 1972, Ser. No. 269,597
Term of patent 14 years
Int. Cl. D7—*03;* D8—*03*
U.S. Cl. D7—152

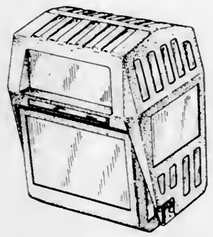
230,939
HANDLE FOR A KITCHEN TOOL OR SIMILAR ARTICLE
Thomas Lamb, 42 Mariomi Road, New Canaan, Conn. 06840
Filed July 7, 1972, Ser. No. 269,598
Term of patent 14 years
Int. Cl. D7—*02, 03*
U.S. Cl. D7—152

230,940
HANDLE FOR CUTLERY
Thomas Lamb, 42 Mariomi Road, New Canaan, Conn. 06840
Filed July 7, 1972, Ser. No. 269,599
Term of patent 14 years
Int. Cl. D7—*03;* D8—*03*
U.S. Cl. D7—152

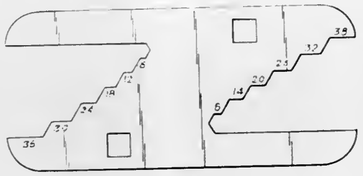
230,941
COMBINED MEAT AND VEGETABLE CHOPPER
Paul Marrie, Dijon, France, assignor to Etud S.A., Quetigny, France
Filed Dec. 30, 1971, Ser. No. 214,530
Claims priority, application France July 5, 1971
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—155



230,942
RECEPTACLE FOR TRASH
Clayton G. Williams and Clayton J. Ammondson, Reidsville, N.C., assignors to Environmental Advertising Systems, Inc., Winston-Salem, N.C.
Filed Mar. 8, 1973, Ser. No. 339,425
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—193

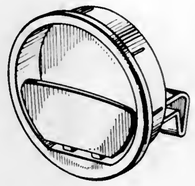


230,943
WRENCH HEAD
Louis F. Marcanello, 526 W. Fisher Ave., Philadelphia, Pa. 19120
Filed July 28, 1972, Ser. No. 276,048
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—17

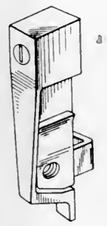


230,944
SCREW DRIVER
David K. Tremaine and Darleen Tremaine, both of 3158 Marathon Drive, San Diego, Calif. 92123
Filed Mar. 17, 1972, Ser. No. 235,875
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—82

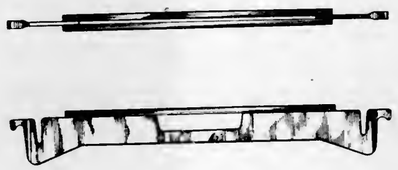
230,945
FLUSH MOUNTED LATCH
Melvin H. Beckman, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed May 11, 1972, Ser. No. 252,537
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—109



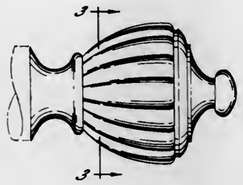
230,946
ACCESS CONTROL HANDLE
Bob G. Harrell, St. Louis, Mo., assignor to The Jackes-Evans Manufacturing Company, St. Louis, Mo.
Filed July 14, 1972, Ser. No. 271,716
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—148



230,947
LOOSE LEAF POST BINDER HANGER AND CARRIER
Henry V. Ivory, Chatham, N.J., assignor to Boorum & Pease Company, Brooklyn, N.Y.
Filed July 17, 1972, Ser. No. 272,121
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154

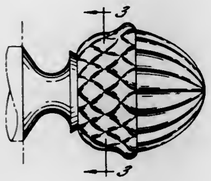


230,948
FINIAL
Daniel R. Moon, Oak Park, Ill., assignor to Newell Companies, Inc., Freeport, Ill.
Filed July 26, 1972, Ser. No. 275,203
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—211

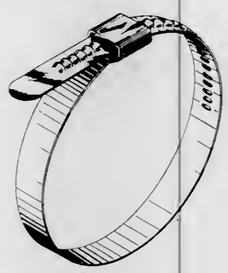


230,949
FINIAL FOR DRAPERY HARDWARE
Irving Levine, 9171 Gazette Ave., Chatsworth, Calif. 91311
Filed Aug. 16, 1971, Ser. No. 172,375
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—212

230,950
FINIAL
Daniel R. Moon, Oak Park, Ill., assignor to Newell Companies, Inc., Freeport, Ill.
Filed July 26, 1972, Ser. No. 275,204
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—212

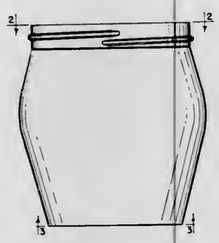


230,951
PIPE CLAMP
Louie J. Marchese, 5116 N. 17th St., Phoenix, Ariz. 85016, and Robert A. Hildebrandt, P.O. Box 42, Queen Creek, Ariz. 85242
Filed Oct. 29, 1971, Ser. No. 194,087
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—229

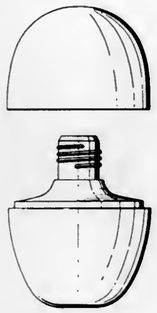


230,952
CLAMP FOR CONNECTING TUBULAR MEMBERS
Norio Matsuura, 31 Owada-naka 2-chome, Nishiyodogawa-ku, Osaka, Japan
Filed Feb. 22, 1972, Ser. No. 228,473
Term of patent 14 years
The portion of the term of the patent subsequent to Dec. 5, 1986, has been disclaimed
Int. Cl. D8—*99*
U.S. Cl. D8—229

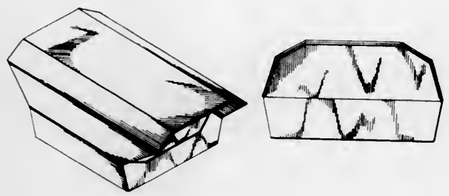
230,953
JAR OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Apr. 26, 1972, Ser. No. 247,935
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—140



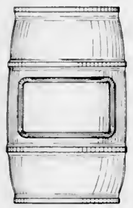
230,954
COMBINED BOTTLE AND CLOSURE THEREFOR
Salvatore Gregorietti, Via Canova 31, Milan, Italy
Filed July 26, 1971, Ser. No. 166,338
Claims priority, application Great Britain Jan. 28, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—145



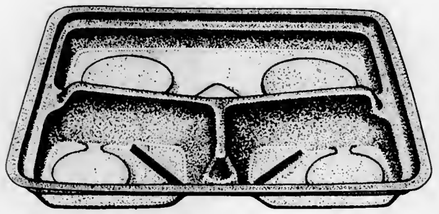
230,955
CARTON
James H. Katzenmeyer, Elkhart, Ind., assignor to Continental Can Company, Inc., New York, N.Y.
Filed Dec. 15, 1970, Ser. No. 26,507
Term of patent 14 years
The portion of the term of the patent subsequent to Nov. 10, 1984, has been disclaimed
Int. Cl. D9—*03*
U.S. Cl. D9—180



230,956
CAN OR SIMILAR ARTICLE
Dexter M. Bystedt, Clarendon Hills, and Thomas R. Stanley, Downers Grove, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Continuation of abandoned design application Ser. No. 206,986, Dec. 10, 1971. This application Dec. 4, 1972, Ser. No. 311,581
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



230,957
COMPARTMENTED COVER FOR A TRAY
Steve Cyr and Mark Whelan, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed June 12, 1970, Ser. No. 23,462
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254

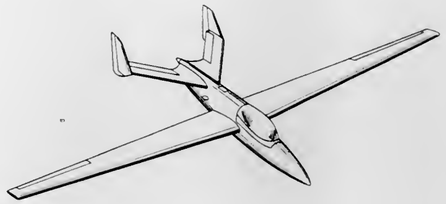


230,958
FOAM DISPENSING NOZZLE FOR AN AEROSOL CONTAINER
Alfred W. Wakeman, Durham, Conn., assignor to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Jan. 24, 1973, Ser. No. 326,512
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—258

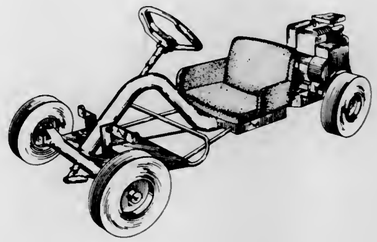
230,959
DISPENSER HEAD FOR A COLLAPSIBLE TUBE OR THE LIKE
Basil Sambanidis, 87—10 37th Ave., Jackson Heights, N.Y. 11372
Filed Sept. 13, 1972, Ser. No. 288,662
Term of patent 7 years
Int. Cl. D9—*07*
U.S. Cl. D9—275

230,960
HANDLE FOR UNDERWATER VEHICLE FOR PULLING DIVER THROUGH THE WATER OR THE LIKE
George J. Peroni, Miami, Fla., assignor to Seatech Corporation, Miami, Fla.
Filed Feb. 16, 1972, Ser. No. 227,008
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—70

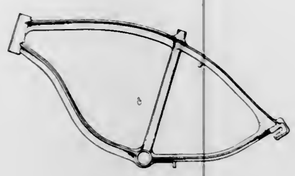
230,961
AIRPLANE
T. Claude Ryan and Peter F. Girard, San Diego County, Calif., assignors to Ryson Aviation Corp., San Diego, Calif.
Filed May 22, 1972, Ser. No. 255,917
Term of patent 7 years
Int. Cl. D12—*07*
U.S. Cl. D12—71



230,962
CART
Edgar W. Detjen, Kiel, Wis., assignor to Gilson Bros. Co., Plymouth, Wis.
Filed Jan. 20, 1972, Ser. No. 219,596
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—88

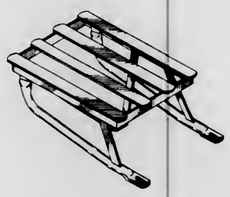


230,963
BICYCLE FRAME
Alfred F. Bauer, Toledo, Ohio, assignor to N L Industries, Inc., New York, N.Y.
Filed July 26, 1972, Ser. No. 275,200
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—111

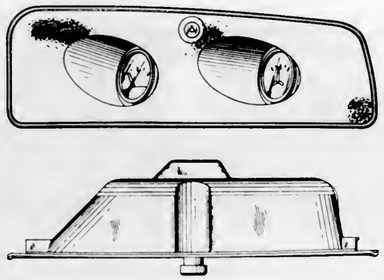


230,964
DRAIN PAN
Cecil N. Blackmore, Hartland, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 7, 1972, Ser. No. 278,487
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D12—155

230,965
MOTORCYCLE LUGGAGE CARRIER
John H. Heltzen, Long Beach, Calif. (15107 S. Main, Gardena, Calif. 90248)
Filed May 17, 1973, Ser. No. 361,069
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158

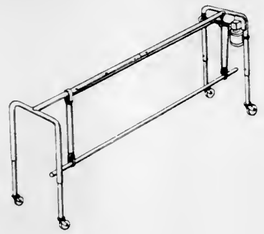


230,966
INSTRUMENT PANEL UNIT TO BE MOUNTED IN THE GLOVE COMPARTMENT OPENING OF A VEHICLE
John N. Hill, Chicago, Ill., assignor to American Yazaki Corporation, Chicago, Ill.
Filed Aug. 14, 1972, Ser. No. 280,597
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—192

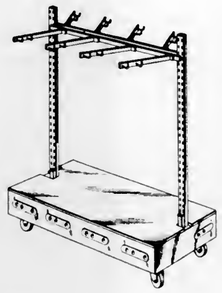


230,967
WHEEL CHOCK
Ordean E. Egland, 161 Mission Lane, Minneapolis, Minn. 55420
Filed Mar. 16, 1973, Ser. No. 341,907
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—217

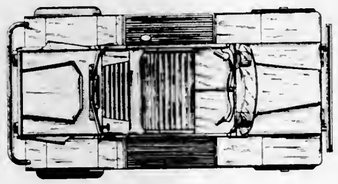
230,968
CARPET UNLOADING AND TRANSPORTING APPARATUS
Lloyd E. Anderson, 3123 Upton Ave. N. 55412, and Gilbert L. Alinder, 5312 Shoreview Ave. S. 55417, both of Minneapolis, Minn.
Filed Sept. 3, 1971, Ser. No. 177,923
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3 M

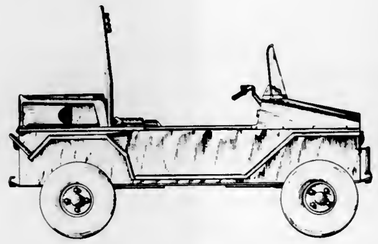


230,969
MUSICAL INSTRUMENT AND CONTROL CART
Mark Saltzman, Stoneybrook, N.Y., assignor to Sorkin Music Company Inc., Hauppauge, N.Y.
Filed July 14, 1972, Ser. No. 271,790
Term of patent 14 years
Int. Cl. D12—*02;* D6—*06*
U.S. Cl. D14—3 M

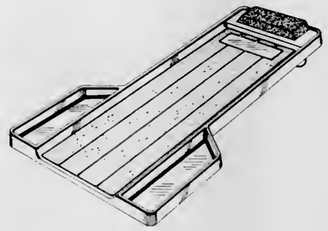


230,970
PASSENGER VEHICLE
Remi Loiselle, Richelieu, Quebec, Canada, assignor to Loman Inc., Richelieu, Quebec, Canada
Filed Aug. 14, 1972, Ser. No. 280,499
Term of patent 3½ years
Int. Cl. D12—*08*
U.S. Cl. D14—3 G

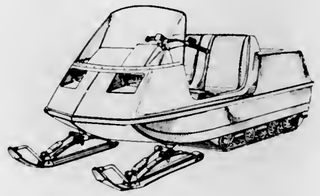




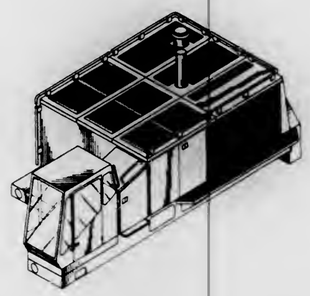
230,971
MECHANIC'S CREEPER
Donald J. Shanklin, Granada Hills, Calif., assignor to Orion Industries, Inc.
Filed Sept. 15, 1972, Ser. No. 289,299
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3 M

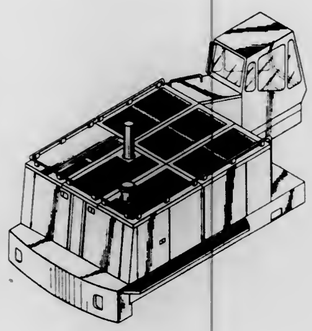


230,972
SNOWMOBILE
Thomas Scott, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 16, 1972, Ser. No. 253,915
Claims priority, application Canada Apr. 24, 1972
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24



230,973
CAB AND BODY STRUCTURE FOR AN EXCAVATOR
Ellis A. Sitton, East Peoria, Glenn W. Shields, Sandwich, William O. Smart, Dunlap, and Cleon C. Streitmatter, Aurora, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 25, 1972, Ser. No. 283,833
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—27 B

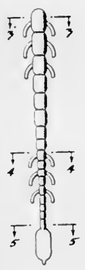




230,974
PAIR OF STOCKS FOR SEMI-AUTOMATIC PISTOLS
Henry R. Howlett, Cicero, Ill. (R.R. 3, Churubusco, Ind. 46723)
Filed Sept. 14, 1971, Ser. No. 180,536
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

230,975
FISHING ROD HANDLE
William D. Carlson, 200 Stevenson Road, New Haven, Conn. 06515
Filed May 18, 1972, Ser. No. 254,837
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

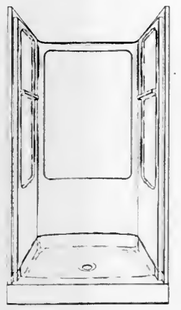
230,976
FISHING LURE
Fred Reynolds, Jr., 1236 Oliver Ave., Bowling Green, Ky. 42101
Filed July 13, 1973, Ser. No. 378,929
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



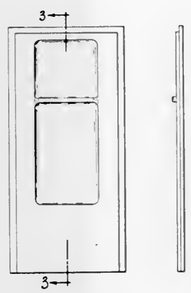
230,977
FISH LURE
Ewell J. Harris, Sunset Mobile Homes, Rte. 3, Box 135A, Adrian, Mich. 49221
Division of design application Ser. No. 235,475, Mar. 16, 1972, now Patent No. 226,710, which is a continuation-in-part of abandoned design application Ser. No. 23,537, June 19, 1970. Divided and this application Dec. 26, 1972, Ser. No. 386,829
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

230,978
FISH LURE
Ewell J. Harris, Sunset Mobile Homes, Rte. 3, Box 135A, Adrian, Mich. 49221
Filed May 5, 1972, Ser. No. 250,866
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

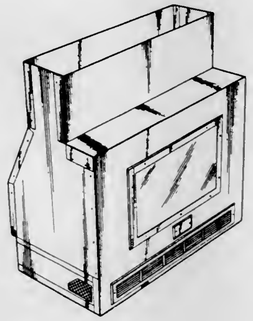
230,979
SHOWER STALL
Merritt W. Seymour, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Nov. 21, 1972, Ser. No. 308,355
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



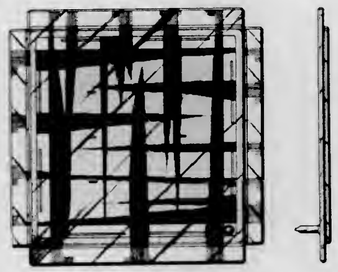
230,980
BATHROOM WALL PANEL
Merritt W. Seymour, Sylvania, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed Nov. 21, 1972, Ser. No. 308,373
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



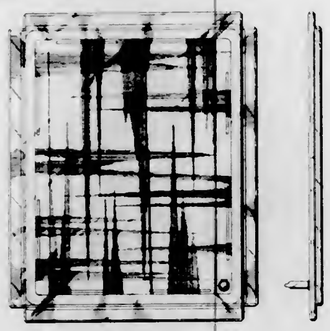
230,981
FURNACE
Raymond R. Dupler, deceased, late of Toledo, Ohio, by Anna Gertrude C. Dupler, executrix, 744 Euclid Ave., Toledo, Ohio 43605
Filed June 5, 1972, Ser. No. 260,045
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72



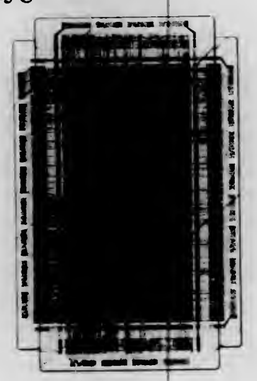
230,982
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur, Temperance, Mich., and Charles W. Salisbury, Rising Sun, and John C. Baker, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed July 1, 1971, Ser. No. 159,081
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



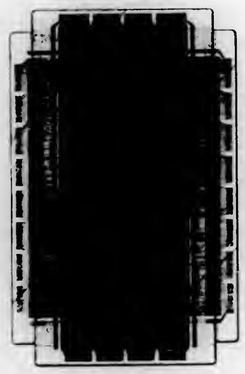
230,983
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur, Temperance, Mich., and Charles W. Salisbury, Rising Sun, and John C. Baker, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed July 1, 1971, Ser. No. 159,083
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



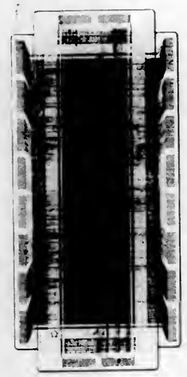
230,984
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Eugene A. Oster, Harold Joseph Hoehn, and Jon W. Klotz, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Oct. 22, 1971, Ser. No. 191,960
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



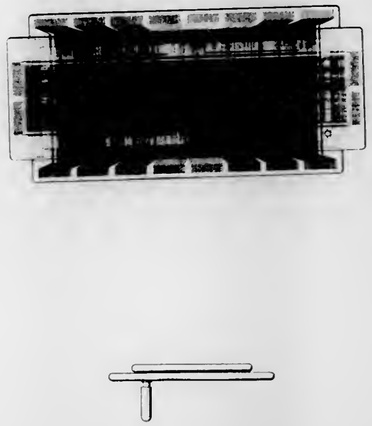
230,985
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Jon W. Klotz, Eugene A. Oster, and Harold Joseph Hoehn, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Oct. 22, 1971, Ser. No. 191,961
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



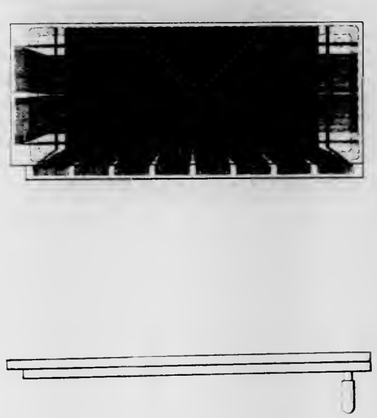
230,986
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Fred E. Mansur, Temperance, Mich., and Larry J. Lohmann, Gerald E. Wojcik, and Richard A. Martel, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Continuation-in-part of design application Ser. No. 26,326, Dec. 7, 1970, now Patent No. 224,111, dated July 4, 1972. This application Nov. 8, 1971, Ser. No. 196,863
Term of patent 14 years
The portion of the term of the patent subsequent to July 4, 1986, has been disclaimed
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



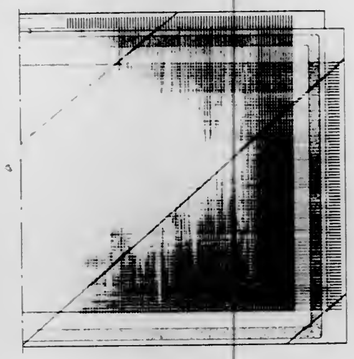
230,987
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Larry J. Lohmann, Gerald E. Wojcik, and Richard A. Martel, Toledo, Ohio, and Fred E. Mansur, Temperance, Mich., assignors to Owens-Illinois, Inc.
Continuation-in-part of design application Ser. No. 26,326, Dec. 7, 1970, now Patent No. 224,111, dated July 4, 1972. This application Nov. 24, 1971, Ser. No. 202,066
Term of patent 14 years
The portion of the term of the patent subsequent to July 4, 1986, has been disclaimed
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

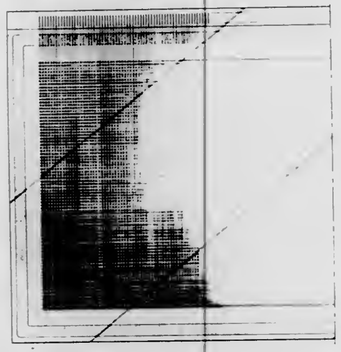


230,988
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
Harold J. Hoehn, Toledo, Ohio, and Fred E. Mansur, Temperance, Mich., assignors to Owens-Illinois, Inc.
Filed June 5, 1972, Ser. No. 260,047
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C



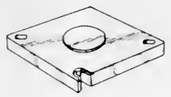
230,989
LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL
William D. Petty, 524 Clover Lane, Perrysburg, Ohio 43551, and Larry J. Lohmann, 2416 Oak Grove Place, Toledo, Ohio 43613
Filed Aug. 15, 1972, Ser. No. 280,906
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

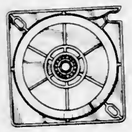




230,990
MICROPHONE
Wilhelm Kollesberger, Jr., Vienna, Austria, assignor to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Wien, Austria
Filed Feb. 24, 1972, Ser. No. 229,243
Claims priority, application Austria Aug. 27, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 J

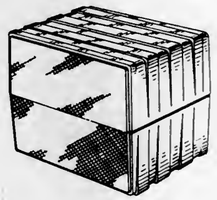
230,991
TAPE CARTRIDGE
Kenneth A. Catto, Portland, and Harold R. Burt, Beaverton, Oreg., assignors to Data Time, Inc., Beaverton, Oreg.
Filed Mar. 31, 1972, Ser. No. 240,332
Term of patent 14 years
Int. Cl. D14—*01;* D16—*99*
U.S. Cl. D26—14 B



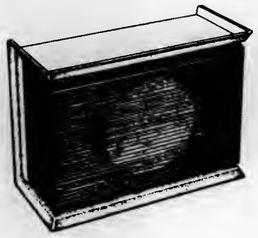


230,992
TELEPHONE SUPPORT OR SIMILAR ARTICLE
Ronald W. Morgan, 716 Rosemont Drive, Colorado Springs, Colo. 80911
Filed Apr. 10, 1972, Ser. No. 242,894
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

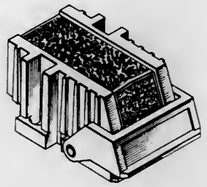
230,993
CABINET FOR ELECTRONIC EQUIPMENT OR SIMILAR ARTICLE
Douglas Warner, Berkeley, Calif., assignor to James B. Lansing Sound, Inc., Los Angeles, Calif.
Filed Mar. 7, 1973, Ser. No. 338,748
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



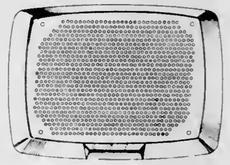
230,994
SPEAKER BOX
Yoshiaki Iida, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 20, 1973, Ser. No. 343,052
Claims priority, application Japan Sept. 20, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G

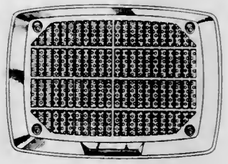


230,995
PHONOGRAPH CARTRIDGE
James P. Thomsen, Mount Prospect, and Ronald C. Thielmann, Arlington Heights, Ill., assignors to Shure Brothers Incorporated
Filed Mar. 26, 1973, Ser. No. 345,006
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D26—14 D

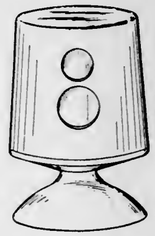


230,996
LOUDSPEAKER GRILLE
William B. Sandler, 70 Clements Road, Newton, Mass. 02158
Filed May 7, 1973, Ser. No. 357,925
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G

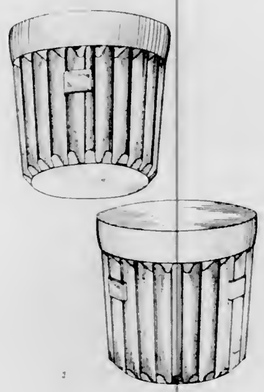




230,997
ENCLOSURE FOR A LOUDSPEAKER SYSTEM
John C. Shannon, Hicksville, N.Y., assignor to Empire Scientific Corporation, Garden City, N.Y.
Filed May 7, 1973, Ser. No. 358,099
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 G

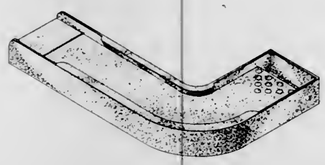


230,998
PLASTIC CASE FOR TRANSFORMERS, SWITCHES AND OTHER ELECTRICAL EQUIPMENT
Charles W. Kellogg, Jr., Box 663, Battleground, Wash. 98604
Filed Oct. 13, 1972, Ser. No. 297,463
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 R

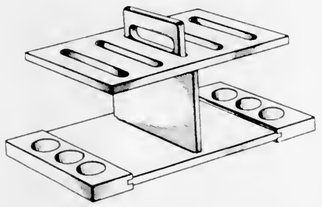


230,999
TOY DOG
Jose Jesus Cardenas Chavez, 4780 Imperial Ave., San Diego, Calif. 92113
Filed June 29, 1972, Ser. No. 267,365
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

231,000
BUMPER BOWL GAME BOARD
Frank J. Blaney II, 109 E. 5th, Gillette, Wyo. 82716
Filed Dec. 6, 1971, Ser. No. 205,463
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BB

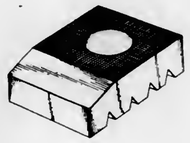


231,001
HOLDER FOR TABLE TENNIS PADDLES AND BALLS
Brett L. Gross and Jesse R. Gross, Los Angeles, Calif., assignors to Harold Leonard & Co., Inc. of California, Los Angeles, Calif.
Filed Feb. 28, 1972, Ser. No. 230,207
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SP

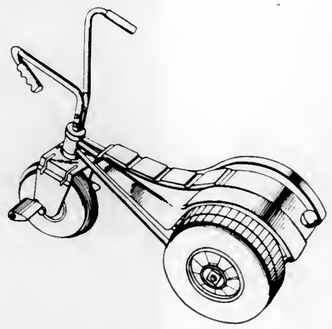


231,002
FOOTBALL KICKING TEE
Joseph M. Ponder, 6593 Evelyn Drive, Middletown, Ohio 45042
Filed Aug. 31, 1972, Ser. No. 285,498
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT

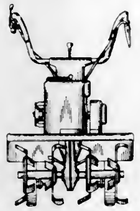
231,003
FOOTBALL KICKING TEE
Joseph M. Ponder, 6593 Evelyn Drive, Middletown, Ohio 45042
Filed Aug. 31, 1972, Ser. No. 285,539
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT



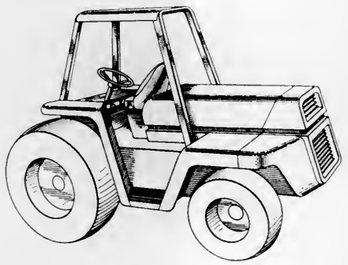
231,004
VELOCIPEDE
Keith E. Brightbill, Nashville, Tenn., assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed July 18, 1972, Ser. No. 272,747
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AL



231,005
TILLER
Seiya Noma, Toshikado Yamasaki, Kazuo Yoshida, Norio Orito, and Mineo Horiguchi, Tokyo, Japan, assignors to Iseki Agricultural Machinery Mfg. Co., Ltd., Matsuyama, Japan
Filed Dec. 28, 1971, Ser. No. 213,239
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D35—2 A

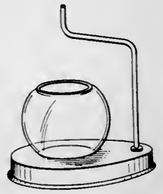


231,006
TRACTOR
Afton B. Root, Detroit, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.
Filed Feb. 14, 1972, Ser. No. 226,366
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D40—5

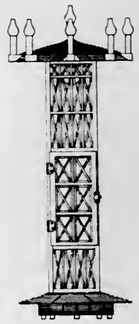


231,007
FINGER RING
Bernard I. Mechanic, 9314 Lincolnwood Drive, Evanston, Ill. 60203
Filed Aug. 3, 1972, Ser. No. 277,800
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C

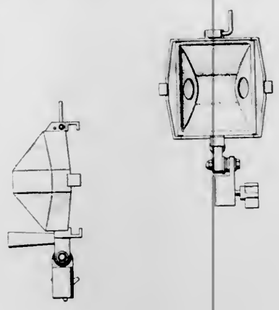
231,008
COMBINED AQUARIUM AND LAMP BASE
Bob J. Hullender, P.O. Box 11068, Santa Rosa, Calif. 95406
Filed July 10, 1972, Ser. No. 270,252
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 D



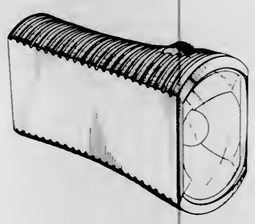
231,009
LAMP
Harden Estell, 827 E. 18th St., Oakland, Calif. 94606
Filed Oct. 10, 1972, Ser. No. 295,886
Term of patent 14 years
Int. Cl. D26—*05, 02*
U.S. Cl. D48—20 C



231,010
COMPACT LUMINAIRE
George R. Hartz, Canoga Park, and Arnold S. Wasserman, Santa Barbara, Calif., assignors to Berkey-Colortran, Inc., Burbank, Calif.
Filed Oct. 24, 1972, Ser. No. 299,721
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K

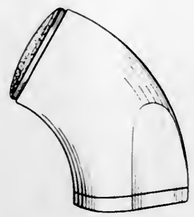


231,011
FLASHLIGHT
Raymond Vic, La Celle-St.-Cloud, France, assignor to Compagnie Industrielle des Piles Electriques "CIPEL," Levallois-Perret, France
Filed Mar. 28, 1972, Ser. No. 239,005
Claims priority, application France Sept. 28, 1971
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A

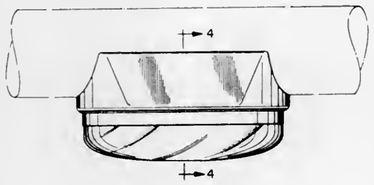


231,012
CIGARETTE LIGHTER
Jean-Marie M. Paroty, Mauregard, France, assignor to Societe Franco-Hispano-Americaine, Saint-Gratien, France
Filed Oct. 12, 1972, Ser. No. 296,760
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

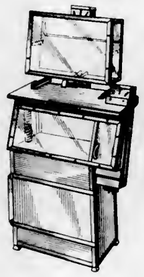
231,013
GARDEN LAMP
Adelaide Bonati, Via Stendhal 72; Silvio Bonatti, Corso di Porta Vittoria 8; Enrico de Munari, Via Stendhal 72; and Carla Federspiel, Via Francesco de Sanctis 74, all of Milan, Italy
Filed Mar. 15, 1973, Ser. No. 341,437
Claims priority, application Italy Sept. 19, 1972
Term of patent 7 years
Int. Cl. D26—*03, 05*
U.S. Cl. D48—31



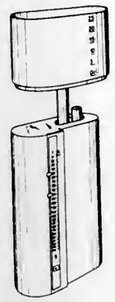
231,014
ROLL BAR MOUNTED VEHICLE DOME LIGHT
Arvin G. Nielson, 8969 Geraldine Ave., San Diego, Calif. 92123
Filed Dec. 13, 1971, Ser. No. 207,707
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



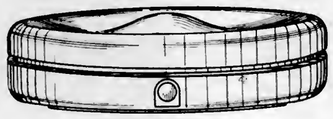
231,015
NEWSPAPER VENDING MACHINE
Jack S. Chalabian, Gardena, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.
Continuation of design applications Ser. No. 182,931 and Ser. No. 182,932, both Sept. 22, 1971. This application Feb. 23, 1973, Ser. No. 335,258
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R



231,016
SCALE FOR LIQUIDS
Marco Zanuso, Milan, Italy, assignor to Terraillon, Annemasse, France
Filed Feb. 28, 1972, Ser. No. 230,174
Claims priority, application Switzerland Sept. 1, 1971
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10 R



231,017
DOMESTIC SCALE
Marco Zanuso, Milan, Italy, assignor to Terraillon, Annemasse, France
Filed Feb. 28, 1972, Ser. No. 230,176
Claims priority, application Switzerland Aug. 31, 1971
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10 R



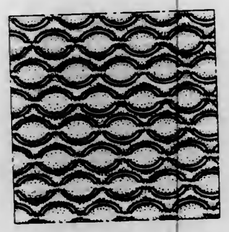
231,018
PAPER TOWELING
Donald Anthony Gilling, Neenah, and Lawrence Alfred Walbrun, Menasha, Wis., assignors to American Can Company, Greenwich, Conn.
Filed Feb. 12, 1973, Ser. No. 331,365
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D59—2 A

231,019
PAPER TOWELING
Donald Anthony Gilling, Neenah, and Lawrence Alfred Walbrun, Menasha, Wis., assignors to American Can Company, Greenwich, Conn.
Filed Feb. 12, 1973, Ser. No. 331,366
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D59—2 A

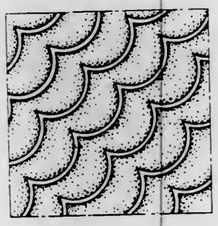
231,020
PAPER TOWELING
Donald Anthony Gilling, Neenah, and Lawrence Alfred Walbrun, Menasha, Wis., assignors to American Can Company, Greenwich, Conn.
Filed Feb. 12, 1973, Ser. No. 331,367
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D59—2 A

231,021
PAPER TOWELING
Donald Anthony Gilling, Neenah, and Lawrence Alfred Walbrun, Menasha, Wis., assignors to American Can Company, Greenwich, Conn.
Filed Feb. 12, 1973, Ser. No. 331,368
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D59—2 A

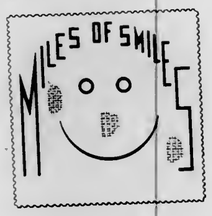
231,022
PAPER TOWELING
Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 9, 1973, Ser. No. 339,822
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 A



231,023
PAPER TOWELING
Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 9, 1973, Ser. No. 339,823
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 A

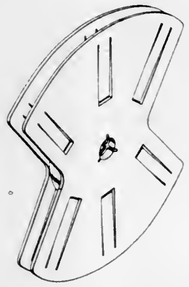


231,024
TRADING STAMP
Frederick Gessin, Danville, Calif.
(1511 Cypress St., Walnut Creek, Calif. 94596)
Filed May 19, 1972, Ser. No. 255,322
Term of patent 14 years
Int. Cl. D19—*05*
U.S. Cl. D59—6 R



231,025
COMBINED AGITATOR AND PHOTO PRINT CARRIER
Herbert F. Diegel, 1524 E. Culver St., Phoenix, Ariz. 85006
Filed Nov. 5, 1971, Ser. No. 196,245
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1 P

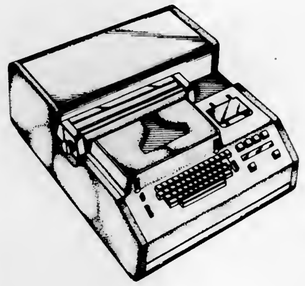
231,026
FILM REEL
Kazuki Kobayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed July 31, 1972, Ser. No. 276,429
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T



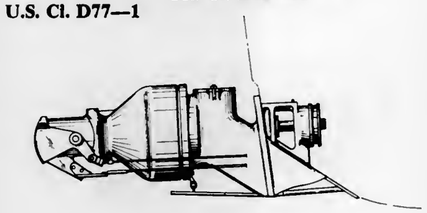
231,027
STAMPER
Takaji Funahashi, 1, 2-chome, Kitatakajo-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan
Filed Oct. 12, 1972, Ser. No. 296,906
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D64—10

231,028
CIRCULAR STAMP
Takaji Funahashi, 1, 2-chome, Kitatakajo-machi, Nishi-ku, Nagoya-shi, Aichi-ken, Japan
Filed Oct. 16, 1972, Ser. No. 297,907
Claims priority, application Japan Apr. 17, 1972
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D64—10

231,029
COMBINED TYPEWRITER AND CALCULATOR
Takehiko Nakanishi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Aug. 31, 1971, Ser. No. 176,780
Claims priority, application Japan Mar. 5, 1971
Term of patent 7 years
Int. Cl. D18—*01*
U.S. Cl. D64—11 A

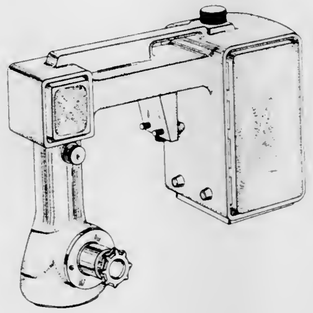


231,030
WATER JET DRIVE FOR BOATS
Ralph A. Rhoda, Orinda, Calif., assignor to Berkeley Pump Company, Berkeley, Calif.
Filed May 8, 1972, Ser. No. 251,583
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1

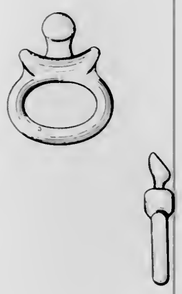


231,031
ACTIVE CAUTERY ELECTRODE HOLDER
Arthur J. Hinnenkamp, Excelsior, Minn., assignor to Medical Plastics, Inc., Minnetonka, Minn.
Filed Jan. 5, 1972, Ser. No. 215,701
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F

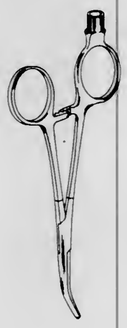
231,032
HYDROMASSAGE UNIT FOR A BATHTUB
Roy A. Jacuzzi, Moraga, and Peter L. Kosta, Lafayette, Calif., assignors to Jacuzzi Research, Inc.
Filed July 23, 1973, Ser. No. 381,860
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 C



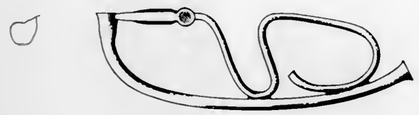
231,033
ORTHODONTIC WATER FILLED GUM SOOTHER AND PACIFIER
Stephen B. Sofro, Providence, R.I., assignor to Reliance Products Corporation, Woonsocket, R.I.
Filed Apr. 20, 1972, Ser. No. 246,115
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—8 C



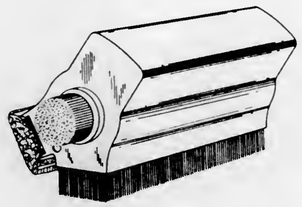
231,034
SURGICAL CLAMP
Michael James Moore, Box A-E, San Luis Obispo, Calif. 93401
Filed Mar. 1, 1972, Ser. No. 231,086
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



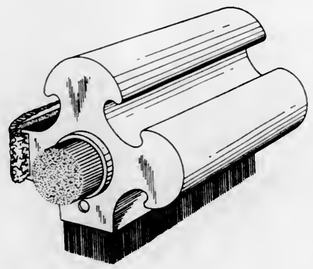
231,035
CIGARETTE HOLDER
Donald G. Herrick, 836 Marmion Ave., Youngstown, Ohio 44502
Filed Jan. 8, 1973, Ser. No. 321,766
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 B



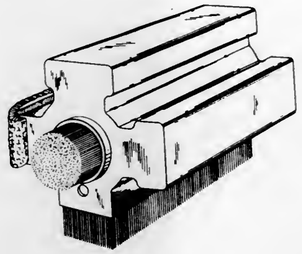
231,036
SHOE CLEANING-POLISHING DEVICE
Andrew W. Brainerd, Kent H. Brainerd, and Stuart W. Brainerd, all of 630 Walden Road, Winnetka, Ill. 60093
Filed Mar. 1, 1972, Ser. No. 231,070
Term of patent 3½ years
Int. Cl. D3—*01;* D4—*02*
U.S. Cl. D86—11



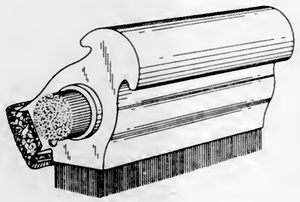
231,037
SHOE CLEANING-POLISHING DEVICE
Andrew W. Brainerd, Kent H. Brainerd, and Stuart W. Brainerd, all of 630 Walden Road, Winnetka, Ill. 60093
Filed Mar. 1, 1972, Ser. No. 231,074
Term of patent 3½ years
Int. Cl. D3—*01;* D4—*02*
U.S. Cl. D86—11



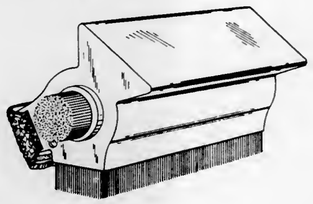
231,038
SHOE CLEANING-POLISHING DEVICE
Andrew W. Brainerd, Kent H. Brainerd, and Stuart W. Brainerd, all of 630 Walden Road, Winnetka, Ill. 60093
Filed Mar. 1, 1972, Ser. No. 231,075
Term of patent 3½ years
Int. Cl. D3—*01;* D4—*02*
U.S. Cl. D86—11



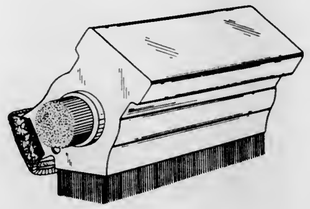
231,039
SHOE CLEANING-POLISHING DEVICE
Andrew W. Brainerd, Kent H. Brainerd, and Stuart W. Brainerd, all of 630 Walden Road, Winnetka, Ill. 60093
Filed Mar. 1, 1972, Ser. No. 231,078
Term of patent 3½ years
Int. Cl. D3—*01;* D4—*02*
U.S. Cl. D86—11



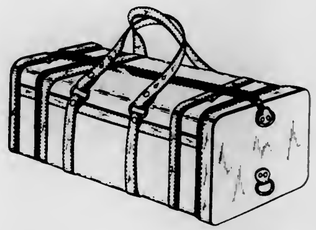
231,040
SHOE CLEANING-POLISHING DEVICE
Andrew W. Brainerd, Kent H. Brainerd, and Stuart W. Brainerd, all of 630 Walden Road, Winnetka, Ill. 60093
Filed Mar. 1, 1972, Ser. No. 231,079
Term of patent 3½ years
Int. Cl. D3—*01;* D4—*02*
U.S. Cl. D86—11



231,041
SHOE CLEANING-POLISHING DEVICE
Andrew W. Brainerd, Kent H. Brainerd, and Stuart W. Brainerd, all of 630 Walden Road, Winnetka, Ill. 60093
Filed Mar. 1, 1972, Ser. No. 231,080
Term of patent 3½ years
Int. Cl. D3—*01;* D4—*02*
U.S. Cl. D86—11

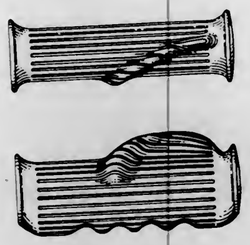


231,042
CARRYING BAG
Robert M. Lee, New York, N.Y., assignor to Hunting World, Incorporated, New York, N.Y.
Filed Jan. 10, 1972, Ser. No. 216,866
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G



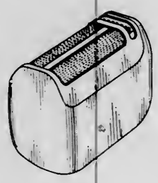
231,043
HANDLE FOR CANES, UMBRELLAS, OR THE LIKE
Arthur Alex Cecil Barnett, Chiddingfold Park, Chiddingfold, Surrey, England
Filed June 13, 1972, Ser. No. 262,429
Claims priority, application Great Britain Dec. 13, 1971
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—4 R

231,044
GRIP FOR HANDLE BARS
Arthur L. Morris, 6117 N. Haven Drive, North Highlands, Calif. 95660
Filed Feb. 15, 1972, Ser. No. 226,641
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—11

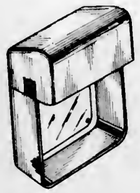


231,045
DRY SHAVER
Maarten Willem van Lelyveld, Eizebosstraat 15, Drachten, Netherlands
Filed Aug. 14, 1972, Ser. No. 280,130
Claims priority, application Switzerland Feb. 14, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

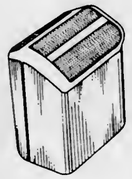
231,046
DRY SHAVER
Maarten Willem van Lelyveld, Eizebosstraat 15, Drachten, Netherlands
Filed Aug. 14, 1972, Ser. No. 280,131
Claims priority, application Switzerland Feb. 14, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



231,047
CASE FOR A DRY SHAVER
Maarten Willem van Lelyveld, Eizebosstraat 15, Drachten, Netherlands
Filed Aug. 14, 1972, Ser. No. 280,134
Claims priority, application Switzerland Feb. 14, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



231,048
DRY SHAVER
Maarten Willem van Lelyveld, Eizebosstraat 15, Drachten, Netherlands
Filed Aug. 14, 1972, Ser. No. 280,137
Claims priority, application Switzerland Feb. 14, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A



231,049
DRY SHAVER
Maarten Willem van Lelyveld, Eizebosstraat 15, Drachten, Netherlands
Filed Aug. 14, 1972, Ser. No. 280,140
Claims priority, application Switzerland Feb. 14, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

231,050
SAFETY RAZOR
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Oct. 2, 1972, Ser. No. 294,481
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

231,051
LABEL
Yasuji Itoh, Tokyo, Japan, assignor to Kabushiki Kaisha Kyobundoh, Sarugaku-cho, Chiyoda-ku, Tokyo, Japan
Filed July 17, 1972, Ser. No. 272,569
Claims priority, application Japan Jan. 18, 1972
Term of patent 14 years
The portion of the term of the patent subsequent to July 10, 1987, has been disclaimed
Int. Cl. D19—*08*
U.S. Cl. D96—8 R

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF MARCH, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aarts, Matias L. C., to Mettler Instrument AG. Automatic weighing apparatus including conveyor means. 3,799,280, Cl. 177-53.000.

AB Volvo Penta: *See—*
Kurling, Lennart, 3,799,104.

Abbott, Terry C., Jr.: *See—*
Barre, Sheridan F.; Abbott, Terry C., Jr.; and Terry, Stephen P., 3,799,663.

Abel, James R.: *See—*
Mitchell, Harry R.; Rice, Hal H.; and Abel, James R., 3,798,903.

Abu Aktiebolag Gvangsta: *See—*
Svensson, Hugo Ragnvald, 3,799,472.

Acker, Norbert K., to Scanner, Inc. Code reading system. 3,800,282, Cl. 340-146.30z.

Acker, William F., to Honeywell Information Systems, Inc. Phase jitter compensator. 3,800,228, Cl. 325-323.000.

Acton, Daniel D., to Anchor Hocking Corporation. Composit closure. 3,799,381, Cl. 215-241.000.

Adams, Jerry. Dispenser and holder bracket. 3,799,466, Cl. 242-55.200.

Adams, Pierrepont, to Olin Corporation. Purification of isocyanates by reducing the hydrolyzable chlorine and acid content. 3,799,963, Cl. 260-453.0sp.

Addressograph Multigraph Corporation: *See—*
Kolibas, James A., 3,799,791.

Adolph, Robert J.; and Stephens, John F., III, to University of Cincinnati, Board of Directors of The. Method and apparatus for diagnosing myocardial infraction in human heart. 3,799,147, Cl. 128-2.050.

Advance Concrete and Asphalt Company: *See—*
Turner, Charles R., 3,798,858.

AGFA Gevaert Aktinegesellschaft: *See—*
Herzhoff, Peter; Gree, Hans; Schweicher, Wolfgang; Voss, Karl; Peckhaus, Oscar; Frenken, Hans; and Bussmann, Heinrich, 3,799,419.

Agfa-Gevaert Aktiengesellschaft: *See—*
Mayr, Helmut; Pelte, Richard; and Huber, Theodor, 3,799,661.
Nagel, Erich; Engelage, Guenter; Himmelsbach, Lothar; and Frankiewicz, Gerhard, 3,799,022.

Agfa-Gevaert N.V.: *See—*
DeCock, Etienne Marie, 3,800,148.

Agui, Eizo, to Yuasa Battery Company Limited. Apparatus for assembling groups of storage battery plates. 3,799,321, Cl. 198-35.000.

Agui, Hideo: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; Nakashita, Mitsuo; Komatsu, Toshiaki; Izara, Akio; and Eda, Yasuko, 3,799,930.

Agulnek, Harry: *See—*
Mishcon, Lester; and Agulnek, Harry, 3,798,930.

Ahlgren, Ilmari, to Lee, Raymond, Organization, Inc., The. Adjustable hanger for clothing. 3,799,412, Cl. 223-88.000.

Ahlgren, Joseph R.: *See—*
Barrett, William J.; and Ahlgren, Joseph R., 3,798,907.

Aigner, Georg, to Siemens Aktiengesellschaft. Electrical switching device and contact arrangement therefor. 3,800,252, Cl. 335-135.000.

Aikoh Co., Ltd., mesne: *See—*
Boron, Joseph J., 3,798,974.

Air Guard Incorporated: *See—*
Duke, Douglas Roy; and Dupuis, Weldon V., 3,798,922.

Air Preheater Company, Inc., The: *See—*
Hazzard, Noel D.; and Lavely, Lloyd L., Jr., 3,799,075.

Air Products and Chemicals, Inc.: *See—*
Langsam, Michael, 3,799,916.

Air Reduction Company, Incorporated: *See—*
Linhardt, Hans D., 3,799,249.

Airpot Corporation: *See—*
Cohen, Arthur M., 3,799,299.

Aisin Seiki Kabushiki Kaisha: *See—*
Nozomu, Torii; and Nobuyuki, Koki, 3,799,596.

Akai Electric Company, Limited: *See—*
Fujimoto, Eisuke; and Yoshikawa, Yoshio, 3,800,319.

Akimoto, Toshio: *See—*
Chikatsu, Tatsusuke; Yoshida, Yoshinori; Shimokawa, Shinichi; and Akimoto, Toshio, 3,800,002.

Akita, Ehchi: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Ehchi; and Nuda, Taro, 3,799,842.

Akiyama, Shunichi: *See—*
Fukuda, Hideo; Suzuki, Takashi; Akiyama, Shunichi; and Sumino, Yasuhiro, 3,799,840.

Akiyama, Susumu: *See—*
Yoshioka, Takeshi; and Akiyama, Susumu, 3,800,265.

Aktiebolaget Electrolux: *See—*
Kilstrom, Lars Gunnar; and Mattsson, Bo Gunnar, 3,798,704.
Svantesson, Sven Elis Ake, 3,799,345.
Svantesson, Sven Elis Ake, 3,799,511.

Aktieselskabet de Danske Sukkerfabrikker: *See—*
Madsen, Rud Frik, 3,799,806.

Aladdin Industries, Incorporated: *See—*
Bridges, John A., 3,799,143.

Albright, Richard A., to Honeywell Information Systems, Inc. Data processing system having automatic interrupt identification technique. 3,800,287, Cl. 340-172.500.

Alden, John W., Jr.; and Webster, Kenneth E., to Combustion Engineering, Inc. Superheater flow baffling. 3,799,121, Cl. 122-32.000.

Alembik, Alfred. Seating-and sleeping furniture. 3,798,683, Cl. 5-13.000.

Alexander, Carl J., to Wells Manufacturing Corporation. Band saw. 3,799,024, Cl. 83-799.000.

Alexander, James D.; and Barfort, Per. Stable lysis responsive lipid bilayer. 3,799,743, Cl. 23-253.00r.

Alexandrov, Alexander Minchev: *See—*
Entshev, Ivan Dimitrov; Kinchev, Nikola Tsanov; Haralampiev, Gueorgui Alexandrov; Alexandrov, Alexander Minchev; Smilenov, Todor Ivanov; and Stojanvo, Jossif Genchev, 3,799,850.

Alfa Romeo S.p.A.: *See—*
Colucci, Ivo, 3,799,577.

Alfa-Laval AB: *See—*
Floter, Sigismund, 3,799,330.

All American Industries, Inc.: *See—*
Carnevale, Umberto A., 3,799,477.

Allais, Andre: *See—*
Rousseau, Genevieve; Allais, Andre; and Poittevin, Andre, 3,799,974.

Allan, John L. H., to GAF Corporation. Chemical embossing using amine-formaldehyde derivatives. 3,800,013, Cl. 264-54.000.

Allen, Lloyd R., to National Research Corporation. Method of producing boron carbide film laminates. 3,799,830, Cl. 156-249.000.

Alley, Lewis F.: *See—*
Long, Marshall; Alley, Lewis F.; and Miller, Jack M., 3,799,013.
Long, Marshall; Alley, Lewis F.; and Miller, Jack M., 3,799,019.

Allied Chemical Corporation: *See—*
Kurze, Ulrich; and Wright, Hubert Arthur, Jr., 3,799,575.
Peckinpaugh, Frank Lee, 3,799,463.

Allinquant, Fernand Michel; and Allinquant, Jacques Gabriel. Vehicle self-pumping suspension strut. 3,799,528, Cl. 267-64.00r.

Allinquant, Jacques Gabriel: *See—*
Allinquant, Fernand Michel; and Allinquant, Jacques Gabriel, 3,799,528.

Allis-Chalmers Corporation: *See—*
Worrix, Matthew L., 3,799,635.

Allison, David F.: *See—*
Camenzind, Hans R.; and Allison, David F., 3,798,753.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Holmstrom, Goran, 3,800,111.
Johansson, Lennart; and Horvath, Josef, 3,799,601.

Allom, Kenneth W.: *See—*
Purdom, Clyde H.; Allom, Kenneth W.; and Shackelford, Harold D., 3,798,871.

Alphonse, Gerard Argant; and Bodeep, George Edward, to RCA Corporation. Process of making Acousto-optic devices. 3,798,746, Cl. 29-470.100.

Alps Motorola, Inc.: *See—*
Murakami, Hajime, 3,800,320.

Aman, Shunsuko: *See—*
Nakamura, Yoshinobu; Ito, Riyuzi; Aman, Shunsuko; and Kojima, Kazutaka, 3,799,956.

Amana Refrigeration, Inc.: *See—*
Pink, John J.; and Boldt, Melvin H., 3,798,923.

Ambats, Maris; Shannon, Thomas D.; and Demaria, Walter Joseph. Convertible direct viewing/projection T-V system. 3,800,085, Cl. 178-7.910.

American Aero Industries, Inc.: *See—*
Soss, John B.; and Stachowiak, John E., 3,799,440.

American Cyanamid Company: *See—*
Postal, Robert H., 3,800,132.

American Home Products Corporation: *See—*
Brucker, Clarence E.; Uhlarik, Kenneth S.; Lampe, John W., Jr.; and Bush, John W., 3,800,045.

American Hospital Supply Corporation, mesne: *See—*
Madalin, William A.; and Follis, Cecilia A., 3,799,386.

American Metal Climax, Inc.: *See—*
Latson, Harold A., 3,798,863.
Opie, William R.; and Coffin, Lamar D., 3,799,764.
American Micro-Systems, Incorporated: *See—*
Carlyle, James S., 3,799,649.
American Potato Company: *See—*
Pulley, Arden O., 3,800,047.
American Safety Equipment Corporation: *See—*
Groendyke, Richard L., 3,798,731.
AMF Incorporated: *See—*
Montz, James R., 3,800,189.
Amin-Madani, Manoucher: *See—*
Dissen, Israel J.; Schultz, Ronald B.; and Amin-Madani, Manoucher, 3,799,911.
Ammerman, George Edward; and McFarlane, William, to Heatcraft, Inc. Combination terminal and fuse holder arrangement for an electrical circuit. 3,800,263, Cl. 337-237.000.
Ampex Corporation: *See—*
Zimmermann, Ernest F., 3,800,196.
Amsted Industries Incorporated: *See—*
Neuman, Otto Walter; and Korpics, Frank Joseph, 3,799,067.
Anaconda Company, The: *See—*
Barone, Angelo P., 3,799,518.
Bunish, Steve; and Faulkner, Joseph W., 3,800,065.
Analytical Products, Inc.: *See—*
Smernoff, Ronald B., 3,799,681.
Anaren Microwave Incorporated: *See—*
Hair, Hugh A., 3,800,221.
Anchor Hocking Corporation: *See—*
Acton, Daniel D., 3,799,381.
Anderson, Alex Lennart, to Ingersoll Milling Machine Company, The. EDM apparatus for finishing rolls. 3,800,117, Cl. 219-69.00v.
Anderson, Donald R., to Nalco Chemical Company. Polymeric latices and sodium aluminate. 3,799,902, Cl. 260-29.6nr.
Anderson, Gerald G.; and Hutto, Ronald C., to Babcock & Wilcox Company, The. Industrial Techinque. 3,799,251, Cl. 165-68.000.
Anderson, Raymond N.; and Gartner, Stanley J., to GTE Sylvania Incorporated and Driver, Wilbur B., Company. Ribbon straightener. 3,798,947, Cl. 72-165.000.
Anderson, Richard S. Shock absorber monting assembly. 3,799,481, Cl. 284-15.000.
Anderson, Richard T., to Owatonna Tool Company. Tooling for valve guide reconditioning. 3,799,687, Cl. 408-75.000.
Anderson, Robert D., Jr.; Hasler, Gerold B.; Kirby, Ralph W.; and White, Kraig R., to International Business Machines Corporation. Asynchronously operated memory system. 3,800,295, Cl. 340-173.0dp.
Anderson, Vernard C.; Cantaloupe, Francis A.; and Overman, Kenneth T., to Corning Glass Works. Extrusion die cleaning apparatus. 3,799,178, Cl. 134-58.00r.
Andrews, Anthony S.: *See—*
Wheeler, Harvey B.; Andrews, Anthony S.; and Schlademan, James A., 3,799,913.
Andrews, Theodore E., to Armstrong Cork Company. Conduit-slitting machine. 3,799,012, Cl. 83-9.000.
Andrews, Thomas Warren: *See—*
Weinberg, Jerome; Geise, Harold Eugene; and Andrews, Thomas Warren, 3,798,775.
Anton, William J. E.; Collins, John E.; and Lind, Peter A., to Minnesota Mining and Manufacturing Company. Control circuit having load and power source isolation. 3,800,185, Cl. 315-153.000.
Antoni, Wilhelm: *See—*
Kindler, Horst; Fischer, Hans-Gerhard; Antoni, Wilhelm; and Appel, Ewald, 3,799,941.
Apparatebau Rothemahle Brandt & Kritzler: *See—*
Schluter, Siegfried Hans-Dietmer; and Kritzler, Gerhard, 3,799,241.
Appel, Ewald: *See—*
Kindler, Horst; Fischer, Hans-Gerhard; Antoni, Wilhelm; and Appel, Ewald, 3,799,941.
Appenzeller, Valentin: *See—*
Kusters, Eduard; and Appenzeller, Valentin, 3,799,052.
Applied Radiation Corporation: *See—*
Symmons, Edger B.; and Coad, George L., 3,799,294.
Archibald, William R.: *See—*
Robinson, Charles W.; Sims, Wilbert N.; and Archibald, William R., 3,799,620.
Arendt, Hans F.: *See—*
Rotter, Erhard F., 3,798,933.
Arimoto, Akira: *See—*
Ogura, Iwao; Onishi, Yoshihiro; and Arimoto, Akira, 3,800,298.
Arino, Hirofumi; Kramer, Henry H.; McGovern, James J.; and Thornton, Alfred K., to Union Carbide Corporation. Production of high purity fission product molybdenum-99. 3,799,883, Cl. 252-301.10r.
Arkey Packaging Corporation: *See—*
Fanter, Edward P., 3,799,425.
Mayea, Lawrence E., 3,799,424.
Armament Systems, Inc.: *See—*
La Rocca, Edward W., 3,799,054.
Armco Steel Corporation: *See—*
Clarke, William C., Jr., 3,799,765.
Armstrong Cork Company: *See—*
Andrews, Theodore E., 3,799,012.
Lewicki, Walter J., Jr.; and Welk, Kenneth L., 3,799,822.
Armstrong, George W. Valve seals. 3,799,187, Cl. 132-246.220.
Arn. Kiekert Sohne: *See—*
Watermann, Hans-Dieter, 3,799,594.
Arnau, Matthew H.; and Grecco, Leonard J., to Uniroyal, Inc. Method of making power transmission belts. 3,799,824, Cl. 156-139.000.
Arnegard, Bo Olof Roland; Emanuelsson, Kaj Bengt Ingemar; and Kristoffer, Hans, to Atlas Copco Aktiebolag. Rotary piston machines. 3,799,712, Cl. 418-191.000.
Arnold & Richter KG: *See—*
Blaschek, Otto, 3,799,660.
Arnold, Lionel C.: *See—*
Talty, Robert D.; and Arnold, Lionel C., 3,799,823.
Arnold, Orlan M.; and Vancini, Carlo A., to Peabody Engineering Corporation. Air cleaning apparatus. 3,798,880, Cl. 55-223.000.
Arnold, Orlan M.; and Vancini, Carlo A., to Peabody Engineering Corporation. Mixing apparatus. 3,799,508, Cl. 259-4.000.
Artin, Robert Lee; and Petroske, Robert Paul, to Oster, John, Manufacturing Co. Hair clipper having blade illumination and field wire strain relief. 3,800,172, Cl. 310-50.000.
Arvin Industries, Inc.: *See—*
Scheitlin, George Edward; and Hardin, Leonard Jack, 3,799,196.
Schlitlin, George E.; Collins, Joseph B.; and Lambert, Michael W., 3,799,748.
Asami, Hiroshi: *See—*
Kuroda, Michro; and Asami, Hiroshi, 3,800,119.
Asari, Akira, to Kobe Steel Company Ltd. Method and apparatus for producing metal tubes by extrusion of a hollow billet. 3,798,954, Cl. 72-255.000.
Ashar, Kanu G.; and Overmeyer, James, to International Business Machines Corporation. Magnetic sensing device. 3,800,193, Cl. 317-235.00r.
Ashmead, Howard L.; Byrne, Sydnor H., Jr.; and Wolf, John P., III, to Du Pont de Nemours, E. I., and Company. Method for producing a gradient elution. 3,799,396, Cl. 222-1.000.
Askew, Jack K. Educational word-forming method and device. 3,798,792, Cl. 35-9.00d.
Astro Dynamics, Inc.: *See—*
Katz, Leonhard, 3,799,292.
Ateliers de Constructions Metalliques de Caen: *See—*
Champot, Alain, 3,799,247.
Atlantic Richfield Canada Ltd.: *See—*
Hendry, Robert D., 3,799,613.
Atlantic Richfield Company: *See—*
Parker, Patrick N., 3,799,874.
Atlas Copco Aktiebolag: *See—*
Arnegard, Bo Olof Roland; Emanuelsson, Kaj Bengt Ingemar; and Kristoffer, Hans, 3,799,712.
Atlas Copo Aktiebolag: *See—*
Taylor, Nicholas Simon Hall; Hilden, Hakon Olavi; and Noren, Carl Anders, 3,799,615.
Automobiles Peugeot: *See—*
Giordano, Jean Louis; and Touchard, Jacques, 3,799,570.
Piret, Jean, 3,799,000.
Autoscan, Inc.: *See—*
Pelta, Edmond R.; and Gold, Kenneth Stewart, 3,798,965.
Avnet, Inc., mesne: *See—*
Clark, Russell L., 3,799,557.
B & S Massey Limited: *See—*
Foster, John; and Wilson, Geoffrey, 3,798,944.
Babb, John H., Jr.; and Maurits, Orville C., to Kysor Industrial Corporation. Dead bolt auxiliary latch. 3,799,592, Cl. 292-140.000.
Babcock & Wilcox Company, The: *See—*
Anderson, Gerald G.; and Hutto, Ronald C., 3,799,251.
Backwinkel, Johannes; and Greyer, Eckhardt, to Blaupunkt-Werke GmbH. Gain controlled high-frequency input stage having a pin-diode network. 3,800,229, Cl. 325-381.000.
Badalich, Frank C.; and Watterlohn, Roy H., to Bell & Howell Company. Filmstrip projector with synchronized sound. 3,799,420, Cl. 226-102.000.
Bader, Clifford J.: *See—*
Branco, Richard P.; and Bader, Clifford J., 3,800,212.
Badger Company Inc., The: *See—*
Love, Fred S., 3,799,845.
Badger, Joe G.; and Valdettaro, Alarico A., to Sarkes Tarzian, Inc. Six position memory type UHF tuner. 3,798,978, Cl. 74-10.800.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Corr, Hubert; Friedrichsen, Wilhelm; and Poehler, Guenther, 3,799,983.
Nienburg, Hans-Juergen; Eisfeld, Wolfgang; and Wache, Harro, 3,799,976.
Badische Anilin- und Soda-Fabrik Aktiengesellschaft: *See—*
Schoettle, Klaus; Hack, Joachim; Loewenberg, Gustav; and Hoffmann, Werner, 3,800,322.
Bafford, Richard Anthony, to Pennwalt Corporation. Process for preparing block copolymers with peroxy-containing chain-transfer agents and products. 3,800,007, Cl. 260-877.000.
Bailey, Earl N.: *See—*
Nilson, Jay Brent; and Bailey, Earl N., 3,800,326.
Bailey, James R., to Johnson Service Company. Piezoelectric acoustical transducer for transmitting and receiving. 3,800,270, Cl. 340-1.00r.
Bailey, Jay Richard, to McCulloch Corporation. Apparatus for reducing the operation noise of a chain saw. 3,798,769, Cl. 30-383.000.
Baker, Charles G., to Case, J. I., Company. Tilt and telescoping steering system. 3,799,569, Cl. 280-87.00a.

Bakewell, Sidney. Power grinder and mixer for foods. 3,799,459, Cl. 241-101.500.
Balgalvis, Arnis, to Stop-Motion Devices Corporation. Control means for filament storage devices. 3,798,929, Cl. 66-125.00r.
Ball Corporation: *See—*
Van Oosterhout, Jack T., 3,800,300.
Ball, Richard Blatchford, to Enrich. Apparatus for displaying a graphic message. 3,798,812, Cl. 40-78.030.
Ballmor: *See—*
McIntire, Richard Kenneth, 3,799,157.
Baltimore Brushes, Inc.: *See—*
Campbell, Richard A., 3,798,833.
Balzers Patent- und Beteiligungs-Aktiengesellschaft: *See—*
Bellmann, Otto, 3,799,110.
Bancroft, Joseph, & Sons Company: *See—*
Trifunovic, Alexander L., 3,798,718.
Banks, Charles T.: *See—*
Caple, Ira; Banks, Charles T.; and Voss, Jorg F., 3,799,468.
Barakauskas, Edward J.: *See—*
Patterson, Arthur E., Jr.; and Barakauskas, Edward J., 3,799,092.
Barbieri, Siegfried, to DURST A.G. Fabrik Fototechnischer Apparate. Device for determining the quantities of colored printing light for the photographic printing of color transparencies. 3,800,070, Cl. 178-5.20a.
Barfort, Per: *See—*
Alexander, James D.; and Barfort, Per, 3,799,743.
Barkow, William Henry: *See—*
Gross, Josef; and Barkow, William Henry, 3,800,176.
Barnett, John E.: *See—*
Warfield, Wayne; and Barnett, John E., 3,799,491.
Barnhart, James W.; and Shea, Philip J., to Dow Chemical Company, The. Reducing serum cholesterol with certain substituted phenols. 3,800,051, Cl. 424-346.000.
Barone, Angelo P., to Anaconda Company, The. Wire drawing annealers. 3,799,518, Cl. 266-3.00r.
Barre, Jean-Gabriel: *See—*
Holt, Terence Albert; and Barre, Jean-Gabriel, 3,798,694.
Barre, Sheridan F.; Abbott, Terry C., Jr.; and Terry, Stephen P., to UMF Systems Incorporated. Ultramicrofiche viewer having image locating scale system. 3,799,663, Cl. 353-27.000.
Barrera, Salvatore E., to Wilkes Pool Corporation. Swimming pool. 3,798,857, Cl. 52-169.000.
Barret, Jean-Pierre: *See—*
Therond, Jean-Francois; Mermet, Jean; Barret, Jean-Pierre; and Cretin, Jacques, 3,800,126.
Barrett, William J.; and Ahlgren, Joseph R., to Woodward Governor Company. Digital governor. 3,798,907, Cl. 60-660.000.
Barrington, Burghus Q., to Halliburton Company. Well packer. 3,799,260, Cl. 166-185.000.
Bartley, Donald O.: *See—*
Hargis, Raymond E.; and Bartley, Donald O., 3,799,872.
Bartling, Helmut: *See—*
Eberle, Herbert; Meyer, Wolfgang; and Bartling, Helmut, 3,800,032.
Bartnick, Henry J., to Eastman Kodak Company. Film unit diverter bar with collapsible spacer means. 3,799,778, Cl. 96-76.00c.
Bartok, Stephen; Klose, George J.; and Stewart, George W., to Opsonar Organ Corporation, mesne. Light collector for optical organ. 3,800,058, Cl. 84-1.180.
Barton, Robert L.: *See—*
Sgambati, Anthony P.; Kamena, Fred; Barton, Robert L.; and Gliem, Donald J., 3,798,953.
Baskettes Ltd.: *See—*
Giesfeldt, John C., 3,800,054.
Basu, Samir, to International Computers Limited. Modulation circuit wherein clock signal is modulated with first and second modulation signals. 3,800,245, Cl. 332-9.00t.
Bata Shoe Financial Corporation of Canada Limited: *See—*
Beamish, Bernard D.; and Taylor, David G., 3,799,087.
Batcher, Kenneth E., to Goodyear Aerospace Corporation. Multidimensional access solid state memory. 3,800,289, Cl. 340-172.500.
Bate, Robert Thomas: *See—*
Wrobel, Joseph S.; and Bate, Robert Thomas, 3,800,243.
Batzer, Hans: *See—*
Porret, Daniel; Habermeier, Juergen; and Batzer, Hans, 3,799,894.
Bauer Bros., Co, The: *See—*
Jewell, Jack D.; and Skeen, Lawrence E., 3,799,456.
Skeen, Lawrence; Jewell, Jack; Landis, Franklin E.; and Mc Neil, William M., 3,799,461.
Bauer Engineering, Inc.: *See—*
Bauer, William J., 3,799,217.
Bauer, Frederick T.; Cairo, Anthony C.; and Holkeboer, Ronald E., to Robertshaw Controls Company. Space thermostat with automatic solid state anticipator. 3,799,433, Cl. 236-68.00b.
Bauer, Peter: *See—*
Bowles, Romald E.; and Bauer, Peter, 3,798,959.
Bauer, William J., to Bauer Engineering, Inc. Liquid loading system. 3,799,217, Cl. 141-1.000.
Bauer, William V., to Lummus Company, The. Solids-to-solids heat exchange apparatus. 3,799,254, Cl. 165-111.000.
Bauerlen, Hans, to Bosch, Robert, G.m.b.H. Method of constructing recording heads. 3,798,756, Cl. 29-592.000.
Baugh, Homer: *See—*
Fullerton, Marvin R.; Hoover, Jess S.; and Baugh, Homer, 3,799,115.
Baum, Jorg Peter, to Verfahrenstechnik Dr.-Ing. Kurt Baum. Adjustable venturi throat for the purification of blast furnace gases. 3,799,502, Cl. 251-124.000.
Bauman, Arthur E. Toilet tissue holder and shelf combination. 3,799,467, Cl. 242-55.200.
Baumanis, Bruno, to Molex Incorporated. Toggle switch. 3,800,110, Cl. 200-67.00c.
Baumann, Albert C. Carrier block and tray for use in encapsulation of semiconductor devices. 3,799,535, Cl. 269-309.000.
Baumann, Frederick W.; La Bahn, William C.; Mac Nary, Robert G.; and Smith, William R., to General Electric Company. Horizontal centrifugal casting machine. 3,799,240, Cl. 164-298.000.
Baxendale, John W., to Vendo Company, The. Staggered stack vending machine. 3,799,393, Cl. 221-67.000.
Baxter Laboratories, Inc.: *See—*
Shockey, William E., 3,799,438.
St. John Peter A.; and Priarone, Paul, 3,799,406.
Bayer Aktiengesellschaft: *See—*
Darsow, Gerhard; and Schnell, Hermann, 3,799,944.
Freitag, Dieter; Haberland, Ulrich; and Krimm, Heinrich, 3,799,953.
Kirschnek, Helmut; Kortmann, Wilfried; and Breyer, Karl-Heinz, 3,799,801.
Nast, Roland; Oertel, Harald; and Ley, Kurt, 3,799,990.
Zellerhoff, Knut; Schutz, Siegismund; and Stendel, Wilhelm, 3,799,921.
BBC Brown, Boveri & Company, Limited: *See—*
Marek, Alois, 3,800,190.
Beal, Glenn I., to Smith, R. M., Inc. Hose nozzle with improved insulation protector structure. 3,799,447, Cl. 239-288.500.
Beamish, Bernard D.; and Taylor, David G., to Bata Shoe Financial Corporation of Canada Limited. Apparatus for automatically interconnecting components of stitchable material. 3,799,087, Cl. 112-121.290.
Bear Brand Hosiery Company: *See—*
Brown, Daniel D.; and Bowen, Dorsie Mae, 3,798,677.
Beck, Edward: *See—*
Bedo, Alfred; and Beck, Edward, 3,799,194.
Beck, Harold R.; and Swett, James B., to Dart Industries Inc. Mold for congealable foodstuffs and the like. 3,799,493, Cl. 249-104.000.
Becker, Josef, to Schottel-Werft Josef Becker KG. Lubricating device for a Z-drive for ships. 3,799,291, Cl. 184-6.180.
Becker, Maureen E.: *See—*
Dixon, William D.; and Becker, Maureen E., 3,799,757.
Becker, Otto Alfred: *See—*
Wefers, Johann Karl; and Becker, Otto Alfred, 3,800,118.
Becton, Dickinson and Company: *See—*
Hilliard, Lewis; and Reno, Woodrow James, 3,799,885.
Becton, Dickinson Electronics Company: *See—*
Lien, Wallace A.; and Pobog, Mathew, 3,800,104.
Bedenbender, Rainer: *See—*
Reitz, Johannes; Fresne, Hans-Jurgen; Bedenbender, Rainer; and Heim, Josef, 3,799,709.
Bedo, Alfred; and Beck, Edward. Ball check valve. 3,799,194, Cl. 137-539.500.
Beery, Jack. Tapered shunt reed switch. 3,800,254, Cl. 335-205.000.
Beiersdorf Aktiengesellschaft: *See—*
Hoppe, Udo, 3,799,969.
Beisch, Hans R., to Sargent Industries of Michigan, Inc. Method of manufacturing wheel trip. 3,798,728, Cl. 29-159.00a.
Belanger, Inc.: *See—*
Belanger, James A., 3,798,847.
Belanger, James A., to Belanger, Inc. Hinge type finishing packs with replaceable units for cylindrical hub structures. 3,798,847, Cl. 51-337.000.
Belcher, Fred H. Auto-transformer coupled hybrid circuits for transistor amplifier stages. 3,800,238, Cl. 330-15.000.
Belden Corporation: *See—*
Torgerson, Duane E., 3,800,068.
Bell & Howell Company: *See—*
Badalich, Frank C.; and Watterlohn, Roy H., 3,799,420.
Fleischman, Andor A., 3,799,656.
Nayak, Ashok B., 3,798,993.
Bell, Malcolm R.; and Zalay, Andrew W., to Sterling Drug Inc. 1,2-Diphenylindoles. 3,799,943, Cl. 260-326.160.
Bell Telephone Laboratories, Incorporated: *See—*
Diaz, Wilfredo, 3,800,169.
Evans, John Grover; and Morse, Charles Ernest, 3,800,098.
Matena, Philip, 3,800,090.
Wright, Arden Bernard, 3,800,083.
Bell-Northern Research Ltd.: *See—*
Bonis, David Raynes, 3,798,712.
Bellati, Hans; and Riiter, Urs, to Brown, Boveri & Company Limited. Stabilized support structure for a turbo-machine. 3,799,482, Cl. 248-19.000.
Bellmann, Otto, to Balzers Patent- und Beteiligungs-Aktiengesellschaft. Device for vacuum coating. 3,799,110, Cl. 118-49.000.
Belpaume, Charles H. Briefs. 3,798,675, Cl. 2-67.000.
Bendix Corporation, The: *See—*
Digby, James J., 3,798,977.
Benner, Alfred: *See—*
Margotte, Werner; and Benner, Alfred, 3,799,950.
Bennice, Richard L.: *See—*

Benoit, Roland A.; Curban, John H.; and Bennice, Richard L., 3,798,684.
Benoit, Roland A.; Curban, John H.; and Bennice, Richard L., to Interroyal Corporation. Fluidic switching system. 3,798,684, Cl. 5-66.000.
Benson, William C. Flexible conveyor system. 3,799,325, Cl. 198-127.00r.
Bent, John H., to Wilson, H. F., Engineering Company. Air powered rotary wire cutting and wrapping tool. 3,798,910, Cl. 60-718.000.
Benteler, Helmut; Hartmann, Franz-Josef; and Hefendehl, Heinz, to Benteler-Werke AG. Method and apparatus for cold-drawing metallic tubes. 3,798,943, Cl. 72-43.000.
Benteler-Werke AG: *See—*
Benteler, Helmut; Hartmann, Franz-Josef; and Hefendehl, Heinz, 3,798,943.
Bentley, David R., to Quester Corporation. Method and apparatus for engine operation. 3,799,301, Cl. 192-3.00r.
Benzel, Karl: *See—*
Harzer, Peter; and Benzel, Karl, 3,800,184.
Bergfelt, Nils H.: *See—*
Thelen, Alfred J.; Bergfelt, Nils H.; and Eufusia, Eugene A., 3,799,800.
Berlin, Helmut Batsch: *See—*
Dickopp, Gerhard; Berlin, Helmut Batsch; and Runge, Wilhelm, 3,800,099.
Beroff, Howard; and Ferguson, Robert G., to Ethicon, Inc. Lateral release suture. 3,799,169, Cl. 128-339.000.
Berreboom, John J.; Cameron, Donald P.; and Stephens, Charles R., Jr., to Pfizer Inc. Benzoxepin-3-ones and benzokioxapin-3-ones as perfame adocants. 3,799,892, Cl. 252-522.000.
Berry, Jean-Luc; and Darlaine, Edgar D., to Remyet, E.P., et Cie. Apparatus for aseptic packing or conditioning of products, notably food products. 3,799,220, Cl. 141-46.000.
Bertin & Cie: *See—*
Bertin, Jean Henri, 3,799,061.
Bertin, Jean Henri, 3,799,095.
Bertin, Jean Henri, to Bertin & Cie. Transport systems comprising a carrying track co-operating with ground-effect machines. 3,799,061, Cl. 104-23.0fs.
Bertin, Jean Henri, to Bertin & Cie. Surface-effect machine suitable for transoceanic traffic. 3,799,095, Cl. 114-67.00a.
Bessam Manufacturing, Inc.: *See—*
Schwarz, Gerald L.; and Schlachet, Hugo, 3,798,881.
Best, John S.; and Smith, Hubert Stacy. Artificial islands and method of controlling ice movement in natural or man-made bodies of water. 3,798,912, Cl. 61-1.00r.
Best Lock Corporation: *See—*
Blekking, C. Paul; and Flack, Max L., 3,798,935.
McCullum, R. Gene, 3,798,938.
Beukering, Henricus Cornelis Johannes: *See—*
Meijer, Roelf Jan; Beukering, Henricus Cornelis Johannes; and Fokker, Herman, 3,798,895.
Beumer, Joseph A.; Jansen, Carl E.; and Radstake, Herman, to Koninklijke Nederlandsche Hoogovens en Staalfabieken N.V. Method and a device for measuring a moisture content of granular inorganic material. 3,800,141, Cl. 250-391.000.
Bicron Electronics Company: *See—*
Schmitt, Clifford G., 3,800,257.
Biermann, William A., to Controls Company of America. Oil control. 3,799,190, Cl. 137-405.000.
Biggs, Dutton; and Konkel, Edward Vernon. Hyperbolic paraboloid roof structure. 3,798,849, Cl. 52-80.000.
Billeruds Aktiebolag: *See—*
Witnes, Odd; and Langaard, Reidar, 3,799,837.
Bilobran, John, to General Motors Corporation. Rotor assembly for a rotary machine. 3,799,706, Cl. 418-61.00a.
Binder, Robert: *See—*
Porsche, Ferdinand Anton Ernst; Binder, Robert; and Weyersberg, Ernst Rudolf, 3,799,138.
Bindler, Jakob: *See—*
Model, Ernst; and Bindler, Jakob, 3,800,048.
Bio-Dynamics, Inc.: *See—*
Budrose, Charles R., 3,800,315.
Biological Concepts, Inc.: *See—*
Rudel, Harry W., 3,800,038.
Bird, James E.; and Carter, Paul R., to United States Steel Corporation. Can stock with differential protective coatings. 3,799,750, Cl. 29-195.00t.
Bissett-Berman Corporation, The: *See—*
Goshgarian, Haig, 3,798,751.
Sandstrom, James P., 3,798,755.
Blackmore, Fred N.; Blackmore, Fred N., Jr.; and Trachet, John R. Method for transplanting plants. 3,799,078, Cl. 111-2.000.
Blackmore, Fred N., Jr.: *See—*
Blackmore, Fred N.; Blackmore, Fred N., Jr.; and Trachet, John R., 3,799,078.
Blackstone Corporation: *See—*
Heen, Melge K., 3,798,787.
Blackwell, Jennings P., to Phillips Petroleum Company. Preparation of arylene sulfide polymer coating dispersion containing fluoracarbon polymer. 3,799,454, Cl. 241-16.000.
Blake, Alexander: *See—*
Dibley, Leland L.; Zaslawsky, Maurice; and Blake, Alexander, 3,798,962.
Blanchard, Christian: *See—*
Clement, Christian; and Blanchard, Christian, 3,800,261.
Blaschek, Otto, to Arnold & Richter KG. Cassette adapted to be externally attached to a motion picture camera. 3,799,660, Cl. 352-78.00r.
Blatt, Leland F. Cam pin plunger clamp. 3,798,985, Cl. 74-102.000.
Blaupunkt-Werke GmbH: *See—*
Backwinkel, Johannes; and Greyer, Eckhardt, 3,800,229.
Blekking, C. Paul; and Flack, Max L., to Best Lock Corporation. Rotating push lock for sliding doors. 3,798,935, Cl. 70-100.000.
Bloch, Herman S., to Universal Oil Products Company. Preparation of tetrafluoroethylene. 3,799,996, Cl. 260-653.300.
Block, Charles, to Gellman Industries, Inc. Apparatus for sewing garment parts. 3,799,086, Cl. 112-121.150.
Bloeck, Siegfried, to Swiss Aluminium Ltd. Packaging container with tear-open thread. 3,799,389, Cl. 220-49.000.
Bloom, Stanley M. N-(2',5'-dihydroxyphenyl or 2',5'-diloweralkoxy phenyl)alkylene pyridinium compounds and derivatives thereof. 3,799,937, Cl. 260-297.00r.
Blossey, Robert G.; and Ostrowski, Edward J., to National Steel Corporation. Feed tip for continuous casting machine. 3,799,410, Cl. 222-566.000.
Bobrov, Anatoly Borisovich: *See—*
Buzhinskaya, Antonia Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Perelygina, Tatyana Fedorovna; and Bobrov, Anatoly Borisovich, 3,799,847.
Bobrova, Evdokia Nikolaevnd: *See—*
Buzhinskaya, Antonia Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Perelygina, Tatyana Fedorovna; and Bobrov, Anatoly Borisovich, 3,799,847.
Bobrova, Irina Maximovna: *See—*
Buzhinskaya, Antonia Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Perelygina, Tatyana Fedorovna; and Bobrov, Anatoly Borisovich, 3,799,847.
Bode, Harald E. W. Apparatus for producing special audio effects utilizing phase shift techniques. 3,800,088, Cl. 179-1.00j.
Bodeep, George Edward: *See—*
Alphonse, Gerard Argant; and Bodeep, George Edward, 3,798,746.
Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Gonner, Winfried, 3,799,683.
Riethmuller, Lothar; Kieper, Hans W.; and Spreitzhofer, Ernst, 3,800,236.
Boekels, Hans, Dr., & Co.: *See—*
Wernitz, Peter, 3,799,281.
Boekhuff, Jack H.: *See—*
Loethen, Walter Victor; Boekhuff, Jack H.; and Huggins, Clifford L., 3,799,407.
Boelkins, Wallace G., to Uni-Mist, Inc. Swivel coupling for fluid conduits. 3,799,589, Cl. 285-281.000.
Boggs, William Henry: *See—*
Lentine, Frank Nickolis; and Boggs, William Henry, 3,798,776.
Bohm, Harald; and Louis, Gerhard, to Licentia Patent-Verwaltungs G.m.b.H. Fuel cell. 3,799,809, Cl. 136-86.00r.
Boileau, Jacques, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. High-speed radial tire. 3,799,231, Cl. 152-209.000.
Boise Cascade Corporation: *See—*
Hurd, David D.; and Mead, Robert B., 3,798,987.
Boldt, Melvin H.: *See—*
Pink, John J.; and Boldt, Melvin H., 3,798,923.
Bolick, Fred C., Jr., to Lanier Electronic Laboratory, Inc. Miniature cassette adapter apparatus and cassette tape recorder-reproducer. 3,800,321, Cl. 360-94.000.
Bolton, Robert A., to General Motors Corporation. Exhaust gas recirculation. 3,799,131, Cl. 123-119.00h.
Bonikowski, Zbigniew; and Keen, Bruce Henry, to British Insulated Callender's Cables Limited. Apparatus for extruding plastic material. 3,799,719, Cl. 425-149.000.
Bonis, David Raynes, to Bell-Northern Research Ltd. Eyeglass clip for headsets. 3,798,712, Cl. 24-81.0ph.
Bonn, Clifford; and Wilson, Kenneth R. A., to Irving Industries Inc. Vehicle safety device. 3,799,574, Cl. 280-150.0ab.
Bonn, Dorrance P., Jr.; and Pratt, Roy E., to Texaco Inc. Fluid catalytic cracking process. 3,799,864, Cl. 208-80.000.
Bonnet, Ludwig. Endoscopes. 3,799,150, Cl. 128-6.000.
Boocock, David G. B.; Dorchai, Raphael O.; Osiecki, Jeanne H.; and Ullman, Edwin F., to Syva Corporation. 4,5-Substituted N-oxy and hydroxy hydroimidazoles. 3,799,942, Cl. 260-309.600.
Borg-Warner Corporation: *See—*
Cook, Leo W., 3,799,309.
Kelly, Robert R.; and Tomashek James R., 3,799,364.
Newton, Alwin B., 3,799,707.
Newton, Alwin D., 3,800,191.
Boron, Joseph J., to Aikoh Co., Ltd., mesne. Sampling apparatus. 3,798,974, Cl. 73-425.40r.
Bortel, Vance W. Rotary wing aircraft and drive means therefor. 3,799,473, Cl. 244-17.190.
Bos, John R.: *See—*
Workman, Lawrence H.; and Bos, John R., 3,799,302.
Bosch, Berthold; Pollmann, Horst; and Schickle, Gerhard, to Telefunken Patenverwertungsgesellschaft m.b.H. Control of gunn oscillations by light irradiation. 3,800,246, Cl. 332-16.00r.
Bosch, Hermann, to Heberlein & Co., AG. Thread or yarn winding control apparatus. 3,799,464, Cl. 242-43.000.
Bosch, Robert, G.m.b.H.: *See—*

Bauerlen, Hans, 3,798,756.
Gotsch, Dieter; Hahner, Reinhard; Lederer, Hans; Kirn, Manfred; and Kuhlmann, Gerhard, 3,799,275.
Bosch, Robert, Hausgeraete GmbH: *See—*
Luderssen, Hugo, 3,799,255.
Bossert, Friedrich: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,799,934.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,799,936.
Bossons, Walter Howard; Lindstaedt, Horst Karl; and Jones, Graham Robin Scott, to Masson Scott Thrissell Engineering Limited. Curl Corrector apparatus for operating on a continuous web. 3,799,038, Cl. 93-1.00r.
Bott, John A. Automobile wind deflector assembly. 3,799,603, Cl. 296-1.00s.
Boud, Colin G. Fluid containers. 3,799,270, Cl. 169-28.000.
Bouiller, Jean Georges; and Joubert, Raymond Jean Maurice, to Societe Nationale d' Etude et de Construction de Moteurs d' Aviation. Means for the transmission of drive to aircraft accessories. 3,799,476, Cl. 244-60.000.
Bouteiller, Charles A.: *See—*
Vizziello, Vito M.; and Bouteiller, Charles A., 3,799,224.
Bowen, Dorsie Mae: *See—*
Brown, Daniel D.; and Bowen, Dorsie Mae, 3,798,677.
Bowles Fluidics Corporation: *See—*
Bowles, Romald E.; and Bauer, Peter, 3,798,959.
Bowles, Romald E.; and Bauer, Peter, to Bowles Fluidics Corporation. Acoustic gauge and fluidic signal processing circuitry therefor. 3,798,959, Cl. 73-37.500.
Brackow, Joachim, to Swiss Aluminum Ltd. Device for continuous measurement of the temperature of the extruded material in extrusion of metals in sections and tubes. 3,798,942, Cl. 72-13.000.
Braden, Walter P. Antipollution device. 3,799,514, Cl. 261-78.00r.
Bragg, Kenneth R. Tool for manipulating dental floss. 3,799,177, Cl. 132-92.000.
Branco, Richard P.; and Bader, Clifford J., to Burroughs Corporation. Mechanical-to-electrical conversion system. 3,800,212, Cl. 322-28.000.
Brandell, John R., to Brandell Products Corporation. Golf putting practice device. 3,799,555, Cl. 273-179.00a.
Brandell Products Corporation: *See—*
Brandell, John R., 3,799,555.
Brandt, Edison R., to Polaroid Corporation. Non-folding tripod adapter. 3,800,312, Cl. 354-293.000.
Brant, Malcolm Victor; and Edwards, Michael, to British Aluminum Company Limited, The. Apparatus for introducing gas into liquid metal. 3,799,522, Cl. 266-34.0pp.
Braukman, Clarence A. Aerator for hose type irrigation system. 3,799,450, Cl. 239-428.500.
Breazeale, Billy H.: *See—*
Kraus, Herbert; and Breazeale, Billy H., 3,799,803.
Breeden Robert H.: *See—*
Jeffery, Robert W.; and Breeden Robert H., 3,799,096.
Breitholtz, Claes; and Lingberg, Gunnar, to Rader Companies, Inc. Rock trap for conveyor tube. 3,799,339, Cl. 209-115.000.
Brennan, John F., to Universal Oil Products Company. Peripheral impregnation of catalyst support material. 3,799,887, Cl. 252-463.000.
Brescia, Anthony J., to Rubbermaid Commercial Products Inc. Receptacle top adaptor construction. 3,799,391, Cl. 220-55.00k.
Breslow, Jeffrey Dale: *See—*
Glass, Marvin I.; Breslow, Jeffrey Dale; and McKay, Robert Snyder, 3,799,544.
Breuer, Friedrich, to Gesellschaft fur Elecktrometallurgie m.b.H. Production of ferro alloys by mixing in the exclusion of ain. 3,799,761, Cl. 75-13.000.
Breyer, Karl-Heinz: *See—*
Kirschnek, Helmut; Kortmann, Wilfried; and Breyer, Karl-Heinz, 3,799,801.
Brichard, Claude, to Glaverbel S.A. Conditioning glass bath adjacent to a vertical sheet draw. 3,799,753, Cl. 65-95.000.
Brichard, Edgard, to Glaverbel. Method of constructing a refractory wall in a float glass furnace. 3,800,014, Cl. 264-30.000.
Bridges, John A., to Aladdin Industries, Incorporated. Food service system. 3,799,143, Cl. 126-246.000.
Bridgestone Tire Company Limited: *See—*
Yamazaki, Harumichi; Nakamura, Kihei; and Kondo, Yoshikazu, 3,799,531.
Brignard, Francois C.; and Lefranc, Jean E.; deceased (by Darmigny, Suzanne M.; widow and heir). Rotary apparatus for dutting vegetables. 3,799,023, Cl. 83-663.000.
Brisson, Claude F.; and Schuna, John E., to United Binding Company, Inc. Article hanging storage apparatus. 3,798,810, Cl. 40-65.000.
British Aluminum Company Limited, The: *See—*
Brant, Malcolm Victor; and Edwards, Michael, 3,799,522.
British Insulated Callender's Cables Limited: *See—*
Bonikowski, Zbigniew; and Keen, Bruce Henry, 3,799,719.
Williams, Albert Leslie; and Verne, Stefan, 3,800,017.
British Iron and Steel Research Association, The: *See—*
Laws, William Robert; and Hyde, Eric Ambrose, 3,799,602.
British Petroleum Company Limited, The: *See—*
Cardwell, Joseph Robin; and Pout, Christopher Ronald, 3,799,867.
Ells, John William, 3,799,208.
British Titan Limited: *See—*
Ward, James Lawrence; and Street, Eric, 3,799,457.
Brochetti, Raymond E., to Hunter, James, Machine Company, Inc., mesne. Needle loom drives. 3,798,717, Cl. 28-4.00r.
Brock, Bruce A., to Honeywell Inc. Method of making a fluidic device. 3,798,727, Cl. 29-157.00r.
Brodlin, Wilhelm, to Weishaut, Max, GmbH, Firma. Burner for liquid fuels. 3,799,732, Cl. 431-347.000.
Broekhuizen, Willem; and Covington, Cecil E., to Textron Inc. Main rotor blade construction. 3,799,700, Cl. 416-226.000.
Bronzavia: *See—*
Colignon, Pierre, 3,799,056.
Brooks, Harry F.: *See—*
Malizio, Andrew B.; Rice, Martin A.; and Brooks, Harry F., 3,799,767.
Brother Kogyo Kabushiki Kaisha: *See—*
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Brown, Boveri & Company Limited: *See—*
Bellati, Hans; and Riiter, Urs, 3,799,482.
Brown, Clinton E., to Hydronautics, Incorporated. Artificial kidney. 3,799,873, Cl. 210-22.000.
Brown, Daniel D.; and Bowen, Dorsie Mae, to Bear Brand Hosiery Company. Method of seaming panty hose. 3,798,677, Cl. 2-224.00r.
Brown, James L.; and Wilder, Richard P., Jr., to Honeywell Information Systems, Inc. Address development technique utilizing a content addressable memory. 3,800,286, Cl. 340-172.500.
Brown, Joe R.; and Johnson, Joseph L., said Johnson assor. to Macco Oil Tool Co., The. Safety means for well flow control. 3,799,269, Cl. 166-315.000.
Brown Oil Tools, Inc.: *See—*
Cochran, Chudleigh B., 3,799,268.
Brubaker, Wilson M. Focusing plate for magnetic mass spectrometer. 3,800,140, Cl. 250-299.000.
Brucker, Clarence E.; Uhlarik, Kenneth S.; Lampe, John W., Jr.; and Bush, John W., to American Home Products Corporation. Lower calorie candy. 3,800,045, Cl. 426-162.000.
Bruckner, Richard; and Tansky, John L., to Bunker Ramo Corporation. Electrical connector for transistor outline semiconductor device. 3,800,268, Cl. 339-66.00m.
Bruderer, Werner; and Koenig, Peter J., to Concase AG. Method of sealing the stopping and withdrawing head in a continuous casting mold. 3,799,238, Cl. 164-82.000.
Bruggi, Mario. Machine for working shoe sole contours. 3,798,693, Cl. 12-87.000.
Brunkhorst, Lloyd E.; Carr, Theodore G.; and Dueker, James E., to McDonnell Douglas Corporation. Pulse optical radiation tracker. 3,800,146, Cl. 250-211.000.
Bryant, Wayne H., to United States of America, National Aeronautics and Space Administration Administrator. Digital controller for a baum folding machine. 3,800,253, Cl. 235-151.000.
Brzozowski, Stephen J.: *See—*
Burgess, James Patton; Polkinghorn, Melvin W.; and Brzozowski, Stephen J., 3,800,267.
Buccicone, Dario, to Bucciconi Engineering Co., Inc. Vacuum belt-type conveyor. 3,799,541, Cl. 271-197.000.
Buccicone, Velio S., to Bucciconi Engineering Co., Inc. Sheet piler. 3,799,540, Cl. 271-189.000.
Bucciconi Engineering Co., Inc.: *See—*
Buccicone, Dario, 3,799,541.
Buccicone, Velio S., 3,799,540.
Buchanan, Edward R.: *See—*
Tarshis, Lemuel A.; and Buchanan, Edward R., 3,799,768.
Tarshis, Lemuel A.; and Buchanan, Edward R., 3,799,769.
Buchner, Richard E.: *See—*
Cinkus, Frank; and Buchner, Richard E., 3,800,165.
Buck, Tom E. Combined ash tray and coaster. 3,799,641, Cl. 312-286.000.
Buckman, Kenneth Ernest; and Rogers, Kenneth Arthur, to General Motors Corporation. Fluid filter elements. 3,799,354, Cl. 210-493.000.
Buderus'sche Eisenwerke: *See—*
Schmidt-Burbach, Gerhard; Jung, Anton L.; Hubert, Helmut; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Strauss, Heinz, 3,798,879.
Budrose, Charles R., to Bio-Dynamics, Inc. Cassette tape recorder sensory adaptor. 3,800,315, Cl. 360-88.000.
Buechler, Lester W.: *See—*
Hennessey, Timothy W.; Lawton, Charles A.; and Buechler, Lester W., 3,798,757.
Bulin, Shelly A., to Case, J. I., Company. Drain tube valve. 3,799,186, Cl. 137-204.000.
Bulters, Hein; Heidemann, Gerrit; and DePutter, Warner Jan, to Industriele Onderneming Wavin N.V. Process and installation for manufacturing fiber reinforced sandwich tube. 3,799,818, Cl. 156-62.200.
Bump, Donald D.: *See—*
Salyer, Ival O.; Bump, Donald D.; and Weesner, Willaim E., 3,799,355.
Bunger, Richard E. Portable slatted animal pen floor forming apparatus. 3,799,490, Cl. 248-18.000.
Bunish, Steve; and Faulkner, Joseph W., to Anaconda Company, The. Grounded power cable. 3,800,065, Cl. 174-115.000.
Bunker Ramo Corporation: *See—*
Bruckner, Richard; and Tansky, John L., 3,800,268.
Bunting, Eugene N. Motor speed control device. 3,800,200, Cl. 318-228.000.
Burbach, Henry E.: *See—*

Harris, David A.; Burbach, Henry E.; and Singer, Joseph G., 3,799,242.
Burbine, William G.: *See—*
Jordan, Merrill E.; Burbine, William G.; and Williams, Frank R., 3,799,788.
Burckhardt, August H. Self-setting trap. 3,798,827, Cl. 43-95.000.
Burdeska, Kurt: *See—*
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, 3,799,952.
Bures, Ladislav: *See—*
Rajnoha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, 3,798,886.
Burgess, James Patton; Polkinghorn, Melvin W.; and Brzozowski, Stephen J., to International Telephone and Telegraph Corporation. Lamp socket. 3,800,267, Cl. 339-14.00r.
Burget, Bohumir: *See—*
Rajnoha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, 3,798,886.
Burke, Jerry A., Jr.: *See—*
Davoud, John Gordon; and Burke, Jerry A., Jr., 3,798,908.
Burkhardt, Joseph A.; Ortloff, John E.; Loth, William D.; and Hickox, Robert E., to Esso Production Research Company. Offshore apparatus and installation technique. 3,798,915, Cl. 61-46.500.
Burkhardt, Joseph A.; McLallen, Dewitt K., Jr.; and Childers, Thomas W., to Esso Production Research Company. Compartmented underwater equipment. 3,799,191, Cl. 137-454.200.
Burleigh, Malcolm B., to Minnesota Mining and Manufacturing Company. Light-desensitizable imaging sheet. 3,799,779, Cl. 96-82.000.
Burns, Bernard J.: *See—*
Douglas, George H.; Diamond, Julius; and Burns, Bernard J., 3,800,043.
Burroughs Corporation: *See—*
Branco, Richard P.; and Bader, Clifford J., 3,800,212.
Burtis, Wilson A.; and Omori, Thomas T. Recreation vehicle. 3,799,565, Cl. 280-16.000.
Bury, George J., to Illinois Tool Works, Inc. Switch construction. 3,800,249, Cl. 335-2.000.
Bush, John W.: *See—*
Brucker, Clarence E.; Uhlarik, Kenneth S.; Lampe, John W., Jr.; and Bush, John W., 3,800,045.
Bush, Thomas P., Jr.; and Grand, Samuel Edward. Log processing machine. 3,799,015, Cl. 83-84.000.
Busheee, Joseph J.: *See—*
Gibbons, Edward J.; Morton, Herbert J.; and Busheee, Joseph J., 3,798,736.
Business Builders International, Inc.: *See—*
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Bussmann, Heinrich: *See—*
Herzhoff, Peter; Gree, Hans; Schweicher, Wolfgang; Voss, Karl; Peckhaus, Oscar; Frenken, Hans; and Bussmann, Heinrich, 3,799,419.
Buteux, Richard Harold Barclay, to Imperial Chemical Industries Limited. Processes for the production of new oriented film and tapes. 3,800,022, Cl. 264-210.00r.
Butter, Karl, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Arrangement of cooling channels for rocket engine combustion chambers. 3,798,902, Cl. 60-260.000.
Butterfield, Delwin W. Solar heating system. 3,799,145, Cl. 126-271.000.
Butterfield, John L.; and Gathers, Glen E., to General Electric Company. Liquid transfer assembly for a liquid cooled dynamoelectric machine. 3,800,174, Cl. 310-61.000.
Buzhinskaya, Antonia Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Perelygina, Tatyana Fedorovna; and Bobrov, Anatoly Borisovich; deceased (by Bobrova, Evdokia Nikolaevnd; and by Bobrova, Irina Maximovna; administrator). Methodfor electrolytically producing a metal band. 3,799,847, Cl. 204-13.000.
Bybee, Samuel M. Linkage type hook setter apparatus. 3,798,821, Cl. 43-15.000.
Bydal, Bruce A., to Du Pont de Nemours, E. I., and Company. Mixer for a melt spinning apparatus. 3,799,509, Cl. 259-4.000.
Byrne, Sydnor H., Jr.: *See—*
Ashmead, Howard L.; Byrne, Sydnor H., Jr.; and Wolf, John P., III, 3,799,396.
Cabot Corporation: *See—*
Jordan, Merrill E.; Burbine, William G.; and Williams, Frank R., 3,799,788.
Cachat, John F., to Parker-Ohio Industries, Inc. Method for inductively heating an elongated, slotted work piece. 3,800,115, Cl. 219-10.430.
Caelus Memories, Inc.: *See—*
Lin, Frank W., 3,800,317.
O'Brien, Terence J., 3,800,325.
Cain, Maurice Edward; Knight, Geoffrey Thomas; Gazeley, Keith Frederick; and Lewis, Peter McHugh, to Natural Rubber Producers Research Association, The. Urethanes for the treatment of rubber. 3,799,954, Cl. 260-396.00n.
Cairo, Anthony C.: *See—*
Bauer, Frederick T.; Cairo, Anthony C.; and Holkeboer, Ronald E., 3,799,433.
Caldwell, John W.: *See—*
Lavachy, Ardre G.; and Caldwell, John W., 3,799,431.
Caldwell, Richard L., to Mobil Oil Corporation. Method and apparatus for radioactive well logging. 3,800,145, Cl. 250-253.000.
Callahan, Michael James, Jr., to Texas Instruments Incorporated. Current-canceling circuit. 3,800,239, Cl. 330-40.000.
Calpis Shokuhin Kogyo Kabushiki Kaisha: *See—*
Inagami, Kaoru; Kamada, Hidemoto; Ino, Kazuo; Terabayashi, Takeshi; Iio, Hiroki; and Yamamura, Hirosi, 3,800,052.
Camco Incorporated: *See—*
Tausch, Gilbert H., 3,799,258.
Watkins, Fred E.; and Dietz, William H., 3,799,204.
Camenzind, Hans R.; and Allison, David F., to Signetics Corporation. Method for making bulk resistor and integrated circuit using the same. 3,798,753, Cl. 29-580.000.
Cameron, Donald P.: *See—*
Berreboom, John J.; Cameron, Donald P.; and Stephens, Charles R., Jr., 3,799,892.
Camosso, Domenico: *See—*
Pizzotti, Ugo; Camosso, Domenico; and Pollastro, Giovanni, 3,799,633.
Campagna, Benjamin J. Manhole closure assembly with support ring. 3,798,848, Cl. 52-20.000.
Campagnuolo, Carl J.: *See—*
Fisher, Evan D.; and Campagnuolo, Carl J., 3,799,205.
Campbell, Jeptha E.; and Gilchrist, James E., to United States of America, Health, Education and Welfare. Instrumental method for plating and counting aerobic bacteria. 3,799,844, Cl. 195-127.000.
Campbell, Richard A., to Baltimore Brushes, Inc. Talking toy. 3,798,833, Cl. 46-227.000.
Campion, Alexander David: *See—*
Parsey, Michael Richard; and Campion, Alexander David, 3,800,019.
Campus Sweater & Sportswear Company: *See—*
Furnari, Anthony, 3,799,084.
Canada-Cities Sercice Ltd.: *See—*
Hendry, Robert D., 3,799,613.
Canadian Patents and Development Limited: *See—*
Romero-Sierra, Cesru Aurelio; and Tanner, Joseph A., 3,799,162.
Canon Kabushiki Kaisha: *See—*
Ogiso, Mitsutoshi; and Takahashi, Kiyoshi, 3,800,305.
Taguchi, Tatsuya; and Konishi, Yuichiro, 3,800,304.
Cantaloupe, Francis A.: *See—*
Anderson, Vernard C.; Cantaloupe, Francis A.; and Overman, Kenneth T., 3,799,178.
Cantor, Stephen E., to Uniroyal, Inc. Halocyanoalkyl epoxy ethers and polymers thereof. 3,799,895, Cl. 260-2.00a.
Cantwell, David Byrne. Golf bag. 3,799,227, Cl. 150-1.50r.
Caple, Ira; Banks, Charles T.; and Voss, Jorg F., to Kimberly-Clark Corporation. Diagonal mandrel traverse winder. 3,799,468, Cl. 242-56.00r.
Cappa, Giulio, to Industrie Pirelli S.p.A. Pneumatic tire for vehicle wheels. 3,799,233, Cl. 152-361.00r.
Capuano, Italo A., to Olin Corporation. Moisture analysis method. 3,799,846, Cl. 204-1.00t.
Carad, Inc.: *See—*
Cass, Boyd E., 3,799,762.
Caras, Peter,; and Pike, Walter E., to SSP Industries,. Duct joint. 3,799,586, Cl. 285-98.000.
Cardenas, Ricardo L.; Carlin, Joseph T.; and Flournoy, Kenoth H., to Texaco Inc. Surfactant oil recovery process for use in formations containing high concentrations of polyvalent ions such as calcium or magnesium. 3,799,264, Cl. 166-275.000.
Cardwell, Joseph Robin; and Pout, Christopher Ronald, to British Petroleum Company Limited, The. Reforming with platinum and tantalum or niobium catalyst. 3,799,867, Cl. 208-139.000.
Carella, Richard F. Archery bowsight. 3,798,783, Cl. 33-265.000.
Carlin, Joseph T.: *See—*
Cardenas, Ricardo L.; Carlin, Joseph T.; and Flournoy, Kenoth H., 3,799,264.
Carlin, William Worth, to PPG Industries, Inc. Method for reducing the organo-lead compound content of aqueous solutions by electrolysis in an electrolyte permeable metallic cathode electrolytic cell. 3,799,853, Cl. 204-149.000.
Carlson, John T. M.; and Lawson, Gerald P., to Rosemount Inc. Method of making resistance wire temperature sensor. 3,798,760, Cl. 29-612.000.
Carlyle, James S., to American Micro-Systems, Incorporated. Haze barrier for liquid crystal display. 3,799,649, Cl. 350-160.01c.
Carnevale, Umberto A., to All American Industries, Inc. Cross runway impact pad for aircraft arresting system. 3,799,477, Cl. 244-110.00c.
Carpenter, Robert E., to Chemplast, Inc. Resilient sealing means for joint between elements having different coefficients of expansion. 3,799,411, Cl. 222-567.000.
Carr, Theodore G.: *See—*
Brunkhorst, Lloyd E.; Carr, Theodore G.; and Dueker, James E., 3,800,146.
Carre, Roland; and Constant, Marcel, to Thomson-CSF. Coherence detecting process and device. 3,800,235, Cl. 328-133.000.
Carreira, Leonard M., to Xerox Corporation. Recording oscillograph utilizing photoelectrophoretic techniques. 3,800,302, Cl. 346-109.000.
Carrier Corporation: *See—*
Morgan, Robert D., 3,798,920.
Shields, J. Rodger, 3,799,692.
Carrier Corporation, mesne: *See—*
Liberman, Harvey W., 3,799,051.
Carroll, James C. Loudspeaker. 3,799,286, Cl. 181-31.00b.

Carroll, Michael: *See—*
Wood, William; Sellers, John; Carroll, Michael; and Griffiths, Mary, 3,799,213.
Carter, Paul R.: *See—*
Bird, James E.; and Carter, Paul R., 3,799,750.
Casagrande, Cesare: *See—*
Ferrari, Iorgio; and Casagrande, Cesare, 3,799,920.
Case, Derek Frank: *See—*
Stamers, Kenneth; and Case, Derek Frank, 3,798,758.
Case, J. I., Company: *See—*
Baker, Charles G., 3,799,569.
Bulin, Shelly A., 3,799,186.
Cass, Boyd E., to Carad, Inc. Slag conditioner for iron and steel processes. 3,799,762, Cl. 75-55.000.
Cassel, Harrison H., to Palmer-Shile Company. Electrical control system. 3,799,057, Cl. 104-1.00r.
Cassella Farbwerke Mainkur Aktiengesellschaft: *See—*
Kindler, Horst; Fischer, Hans-Gerhard; Antoni, Wilhelm; and Appel, Ewald, 3,799,941.
Castaldo, Stanley C. Illuminated handbag apparatus having walk along light. 3,800,134, Cl. 240-6.45p.
Castillo, Herman B., to Eaton Corporation. Liquid-vapor cycle air-condition system. 3,799,243, Cl. 165-19.000.
Castle, John Roderick. Aluminum building. 3,798,853, Cl. 52-92.000.
Casull, Richard J. Means for coupling a hand gun to an auxiliary stock. 3,798,818, Cl. 42-72.000.
Caterpillar Tractor Company: *See—*
Master, Ralph L.; Philipsen, Richard D.; Starr, Kenneth E.; and Unkrich, Herbert C., 3,799,699.
Van Gaasbeek, Peter Hakkenberg; and Hebner, Theodore J., 3,799,628.
Caussin, Georges, to Jeumont-Schneider and Trailigaz. System for the electric supply of a variable capacitive load. 3,800,210, Cl. 321-9.00r.
Causton, Brian Edward: *See—*
Holloway, Maurice William; and Causton, Brian Edward, 3,799,905.
Cawley, John D.; and Haber, Jan W. H., to Eastman Kodak Company. Polymeric acrylic compounds. 3,799,972, Cl. 260-486.00r.
Cecere, Joseph A., Jr. Electric stepladder. 3,799,289, Cl. 182-145.000.
Cedar Rapids Engineering Company: *See—*
Humbert, Marvin H., 3,799,561.
Celada, Juan; Villarreal, David; and MacKay, Patrick W., to Fierro Espanja, S.A. Method and apparatus for the gaseous reduction of iron ore to sponge iron. 3,799,521, Cl. 266-29.000.
Cellu-Products Company: *See—*
Miller, Alan H.; and Currie, Grover C., 3,799,167.
Celotex Corporation, The: *See—*
Lester, Russell H., 3,799,296.
Moss, Ernest K., 3,799,896.
Centre Technique: *See—*
Holt, Terence Albert; and Barre, Jean-Gabriel, 3,798,694.
Cerne, Gerd: *See—*
Roeder, Jean; and Cerne, Gerd, 3,799,479.
Certain-Teed Products Corporation, mesne: *See—*
Waksman, David; and Stewart, James R., 3,799,833.
Ceskoslovenska akademie ved: *See—*
Jarolim, Vaclav; Sehnal, Frantisek; and Sorm, Frantisek, 3,799,957.
Chadwick, Duane G. Artificial sunrise. 3,798,889, Cl. 58-19.00c.
Chamouton, Daniel Jean Marie. Device for drying continuous web material. 3,798,785, Cl. 34-54.000.
Champleboux, Jacques; and Delaux, Robert, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes. Hoses and pipes. 3,799,825, Cl. 156-144.000.
Champot, Alain, to Ateliers de Constructions Metalliques de Caen. Roof composed of multipurpose self-supporting longitudinal elements, method and installation for its manufacture. 3,799,247, Cl. 165-49.000.
Channon, Frederick R.: *See—*
Fischer, David L.; and Channon, Frederick R., 3,799,839.
Chappell, Gilmore H. Holder for a vacuum bottle. 3,799,600, Cl. 294-31.200.
Charpentier, Maurice, to Saint-Gobain. Fabrication of cellular resinous products. 3,800,018, Cl. 264-53.000.
Chatterton, Edward J., to United States of America, Air Force. Optical tracking system. 3,799,676, Cl. 356-152.000.
Chemetron Corporation: *See—*
Helton, Donald C.; and Steveling, Robert C., 3,800,120.
Chemineer, Inc.: *See—*
Kime, Donald L.; and Stogdill, Ronald G., 3,798,991.
Chemische Werke Huls Aktiengesellschaft: *See—*
Feinauer, Roland; and Muller, Karl-Adolf, 3,799,899.
Chemplast, Inc.: *See—*
Carpenter, Robert E., 3,799,411.
Chenel, Albert, Jr. Glaziers tool. 3,799,225, Cl. 145-46.000.
Cheng, Paul J., to Phillips Petroleum Company. Carbon black reactor. 3,799,745, Cl. 23-259.500.
Cherio, Vittoria; and Mignone, Giuseppe. Device for stuffing foodstuff into tubular nettings. 3,798,872, Cl. 53-197.000.
Cheron, Jean Paul Robert, to Saint-Gobain. Apparatus for tempering sheets of glass, in particular, sheets of curved form. 3,799,752, Cl. 65-351.000.
Chesluk, Ralph P.: *See—*
White, James A.; and Chesluk, Ralph P., 3,799,876.
Chevalier, Andre; Grolet, Pierre; and Reynard, Remi, to Institut Francais Du Petrole des Carburants. Couplings of reduced size and capable of transmitting high mechanical stresses between and armoured flexible member and a rigid element. 3,799,587, Cl. 285137.00r.
Chiappinelli, Paul S. Radio monting collar. 3,799,483, Cl. 248-27.000.
Chicago Bridge & Iron Company: *See—*
Maher, James Bernard; and Delahunty, Terry Wayne, 3,798,918.
Chicago Dynamic Industries, Inc.: *See—*
Heide, Stanford M., 3,800,107.
Chikatsu, Tatsusuke; Yoshida, Yoshinori; Shimokawa, Shinichi; and Akimoto, Toshio, to Japan Synthetic Rubber Company, Limited. Process for preventing the polymerization of conjugated dienes. 3,800,002, Cl. 260-681.50r.
Childers, Thomas W.: *See—*
Burkhardt, Joseph A.; McLallen, Dewitt K., Jr.; and Childers, Thomas W., 3,799,191.
Chinoin Gyogyszeves Vegyeszeti Termekek Gyara RT: *See—*
Kovats, Ferenc; and Pinter, Andor, 3,798,784.
Chisholm, Andrew Alexander, to Platt International Limited. Textile spinning machines. 3,799,630, Cl. 308-9.000.
Chore-Time Equipment, Inc.: *See—*
Hastetler, Eldon, 3,799,116.
Chorvat, Robert J.; and Pappo, Raphael, to Searle, G. D., & Co. Process for the manufacture of delta 4-steroidal lactams. 3,799,931, Cl. 260-289.0az.
Chottiner, Jacob: *See—*
Sampson, Ronald N.; and Chottiner, Jacob, 3,799,811.
Christensen, Rolf: *See—*
Hansen, Gunnar Lyshoj; and Christensen, Rolf, 3,799,201.
Christianson, Raymond A., to Under Sea Industries, Inc. First stage scuba regulator. 3,799,189, Cl. 137-316.000.
Christopher, P. A.: *See—*
United States of America, National Aeronautics and Space Administration, 3,798,741.
Chronister, Clyde H., to Chronister Development, Inc. Valve. 3,799,188, Cl. 137-271.000.
Chronister Development, Inc.: *See—*
Chronister, Clyde H., 3,799,188.
CH20, Inc.: *See—*
Courtright, Burr, 3,799,582.
Ciba-Geigy AG: *See—*
Martin, Henry; Duerr, Dieter; Hubele, Adolf; Pisstotas, Georg; Rohr, Otto; and Rufener, Jacques, 3,799,759.
Nachbur, Hermann; and Maeder, Arthur, 3,800,010.
Porret, Daniel; Habermeier, Juergen; and Batzer, Hans, 3,799,894.
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, 3,799,952.
Ciba-Geigy Corporation: *See—*
Heusler, Karl; and Woodward, Robert Burns, 3,799,938.
Margotte, Werner; and Benner, Alfred, 3,799,950.
Martin, Henry; Pissiotas, Georg; and Rohr, Otto, 3,800,037.
Model, Ernst; and Bindler, Jakob, 3,800,048.
Nikles, Erwin, 3,799,925.
Cincinnati Gear Company: *See—*
Fritsch, Felix, 3,798,999.
Cincinnati Milacron-Heald Corporation: *See—*
Robillard, Howard George; and Uhtenwoltd, Herbert Rudolph, 3,798,840.
Cinkus, Frank; and Buchner, Richard E., to International Telephone and Telegraph Corporation. Electronic pulse storage device. 3,800,165, Cl. 307-238.000.
Cinouin, Jean-Pierre, "Lucien Ferraz & Cie". Fuse cartridge. 3,800,262, Cl. 337-203.000.
Cirino, John F. Rollover car washer. 3,798,696, Cl. 15-21.00e.
Cities Service Oil Company: *See—*
Oliver, Don L., 3,799,278.
Clair Mfg. Co., Inc.: *See—*
Weatherell, James W., 3,798,843.
Clark Equipment Company: *See—*
Hancock, James E., 3,798,805.
Clark, Marion A. Pre-selector gear shift for bicycle. 3,798,986, Cl. 74-217.00b.
Clark, Russell L., to Avnet, Inc., mesne. 45 RPM adapter. 3,799,557, Cl. 274-10.00s.
Clark, Thomas D., to Westinghouse Air Brake Company. Digital speed control apparatus for vehicles. 3,800,139, Cl. 246-182.00c.
Clarke, Donald H.: *See—*
Rubens, Louis C.; and Clarke, Donald H., 3,798,836.
Clarke, William C., Jr., to Armco Steel Corporation. Free-machining stainless steel. 3,799,765, Cl. 75-126.000.
Clarke-Gravely Corporation: *See—*
Lowder, Dale E.; and Nise, Wilfred C., 3,798,697.
Cleary, Edward J., Jr., to United States of America, Navy. Omni-converter with digital phase shifter. 3,800,125, Cl. 235-150.200.
Clecon Incorporated: *See—*
McClive, Ralph T., 3,799,352.
Clement, Christian; and Blanchard, Christian, to La Telemecanique. Device for regulating the current strength for a thermal relay. 3,800,261, Cl. 337-84.000.
Cleo Wrap Corporation: *See—*
Purdom, Clyde H.; Allom, Kenneth W.; and Shackelford, Harold D., 3,798,871.
Cloots, Henry P.; and Neumann, James A., to Waukesha Foundry Company, Inc. Positive displacement pump. 3,799,713, Cl. 418-206.000.

Close, Ernest Frederick, to Magnavox Company, The. Multiple frequency FM detector. 3,800,226, Cl. 325-315.000.
Coad, George L.: *See—*
Symmons, Edger B.; and Coad, George L., 3,799,294.
Cobb, Harold W., to Dennison Manufacturing Company. Document feeding mechanism. 3,799,537, Cl. 271-3.000.
Cochran, Chudleigh B., to Brown Oil Tools, Inc. Method and apparatus for evacuating drilling fluids from a well. 3,799,268, Cl. 166-313.000.
Cochran, David S., to Hewlett-Packard Company. Synchronized time delay circuit. 3,800,168, Cl. 307-290.000.
Cochran, William R.; and Heiling, Gerald M., to International Business Machines Corporation. Digitally compensated scanning system. 3,800,078, Cl. 178-7.100.
Cochrane, Ralph W.: *See—*
Czopor, Edmund J.; Newton, Joseph; Cochrane, Ralph W.; and Mazur, Stan T., 3,798,723.
Cocke, John; and Helman, David R., to International Business Machines Corporation. Data processing system memory relocating apparatus and method. 3,800,291, Cl. 340-172.500.
Coffin, Lamar D.: *See—*
Opie, William R.; and Coffin, Lamar D., 3,799,764.
Cohen, Arthur M., to Airpot Corporation. Damping dashpot assembly. 3,799,299, Cl. 188-282.000.
Coiko, Aleftin: *See—*
Suvorov, Boris Viktorovich; Kagarlitsky, Alfred Davydovich; Sembaev, Dauren Khamitovich; Kolodina, Ivetta Sergeevna; and Coiko, Aleftin, 3,799,888.
Cole, William R.; Harrison, James W.; Kotula, Bruno S.; Mariich, Jovo S.; and Tahmisian, Theodore N., to United States of America Atomic Energy Commission. Precision trimmer for an encapsulated specimen. 3,799,029, Cl. 90-38.00r.
Coleman, Charles M. Miniaturized integrated analytical test container. 3,799,742, Cl. 23-253.00r.
Coleman, John Dale: *See—*
Wickham, David John; and Coleman, John Dale, 3,799,623.
Coles, Leander M. Mortician's table. 3,799,534, Cl. 269-32.00b.
Colestock, Harry Elliott; Hoadley, Kenneth G.; and Marcinkiewicz, Eugene J., said Colestock and said Hoadley assors. to International Telephone and Telegraph Corporation. Apparatus for feeding polished machine parts past optical scanning means to enable inpection of the polished parts. 3,799,682, Cl. 356-237.000.
Colignon, Pierre, to Bronzavia. Thermal insulation blocks, particularly for space vehicles. 3,799,056, Cl. 102-105.000.
Collette, Hubert: *See—*
Stauff, Emile; and Collette, Hubert, 3,798,796.
Collins, Eddie L.: *See—*
Scott, Charles D.; and Collins, Eddie L., 3,800,161.
Collins, Henry R., Jr. Composite sampler method and apparatus. 3,798,972, Cl. 73-422.0tc.
Collins, John E.: *See—*
Anton, William J. E.; Collins, John E.; and Lind, Peter A., 3,800,185.
Collins, Joseph B.: *See—*
Schlitlin, George E.; Collins, Joseph B.; and Lambert, Michael W., 3,799,748.
Collins, Larry L.: *See—*
Julian, Ralph R.; and Collins, Larry L., 3,798,705.
Collins, Robert F., to Kendall Company, The. Multiple purpose drape. 3,799,161, Cl. 128-132.00d.
Collins, William O. Method and apparatus for recovering gold. 3,799,334, Cl. 209-11.000.
Con Industries Operating Corporation: *See—*
Into, Henry A., 3,799,684.
Reddy, Komatireddy Narashimha, 3,799,137.
Colucci, Ivo, to Alfa Romeo S.p.A. Safety belt having three fastening points for the seat of a motor car. 3,799,577, Cl. 280-150.50b.
Columbia Broadcasting System, Inc.: *See—*
Smith, Clyde W., 3,800,077.
Combustion Engineering, Inc.: *See—*
Alden, John W., Jr.; and Webster, Kenneth E., 3,799,121.
Harris, David A.; Burbach, Henry E.; and Singer, Joseph G., 3,799,242.
Harris, Lewis K., 3,798,968.
Compagnie General d'Electricite: *See—*
Guillet, Robert; and Cornillault, Jean, 3,799,674.
Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Boileau, Jacques, 3,799,231.
Montagne, Jean Bernard, 3,799,230.
Compagnie Industrielle des Lasers: *See—*
Guillet, Robert; and Cornillault, Jean, 3,799,674.
Compteurs Schlumberger: *See—*
Souillard, Michel, 3,800,215.
Concase AG: *See—*
Bruderer, Werner; and Koenig, Peter J., 3,799,238.
Conklin, Carroll C., Jr. Disposable tooth cleaner. 3,798,698, Cl. 15-167.00r.
Conlee, George D., to Slifer Manufacturing Company, Incorporated. Fluid flow detector and control for a hot water system. 3,799,184, Cl. 137-94.000.
Connors, John J.; and Smith, Charles C., to Tappan Company, The. Guard for mechanical power press. 3,798,998, Cl. 74-612.000.
Conover, Haywood W. Combination boat hook and pole. 3,799,099, Cl. 114-221.000.
Consolidated Papers, Inc.: *See—*
Damrau, Wayne A., 3,799,111.
Consolidated Rock Products, Company: *See—*
Vincent, Clifford A., 3,799,221.
Constant, Marcel: *See—*
Carre, Roland; and Constant, Marcel, 3,800,235.
Construction Company Limited: *See—*
Tanaka, Tohachiro; Ishii, Kenichi; Sasaki, Seiya; and Shiraishi, Hiromi, 3,800,116.
Continental Oil Company: *See—*
Gordon, Ronnie D.; and Starks, Charles M., 3,799,999.
Control Concepts, Inc.: *See—*
Zeuner, Kenneth W., 3,799,497.
Controls Company of America: *See—*
Biermann, William A., 3,799,190.
Cook, Edward H., Jr.; and Snyder, Daniel J., to Hoaker Chemical Corporation. Reactivation of cathodes in chlorate cells. 3,799,849, Cl. 204-95.000.
Cook, Leo W., to Borg-Warner Corporation. Clutch driven member assembly with vibration damper. 3,799,309, Cl. 192-106.200.
Copeland, Thomas D., Jr.: *See—*
Selch, Howard I., 3,799,026.
Copland, George V.: *See—*
Zimmerman, Carl W.; and Copland, George V., 3,800,242.
Corbin, Dennis Dale: *See—*
Gabby, John Lester; Corbin, Dennis Dale; and Lowe, Jack Bruner, 3,800,036.
Cornell, Richard D., to Johnson Products, Inc. Hydraulic lash adjuster oil metering means. 3,799,129, Cl. 123-90.360.
Cornillault, Jean: *See—*
Guillet, Robert; and Cornillault, Jean, 3,799,674.
Corning Glass Works: *See—*
Anderson, Vernard C.; Cantaloupe, Francis A.; and Overman, Kenneth T., 3,799,178.
Corr, Hubert; Friedrichsen, Wilhelm; and Poehler, Guenther, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Catalytic hydrogenation process. 3,799,983, Cl. 260-563.00d.
Costes, Bertrand Marie Dominique; Coutin, Pierre Fernand; and Hasquenoph, Jean Henri Marie, to Etat Francais, represente par le Ministere de la Defense Nationale Delegation Ministerielle Pour la Defense Nationale Delegation, and R. Alkam a Cie. Ejector forjettisoning loads from aircrafts. 3,799,478, Cl. 244-137.00r.
Costigan, Edward F.: *See—*
Walsh, Michael Adrian; and Costigan, Edward F., 3,799,170.
Coulter Electronics, Inc.: *See—*
Jones, Alan Richardson, 3,799,744.
Countryman, Albert J., to Ty-Lok Assembly Systems, Inc. Strapping method. 3,799,214, Cl. 140-93.200.
Courtright, Burr, to CH20, Inc. Wheeled cradle structure for use with agricultural wheel lines. 3,799,582, Cl. 280-408.000.
Cousins, Sydne. Separable fastener. 3,798,711, Cl. 24-77.00r.
Coutin, Pierre Fernand: *See—*
Costes, Bertrand Marie Dominique; Coutin, Pierre Fernand; and Hasquenoph, Jean Henri Marie, 3,799,478.
Coverdale, James C., Jr., to Franklin Mint Corporation. Copying machine. 3,799,028, Cl. 90-13.700.
Covington, Cecil E.: *See—*
Broekhuizen, Willem; and Covington, Cecil E., 3,799,700.
Cowley, William C.; and Stutzke, Robert E., to Vermont American Corporation. Hedge trimmer assembly. 3,798,768, Cl. 30-223.000.
Cowpland, Michael C. J., to Microsystems International Limited. Power supply circuit for an electronic telephone set. 3,800,095, Cl. 179-77.000.
Cox, Edwin, Associates: *See—*
Davoud, John Gordon; and Burke, Jerry A., Jr., 3,798,908.
Crachy, Rudolf: *See—*
Ledergerber, Alfred; and Crachy, Rudolf, 3,798,720.
Craig, Paul N.; and Zirkle, Charles L., to Smithkline Corporation. Pharmaceutical methods using a substituted 10-aminoalkyl-9,10-dihydroanthracene. 3,800,044, Cl. 424-330.000.
Cramer, Paul C., Company: *See—*
Parfet, A. James, 3,800,020.
Crawford, James A. Portable, collapsible multipurpose container. 3,799,228, Cl. 150-49.000.
Crawford, James E.; and Russell, Richard H., to Owens-Illinois, Inc. Method of coating glass surface and products produced thereby. 3,799,795, Cl. 117-54.000.
Creager, John E.: *See—*
Schlanzky, Manfred P. H.; and Creager, John E., 3,798,970.
Cretin, Jacques: *See—*
Therond, Jean-Francois; Mermet, Jean; Barret, Jean-Pierre; and Cretin, Jacques, 3,800,126.
Creusot-Loire: *See—*
Rey, Michel, 3,799,361.
Criel, Martin J.: *See—*
Hunt, Maureen A.; and Criel, Martin J., 3,798,685.
Crouch, Robert D.: *See—*
Stavropoulos, William S.; and Crouch, Robert D., 3,799,843.
Crowe-Gulde, Inc.: *See—*
Salts, Thomas R., 3,799,716.
Croxon, Allen H. Data handling apparatus. 3,800,290, Cl. 340-172.500.
Crucible Inc.: *See—*
Ross, Stuart T.; and Leslie, Brian R., 3,798,742.

Crutchfield, Marvin M.; and Rapko, John N., to Monsanto Company. Ortho-phenylenedioxydimalonates. 3,799,970, Cl. 260-473.00g.
Cudzik, Daniel F., to Reynolds Metals Company. Easy open end closure. 3,799,390, Cl. 220-54.000.
Cummingham, Douglas James, to Wingard Limited. Slats for motor vehicles. 3,799,609, Cl. 297-340.000.
Curban, John H.: *See—*
Benoit, Roland A.; Curban, John H.; and Bennice, Richard L., 3,798,684.
Curley, John L.; and Martland, Wallace A., to Honeywell Information Systems, Inc. Variable masking for segmented memory. 3,800,292, Cl. 340-172.500.
Currie, Grover C.: *See—*
Miller, Alan H.; and Currie, Grover C., 3,799,167.
Curtis, Rolando T., to Integrated Ceilings, Inc. Grid support structure and clip means therefor. 3,798,865, Cl. 52-665.000.
Cushman, Robert D.: *See—*
Schmit, Justin M.; and Cushman, Robert D., 3,799,914.
Cutler Hammer Inc.: *See—*
Woodger, Frederick Noel, 3,800,260.
Cutler, James F.; Maxted, Wesley R.; and Soderstrom, Edward C., to Rapistan, Incorporated. Article aligning apparatus. 3,799,319, Cl. 198-29.000.
Cutler-Hammer, Inc.: *See—*
Zalar, David R., 3,800,205.
Czech, James I.; and Oakley, Roy C., Jr., to Whirlpool Corporation. Elevated support for cabinet for automatic washing machines for accessibility to and servicing of drive mechanism for machine. 3,798,931, Cl. 68-3.00r.
Czopor, Edmund J.; Newton, Joseph; Cochrane, Ralph W.; and Mazur, Stan T., to Gorham Tool Company. Cutting tool. 3,798,723, Cl. 29-103.00a.
Czopor, Edmund J., to Gorham Tool Company. Locking arrangement for cutting blade inserts. 3,798,724, Cl. 29-105.00r.
Daams, Jasper: *See—*
Van Daalen, Jan Johannes; and Daams, Jasper, 3,799,964.
Dager, William A.; and Fredrick, William G., Jr., to Photon Sources, Inc. Optical drilling head for lasers. 3,799,657, Cl. 350-247.000.
Dahl, Binar S., to Outboard Marine Corporation. Rear shield for rotary lawnmower. 3,799,579, Cl. 280-150.00r.
Dahl, Ernest A., Jr. Magnetic tray device. 3,798,813, Cl. 40-105.500.
Dahlstrom, Karl L. Internal combustion engine. 3,799,130, Cl. 123-119.00a.
Daigne, Bernard M.; and Girard, Francois M., to Office National d'Etudes et de Recherches Aerospatiales. Electron analysis apparatus with heat-protective shield means spacedly overlying a sample supporting surface. 3,800,152, Cl. 250-310.000.
Dalton, Robert L., Jr.: *See—*
Deans, Harry A.; and Dalton, Robert L., Jr., 3,799,261.
D'Amico, John Joseph, to Monsanto Company. 2-(N-2-cyandethyldithiocarbamylmethylene)-5-hydroxy-4H-pyran-4-one and metal chelates. 3,799,945, Cl. 260-345.900.
Damrau, Wayne A., to Consolidated Papers, Inc. Web coating apparatus. 3,799,111, Cl. 118-63.000.
Danchenko, Vitaly, to United States of America, National Aeronautics and Space Administration. Radiation hardening of MOS devices by boron. 3,799,813, Cl. 148-1.500.
Danek, Michael J., to General Motors Corporation. Throttle controlled by transmission ratio. 3,799,008, Cl. 74-860.000.
Danfocs A/S: *See—*
Dyre, Mogens, 3,799,250.
Danfoss A/S: *See—*
Hansen, Gunnar Lyshoj; and Christensen, Rolf, 3,799,201.
Daniel, Leopold S. Neck and shoulder drape. 3,798,674, Cl. 2-50.000.
Danke, Rudolph B., to Simplex Time Recorder Co. Telephone Timer. 3,800,301, Cl. 346-84.000.
Darlaine, Edgar D.: *See—*
Berry, Jean-Luc; and Darlaine, Edgar D., 3,799,220.
Darmigny, Suzanne M.: *See—*
Brignard, Francois C.; and Lefranc, Jean E., 3,799,023.
Darreff, Francis P.: *See—*
Lyons, Joseph B., Jr.; and Darreff, Francis P., 3,800,086.
Darsow, Gerhard; and Schnell, Hermann, to Bayer Aktiengesellschaft. Chlorine-containing aromatic dioxine compounds and process for the production thereof. 3,799,944, Cl. 260-340.300.
Dart Industries Inc.: *See—*
Beck, Harold R.; and Swett, James B., 3,799,493.
Das, Nalini R.; and Strain, Edwin H., to Raytheon Company. Electric ignition system. 3,799,730, Cl. 431-191.000.
Dave, Rajnikant P.: *See—*
Reale, Salvatore J.; Eich, Clarence C.; Van Dyke, Walter J.; Dave, Rajnikant P.; Whitney, Gilbert C.; and , 3,799,123.
Davidge, Ronald V.; Davis, Clyton J.; Okcuoglu, Selahattin A.; and Schaefer, John O., to International Business Machines Corporation. Automatic erase mechanism. 3,799,316, Cl. 197-181.000.
Davidsohn, Uryon S., to Motorola, Inc. Semiconductor devices. 3,800,195, Cl. 317-235.00r.
Davis, Clyton J.: *See—*
Davidge, Ronald V.; Davis, Clyton J.; Okcuoglu, Selahattin A.; and Schaefer, John O., 3,799,316.
Davis, George B., Jr. Lug wrench. 3,799,011, Cl. 81-121.00r.
Davis, William A., to Vongrey, Michael L., Jr. Admixtures for filling natural and artificial subterranean voids. 3,799,787, Cl. 106-287.0ss.
Davoud, John Gordon; and Burke, Jerry A., Jr., to Cox, Edwin, Associates. External combustion power producing system. 3,798,908, Cl. 60-694.000.
Davy-Ashmore Limited: *See—*
Kirk, Frederick Arthur, 3,798,740.
Day, Robert L.: *See—*
Smith, Edward A.; and Day, Robert L., 3,799,685.
De Clercq, Willy J. C., to Neratoom, N. V. Heat exchanger. 3,799,257, Cl. 165-171.000.
De Fraeye, Dirk Jules Remi; and Lens, Leo. Halogen incandescent lamp containing bromine and phosphorus. 3,800,180, Cl. 313-222.000.
De Jong, Cornelis. Method of forming flat end faces of wire-shaped current conductors which are passed through a glass bottom of a semiconductor base. 3,798,761, Cl. 29-624.000.
De Jong, Dirk W., to Fokker-V.F.W. Right angled connection for building elements. 3,798,859, Cl. 52-259.000.
De Marchi, Giovanni; and Scolastico, Carlo, to Laboratorio Prodotti Biologici Braglia S.p.A. Method of making 11alpha- or 11beta-hydroxy-18-nor-17-alpha- alkyl-17beta-methylandrosta-4,13-diene-3-ones. 3,799,955, Cl. 260-397.450.
De Sena, Joseph. Artist's collapsible wall and table mountable easel. 3,799,488, Cl. 248-452.000.
Dean, Michael Gordon Ellis; and Saunders, Brian James. Electrical heating apparatus for reducing or preventing the formation of ice on aircraft parts. 3,800,121, Cl. 219-202.000.
Deans, Harry A.; and Dalton, Robert L., Jr., to Esso Production Research Company. Technique for measuring fluid drift. 3,799,261, Cl. 166-250.000.
Debs, Victor, to Levolor Lorentzen, Inc. Venetian blind having a cord lock which is actuated upon full raising of the blind. 3,799,236, Cl. 160-178.00c.
DeCock, Etienne Marie, to Agfa-Gevaert N.V. Device for sensing a moving sheet material for imperfections. 3,800,148, Cl. 250-562.000.
Deed, Donald W.; and Lukk, George G., to Esso Research and Engineering Company. Method of producing jet fuel by upgrading light catalytic cycle oil. 3,799,869, Cl. 208-211.000.
Degremont Societe Generale d'Epuration & d'Assainissement: *See—*
Savall, Vincent; and Treille, Pierre, 3,799,350.
Deimann, Frank: *See—*
Kersting, Emil Friedrich; and Deimann, Frank, 3,799,636.
Dejong, Allan W., to Fram Corporation. Flexible bladed fan with tab connected reinforcing member. 3,799,697, Cl. 416-132.000.
Dekoekkoek, John W., to Western Automation Corporation. Conveyor loading apparatus. 3,799,318, Cl. 198-26.000.
Del Rio, Eddy Humberto, to RCA Corporation. Card stacker having rotatable bumper to stop card travel. 3,799,539, Cl. 271-188.000.
Delahaye, Jean, to Progil. Gas turbine prime mover. 3,798,898, Cl. 60-39.020.
Delahunty, Terry Wayne: *See—*
Maher, James Bernard; and Delahunty, Terry Wayne, 3,798,918.
Delaux, Robert: *See—*
Champleboux, Jacques; and Delaux, Robert, 3,799,825.
Delgado, Alberto: *See—*
Sale, Howard James; Delgado, Alberto; and Doyle, Carroll Francis, 3,800,031.
Delmer, William A. Solid pellet and self cleaning irrigation device. 3,799,441, Cl. 239-145.000.
Delmer, William A. Fibrous self cleaning irrigation device. 3,799,442, Cl. 239-145.000.
Deltoer, Marcel Henri. Method of making a rotary switch stator. 3,798,763, Cl. 29-630.00r.
Demaria, Walter Joseph: *See—*
Ambats, Maris; Shannon, Thomas D.; and Demaria, Walter Joseph, 3,800,085.
Denki Onkyo Co., Ltd.: *See—*
Katayama, Shitomi; Horikawa, Hideichi; Takahashi, Yukio; and Masuda, Noboru, 3,800,006.
Dennis, Roderick A. Nuclear guidance system for controlling aircraft landings. 3,800,144, Cl. 250-362.000.
Dennison Manufacturing Company: *See—*
Cobb, Harold W., 3,799,537.
DePutter, Warner Jan: *See—*
Bulters, Hein; Heidemann, Gerrit; and DePutter, Warner Jan, 3,799,818.
Dereng, Viggo G. Parachute deployment bag. 3,799,480, Cl. 244-147.000.
Derenski, David J.; and Wiater, Kenneth W., to Teletype Corporation. Single step tape reader. 3,800,069, Cl. 178-4.100.
Deshayes, Philippe Marie: *See—*
Weber, Guy Paul; and Deshayes, Philippe Marie, 3,799,669.
Desjardins, Stanley P.: *See—*
McCullough, Edward E.; and Desjardins, Stanley P., 3,799,637.
Desplats, Andre, to Tractel S.A. Twin clamp traction apparatus for cables or rods. 3,799,503, Cl. 254-76.000.
Despretz, Henri. Multiple plow. 3,799,273, Cl. 172-754.000.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; Schreyer, Gerd; and Weigert, Wolfgang, 3,799,979.
Keller, Rudolf; Hoffmann, Edmund; and Neugebauer, Walter, 3,799,756.

Keller, Rudolf; Kruger, Manfred; Lussling, Theodor; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,949.
Kruger, Manfred; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,948.
Develco, Inc.: *See—*
Rorden, Louis H., 3,800,213.
Devore, Ernest W.; and Irwin, John W., to International Business Machines Corporation. Error detection and correction systems. 3,800,281, Cl. 340-146.1al.
Dexter Corporation, The: *See—*
Dissen, Israel J.; Schultz, Ronald B.; and Amin-Madani, Manoucher, 3,799,911.
Di Battista, Giuseppe. Dispensing device. 3,799,399, Cl. 222-83.500.
Di Maggio, Vincent H.; and Wong, John. Electrical service pedestal. 3,800,063, Cl. 174-38.000.
Diamond, Julius: *See—*
Douglas, George H.; Diamond, Julius; and Burns, Bernard J., 3,800,043.
Diaz, Wilfredo, to Bell Telephone Laboratories, Incorporated. Timing circuit including temperature compensation. 3,800,169, Cl. 307-310.000.
Dibley, Leland L.; Zaslawsky, Maurice; and Blake, Alexander, to United States of America, Atomic Energy Commission. Method for predicting movements of structural members emplaced in the earth. 3,798,962, Cl. 73-88.00e.
Dickopp, Gerhard; Berlin, Helmut Batsch; and Runge, Wilhelm, to Ted Bildplatten Aktiengesellschaft. Storing and reproducing information and carrier therefor with zones of different deformation characteristics. 3,800,099, Cl. 179-100.10a.
Dielman, Harold J., to Sanymetal Products Co., Inc., The. Door latch. 3,799,593, Cl. 292-145.000.
Dietrich, Heinz J.: *See—*
Steiger, Edward L.; and Dietrich, Heinz J., 3,799,971.
Dietrich Manufacturing, Inc.: *See—*
Dietrich, William J., 3,799,079.
Dietrich, William J., to Dietrich Manufacturing, Inc. Applicator for depositing anhydrous ammonia underground. 3,799,079, Cl. 111-7.000.
Dietz, William H.: *See—*
Watkins, Fred E.; and Dietz, William H., 3,799,204.
Digby, James J., to Bendix Corporation, The. Pinion for starter gearing. 3,798,977, Cl. 74-6.000.
Digital Equipment Corporation: *See—*
Halio, Leonard F.; and Lavoie, Herve E., 3,800,183.
Dinning, Robert W., to Macco Oil Tool Co., Inc. Side pocket kickover tool. 3,799,259, Cl. 166-117.500.
Dissen, Israel J.; Schultz, Ronald B.; and Amin-Madani, Manoucher, to Dexter Corporation, The. Binder for electrophotographic coatings. 3,799,911, Cl. 260-78.50r.
Dixon, William D.; and Becker, Maureen E., to Monsanto Company. Arylglyoxylonitrileoximes as plant regulants. 3,799,757, Cl. 71-76.000.
Donne, Werner, to LKB-Produkter AB. Optical interference filter having an intermediate energy absorbing layer. 3,799,654, Cl. 350-166.000.
Dorchai, Raphael O.: *See—*
Boocock, David G. B.; Dorchai, Raphael O.; Osiecki, Jeanne H.; and Ullman, Edwin F., 3,799,942.
Dortenzo, Alexander T., to Pennsylvania Engineering Corporation. Gas handling system for metallurgical vessels. 3,799,525, Cl. 266-35.000.
Dortenzo, Alexander T., to Pennsylvania Engineering Corporation. Method and apparatus for cooling the exhaust gas system of metallurgical vessels. 3,799,763, Cl. 75-60.000.
Douglas, Daryl D.: *See—*
Paine, David L.; Urch, Harvey M.; and Douglas, Daryl D., 3,799,703.
Douglas, George H.; Diamond, Julius; and Burns, Bernard J., to Rorer, William H., Inc. 1-Substituted biguanides as gastrointestinal spasmolytic agents. 3,800,043, Cl. 424-326.000.
Douglass, Mayward Clyde. Apparatus for dispensing compressed gas at programmed pressure and volume. 3,799,218, Cl. 141-18.000.
Douti, Kingsley A., to Kay Pneumatics, mesne. Floating detent for spool valves. 3,799,203, Cl. 137-625.650.
Dow Chemical Company, The: *See—*
Barnhart, James W.; and Shea, Philip J., 3,800,051.
Frasure, James W., 3,799,436.
Gritzner, Gerhard; and Leddy, James J., 3,799,860.
Gurgiolo, Arthur E.; and McAda, Robert W., 3,799,947.
Johnson, Howard, 3,799,935.
McCann, Gordon D.; Dumitru, Earl L.; and Louch, James B., 3,799,901.
Moyer, John R.; and Neipert, Marshall P., 3,799,749.
Najvar, Daniel J., 3,799,903.
Rubens, Louis C.; and Clarke, Donald H., 3,798,836.
Stavropoulos, William S.; and Crouch, Robert D., 3,799,843.
Dow, Norris F.; and Halton, Murray, to Doweave, Inc. Machine for forming triaxial fabrics. 3,799,209, Cl. 139-11.000.
Doweave, Inc.: *See—*
Dow, Norris F.; and Halton, Murray, 3,799,209.
Downey, Holmes A., to Reliance Electric Company. Shaft coupling and element therefor. 3,798,924, Cl. 64-13.000.
Doyle, Carroll Francis: *See—*
Sale, Howard James; Delgado, Alberto; and Doyle, Carroll Francis, 3,800,031.
Dr.-Ing. h.c.F. Porsche KG: *See—*
Porsche, Ferdinand Anton Ernst; Binder, Robert; and Weyersberg, Ernst Rudolf, 3,799,138.
Drackett Company, The: *See—*
Gabby, John Lester; Corbin, Dennis Dale; and Lowe, Jack Bruner, 3,800,036.
Drekhova, Natalia Vsevolodovna: *See—*
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Drekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,799,889.
Driver, Wilbur B., Company: *See—*
Anderson, Raymond N.; and Gartner, Stanley J., 3,798,947.
Du Pont de Nemours, E. I., and Company: *See—*
Ashmead, Howard L.; Byrne, Sydnor H., Jr.; and Wolf, John P., III, 3,799,396.
Bydal, Bruce A., 3,799,509.
Flippen, Richard B., 3,799,648.
Hull, Charles W.; and Whitley, Robert K., 3,800,151.
Lalwanly, Narain S., 3,798,747.
Rollins, Richard R., 3,799,164.
Starkweather, Howard W., Jr., 3,800,008.
Dubois, Bernard Jacques, to Gamlen Naintre S.A. Device for stabilizing and damping the movement of floating units and increasing their buoyancy. 3,798,913, Cl. 61-1.00f.
Ducon Company, Inc., The: *See—*
Kalen, Bodo, 3,798,882.
Duda, John L., Jr. Leaf separator. 3,799,338, Cl. 209-114.000.
Dudevoir, Wilfrid G.: *See—*
Johnson, Philip M.; and Dudevoir, Wilfrid G., 3,799,675.
Dudley, George M. Metered coolant valve. 3,798,726, Cl. 29-106.000.
Dueker, James E.: *See—*
Brunkhorst, Lloyd E.; Carr, Theodore G.; and Dueker, James E., 3,800,146.
Duer, Morris J. Method and tool for effecting a thread lock. 3,798,749, Cl. 29-520.000.
Duerr, Dieter: *See—*
Martin, Henry; Duerr, Dieter; Hubele, Adolf; Pisstotas, Georg; Rohr, Otto; and Rufener, Jacques, 3,799,759.
Duffin, George Frank; and Hogg, James, to Minnesota Mining and Manufacturing Company. Certain s-triazolo[1,5-a]pyrimidine compounds and their preparation. 3,799,926, Cl. 260-256.50r.
Duke, Douglas Roy; and Dupuis, Weldon V., to Air Guard Incorporated. Apparatus for conditioning air. 3,798,922, Cl. 62-264.000.
Dumitru, Earl L.: *See—*
McCann, Gordon D.; Dumitru, Earl L.; and Louch, James B., 3,799,901.
Dumont-Fillon, Jacques; and Vedda, Louis, to Institut de Recherches de la Siderurgie Francaise. Method for continuous casting of metal. 3,799,239, Cl. 164-87.000.
Duncan, Anthony Bruce, to Rucker Company, The. Crane aiding mechanism. 3,799,505, Cl. 254-173.000.
Dunnavant, William R.; Harris, Edward M.; Kurz, Philip F.; Markle, Richard A.; and Parker, Edward H., to Western Litho Plate & Supply Co. Photopolymers. 3,799,915, Cl. 260-86.10r.
DuPocher, Gideon A., to Essex International, Inc. Push-pull switch having self-biasing elastomeric material contacted with discrete conductive particles dispersed therein. 3,800,112, Cl. 200-161.000.
duPont, Michael M.: *See—*
Lamb, Paul Wentworth, 3,800,149.
Dupuis, Weldon V.: *See—*
Duke, Douglas Roy; and Dupuis, Weldon V., 3,798,922.
Durrant, Norman J. Reweaver's bench fixture. 3,799,487, Cl. 248-441.000.
DURST A.G. Fabrik Fototechnischer Apparate: *See—*
Barbieri, Siegfried, 3,800,070.
Duval, Henri Joseph. Illuminated shoe. 3,800,133, Cl. 240-6.40w.
Duzan, James R., to General Motors Corporation. Variable diffuser. 3,799,694, Cl. 415-161.000.
Dye, Harry D., to Dye-Call, Inc. Decoy. 3,798,820, Cl. 43-3.000.
Dye-Call, Inc.: *See—*
Dye, Harry D., 3,798,820.
Dynamit Nobel Aktiengesellschaft: *See—*
Schwarzrock, Karl, 3,799,725.
Dynatel Corporation: *See—*
Hamilton, Robert H., 3,800,216.
Dyno Industrier A.S.: *See—*
Hiorth, Hans, 3,800,012.
Dyre, Mogens, to Danfocs A/S. Air treatment equipment. 3,799,250, Cl. 165-61.000.
Easter, Holton C., to Inland Steel Company. Non-stripping guide system for rolling mill. 3,798,952, Cl. 72-227.000.
Eastman Kodak Company: *See—*
Bartnick, Henry J., 3,799,778.
Cawley, John D.; and Haber, Jan W. H., 3,799,972.
Horton, William Howard, 3,800,308.
Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., 3,799,786.
Kron, Martin W., 3,799,826.
Warburton, Charles D., 3,799,739.
Eaton Corporation: *See—*
Castillo, Herman B., 3,799,243.
Richards, Elmer A., 3,799,002.

Eberhard, Peter. Cut-away model for dental prosthesis. 3,798,772, Cl. 32-11.000.
Eberle, Herbert; Meyer, Wolfgang; and Bartling, Helmut, to Salzdetfurth AG. Active magnesium oxide. 3,800,032, Cl. 423-636.000.
Ebert, Michael: *See—*
Reick, Franklin G., 3,799,832.
Echols, Bruce E.: *See—*
Raybon, Charles L., 3,799,512.
Eckert, Alton B.: *See—*
Zucker, Fredric E.; Eckert, Alton B.; Hinman, Bruce E.; and Feinland, Seymour, 3,800,284.
Eckert, George W.: *See—*
Lachowicz, Donald R.; Saines, George S.; Michelson, Malvin J.; and Eckert, George W., 3,799,751.
Ecodyne Corporation: *See—*
Furlong, Donn B.; and Luzaich, Samuel, 3,799,516.
Eda, Yasuko: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; Nakashita, Mitsuo; Komatsu, Toshiaki; Izara, Akio; and Eda, Yasuko, 3,799,930.
Edelman, Alfred E. Wide blade dental implant. 3,798,771, Cl. 32-10.00a.
Edelson, Andrew C. Variable intensity battery operated light. 3,800,136, Cl. 240-10.65d.
Edwards, Michael: *See—*
Brant, Malcolm Victor; and Edwards, Michael, 3,799,522.
Edwards, Robert S.: *See—*
Kuntschik, Lawrence F.; and Edwards, Robert S., 3,799,984.
Egbert, James: *See—*
Richards, Robert W.; and Egbert, James, 3,798,981.
Eich, Clarence C.: *See—*
Reale, Salvatore J.; Eich, Clarence C.; Van Dyke, Walter J.; Dave, Rajnikant P.; Whitney, Gilbert C.; and , 3,799,123.
Eisele, Dieter; Weimann, Klaus; and Schaerli, Otto. Semiconductor circuit element with pressure contact means. 3,800,192, Cl. 317-234.00r.
Eisen-und Drahtwerke Erlau Aktiengesellschaft: *See—*
Schnurle, Werner, 3,799,232.
Eisenschmid, Lidwig. Arrangement for sledding by means of skis. 3,799,564, Cl. 280-12.00f.
Eisfeld, Wolfgang: *See—*
Nienburg, Hans-Juergen; Eisfeld, Wolfgang; and Wache, Harro, 3,799,976.
Eklund, Jon Arthur, to General Electric Company. Method of manufacturing an electrically insulated metallic conductor with the insulation adhering to the conductor, and product. 3,800,067, Cl. 174-120.00r.
Electronic Arrays, Inc.: *See—*
Umstattd, Richard H., 3,800,129.
Electrostatic Research Corporation: *See—*
Janszen, Arthur A., 3,800,102.
Eli Lilly and Company: *See—*
Jackson, Billy G., 3,799,924.
Elitex, Zavody textilniho Strojirenstvi: *See—*
Rajnoha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, 3,798,886.
Ells, John William, to British Petroleum Company Limited, The. Piplines. 3,799,208, Cl. 138-175.000.
Elmer, Richard L.; and Peterson, Elizabeth A., to Thiokol Chemical Corporation. Method of bonding a polysulfide sealant in a masonry surface. 3,799,798, Cl. 117-72.000.
Elmo Company Limited: *See—*
Kachi, Kenjiro, 3,798,793.
Elvrum, Don S. Curing and pretannage of hides. 3,799,737, Cl. 8-94.160.
Ely, John W.; and Tiner, Robert L., to Halliburton Company. Hydraulic fracturing method using benzoic acid to further increase the viscosity of liquid hydrocarbon. 3,799,267, Cl. 166-308.000.
Emanuelsson, Kaj Bengt Ingemar: *See—*
Arnegard, Bo Olof Roland; Emanuelsson, Kaj Bengt Ingemar; and Kristoffer, Hans, 3,799,712.
Emery Indistries, Inc.: *See—*
Mains, Harold E., 3,799,940.
Endo, Gen: *See—*
Kiyono, Hiroshi; Nakashima, Junichi; Fujisaki, Yasuyuki; Ishigaki, Yukio; and Endo, Gen, 3,799,718.
Engelage, Guenter: *See—*
Nagel, Erich; Engelage, Guenter; Himmelsbach, Lothar; and Frankiewicz, Gerhard, 3,799,022.
Enger, Thomas A.; Evans, Charles W., Jr.; and Johnson, Lance H., to International Business Machines Corporation. Microprogram control subsystem. 3,800,293, Cl. 340-172.500.
Enrich: *See—*
Ball, Richard Blatchford, 3,798,812.
Ensor, Arthur John. Roof structure. 3,798,850, Cl. 52-80.000.
Entshev, Ivan Dimitrov; Kinchev, Nikola Tsanov; Haralampiev, Gueorgui Alexandrov; Alexandrov, Alexander Minchev; Smilenov, Todor Ivanov; and Stojanvo, Jossif Genchev, to NIIZM. Electrolytic process of extracting metallic zinc. 3,799,850, Cl. 204-119.000.
Eppler, Arthur H. Pressure feed for sand blast abrasive. 3,798,841, Cl. 51-12.000.
Epstein, James; and Liang, Charles C., to Mallory, P. R., & Co., Inc. Alkaline dry cell and permanganate cathode therefor. 3,799,959, Cl. 260-429.00r.
Erickson, Jon D.: *See—*
Jaye, Sam; and Erickson, Jon D., 3,800,278.
Erickson, Robert S. Travel board game apparatus. 3,799,551, Cl. 273-134.0ac.
Erickson, Wallace A., to Erickson, Wallace A., & Company. N,N-bis(2-hydroxyethyl)-3,4,5-trimethyl-aniline. 3,799,985, Cl. 260-573.000.
Erickson, Wallace A., & Company: *See—*
Erickson, Wallace A., 3,799,985.
Erisman, Edward R., to International Harvester Company. Transmission clutches with feedback controlled pressure modulator. 3,799,308, Cl. 192-87.130.
Erny, Daniel Richard, to Van Dyk Research Corporation. Self-centering paper roll holder. 3,799,465, Cl. 242-55.200.
Essex International, Inc.: *See—*
DuPocher, Gideon A., 3,800,112.
Esso Production Research Company: *See—*
Burkhardt, Joseph A.; Ortloff, John E.; Loth, William D.; and Hickox, Robert E., 3,798,915.
Burkhardt, Joseph A.; McLallen, Dewitt K., Jr.; and Childers, Thomas W., 3,799,191.
Deans, Harry A.; and Dalton, Robert L., Jr., 3,799,261.
Kiel, Othar M., 3,799,266.
Kirby, Robert Andrew, 3,799,285.
Esso Production Research Company, mesne: *See—*
Prillieux, Marcel; and Tirtiaux, Robert, 3,799,263.
Esso Research and Engineering Company: *See—*
Deed, Donald W.; and Lukk, George G., 3,799,869.
Hastings, Sam H., 3,799,907.
Marks, Alfred F., 3,799,960.
Newman, Neil F., 3,799,927.
Esten, Harold. Pilot poerated control valve. 3,799,496, Cl. 251-30.000.
Estep, Edward E.: *See—*
Milam, Joseph E.; and Estep, Edward E., 3,799,852.
Esters of 10-oxa-2,4-alkadienoic acids: *See—*
Jarolim, Vaclav; Sehnal, Frantisek; and Sorm, Frantisek, 3,799,957.
Estey, Willard E., to Perkin-Elmer Corporation, The. Sample method and arrangement for gas chromatograph. 3,798,973, Cl. 73-422.0gc.
Etablissement Public: Agence Nationale de Valorisation de la Recherche Anvar, Regie dite: Regie Nationale des Usines Renault: *See—*
Lopez, Fernand Louis; Scheffer, Bela; Vulmiere, Huguette Nelly; and Vulmiere, Claude Jacques, 3,799,677.
Etat Francais, represente par le Ministere de la Defense Nationale Delegation Ministerielle Pour la Defense Nationale Delegation, and R. Alkam a Cie: *See—*
Costes, Bertrand Marie Dominique; Coutin, Pierre Fernand; and Hasquenoph, Jean Henri Marie, 3,799,478.
Ethicon, Inc.: *See—*
Beroff, Howard; and Ferguson, Robert G., 3,799,169.
Ethyl Corporation: *See—*
Hutchinson, Donald O., 3,799,125.
Mitchell, Lawrence C., 3,799,958.
Eufusia, Eugene A.: *See—*
Thelen, Alfred J.; Bergfelt, Nils H.; and Eufusia, Eugene A., 3,799,800.
Evans, Charles W., Jr.: *See—*
Enger, Thomas A.; Evans, Charles W., Jr.; and Johnson, Lance H., 3,800,293.
Evans, John Grover; and Morse, Charles Ernest, to Bell Telephone Laboratories, Incorporated. Key telephone system transfer arrangement. 3,800,098, Cl. 179-99.000.
Evertz, Egon: *See—*
Seybold, Rolf; Evertz, Egon; and Stadler, Siegfried, 3,798,842.
Evrard, Jean Claude, to Rapee, George. Device for measuring fluid consumption. 3,798,963, Cl. 73-113.000.
Ewald, Frederick C. Joint prostheses. 3,798,679, Cl. 3-1.000.
Ezaki, Norio: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Ehchi; and Nuda, Taro, 3,799,842.
Fabrenfabriken Bayer Aktiengesellschaft: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,799,936.
Fahey, Darryl R., to Phillips Petroleum Company. Process for recovering a nickel(O) oligomerization catalyst in the form of a nickel(II) dimerization catalyst. 3,800,000, Cl. 260-666.0py.
Fahrbach, Rudolf, to Universal Manufacturing Company, Inc. Toroidal coil-winding machine. 3,799,462, Cl. 242-4.00b.
Faiks, Frederick S., to Steelcase Inc. Drawer interlock. 3,799,638, Cl. 312-216.000.
Falconieri, Remo: *See—*
Guerrini, Gian Paolo; and Falconieri, Remo, 3,799,311.
Fangmeier, Ralf; Goeke, Alfons; Krafft, Erich; and Koch, Rolf Eckard, to Kieserling, Th. & Albrecht. Method of straightening elongated workpieces. 3,798,948, Cl. 72-162.000.
Fanter, Edward P., to Arkey Packaging Corporation. Blank for making containers and container with top formed by curved surfaces. 3,799,425, Cl. 229-37.00r.
Farah Manufacturing Company, Inc.: *See—*
McKeen, Leighton R., 3,798,980.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,799,934.
Farina, Patrick Louis, to RCA Corporation. Multi-indicia display device. 3,800,178, Cl. 313-108.00r.

Farmer, Everett L. Self-heating wax modeling spatula. 3,800,122, Cl. 219-239.000.
Farris, Ralph J. Optionally stabilized drilling tool. 3,799,279, Cl. 175-325.000.
Faulkner, Joseph W.: *See—*
Bunish, Steve; and Faulkner, Joseph W., 3,800,065.
Fedor, Gerald S. Component preforming machine. 3,798,734, Cl. 29-203.00b.
Feichtner, John D.: *See—*
Roland, George W.; Feichtner, John D.; and Gotilieb, Milton, 3,799,659.
Feinauer, Roland; and Muller, Karl-Adolf, to Chemische Werke Huls Aktiengesellschaft. Two-step polymerization of lauryllactam without mineral acid catalysts. 3,799,899, Cl. 260-18.00n.
Feinland, Seymour: *See—*
Zucker, Fredric E.; Eckert, Alton B.; Hinman, Bruce E.; and Feinland, Seymour, 3,800,284.
Feitz, Edwin H.: *See—*
Schmidt, Helmut, 3,799,037.
Feldmann, Wilhelm: *See—*
Wimmer, Helmut; Feldmann, Wilhelm; Schauenburg, Wilhelm; and Heimerzheim, Reiner, 3,798,955.
Felice, Klaus; Sedlmeier, Josef; Gierer, Walter; Frey, Werner; and Wiedemann, Otto, to Wacker-Chemie G.m.b.H. Catalysts for the manufacture of phthalic anhydride. 3,799,886, Cl. 252-461.000.
Feneziani, George, to Stauffer Chemical Company. Telescoping conduit. 3,799,223, Cl. 141-388.000.
Ferdelman, Donald C., to General Motors Corporation. Controls to cycle fan with electric heater or compressor on heat-cool room air conditioner. 3,799,245, Cl. 165-29.000.
Ferguson, Richard E. Composite fishing tackle pail. 3,798,826, Cl. 43-54.50r.
Ferguson, Robert G.: *See—*
Beroff, Howard; and Ferguson, Robert G., 3,799,169.
Ferranti Limited: *See—*
Kerr, Andrew Guy, 3,799,678.
Ferranti-Packard Limited: *See—*
Gluck, David, 3,798,779.
Ferrari, Iorgio; and Casagrande, Cesare, to Siphar S.A. 1,4-Benzodiazephine derivatives. 3,799,920, Cl. 260-239.30d.
Ferraz & Cie": *See—*
Cinouin, Jean-Pierre, 3,800,262.
Ferry Cap & Set Screw Company, The: *See—*
MacGuire, Andrew E., 3,799,132.
Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Safety device for vehicle occupants. 3,799,576, Cl. 280-150.0ab.
Fiberglas Canada Limited: *See—*
Woodhams, Raymond T.; and Golemba, Frank J., 3,799,799.
Fierro Espanja, S.A.: *See—*
Celada, Juan; Villarreal, David; and MacKay, Patrick W., 3,799,521.
Fiffer, William L., to Sears, Roebuck and Co. Back carrier with adjustable support. 3,799,414, Cl. 224-6.000.
Fileccia, Genese L.: *See—*
Knemeyer, Siegfried; and Fileccia, Genese L., 3,800,127.
Finefrock, Doanld W., to Johnson Rubber Company, The. Bearing for articulated barge or the like. 3,799,101, Cl. 114-235.00a.
Finger, Gunther: *See—*
Hegemann, Karl-Rudolf; Finger, Gunther; and Pasambegovic, Munir, 3,799,520.
Finley, Richard O. Disposable cooking utensil with even heating. 3,799,048, Cl. 99-415.000.
Firestone Tire & Rubber Company, The: *See—*
Moosavian, Seid Hossein; and Johnson, Charles Robert, 3,799,235.
Fischer, David L.; and Channon, Frederick R., to General Electric Company. Reactivity and power distribution control of nuclear reactor. 3,799,839, Cl. 176-68.000.
Fischer, Hans-Gerhard: *See—*
Kindler, Horst; Fischer, Hans-Gerhard; Antoni, Wilhelm; and Appel, Ewald, 3,799,941.
Fish, Raymond M., to United States of America, National Aeronautics and Space Administration. Auditory display for the blind. 3,800,082, Cl. 178-7.200.
Fisher, Evan D.; and Campagnuolo, Carl J., to United States of America, Army. Fluid oscillators. 3,799,205, Cl. 137-826.000.
Fisher, Howard M., to Pennsylvania Engineering Corporation. Suspension assembly for metal treating vessel. 3,799,527, Cl. 266-36.00p.
Fisher, Robert E.; and Partch, Newell T., to Up-Right, Inc. Cable restraint for multi-stage pneumatic lift assembly. 3,799,290, Cl. 182-148.000.
Fishman, Jack B.; and Mutschler, William E., to Nucleonics Development Company. AGC for rediation counter. 3,800,143, Cl. 250-363.000.
Fitzgerald, Francis J., Jr.: *See—*
Sullivan, Norman M.; and Fitzgerald, Francis J., Jr., 3,799,365.
Fitzgerald, Maurice J., to Polaroid Corporation. Synthetic silver halide emulsion binder. 3,799,781, Cl. 96-113.000.
Fitzgerald, Maurice J., to Polaroid Corporation. Synthetic silver halide emulsion binder. 3,799,782, Cl. 96-113.000.
Fitzpatrick, Daniel T., to Prab Conveyors, Inc. Harpoon-type conveyor. 3,799,329, Cl. 198-221.000.
Fives Lille-Cail: *See—*
Menu, Edouard, 3,799,524.
Fjellman, Rune Axel Erik. Compression moulding press. 3,799,720, Cl. 425-157.000.
Flack, Max L.: *See—*
Blekking, C. Paul; and Flack, Max L., 3,798,935.
Flaherty, Edward J. Flag waving unit. 3,798,816, Cl. 40-218.000.
Flair Manufacturing Corporation: *See—*
Shur, Ira, 3,799,499.
Flambard, Christian; Lambert, Alain; and Pacreau, Michel. Apparatus for non-destructive checking of workpieces. 3,798,961, Cl. 73-71.50v.
Flawn, Richard Edwin; Nearn, Malcolm Richard; and Petter, Peter John, to Lever Brothers Company. Hair control compositions and method of use. 3,800,033, Cl. 424-47.000.
Fleischman, Andor A., to Bell & Howell Company. Optical relay system. 3,799,656, Cl. 350-222.000.
Fleury, Camille G. Pitcher for dispensing liquids contained in bags. 3,799,400, Cl. 222-83.500.
Flippen, Richard B., to Du Pont de Nemours, E. I., and Company. Ferroelastic crystals switched by motion of a domain wall having a zigzag configuration. 3,799,648, Cl. 350-150.000.
Floter, Sigismund, to Alfa-Laval AB. Dung remover. 3,799,330, Cl. 198-224.000.
Flournoy, Kenoth H.: *See—*
Cardenas, Ricardo L.; Carlin, Joseph T.; and Flournoy, Kenoth H., 3,799,264.
Fluidtech Corporation: *See—*
Osheroff, Gene W., 3,799,246.
Fluke, John, Mfg. Co., Inc.: *See—*
Ochs, Eugene V., 3,800,241.
Fluor Corporation: *See—*
Robertson, Gerald L., 3,799,097.
FMC Corporation: *See—*
Gibbons, Harold M., 3,799,197.
Gilmore, Charles G., 3,799,835.
Foa, Franco: *See—*
Marini, Manlio; Maritano, Oddino; and Foa, Franco, 3,798,958.
Fokker, Herman: *See—*
Meijer, Roelf Jan; Beukering, Henricus Cornelis Johannes; and Fokker, Herman, 3,798,895.
Fokker-V.F.W.: *See—*
De Jong, Dirk W., 3,798,859.
Follis, Cecilia A.: *See—*
Madalin, William A.; and Follis, Cecilia A., 3,799,386.
Footchkar, Theodore. Reflector. 3,799,646, Cl. 350-97.000.
Force, Earl; and Williams, Michael. Gauges for bowling balls. 3,798,780, Cl. 33-174.00f.
Fornataro, Augustine A., to Herr-Voss Corporation. Torque distribution system. 3,798,951, Cl. 72-205.000.
Forsell, Bo Anders; and Niklasson, Rune John Valdemar, to Rederiaktiebolaget Nordstjernan. Process for neutralization and regeneration of aqueous solutions of acids and dissolved metals. 3,800,024, Cl. 423-55.000.
Forst, Oswald, GmbH: *See—*
Schubert, Ludwig, 3,799,030.
Fosberg, Theodore M. Method and apparatus for detecting oil pollution in water. 3,800,219, Cl. 324-65.00r.
Foster, John; and Wilson, Geoffrey, to B & S Massey Limited. Forging presses. 3,798,944, Cl. 72-67.000.
Foster Wheeler Corporation: *See—*
Reale, Salvatore J.; Eich, Clarence C.; Van Dyke, Walter J.; Dave, Rajnikant P.; Whitney, Gilbert C.; and (said Reale, Eich, Van Dyke, and Dave, assors. to), 3,799,123.
Foster, William F.; and Wild, Robert W., to Heist, C. H., Corporation. High pressure jet cleaning device. 3,799,443, Cl. 239-163.000.
Fox, Austin Leslie; and Jones, William Arthur Albert, to Molins Limited. Three-dimensional shaping of panels of cards. 3,799,040, Cl. 93-1.00d.
Fox, Charles E.: *See—*
Ryburn, Kenneth D.; Mc Clone, Robert J.; and Fox, Charles E., 3,799,297.
Fox, Joseph S., to Union Carbide Corporation. Recovery of tungsten from low grade tungsten ores. 3,800,025, Cl. 423-61.000.
Fox, Richard Q., to Westinghouse Electric Corporation. Rolling mill gauge control method and apparatus including plasticity determination. 3,798,941, Cl. 72-10.000.
Foxboro Company, The: *See—*
Russell, Douglas D.; and George, Henry A., 3,800,288.
Frahm, Gerd Rainer, to NGZ Geldzahlmaschinen-Ges. mbH. & Company. Automatic coin dispensing machine. 3,798,873, Cl. 53-212.000.
Fram Corporation: *See—*
Dejong, Allan W., 3,799,697.
Francke, Andries; and Heinz, Karl Ludwig, to Lever Brothers Company. Method for cleaning dishes and the like. 3,799,879, Cl. 252-89.000.
Francois, Peynaud, to Thomson-CSF. Methods of and devices for transmitting and receiving as used in navigation systems employing the doppler effects. 3,800,274, Cl. 340-3.00r.
Franek, Jozef Tadeusz; and Porucznik, Paul, to Metal Box Company Limited, The. Treating strip metal. 3,798,950, Cl. 72-205.000.
Frank, Daniel L., to General Motors Corporation. Solenoid valve control for exhaust gas recirculation. 3,799,133, Cl. 123-119.00a.
Frankiewicz, Gerhard: *See—*

Nagel, Erich; Engelage, Guenter; Himmelsbach, Lothar; and Frankiewicz, Gerhard, 3,799,022.
Franklin Mint Corporation: *See—*
Coverdale, James C., Jr., 3,799,028.
Fransc, Albert D., to Petrolite Corporation. Solids removal process. 3,799,855, Cl. 204-188.000.
Fransc, Albert D., to Petrolite Corporation. Waterless desalting process. 3,799,856, Cl. 204-188.000.
Franse, Albert D., to Petrolite Corporation. Electrofilter system. 3,799,857, Cl. 204-188.000.
Franz, Henry H. Container filling apparatus. 3,799,222, Cl. 141-291.000.
Franz, John E., to Monsanto Company. N-phosphonomethyl-clycine phytotoxicant compositions. 3,799,758, Cl. 71-86.000.
Frasure, James W., to Dow Chemical Company, The. Low speed linear induction motor reaction rail. 3,799,436, Cl. 238-122.000.
Freber, Elmer C., to Marquette Tool and Die Company. Go-cart and frame therefor. 3,799,283, Cl. 180-56.000.
Fredell, Gary D., to Gulf & Western Industries, Inc. Signal light adapter. 3,800,137, Cl. 240-41.00r.
Fredrick, William G., Jr.: *See—*
Dager, William A.; and Fredrick, William G., Jr., 3,799,657.
Freeman, Gerald R. Waffle baking apparatus. 3,799,047, Cl. 99-332.000.
Freese, Ronald. Apparatus and method for treating sewage. 3,799,346, Cl. 210-124.000.
Freitag, Dieter; Haberland, Ulrich; and Krimm, Heinrich, to Bayer Aktiengesellschaft. 1,4-Bis(4',4''-dihydroxy-triphenyl-methyl) benzene. 3,799,953, Cl. 260-395.000.
French, Thomas, & Sons, Limited: *See—*
Wood, William; Sellers, John; Carroll, Michael; and Griffiths, Mary, 3,799,213.
Frenken, Hans: *See—*
Herzhoff, Peter; Gree, Hans; Schweicher, Wolfgang; Voss, Karl; Peckhaus, Oscar; Frenken, Hans; and Bussmann, Heinrich, 3,799,419.
Fresne, Hans-Jurgen: *See—*
Reitz, Johannes; Fresne, Hans-Jurgen; Bedenbender, Rainer; and Heim, Josef, 3,799,709.
Frey, Gerald J. Slide projector with non-slipping endless slide holder. 3,799,665, Cl. 353-109.000.
Frey, Werner: *See—*
Felice, Klaus; Sedlmeier, Josef; Gierer, Walter; Frey, Werner; and Wiedemann, Otto, 3,799,886.
Friedrichsen, Wilhelm: *See—*
Corr, Hubert; Friedrichsen, Wilhelm; and Poehler, Guenther, 3,799,983.
Friend, Irvin. Filing cabinet. 3,799,639, Cl. 312-221.000.
Fritsch, Felix, to Cincinnati Gear Company. Multi-speed transmission. 3,798,999, Cl. 74-674.000.
Fritz, Alton L., to Unique Machine Tool Co., Inc. Rotating hammer. 3,798,739, Cl. 29-235.000.
Frost, A. C., Jr.: *See—*
Madeley, Harvey I., 3,798,692.
Frost, Frank E., to Reed Tool Company. Rotary fluid joint. 3,799,585, Cl. 285-93.000.
Frostick, Harold G., to United States Steel Corporation. Rolling mill control system. 3,798,940, Cl. 72-8.000.
Fuji Photo Film Co., Ltd.: *See—*
Takeuchi, Syozo, 3,799,784.
Tamai, Yasuo; and Sadamatsu, Shigeru, 3,799,340.
Ueda, Hiroyuki; Ohue, Shingo; and Sawano, Yukio, 3,799,662.
Watarai, Syu; Ono, Hisatake; Osada, Chiaki; Honjo, Satoru; and Tamai, Yasuo, 3,799,773.
Fujii, Osamu: *See—*
Suzuki, Satomi; Fujii, Osamu; Wakabayashi, Hirokazu; Kishimoto, Toshio; and Numabe, Masashi, 3,799,897.
Fujii, Setsuro: *See—*
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuki; and Fujii, Setsuro, 3,799,988.
Fujimoto, Eisuke; and Yoshikawa, Yoshio, to Akai Electric Company, Limited. Cassette type tape recording and reproducing apparatus. 3,800,319, Cl. 360-4.00f.
Fujimoto, Kazuo: *See—*
Hashimoto, Rikichi; Kamada, Harunori; Fujimoto, Kazuo; Kanaiwa, Tsutomu; and Iwasa, Kiyoshi, 3,799,380.
Fujimoto, Keimei; Mukai, Kunio; Hirano, Masachika; Tanaka, Katsutoshi; Takeda, Hisami; and Kawano, Suminori, to Sumitomo Chemical Company, Ltd. Amidothiol phosphoric acid esters. 3,800,011, Cl. 260-940.000.
Fujimoto, Syoji, to Nippon Electric Company, Limited. Method of producing silicon gate insulated-gate field effect transistor. 3,798,752, Cl. 29-571.000.
Fujisaki, Yasuyuki: *See—*
Kiyono, Hiroshi; Nakashima, Junichi; Fujisaki, Yasuyuki; Ishigaki, Yukio; and Endo, Gen, 3,799,718.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takano, Tadayoshi; Kurita, Masaru; Nikaido, Hiroo; Mera, Masashi; Konishi, Nobukiyo; and Okui, Ritsuko, 3,799,923.
Fukaumi, Masaharu; and Mori, Toshiyuki, to Olympus Optical Co., Ltd. Controllable bendable tube of an endoscope. 3,799,151, Cl. 128-6.000.
Fukuda, Hideo: *See—*
Nara, Kiyoshi; Ohta, Kazuhiko; Yamazaki, Osami; and Fukuda, Hideo, 3,799,980.
Fukuda, Hideo; Suzuki, Takashi; Akiyama, Shunichi; and Sumino, Yasuhiro, to Takeda Chemical Industries, Ltd. Method for producing citric acid. 3,799,840, Cl. 195-28.00r.
Fukushima, Osammu; Matsumoto, Seiji; and Sato, Masamichi. Apparatus for forming white frame in electrophotography. 3,799,666, Cl. 355-3.00r.
Fuller Company: *See—*
Hefney, John M., 3,798,883.
Kramer, Walter W., 3,799,621.
Fuller, Ray W.: *See—*
Molloy, Bryan B.; Fuller, Ray W.; and Hauser, Kenneth L., 3,799,982.
Fullerton, Marvin R.; Hoover, Jess S.; and Baugh, Homer. Animal crowding gate. 3,799,115, Cl. 119-20.000.
Funck, Dr.-Ing., K.G.: *See—*
Funck, Herbert, 3,798,804.
Funck, Herbert, to Funck, Dr.-Ing., K.G. Safety shoe. 3,798,804, Cl. 36-72.00r.
Furlong, Donn B.; and Luzaich, Samuel, to Ecodyne Corporation. Fill hanger. 3,799,516, Cl. 261-111.000.
Furnari, Anthony, to Campus Sweater & Sportswear Company. Feed control for operationally programmed sewing machine. 3,799,084, Cl. 112-121.110.
Furukawa Denki Kogyo Co. Ltd.: *See—*
Kataoka, Hirobumi; Suzuki, Kazunari; Takayama, Yoshio; and Iwata, Yoshisuke, 3,800,062.
Fuwa, Jyoichi, to Ricoh Co., Ltd. Facsimile device. 3,800,080, Cl. 178-7.100.
G&W Electric Specialty Company: *See—*
Lusk, George E., 3,800,064.
Gabby, John Lester; Corbin, Dennis Dale; and Lowe, Jack Bruner, to Drackett Company, The. Ice milk or low fat imitation ice cream. 3,800,036, Cl. 426-164.000.
GAF Corporation: *See—*
Allan, John L. H., 3,800,013.
Nichols, Gordon W., 3,800,157.
Gaines, Paul C., Jr. Apparatus for transfering heat. 3,799,256, Cl. 165-145.000.
Gaiser, Conrad J., to Gaiser Enterprises, Inc. Self inflatable air mattress, and sleeping bag. 3,798,686, Cl. 5-343.000.
Gaiser Enterprises, Inc.: *See—*
Gaiser, Conrad J., 3,798,686.
Galate, Joseph: *See—*
Moffat, Robert J.; Hunn, Bruce D.; and Galate, Joseph, 3,799,812.
Gallagher, William E., to Proctor & Gamble Company, The. Pulsating-flow coffee extraction process. 3,800,055, Cl. 426-432.000.
Galloway, Lawrence Henry, to Illinois Tool Works Inc. Anchor bolt. 3,799,027, Cl. 85-79.000.
Gam Rad, Inc.: *See—*
Shea, James J.; and Ochodnicky, Samuel S., 3,800,147.
Gamlen Naintre S.A.: *See—*
Dubois, Bernard Jacques, 3,798,913.
Gantt, James E., to Universal Oil Products Company. Riser-reactor system providing improved fluidized catalyst contacting. 3,799,868, Cl. 208-153.000.
Garbo, Paul W.: *See—*
Tsunoda, Kenneth, 3,799,025.
Gardella, Adriano. Brake unit for the warp beam of weaving looms. 3,799,210, Cl. 139-100.000.
Gardner, Harris L. Knee brace. 3,799,158, Cl. 128-80.00c.
Gardner, Stanley Frank, to Lucas Aerospace Limited. Liquid atomising devices. 3,799,449, Cl. 239-403.000.
Gardner-Denver Company: *See—*
Tipton, Joe D., 3,799,200.
Workman, Lawrence H.; and Bos, John R., 3,799,302.
Gartner, Stanley J.: *See—*
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Garwin, Richard L., to United States of America, Atomic Energy Commission. Energy storage and switching with superconductors. 3,800,256, Cl. 335-216.000.
Gates, Major F.: *See—*
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Gaul, Alan R.; and Villier, Raymond, to Masoneilan International, Inc. Electromechanical valve positioning apparatus. 3,800,201, Cl. 318-283.000.
Gavere, Harold K.; and Mix, Robert C., to Minnesota Mining and Manufacturing Company. Long yardage tape core assembly. 3,799,470, Cl. 242-68.500.
Gazeley, Keith Frederick: *See—*
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Gea Luftkuehlergesellschaft Happel GmbH & Co. KG: *See—*
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Kienhofer, Klaus, 3,798,979.
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Schmidt, Karl Otto, 3,799,282.
Geerlings, Antonius Hubertus. Apparatus for supplying a gas, especially an oxygen into a liquid. 3,799,515, Cl. 261-92.000.
Geiger, Istvan: *See—*
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Geise, Harold Eugene: *See—*
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Bolton, Robert A., 3,799,131.
Buckman, Kenneth Ernest; and Rogers, Kenneth Arthur, 3,799,354.
Danek, Michael J., 3,799,008.
Duzan, James R., 3,799,694.
Ferdelman, Donald C., 3,799,245.
Frank, Daniel L., 3,799,133.
Haglund, Robert J.; and Steele, James A., 3,799,034.
Hause, Gilbert K., 3,799,004.
Heidacker, Walter C., 3,799,434.
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Jacobs, James W., 3,799,640.
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Small, Robert C., 3,799,128.
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Jackson, Keith L., 3,799,066.
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Georgii, Hans Christer, to Georgii, Borghild. Supporting structures and methods of making them. 3,798,864, Cl. 52-653.000.
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Gerds, Hermann, to Siemens Electrogerate GmbH. Method of making electric heating unit. 3,798,759, Cl. 29-611.000.
Gerhard, Helmut, to Westerwalder Eisenwerk, Dr. Paul Gerhard KG. Transcontainer for flowable material. 3,799,383, Cl. 220-1.500.
Gerlach, Doris M. Vehicle table. 3,799,071, Cl. 108-46.000.
Gerlich, Stephen. Massaging machine. 3,799,155, Cl. 128-44.000.
Gertsch AG, mesne: *See—*
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Gesellschaft fur Elecktrometallurgie m.b.H.: *See—*
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Gesslein, Georg. Baby carriage. 3,799,606, Cl. 296-28.00b.
Gibbon, Robert Muir, to Imperial Chemical Industries Limited. Surface treating compositions. 3,799,919, Cl. 260-18.00s.
Gibbons, Edward J.: *See—*
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Gibbons, Edward J.; Morton, Herbert J.; and Busheee, Joseph J., to Gibbons, Edward J. Rubber stamp assembler. 3,798,736, Cl. 29-208.00f.
Gibbons, Harold M., to FMC Corporation. Dual jack assembly for marine loading arms. 3,799,197, Cl. 137-615.000.
Gieles, Antonius Cornelis Maria; and Somers, Gerardus Henricus Johannus, to U.S. Philips Corporation. Probe for measuring the flow of liquids. 3,798,967, Cl. 73-204.000.
Gierer, Walter: *See—*
Felice, Klaus; Sedlmeier, Josef; Gierer, Walter; Frey, Werner; and Wiedemann, Otto, 3,799,886.
Giesfeldt, John C., to Baskettes Ltd. Method for making potato baskets. 3,800,054, Cl. 426-390.000.
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Gillette Company, The: *See—*
Jeronimus, Patrick R., 3,799,332.
Gilmore, Charles G., to FMC Corporation. Anti-crease friction weld strapping tool. 3,799,835, Cl. 156-580.000.
Giordano, Jean Louis; and Touchard, Jacques, to Regie Nationalees Usines Renault and Automobiles Peugeot. Trim correctors for motor vehicles. 3,799,570, Cl. 280-124.00f.
Girard, Francois M.: *See—*
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Girard, Rene Fernand Victor; and Le Guillerm, Jacques, to Societe Industrielle Honeywell Bull. Process and apparatus for obtaining wire for magnetic memories. 3,799,804, Cl. 117-231.000.
Girguis, Sobhy Larib, to Uni-Cardan AG. Protective housing for constant velocity universal joints. 3,798,927, Cl. 64-32.00f.
Girling Limited: *See—*
Green Martin, 3,799,588.
Hill, Albert Charles, 3,799,295.
Ingram, Brian; and Spence, Douglas Roy, 3,799,300.
Givaudan Corporation: *See—*
Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, 3,799,987.
Givens, Wyatt W., to Mobil Oil Corporation. Method and apparatus for radioactive well logging employing partially overlapping time windows for detection of radiation. 3,800,150, Cl. 250-262.000.
Glass, Emmett F.; and Young, Robert G., to Sperry Rand Corporation. Baler pickup counter-balancing mechanism and pickup rope lift. 3,798,885, Cl. 56-364.000.
Glass, John Richard, to Mobil Oil Corporation. Automatic viscometer with multiple capillary viscometer tube. 3,798,960, Cl. 73-55.000.
Glass, Marvin & Associates: *See—*
Glass, Marvin I.; Breslow, Jeffrey Dale; and McKay, Robert Snyder, 3,799,544.
Terzian, Rouben T., 3,798,832.
Glass, Marvin I.; Breslow, Jeffrey Dale; and McKay, Robert Snyder, to Glass, Marvin & Associates. Vehicle action toy. 3,799,544, Cl. 273-86.00h.
Glasser, Carol A.: *See—*
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Glaverbel: *See—*
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Glaverbel S.A.: *See—*
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Van Lacthem, Robert, 3,799,817.
Gleason, James M.; and Pitts, Robert A., to Gould Inc. and Hakma Advanced Machine Company. Flexible marine engine exhaust. 3,798,904, Cl. 60-310.000.
Glidden, Roger C.; and Marshall, Duane, to Scott, David H., mesne. Solid state remote unit for data transmitting system. 3,800,091, Cl. 179-4.000.
Glidden, Roger C., to Scott, David H., mesne. Data receiver. 3,800,096, Cl. 179-84.0uf.
Gliem, Donald J.: *See—*
Sgambati, Anthony P.; Kamena, Fred; Barton, Robert L.; and Gliem, Donald J., 3,798,953.
Gloskowski, Walter. Tilt-up wall panel brace assembly. 3,798,856, Cl. 52-127.000.
Gloucester Engineering Co., Inc.: *See—*
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Gluck, David, to Ferranti-Packard Limited. Probe inspection system. 3,798,779, Cl. 33-169.00c.
Goal Lock Company: *See—*
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Goeke, Alfons: *See—*
Fangmeier, Ralf; Goeke, Alfons; Krafft, Erich; and Koch, Rolf Eckard, 3,798,948.
Goerditz, Hans. Mirror arrangement. 3,799,489, Cl. 248-480.000.
Goerke, Ariste W., to Owens-Corning Fiberglas Corporation. Shippable dispensing container. 3,799,409, Cl. 222-561.000.
Goglio, Luigi. Degassing valve for hermetically sealed flexible containers and continer provided with the valve. 3,799,427, Cl. 229-62.500.
Gold, Kenneth Stewart: *See—*
Pelta, Edmond R.; and Gold, Kenneth Stewart, 3,798,965.
Golemba, Frank J.: *See—*
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Gonner, Winfried, to Bodenseewerk Perkin-Elmer & Co., GmbH. Flow-through sample cells which determine their own fill level. 3,799,683, Cl. 356-246.000.

Goodyear Aerospace Corporation: *See—*
Batcher, Kenneth E., 3,800,289.
Goodyear Tire & Rubber Company, The: *See—*
Johnson, Ernest D., 3,799,060.
Goore, Moshe, to Smithkline Corporation. Production of interferon from human leukocytes in the absence of serum. 3,800,035, Cl. 424-85.000.
Gorchev, Dimiter. Diffuser valve. 3,799,046, Cl. 98-41.0av.
Gordon, Ronnie D.; and Starks, Charles M., to Continental Oil Company. Synthesis of primary alkyl halides. 3,799,999, Cl. 260-658.00r.
Gorham Tool Company: *See—*
Czopor, Edmund J.; Newton, Joseph; Cochrane, Ralph W.; and Mazur, Stan T., 3,798,723.
Czopor, Edmund J., 3,798,724.
Goshgarian, Haig, to Bissett-Berman Corporation, The. Method of making an electrolytic cell. 3,798,751, Cl. 29-570.000.
Gotilieb, Milton: *See—*
Roland, George W.; Feichtner, John D.; and Gotilieb, Milton, 3,799,659.
Goto, Naohiro: *See—*
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Gotsch, Dieter; Hahner, Reinhard; Lederer, Hans; Kirn, Manfred; and Kuhlmann, Gerhard, to Bosch, Robert, G.m.b.H. Hammer-drill. 3,799,275, Cl. 173-48.000.
Gottfried Boschoff Bau Kompl Gasreinigungs und Wasserruckkuhlanlagen Kommanditgesellschaft: *See—*
Hegemann, Karl-Rudolf; Finger, Gunther; and Pasambegovic, Munir, 3,799,520.
Gould Inc.: *See—*
Gleason, James M.; and Pitts, Robert A., 3,798,904.
Govang, James A., to Stanley Work, The. Merchandising display assembly. 3,799,357, Cl. 211-59.000.
Govoruhk, Nicholas J. Method for removing bat fly eggs from horses. 3,799,119, Cl. 119-157.000.
Gower-Rees, Christopher David; and Walton, John Noel, to Walton, Beverly Ann; d/b/b/ under the firm name and style of Infopat. Amusement device. 3,799,546, Cl. 273-109.000.
Graber, David A. Drying apparatus and method for particle materials. 3,798,786, Cl. 34-57.00r.
Graber, David A., 1/2 to Gates, Major F. Materials handling apparatus and method. 3,798,791, Cl. 34-164.000.
Grace, W. R., & Co.: *See—*
Sale, Howard James; Delgado, Alberto; and Doyle, Carroll Francis, 3,800,031.
Grady, Francis J. Apparatus for pretzel manufacture. 3,799,724, Cl. 425-311.000.
Graf, Carlton Eugene; and Skogsholm, Einar Aasen, to General Electric Company. Protection means for preventing overvoltage and undervoltage conditions in power circuits. 3,800,198, Cl. 318-227.000.
Graham, David A.: *See—*
Stearns, Burdett K.; Graham, David A.; Seemauo, James M.; and Zink, George, 3,799,560.
Grand, Samuel Edward: *See—*
Bush, Thomas P., Jr.; and Grand, Samuel Edward, 3,799,015.
Granholm, Lars E., to Outboard Marine Corporation. Stern drive unit trim tab. 3,799,103, Cl. 115-34.00r.
Granted to the United States Atomic Energy Commission under the Provisions of 42 U.S.C. 2182: *See—*
Schulz, David Arthur; and Turner, Charles Lamar, 3,799,790.
Graves, Willa A. Smogless combustion apparatus. 3,799,076, Cl. 110-8.00r.
Grecco, Leonard J.: *See—*
Arnau, Matthew H.; and Grecco, Leonard J., 3,799,824.
Gree, Hans: *See—*
Herzhoff, Peter; Gree, Hans; Schweicher, Wolfgang; Voss, Karl; Peckhaus, Oscar; Frenken, Hans; and Bussmann, Heinrich, 3,799,419.
Green Martin, to Girling Limited. Adaptor assemblies for connecting complementary members. 3,799,588, Cl. 285-158.000.
Green, Rollo G. Mail candling apparatus. 3,799,337, Cl. 209-111.700.
Greenspan, Doanld J., to U. S. Medical Research & Development, Inc. Method of using a serum separator. 3,799,342, Cl. 210-73.000.
Greenwood, Roger; and Roberts, Thomas, to International Telephone and Telegraph Corporation. Combination valve and component thereof. 3,799,193, Cl. 137-525.000.
Gregoire, Clyde G. Paper folder. 3,799,536, Cl. 270-61.00r.
Grewer, Rudolf; and Pohl, Ulrich, to Thyssen-Niederrhein AG. Discharge system for a shaft-type furnace. 3,799,367, Cl. 214-23.000.
Greyer, Eckhardt: *See—*
Backwinkel, Johannes; and Greyer, Eckhardt, 3,800,229.
Grieder, Charles K. Swimming frog having stops and surfaces controlling leg movement. 3,798,830, Cl. 46-92.000.
Griese, Wolfgang, to Volkswagenwek Aktiengesellschaft. Combustion engine with quick arrangement for its exhaust gas cleaning device during cold or idle run. 3,799,134, Cl. 123-119.00a.
Griffiths, Leslie N., to Kelbinator, Inc. Method for assembly of evaporator tubing to liner. 3,799,831, Cl. 156-297.000.
Griffiths, Mary: *See—*
Wood, William; Sellers, John; Carroll, Michael; and Griffiths, Mary, 3,799,213.
Griswold, Edward A. Method of installing photoelectric cell in a driveway. 3,798,743, Cl. 29-428.000.
Gritzner, Gerhard; and Leddy, James J., to Dow Chemical Company, The. Apparatus for preparation of Cl_2 by electrolysis of HCl and polyvalent metal chlorides. 3,799,860, Cl. 204-258.000.
Groendyke, Richard L., to American Safety Equipment Corporation. Apparatus for assembly of a retractor device including a safety belt. 3,798,731, Cl. 29-200.00a.
Grolet, Pierre: *See—*
Chevalier, Andre; Grolet, Pierre; and Reynard, Remi, 3,799,587.
Gropper, John L., to Sanders Associates, Inc. Credit verifying unit. 3,800,283, Cl. 340-149.10a.
Gros-Louis, Antoine. Emergency snowshoes in particular for stranded snowmobilers. 3,798,801, Cl. 36-2.5ab.
Grosbard, Gregory. Magnetic shield for charged particles. 3,800,158, Cl. 250-515.000.
Gross, Josef; and Barkow, William Henry, to RCA Corporation. Self-converging color image display system. 3,800,176, Cl. 313-69.00c.
Gross, W. J.: *See—*
United States of America, National Aeronautics and Space Administration, 3,798,741.
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Drekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich. Hydrogenation and hydrodealkylation catalst. 3,799,889, Cl. 252-470.000.
GTE Automatic Electric Laboratories, Incorporated: *See—*
Heffner, Samuel T., 3,800,280.
Maruscak, John; and Roy, Sanat K., 3,800,097.
GTE Sylvania Incorporated: *See—*
Anderson, Raymond N.; and Gartner, Stanley J., 3,798,947.
Zelenz, Martin L., 3,800,240.
Guerrini, Gian Paolo; and Falconieri, Remo, to Olivetti, Ing., C. & C., S.p.A. Removable typehead for a printing mechanism. 3,799,311, Cl. 9-9-71.
Guier, William. Apparatus for threading and unthreading vertical lengths of drill pipe. 3,799,009, Cl. 81-57.160.
Guier, William. Apparatus for rotating a member. 3,799,010, Cl. 81-57.170.
Guillet, Robert; and Cornillault, Jean, to Compagnie General d'Electricite and Compagnie Industrielle des Lasers. System enabling the detecting of movements of a first element in relation to another. 3,799,674, Cl. 356-138.000.
Gulf & Western Industries, Inc.: *See—*
Fredell, Gary D., 3,800,137.
Gulf General Atomic Incorporated: *See—*
Oakes, Eric J., 3,798,909.
Gulf Oil Canada Limited: *See—*
Hendry, Robert D., 3,799,613.
Gurgiolo, Arthur E.; and McAda, Robert W., to Dow Chemical Company, The. Halomethyl vinyl glycidyl ethers. 3,799,947, Cl. 260-348.00r.
Gurkin, David E. Orthopedic traction device. 3,799,156, Cl. 128-75.000.
Guthrie, Robert William; and Kierstead, Richard Wightman, to Hoffmann-La Roche Inc. Amino citric acid derivatives. 3,799,951, Cl. 260-349.000.
Gvacho, Daniel S., to Reynolds Metals Company. Container construction. 3,799,423, Cl. 229-14.00b.
Haas, Paul A., to United States of America, Atomic Energy Commission. Loading a cation exchange resin with uranyl ions. 3,800,023, Cl. 423-7.000.
Haber, Jan W. H.: *See—*
Cawley, John D.; and Haber, Jan W. H., 3,799,972.
Haberland, Ulrich: *See—*
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Habermeier, Juergen: *See—*
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Hack, Joachim: *See—*
Schoettle, Klaus; Hack, Joachim; Loewenberg, Gustav; and Hoffmann, Werner, 3,800,322.
Hagemann, Julius, to United States of America, Navy. Acoustic image conversion tube. 3,800,275, Cl. 340-5.0mp.
Hagen, Hans Werner, to Metzeler Aktiengesellschaft. Rotational casting or molding machine. 3,799,729, Cl. 425-435.000.
Hagen, Klaus: *See—*
Kuhlmann-Schafer, Wilhelm H.; Hagen, Klaus; Peters, Hans-Dieter; and Wolters, Gunther, 3,800,057.
Hager, Robert G. Luggage transport structure. 3,799,568, Cl. 280-37.000.
Haglund, Robert J.; and Steele, James A., to General Motors Corporation. Rotary fluid device. 3,799,034, Cl. 91-490.000.
Hahn, Harry L. Device and method for correcting ingrown toenails. 3,799,160, Cl. 128-81.00a.
Hahner, Reinhard: *See—*
Gotsch, Dieter; Hahner, Reinhard; Lederer, Hans; Kirn, Manfred; and Kuhlmann, Gerhard, 3,799,275.
Hailey, John J. Combustion device. 3,799,734, Cl. 431-353.000.
Hair, Hugh A., to Anaren Microwave Incorporated. Digital frequency meter. 3,800,221, Cl. 324-78.00d.
Hakma Advanced Machine Company: *See—*
Gleason, James M.; and Pitts, Robert A., 3,798,904.
Halatron Corporation: *See—*
Mailer, Hugh, 3,799,643.

Halio, Leonard F.; and Lavoie, Herve E., to Digital Equipment Corporation. Display device with means for drawing vectors. 3,800,183, Cl. 315-18.000.
Hall, Floyd V., to Liggett & Myers Incorporated. Automatic Cigarette feed machine. 3,799,324, Cl. 198-45.000.
Hall, Floyd Van, to Liggett & Myers Incorporated. Apparatus for obtaining rounded filter plugs for cigarettes. 3,799,041, Cl. 93-1.00c.
Hall, John Lewis: *See—*
Wickham, David John; and Hall, John Lewis, 3,799,498.
Hallenbeck, N. P. Company, Inc.: *See—*
Hallenbeck, Norman P.; and Willard, Stephen F., 3,799,031.
Hallenbeck, Norman P.; and Willard, Stephen F., to Hallenbeck, N. P. Company, Inc. Hot stamping press machine. 3,799,031, Cl. 91-189.000.
Halliburton Company: *See—*
Barrington, Burghus Q., 3,799,260.
Ely, John W.; and Tiner, Robert L., 3,799,267.
Halligan, Dewey D. Component lead cutter. 3,799,017, Cl. 83-167.000.
Hallman, John Ray, Jr. Keynote selector apparatus for electronic organs. 3,800,060, Cl. 84-1.240.
Halton, Murray: *See—*
Dow, Norris F.; and Halton, Murray, 3,799,209.
Hamasaki, Masafumi; and Haruna, Takashi, to Nissan Motor Company, Limited. Vehicle safety device. 3,799,578, Cl. 280-150.0ab.
Hamilton, Robert H., to Dynatel Corporation. Cable fault locator apparatus and method with reference voltage comparison. 3,800,216, Cl. 324-52.000.
Hammerschlag, Georg. Circular saws. 3,799,021, Cl. 83-491.000.
Hancock, Herbert A., to Sherritt Gordon Mines Limited. Process for making porous electrode plates. 3,799,808, Cl. 136-29.000.
Hancock, James E., to Clark Equipment Company. Adjustable scraper blade. 3,798,805, Cl. 37-141.00r.
Hannaman, Donald K., to Rigel Mfg., Inc. Lens grinding apparatus. 3,798,844, Cl. 51-101.0lg.
Hansen, Gunnar Lyshoj; and Christensen, Rolf, to Danfoss A/S. Distributor valve for an internally shafted orbital piston machine. 3,799,201, Cl. 137-625.210.
Hanson, Alden B.; and Hanson, Chris A., to Hanson Industries Inc. Ski boot and liner therefor. 3,798,799, Cl. 36-2.5al.
Hanson, Chris A.: *See—*
Hanson, Alden B.; and Hanson, Chris A., 3,798,799.
Hanson Industries Inc.: *See—*
Hanson, Alden B.; and Hanson, Chris A., 3,798,799.
Hanson, Thomas Alec. Cutting tool. 3,798,725, Cl. 29-106.00r.
Harada, Takeo; Moriya, Takeshi; and Wakasa, Rikichi, to Mallory, P. R., & Co., Inc. Electrical contact material containing silver, cadmium oxide, tin and cobalt. 3,799,770, Cl. 75-173.00r.
Harada, Takeo, to Mallory, P. R., & Co., Inc. Electrical contact material containing silver, cadmium oxide, tin and nickel. 3,799,771, Cl. 75-178.00a.
Haralampiev, Gueorgui Alexandrov: *See—*
Entshev, Ivan Dimitrov; Kinchev, Nikola Tsanov; Haralampiev, Gueorgui Alexandrov; Alexandrov, Alexander Minchev; Smilenov, Todor Ivanov; and Stojanvo, Jossif Genchev, 3,799,850.
Hardi-Kern, Ernst; Stager, Max Koch; and Neidecker, Rudolf, to Multi-Contact. Polarity reversing switch. 3,800,103, Cl. 200-1.00v.
Hardin, Leonard Jack: *See—*
Scheitlin, George Edward; and Hardin, Leonard Jack, 3,799,196.
Hargis, Raymond E.; and Bartley, Donald O., to Howe-Baker Engineers, Inc. Oil-water separation. 3,799,872, Cl. 210-21.000.
Harlan, Alfred R.; and Petersen, Ronald E., to Motorola, Inc. Two-way door assembly for a cassette tape player. 3,800,328, Cl. 360-4.00c.
Harmon, Thomas B. Portable sign. 3,798,814, Cl. 40-129.00r.
Harreld, James H. Portable hand-operated cuspidor. 3,798,682, Cl. 4-271.000.
Harrell, John W.: *See—*
Patton, Bobbie J.; Sexton, James H.; and Harrell, John W., 3,800,277.
Harrington, Joseph K.; and Robertson, Jerry E., to Minnesota Mining & Manufacturing Company. N-aryl-N-fluoroalkylsulfonyl carbamates. 3,799,968, Cl. 260-470.000.
Harris, David A.; Burbach, Henry E.; and Singer, Joseph G., to Combustion Engineering, Inc. Regenerative air heater with reversible drive. 3,799,242, Cl. 165-7.000.
Harris, Edward M.: *See—*
Dunnavant, William R.; Harris, Edward M.; Kurz, Philip F.; Markle, Richard A.; and Parker, Edward H., 3,799,915.
Harris, Lewis K., to Combustion Engineering, Inc. Turbine meter bearing support. 3,798,968, Cl. 73-231.00r.
Harris, Norman H.; Thomas, John H.; Isaak, Harlan R.; and Kanz, John W., to United States of America, The. Circuit board processing. 3,798,762, Cl. 29-626.000.
Harrison, James W.: *See—*
Cole, William R.; Harrison, James W.; Kotula, Bruno S.; Mariich, Jovo S.; and Tahmisian, Theodore N., 3,799,029.
Harshaw, William A., II. Method of verifying the authenticity of a document and identifiable document produced thereby. 3,800,142, Cl. 250-337.000.
Harsso Corporation: *See—*
Randall, Francis R., 3,799,373.
Hart, Dennis L., to Rain Bird Sprinkler Mfg. Corporation. Quick disconnect nozzle. 3,799,453, Cl. 239-600.000.
Hartman Metal Fabricators, Inc.: *See—*
Loomer, Weston R., 3,799,298.
Hartman, Thomas A. Elastomers in shear force transfer systems. 3,799,501, Cl. 251-306.000.
Hartmann, Franz-Josef: *See—*
Benteler, Helmut; Hartmann, Franz-Josef; and Hefendehl, Heinz, 3,798,943.
Haruna, Takashi: *See—*
Hamasaki, Masafumi; and Haruna, Takashi, 3,799,578.
Harvey, George Arthur, to Umec-Boydell (Belting) Limited. Endless band conveyors. 3,799,328, Cl. 198-195.000.
Harzer, Peter; and Benzel, Karl, to Wandel & Goltermann. Oscilloscopic system to detect distortion due to transients. 3,800,184, Cl. 315-26.000.
Hashimoto Kogyo Co., Ltd.: *See—*
Hashimoto, Rikichi; Kamada, Harunori; Fujimoto, Kazuo; Kanaiwa, Tsutomu; and Iwasa, Kiyoshi, 3,799,380.
Hashimoto, Rikichi; Kamada, Harunori; Fujimoto, Kazuo; Kanaiwa, Tsutomu; and Iwasa, Kiyoshi, to Sumitomo Chemical Company, Ltd. and Hashimoto Kogyo Co., Ltd. Screw lids or crown caps for bottles having improved sealing gaskets. 3,799,380, Cl. 215-40.000.
Hashimoto, Saburo; and Sandiford, Burton B., to Union Oil Company of California. Method of irrigation and fertilization. 3,798,838, Cl. 47-58.000.
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuki; and Fujii, Setsuro, to Taiho Pharmaceutical Company, Limited. ω-Quanidino acid diamide derivatives and manufacturing the same. 3,799,988, Cl. 260-561.00a.
Hasler, AG: *See—*
Schweizer, John, 3,799,671.
Hasler, Gerold B.: *See—*
Anderson, Robert D., Jr.; Hasler, Gerold B.; Kirby, Ralph W.; and White, Kraig R., 3,800,295.
Hasquenoph, Jean Henri Marie: *See—*
Costes, Bertrand Marie Dominique; Coutin, Pierre Fernand; and Hasquenoph, Jean Henri Marie, 3,799,478.
Hasselbald, Fritz Victor: *See—*
Olsson, Kurt Ove, 3,800,311.
Hassen-Plug, Maurice M.: *See—*
Smutny, Frank D.; and Hassen-Plug, Maurice M., 3,799,608.
Hastetler, Eldon, to Chore-Time Equipment, Inc. Method and apparatus for installing feeding system conveyor tubes. 3,799,116, Cl. 119-51.00r.
Hastings, Sam H., to Esso Research and Engineering Company. Suspension polymerization of styrene in the presence of an antioxidant such as bisphenol-A. 3,799,907, Cl. 260-45.95r.
Hatakeyama, Toshikatsu: *See—*
Usui, Yoshito; Shiojima, Kenji; Hatakeyama, Toshikatsu; and Sakau, Norio, 3,800,251.
Hauni-Werke, Korber & Co. KG: *See—*
Wochnowski, Waldemar, 3,799,176.
Hause, Gilbert K., to General Motors Corporation. Change speed power transmission. 3,799,004, Cl. 74-763.000.
Hauser, Kenneth L.: *See—*
Molloy, Bryan B.; Fuller, Ray W.; and Hauser, Kenneth L., 3,799,982.
Morin, Robert B.; Spry, Douglas O.; Hauser, Kenneth L.; and Mueller, Richard A., 3,799,967.
Haworth, Lionel, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Rotors for gas turbine engines. 3,799,698, Cl. 416-204.000.
Haws Drinking Fountain Company: *See—*
Wright, Allen C., 3,799,439.
Hawthorne, Vaughn T., to Keystone Industries, Inc. Stop means for railway impact absorbing device. 3,799,359, Cl. 213-8.000.
Hayase, Yoshio: *See—*
Nagata, Wataru; and Hayase, Yoshio, 3,800,009.
Hayashibara Company: *See—*
Sugimoto, Kaname, 3,799,805.
Hayes, Haskel Douglas: *See—*
Rizer, Brooks; and Hayes, Haskel Douglas, 3,798,767.
Hazeltine Corporation: *See—*
Page, Charles E., 3,800,075.
Reeber, Nicholas J., 3,800,071.
Hazzard, Noel D.; and Lavely, Lloyd L., Jr., to Air Preheater Company, Inc., The. Hot ash dump. 3,799,075, Cl. 110-8.00a.
Heatcraft, Inc.: *See—*
Ammerman, George Edward; and McFarlane, William, 3,800,263.
Heath, Walter, to Parkland International Inc. Environmental chamber. 3,799,163, Cl. 128-191.00a.
Heatwole, Edward G., to Transcal, Inc. Transferable decal license. 3,799,829, Cl. 156-235.000.
Heberlein & Co., AG: *See—*
Bosch, Hermann, 3,799,464.
Hebert, Remy, to Societe Anonyme dite: Aquitaine-Total Organico. Process for the polymerization or dodecalactain in the presence of potassium hydroxide. 3,799,912, Cl. 260-78.001.
Hebner, Theodore J.: *See—*
Van Gaasbeek, Peter Hakkenberg; and Hebner, Theodore J., 3,799,628.
Heen, Melge K., to Blackstone Corporation. Methods and apparatus for recovery of volatile solvents. 3,798,787, Cl. 34-75.000.
Hefendehl, Heinz: *See—*
Benteler, Helmut; Hartmann, Franz-Josef; and Hefendehl, Heinz, 3,798,943.

Heffner, Samuel T., to GTE Automatic Electric Laboratories, Incorporated. Time skew measurement circuit for mag tape transports. 3,800,280, Cl. 340-146.10f.
Hefney, John M., to Fuller Company. Gas scrubber, entrainment separator and combination thereof. 3,798,883, Cl. 55-456.000.
Hegemann, Karl-Rudolf; Finger, Gunther; and Pasambegovic, Munir, to Gottfried Boschoff Bau Kompl Gasreinigungs und Wasserruckkuhlanlagen Kommanditgesellschaft. Two-part gas-collecting hood for converter. 3,799,520, Cl. 266-19.000.
Heidacker, Walter C., to General Motors Corporation. Exhaust pipe mounted riser valve. 3,799,434, Cl. 236-101.000.
Heide, Stanford M., to Chicago Dynamic Industries, Inc. Slide selector switch. 3,800,107, Cl. 200-16.00d.
Heidemann, Gerrit: *See—*
Bulters, Hein; Heidemann, Gerrit; and DePutter, Warner Jan, 3,799,818.
Heiling, Gerald M.: *See—*
Cochran, William R.; and Heiling, Gerald M., 3,800,078.
Heilweil, Israel J., to Mobil Oil Corporation. Lead trap. 3,799,870, Cl. 208-251.000.
Heim, Josef: *See—*
Reitz, Johannes; Fresne, Hans-Jurgen; Bedenbender, Rainer; and Heim, Josef, 3,799,709.
Heimerzheim, Reiner: *See—*
Wimmer, Helmut; Feldmann, Wilhelm; Schauenburg, Wilhelm; and Heimerzheim, Reiner, 3,798,955.
Hein, Georg, to Vaillant, Joh, K.G. Premixing gas burner. 3,799,452, Cl. 239-553.300.
Heinz, Karl Ludwig: *See—*
Francke, Andries; and Heinz, Karl Ludwig, 3,799,879.
Heist, C. H., Corporation: *See—*
Foster, William F.; and Wild, Robert W., 3,799,443.
Hek, Homer C., to Universal Dynamics Corporation. Multi-station loader for particulate material. 3,799,622, Cl. 302-28.000.
Hellige, Fritz, & Co., G.m.b.H.: *See—*
Thoma, Josef, 3,800,220.
Helman, David R.: *See—*
Cocke, John; and Helman, David R., 3,800,291.
Helpich, William A.; Park, Glenn S.; and Palmer, George W., to Peabody Galion Corporation. Refuse collecting vehicle. 3,799,376, Cl. 214-83.300.
Helton, Donald C.; and Steveling, Robert C., to Chemetron Corporation. Glux cored electrode. 3,800,120, Cl. 219-146.000.
Hemard, Jean, to Ste Pernod. Devices for dispensing articles from a stack of articles. 3,799,394, Cl. 221-251.000.
Hender, Berkeley Stephens. Drive system. 3,799,284, Cl. 180-65.00a.
Hendry, Robert D., 30% Canada-Cities Sercice Ltd., 30% Imperial Oil Limited, 30% Atlantic Richfield Canada Ltd. and 30% Gulf Oil Canada Limited. Tar sands mining process. 3,799,613, Cl. 299-7.000.
Henig, Hans. Current lead-in devices for containers employed in electrolytic treatments. 3,799,858, Cl. 204-213.000.
Henigman, Boby J.: *See—*
Vassar, Jack K.; and Henigman, Boby J., 3,799,583.
Henkel & Cie GmbH: *See—*
Weinrich, Erwin, 3,799,900.
Henley, W. H.: *See—*
United States of America, National Aeronautics and Space Administration, 3,798,741.
Hennessey, Timothy W.; Lawton, Charles A.; and Buechler, Lester W., to Robbins & Meyers, Inc. Magnetic alignment method for electric machine. 3,798,757, Cl. 29-596.000.
Henry, Gray G. Whip device. 3,799,429, Cl. 231-2.00r.
Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; Schreyer, Gerd; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of alpha, beta-unsaturated carboxylic acids. 3,799,979, Cl. 260-53.00n.
Hermans, Fernand Victor Francois, to Le Four Industriel. Device for controlling a mixture of two gases. 3,799,195, Cl. 137-553.000.
Herr-Voss Corporation: *See—*
Fornataro, Augustine A., 3,798,951.
Herrich, William A.; Pittenger, Francis H.; and Keller, John A., to Peabody Galion Corporation. Safety shield for a rear loading refuse vehicle. 3,799,375, Cl. 214-83.300.
Hershner, Carlton H., Sr., to United States of America, Navy. Deep submergence ambient pressure cryogenic storage apparatus. 3,798,919, Cl. 62-45.000.
Herzhoff, Peter; Gree, Hans; Schweicher, Wolfgang; Voss, Karl; Peckhaus, Oscar; Frenken, Hans; and Bussmann, Heinrich, to AGFA Gevaert Aktinegesellschaft. Apparatus for slowing down and stopping moving webs or foil. 3,799,419, Cl. 226-11.000.
Heseltine, Donald W.: *See—*
Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., 3,799,786.
Heusler, Karl; and Woodward, Robert Burns, to Ciba-Geigy Corporation. Certain 4-thia-2,6-diazabicyclo[3.2.0]heptane derivatives. 3,799,938, Cl. 260-306.700.
Hewlett-Packard Company: *See—*
Cochran, David S., 3,800,168.
Hexcel Corporation: *See—*
Taylor, Robert S., 3,799,909.
Hickox, Robert E.: *See—*
Burkhardt, Joseph A.; Ortloff, John E.; Loth, William D.; and Hickox, Robert E., 3,798,915.
Higashi, Kisaburo, to Tonka Corporation. Wind-up toy vehicle with disengageable wind-up mechanism operated by rear axle rotation. 3,798,831, Cl. 46-206.000.
Highland, Andrew, to General Electric Company. Low cost convergence apparatus with cathode ray tube neck tolerance accommodation. 3,800,255, Cl. 335-212.000.
Hilden, Hakon Olavi: *See—*
Taylor, Nicholas Simon Hall; Hilden, Hakon Olavi; and Noren, Carl Anders, 3,799,615.
Hill, Albert Charles, to Girling Limited. Vehicle drum brakes. 3,799,295, Cl. 188-79.5gc.
Hill, Charles C., to Power Technology Corporation. Gas turbine engine. 3,798,899, Cl. 60-39.020.
Hill, Freeman K., to United States of America, Navy. Underwater acoustical jamming apparatus. 3,799,094, Cl. 114-20.00r.
Hill, Joseph Henry; Walmsley, Robert Edwin; and Parker, Derrick Douglas, to Vandervell Products Limited. Bearings for Railway Vehicles. 3,799,632, Cl. 308-56.000.
Hill, Marion E.; Tolberg, Wesley E.; and McDonald, Gerald J., to United States of America, Army, mesne. Process for the manufacture of trinitrotoluene. 3,799,993, Cl. 260-645.000.
Hill, Ruth Linda; and Rosenoff, Alan E., to Polaroid Corporation. Silver halide emulsion containing sensitizing dye combination. 3,799,783, Cl. 96-124.000.
Hillberg, Robert Lee, to Remington Arms Company, Inc., mesne. Auxiliary gun stock. 3,798,819, Cl. 42-72.000.
Hilliard, Lewis; and Reno, Woodrow James, to Becton, Dickinson and Company. Test system for monitoring heparin. 3,799,885, Cl. 252-408.000.
Hills, Ronald William. Board game apparatus. 3,799,547, Cl. 273-131.00b.
Himmelsbach, Lothar: *See—*
Nagel, Erich; Engelage, Guenter; Himmelsbach, Lothar; and Frankiewicz, Gerhard, 3,799,022.
Hinachi, Matatoyo; and Mori, Toyoshi, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Stepping motor drive control system with coil current adjustment. 3,800,206, Cl. 318-696.000.
Hinchliff, Richard W., to Merritt Equipment Co. Spring hanger bracket for vehicles. 3,799,562, Cl. 280-104.50b.
Hinman, Bruce E.: *See—*
Zucker, Fredric E.; Eckert, Alton B.; Hinman, Bruce E.; and Feinland, Seymour, 3,800,284.
Hinojosa, Octavio G.: *See—*
Hinojosa, Servando G.; and Hinojosa, Octavio G., 3,798,854.
Hinojosa, Servando G.; and Hinojosa, Octavio G. Prefinished wallboard. 3,798,854, Cl. 52-100.000.
Hiorth, Hans, to Dyno Industrier A.S. Method and apparatus for semi-continuous preparation of an explosive composition. 3,800,012, Cl. 264-3.00r.
Hirai, Tadaaki: *See—*
Maruyama, Eiichi; Hirai, Tadaaki; Inao, Kiyohisa; and Goto, Naohiro, 3,800,194.
Hirano, Masachika: *See—*
Fujimoto, Keimei; Mukai, Kunio; Hirano, Masachika; Tanaka, Katsutoshi; Takeda, Hisami; and Kawano, Suminori, 3,800,011.
Hirschler, Josef: *See—*
Sernetz, Heinz; and Hirschler, Josef, 3,799,634.
Hitachi, Ltd.: *See—*
Maruyama, Eiichi; Hirai, Tadaaki; Inao, Kiyohisa; and Goto, Naohiro, 3,800,194.
Moriguti, Kazuo; Yokoi, Nobuyasu; and Yamaguchi, Yukio, 3,799,689.
Ogura, Iwao; Onishi, Yoshihiro; and Arimoto, Akira, 3,800,298.
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,800,186.
Hitchcock, Robert D.; and Malloy, Richard J., to United States of America, Navy. Rotating acoustic scanner system for positioning objects on the ocean floor. 3,800,272, Cl. 340-3.00r.
Hoadley, Kenneth G.: *See—*
Colestock, Harry Elliott; Hoadley, Kenneth G.; and Marcinkiewicz, Eugene J., 3,799,682.
Hoaker Chemical Corporation: *See—*
Cook, Edward H., Jr.; and Snyder, Daniel J., 3,799,849.
Hochstetler, Alan R.: *See—*
Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, 3,799,987.
Hoelmer, Karl H., to Tool Steel Gear & Pinion Co., The. Scrap chopper. 3,799,020, Cl. 83-349.000.
Hoffmann, Edmund: *See—*
Keller, Rudolf; Hoffmann, Edmund; and Neugebauer, Walter, 3,799,756.
Hoffmann, Werner: *See—*
Schoettle, Klaus; Hack, Joachim; Loewenberg, Gustav; and Hoffmann, Werner, 3,800,322.
Hoffmann-La Roche Inc.: *See—*
Guthrie, Robert William; and Kierstead, Richard Wightman, 3,799,951.
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,799,975.
Hogg, James: *See—*
Duffin, George Frank; and Hogg, James, 3,799,926.
Holkeboer, Ronald E.: *See—*
Bauer, Frederick T.; Cairo, Anthony C.; and Holkeboer, Ronald E., 3,799,433.

Holko, Kenneth H., to United States of America, National Aeronautics and Space Administration. Diffusion welding. 3,798,748, Cl. 29-487.000.
Holland, John G., Sr., to Rolligon Corporation. Axial supporting vehicle wheels engagable with load bearing rollers. 3,799,617, Cl. 301-5.00p.
Holland, Walter Philip, to United Kingdom Atomic Energy Authority. Production of metal oxides. 3,799,882, Cl. 252-301.10r.
Hollins, Jesse R. Apparatus for protecting the driver of a vehicle. 3,798,994, Cl. 74-492.000.
Hollins, Jesse R. Assembly for protecting a passenger of a vehicle. 3,799,572, Cl. 280-150.00b.
Hollisn, Jesse R. Seat belt buckle. 3,799,610, Cl. 297-385.000.
Holloway, Maurice William; and Causton, Brian Edward, to National Research Development Corporation. Dental epoxides. 3,799,905, Cl. 260-37.0ep.
Holman, Lee B., to Standum, Inc. Method and apparatus for treating discrete articles. 3,799,336, Cl. 209-85.000.
Holmes, Gordon E.: *See—*
Meister, Harry M.; Kelley, James B.; and Holmes, Gordon E., 3,799,402.
Holmes, Richard E., to Lilly, Eli, and Company. Cinchoninic acid derivatives. 3,799,929, Cl. 260-287.00r.
Holmstrom, Goran, to Allmanna Svenska Elektriska Aktiebolaget. Electric switching device comprising insulating parts reinforced with polyvinyl alcohol fibres. 3,800,111, Cl. 200-144.00c.
Holophane Company, Inc.: *See—*
Shadwick, Jan, 3,800,138.
Holt, Terence Albert; and Barre, Jean-Gabriel, to Centre Technique. Apparatus for fitting shoe uppers. 3,798,694, Cl. 12-8.500.
Honeycutt, Don R., to Omark Industries, Inc. Safety holding valve rod eye assembly. 3,799,032, Cl. 91-420.000.
Honeywell Inc.: *See—*
Brock, Bruce A., 3,798,727.
Luft, Victor, 3,799,647.
Ryburn, Kenneth D.; Mc Clone, Robert J.; and Fox, Charles E., 3,799,297.
Honeywell Information Systems, Inc.: *See—*
Acker, William F., 3,800,228.
Albright, Richard A., 3,800,287.
Brown, James L.; and Wilder, Richard P., Jr., 3,800,286.
Curley, John L.; and Martland, Wallace A., 3,800,292.
Honjo, Satoru: *See—*
Watarai, Syu; Ono, Hisatake; Osada, Chiaki; Honjo, Satoru; and Tamai, Yasuo, 3,799,773.
Honn, James B.: *See—*
Platz, Gerald M.; and Honn, James B., 3,799,042.
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Hooker Chemical Corporation: *See—*
Miller, George T., 3,799,794.
Robota, Stephen; and Lloyd, Vernon J., 3,800,028.
Sherwood, Donald W.; and Siconolfi, Carmine A., 3,800,004.
Sherwood, Donald W.; Tideswell, Richard B.; and Kujawa, Francis M., 3,800,005.
Thorpe, Donald H.; and Hopkins, George C., 3,799,981.
Wagner, George M., 3,799,738.
Hoover, Donald R.: *See—*
Mohr, Frederick H.; and Hoover, Donald R., 3,798,709.
Hoover, Jess S.: *See—*
Fullerton, Marvin R.; Hoover, Jess S.; and Baugh, Homer, 3,799,115.
Hopkins, George C.: *See—*
Thorpe, Donald H.; and Hopkins, George C., 3,799,981.
Hoppe, Udo, to Beiersdorf Aktiengesellschaft. Urea derivatives. 3,799,969, Cl. 260-471.00r.
Horikawa, Hideichi: *See—*
Katayama, Shitomi; Horikawa, Hideichi; Takahashi, Yukio; and Masuda, Noboru, 3,800,006.
Horn, Wayne L. Distributor. 3,799,080, Cl. 111-7.000.
Horst, Patricia J. Measurer. 3,798,975, Cl. 73-429.000.
Horton, William Howard, to Eastman Kodak Company. Synchronizing mechanism for flash firing and shutter actuation. 3,800,308, Cl. 354-142.000.
Horvath, Josef: *See—*
Johansson, Lennart; and Horvath, Josef, 3,799,601.
Horvath, Steve J. Container label operating device. 3,799,834, Cl. 156-481.000.
House, Ronnalee, to General Motors Corporation. Ignition distributor. 3,799,135, Cl. 123-146.50a.
Howard, Jack E., to International Fabric Molders, Inc. Molded breast cup and method of making the same. 3,799,174, Cl. 128-464.000.
Howard, Jack E., to International Fabric Molders, Inc. Adjustable mold platen for fabric molding. 3,799,721, Cl. 425-195.000.
Howard, Jack E., to International Fabric Molders, Inc. Heat control for fabric molding. 3,799,727, Cl. 425-394.000.
Howard, Jack E., to International Fabric Molders, Inc. Mold closing device for fabric molding. 3,799,728, Cl. 425-416.000.
Howe-Baker Engineers, Inc.: *See—*
Hargis, Raymond E.; and Bartley, Donald O., 3,799,872.
Howells, Paul W.; and Lederer, Edwin H., to Syracuse University Research Corporation. Emergency-stop brake. 3,799,293, Cl. 188-5.000.
Hsien, Tao Yuan: *See—*
Tseng, Sheng-Tsai; and Hsien, Tao Yuan, 3,799,127.
Hubble, David H.; and Lamont, John A., to United States Steel Corporation. Method of making a removable bottom for a steelmaking furnace for preformed refractory shapes and resulting product. 3,799,526, Cl. 266-35.000.
Hubele, Adolf: *See—*
Martin, Henry; Duerr, Dieter; Hubele, Adolf; Pisstotas, Georg; Rohr, Otto; and Rufener, Jacques, 3,799,759.
Huber, Theodor: *See—*
Mayr, Helmut; Pelte, Richard; and Huber, Theodor, 3,799,661.
Hubert, Helmut: *See—*
Schmidt-Burbach, Gerhard; Jung, Anton L.; Hubert, Helmut; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Strauss, Heinz, 3,798,879.
Huettner, Lothar A. Rotating heat Exchanger. 3,799,120, Cl. 122-11.000.
Huggins, Clifford L.: *See—*
Loethen, Walter Victor; Boekhuff, Jack H.; and Huggins, Clifford L., 3,799,407.
Hughes, James W., to Texaco Inc. Process for imparting scale resistance to a surface. 3,799,797, Cl. 117-72.000.
Huguenin, Jules. Storage receptacle. 3,799,430, Cl. 232-43.200.
Hull, Charles W.; and Whitley, Robert K., to Du Pont de Nemours, E. I., and Company. Method for adjusting the ion beam height in a mass spectrometer. 3,800,151, Cl. 250-283.000.
Hull, Peter Richard, to General Electric Company. Bullet nose fastening arrangement. 3,799,693, Cl. 415-121.000.
Humbert, Marvin H., to Cedar Rapids Engineering Company. Valve holding and aligning device. 3,799,561, Cl. 279-51.000.
Huml, George E.; and Willison, Donald, to Midland-Ross Corporation. Railway draft gear. 3,799,360, Cl. 213-22.000.
Humphreys, Robert P., to Micro Devices Corp. Fusing and switching means and circuit means controlled thereby. 3,800,259, Cl. 337-10.000.
Hunn, Bruce D.: *See—*
Moffat, Robert J.; Hunn, Bruce D.; and Galate, Joseph, 3,799,812.
Hunt, Guilbert M., to Tokheim Corporation. Multiple speed drive transmission. 3,798,989, Cl. 74-244.000.
Hunt, Maureen A.; and Criel, Martin J. Cover support assembly. 3,798,685, Cl. 5-319.000.
Hunter, James B., to Matthey Bishop, Inc. Preparation of structures with a coating of Al_2O_3/SiO_2 fibers bonded to Al_2O_3 for use as catalyst substrates. 3,799,796, Cl. 117-70.00a.
Hunter, James, Machine Company, Inc., mesne: *See—*
Brochetti, Raymond E., 3,798,717.
Hurd, David D.; and Mead, Robert B., to Boise Cascade Corporation. Spindle assembly. 3,798,987, Cl. 74-230.01r.
Hurkamp, Charles H. Collapsible shipping container. 3,799,384, Cl. 220-6.000.
Hurley, Frederick A. Player activated electrical random selection device. 3,799,553, Cl. 273-141.00a.
Hutchinson, Donald O., to Ethyl Corporation. Process and apparatus using circulating gas stripping loop for on-board production of volatile fuel to operate an internal combustion engine. 3,799,125, Cl. 123-3.000.
Hutchinson, John, to Imperial Chemical Industries Limited. Preparation of omega-hydroperfluoroalkanes. 3,799,995, Cl. 260-653.000.
Huteaus, Andre, to Somip. Vat device for the treatment of articles in a fluidified medium. 3,799,112, Cl. 118-629.000.
Hutto, Ronald C.: *See—*
Anderson, Gerald G.; and Hutto, Ronald C., 3,799,251.
Hwa Te Rotary Engine Company: *See—*
Tseng, Sheng-Tsai; and Hsien, Tao Yuan, 3,799,127.
Hyde, Eric Ambrose: *See—*
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Hydraulic Industries, Inc.: *See—*
Tennis, Francis H., 3,798,905.
Hydrill Company: *See—*
Mc Lane, Douglas R., 3,799,050.
Hydronautics, Incorporated: *See—*
Brown, Clinton E., 3,799,873.
Hymel, Moise J. Apparatus for unloading sugarcane. 3,799,371, Cl. 214-44.00r.
I-T-E Imperial Corporation: *See—*
Strobel, Albert, 3,800,114.
ICI America Inc.: *See—*
Rutledge, Thomas F., 3,799,977.
Iio, Hiroki: *See—*
Inagami, Kaoru; Kamada, Hidemoto; Ino, Kazuo; Terabayashi, Takeshi; Iio, Hiroki; and Yamamura, Hirosi, 3,800,052.
Ikeda, Hideo, to Nippon Kogaku K.K. Multi-layer anti-reflection coating. 3,799,653, Cl. 350-164.000.
Illinois Tool Works, Inc.: *See—*
Bury, George J., 3,800,249.
Galloway, Lawrence Henry, 3,799,027.
Imperial Chemical Industries Limited: *See—*
Buteux, Richard Harold Barclay, 3,800,022.
Gibbon, Robert Muir, 3,799,919.
Hutchinson, John, 3,799,995.
Mead, David Geoffrey, 3,799,998.
Morris, George Oswald, 3,798,875.
Parsey, Michael Richard; and Campion, Alexander David, 3,800,019.
Imperial Oil Limited: *See—*
Hendry, Robert D., 3,799,613.

Inagami, Kaoru; Kamada, Hidemoto; Ino, Kazuo; Terabayashi, Takeshi; Iio, Hiroki; and Yamamura, Hirosi, to Calpis Shokuhin Kogyo Kabushiki Kaisha. Preparation of an acidified milk beverage. 3,800,052, Cl. 426-359.000.
Inagawa, Takashi, to Tokyo Shibaura Electric Co., Ltd. Door switch for electrical apparatus. 3,800,108, Cl. 200-61.620.
Inao, Kiyohisa: *See—*
Maruyama, Eiichi; Hirai, Tadaaki; Inao, Kiyohisa; and Goto, Naohiro, 3,800,194.
Industrial Acoustics Company, Inc.: *See—*
Kaufman, Arne M., 3,798,839.
Industrial Washing Machine Corporation: *See—*
Sadwith, Howard M., 3,799,807.
Industrie A. Zanussi S.p.A.: *See—*
Mazza, Lamberto, 3,799,348.
Mazza, Lamberto, 3,799,558.
Industrie Pirelli S.p.A.: *See—*
Cappa, Giulio, 3,799,233.
Industriele Onderneming Wavin N.V.: *See—*
Bulters, Hein; Heidemann, Gerrit; and DePutter, Warner Jan, 3,799,818.
Ingersoll Milling Machine Company, The: *See—*
Anderson, Alex Lennart, 3,800,117.
Ingram, Brian; and Spence, Douglas Roy, to Girling Limited. Hydraulic braking systems for vehicles. 3,799,300, Cl. 192-3.00r.
Inland Steel Company: *See—*
Easter, Holton C., 3,798,952.
Ino, Kazuo: *See—*
Inagami, Kaoru; Kamada, Hidemoto; Ino, Kazuo; Terabayashi, Takeshi; Iio, Hiroki; and Yamamura, Hirosi, 3,800,052.
Inoue, Tadashi: *See—*
Omoto, Tsunehiko; Inoue, Tadashi; and Yazaki, Takanori, 3,800,029.
Institut de Recherches de la Siderurgie Francaise: *See—*
Dumont-Fillon, Jacques; and Vedda, Louis, 3,799,239.
Institut Francais Du Petrole des Carburants: *See—*
Chevalier, Andre; Grolet, Pierre; and Reynard, Remi, 3,799,587.
Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Therond, Jean-Francois; Mermet, Jean; Barret, Jean-Pierre; and Cretin, Jacques, 3,800,126.
Institute of Gas Technology: *See—*
Long, George M., 3,799,182.
Institutul Pentra Creatie Stiuntifica Si Teknica: *See—*
Rado, Andrei Gheorghe E., 3,799,446.
Integrated Ceilings, Inc.: *See—*
Curtis, Rolando T., 3,798,865.
International Business Machines Corporation: *See—*
Anderson, Robert D., Jr.; Hasler, Gerold B.; Kirby, Ralph W.; and White, Kraig R., 3,800,295.
Ashar, Kanu G.; and Overmeyer, James, 3,800,193.
Cochran, William R.; and Heiling, Gerald M., 3,800,078.
Cocke, John; and Helman, David R., 3,800,291.
Davidge, Ronald V.; Davis, Clyton J.; Okcuoglu, Selahattin A.; and Schaefer, John O., 3,799,316.
Devore, Ernest W.; and Irwin, John W., 3,800,281.
Enger, Thomas A.; Evans, Charles W., Jr.; and Johnson, Lance H., 3,800,293.
Kline, Norman D.; and Weinschenk, Russell J., 3,800,170.
Lawlor, Francis Daniel, 3,800,294.
McNeil, William D.; and Rohland, William S., 3,800,079.
Smtih, Jack E., 3,799,314.
International Computers Limited: *See—*
Basu, Samir, 3,800,245.
Smith, Stephen Clifford, 3,800,167.
Stamers, Kenneth; and Case, Derek Frank, 3,798,758.
International Fabric Molders, Inc.: *See—*
Howard, Jack E., 3,799,174.
Howard, Jack E., 3,799,721.
Howard, Jack E., 3,799,727.
Howard, Jack E., 3,799,728.
International Harvester Company: *See—*
Erisman, Edward R., 3,799,308.
International Tapetronics Corporation: *See—*
Jenkins, John P., 3,800,323.
International Telephone and Telegraph Corporation: *See—*
Burgess, James Patton; Polkinghorn, Melvin W.; and Brzozowski, Stephen J., 3,800,267.
Cinkus, Frank; and Buchner, Richard E., 3,800,165.
Colestock, Harry Elliott; Hoadley, Kenneth G.; and Marcinkiewicz, Eugene J. (said Colestock and said Hoadley assors. to), 3,799,682.
Greenwood, Roger; and Roberts, Thomas, 3,799,193.
Reddick, Willis C., 3,800,089.
International Telephone and Telegraph Corporation, mesne: *See—*
Werstein, Frank A., 3,798,866.
International Video Corporation: *See—*
Jantzen, Johannes K., 3,800,318.
Interroyal Corporation: *See—*
Benoit, Roland A.; Curban, John H.; and Bennice, Richard L., 3,798,684.
Into, Henry A., to Colt Industries Operating Corporation. Fastener and assembly. 3,799,684, Cl. 403-261.000.
Ippoushi, Masahiko, to Kabushiki Kaisha Daini Seikosha. Day-and-date changing device for a wristwatch. 3,798,893, Cl. 58-58.000.
Irish, Charles G., Jr.; Silva, Joseph W.; and Owles, Raymond I. Electrical initiator. 3,799,055, Cl. 102-100.000.
Irving Industries Inc.: *See—*
Bonn, Clifford; and Wilson, Kenneth R. A., 3,799,574.
Irwin, John W.: *See—*
Devore, Ernest W.; and Irwin, John W., 3,800,281.
Irwin, Waverly G.; and Taube, Otto H., said Taube assor. to said Waverly, Irwin G. Concrete finishing float. 3,798,701, Cl. 15-235.800.
Irwin-Childs, Francis. Panel connectors for reinforced concrete diaphrahm walls. 3,798,914, Cl. 61-35.000.
Isaak, Harlan R.: *See—*
Harris, Norman H.; Thomas, John H.; Isaak, Harlan R.; and Kanz, John W., 3,798,762.
Ishigaki, Yukio: *See—*
Kiyono, Hiroshi; Nakashima, Junichi; Fujisaki, Yasuyuki; Ishigaki, Yukio; and Endo, Gen, 3,799,718.
Ishii, Akira; and Kondo, Kanichi, to Matsushita Electric Industrial Co., Ltd. Device for generating high voltage. 3,800,171, Cl. 310-8.700.
Ishii, Kenichi: *See—*
Tanaka, Tohachiro; Ishii, Kenichi; Sasaki, Seiya; and Shiraishi, Hiromi, 3,800,116.
Ishii, Yozo: *See—*
Oga, Toshisaburo; Yoshizuka, Kunio; Yoneda, Yoshiharu; Yanako, Shigehisa; Ishii, Yozo; and Watabe, Seiji, 3,799,469.
Ishimaru, Wataru: *See—*
Takagi, Takeshi; Ishimaru, Wataru; and Miyauchi, Toshiyuki, 3,799,001.
Ishizawa, Kazutomo; Koide, Tohru; Kondo, Tamotsu; and Miyawaki, Katsumi, to Kanedo Ltd. Method and apparatus for counting the number of individual filaments composing a multifilament yarn. 3,800,160, Cl. 250-563.000.
Iskra-Zavod Za Avtomatizacijo v Zdruzenem podjetju Iskra: *See—*
Vrenko, Erik, 3,800,084.
Isqpaki, Osamo: *See—*
Shingai, Kiyozo; Watanabe, Tadashi; Murata, Koichiro; and Isqpaki, Osamo, 3,799,910.
Itaru, Otsu: *See—*
Kijimoto, Shigenori, 3,799,198.
Ito, Riyuzi: *See—*
Nakamura, Yoshinobu; Ito, Riyuzi; Aman, Shunsuko; and Kojima, Kazutaka, 3,799,956.
Iwasa, Kiyoshi: *See—*
Hashimoto, Rikichi; Kamada, Harunori; Fujimoto, Kazuo; Kanaiwa, Tsutomu; and Iwasa, Kiyoshi, 3,799,380.
Iwata, Yoshisuke: *See—*
Kataoka, Hirobumi; Suzuki, Kazunari; Takayama, Yoshio; and Iwata, Yoshisuke, 3,800,062.
Izara, Akio: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; Nakashita, Mitsuo; Komatsu, Toshiaki; Izara, Akio; and Eda, Yasuko, 3,799,930.
Izumi Denki Company Limited: *See—*
Kuroda, Michro; and Asami, Hiroshi, 3,800,119.
J-B-T Instruments, Inc.: *See—*
Sheahan, Robert E., 3,800,113.
Jackson, Billy G., to Eli Lilly and Company. Ester cleavage process. 3,799,924, Cl. 260-243.00c.
Jackson, Keith L., to General Steel Industries, Inc. Railway truck supporting third rail collection equipment. 3,799,065, Cl. 105-182.00e.
Jackson, Keith L., to General Steel Industries, Inc. Resilient railway truck suspension. 3,799,066, Cl. 105-182.00r.
Jacobs, James W., to General Motors Corporation. Rack apparatus to prevent tipping of a mobile dishwasher. 3,799,640, Cl. 312-273.000.
Jacobs, James W., to General Motors Corporation. Vanes for rotary pumps and motors. 3,799,710, Cl. 418-147.000.
James, Lloyd G.: *See—*
Mitchell, William S.; and James, Lloyd G., 3,799,271.
Janning, John L., to National Cash Register Company, The. Liquid crystal display cell and method of making same. 3,799,651, Cl. 350-160.01c.
Jansen, Carl E.: *See—*
Beumer, Joseph A.; Jansen, Carl E.; and Radstake, Herman, 3,800,141.
Janssen, Edward W.: *See—*
Oehmke, Richard W.; Ofstead, Ronald F.; and Janssen, Edward W., 3,798,837.
Janszen, Arthur A., to Electrostatic Research Corporation. Electrostatic transducer and method and means for making same. 3,800,102, Cl. 179-111.00r.
Jantzen, Johannes K., to International Video Corporation. Helical tape guide. 3,800,318, Cl. 360-84.000.
Japan Synthetic Rubber Company, Limited: *See—*
Chikatsu, Tatsusuke; Yoshida, Yoshinori; Shimokawa, Shinichi; and Akimoto, Toshio, 3,800,002.
Japanese National Railways: *See—*
Kikuchi, Takashi; Motoki, Toshitsune; Kobayashi, Hideo; and Kamei, Toshiaki, 3,799,064.
Jarabek, Robert D., to PPG Industries, Inc. Method of electrodepositing cationic compositions. 3,799,854, Cl. 204-181.000.
Jarolim, Vaclav; Sehnal, Frantisek; and Sorm, Frantisek, to Ceskoslovenska akademie ved and Esters of 10- oxa-2,4-alkadienoic acids. . 3,799,957, Cl. 260-410.90r.

Jaye, Sam; and Erickson, Jon D. Brake lining wear warning gauge. 3,800,278, Cl. 340-52.00a.
Jeffery, Robert W.; and Breeden Robert H. Sperry Rand Corporation Power transmission. 3,799,096, Cl. 114-150.000.
Jen, Timothy Yu-Wen; and Weisbach, Jerry A., to Smithkline Corporation. 4-Substituted 3-cephem compounds. 3,799,922, Cl. 260-243.00c.
Jenkins, John P., to International Tapetronics Corporation. Cassette tape transport with pivotally supported universally adjustable head and upright front-mounted cassette. 3,800,323, Cl. 360-96.000.
Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., to Eastman Kodak Company. Crosslinkable polymer compositions utilizing N-hetero-cyclic compounds with cleavable oxy substituents. 3,799,786, Cl. 106-125.000.
Jeno's Inc.: *See—*
Schmit, Justin M.; and Cushman, Robert D., 3,799,914.
Jensen, Flemming E., to Smidth, F. L., & Co. Conveyor flights for rotary kiln. 3,799,735, Cl. 432-16.000.
Jensen, Fred H. Method and apparatus for sequestering open flame combustion gas. 3,799,142, Cl. 126-39.00j.
Jeronimus, Patrick R., to Gillette Company, The. Shipping and display container. 3,799,332, Cl. 206-44.00r.
Jerrold Electronics Corporation: *See—*
Shekel, Jacob, 3,800,218.
Jeumont-Schneider: *See—*
Caussin, Georges, 3,800,210.
Jeumot-Schneider: *See—*
Mehta, Robert, 3,800,197.
Jewell, Jack: *See—*
Skeen, Lawrence; Jewell, Jack; Landis, Franklin E.; and Mc Neil, William M., 3,799,461.
Jewell, Jack D.; and Skeen, Lawrence E., to Bauer Bros., Co, The. Refiner plate clearance control system. 3,799,456, Cl. 241-37.000.
Johansen, Ole Bjerke. Device in water closets. 3,798,681, Cl. 4-85.000.
Johansson, Lennart; and Horvath, Josef, to Allmanna Svenska Elektriska Aktiebolaget. Spreader for cargo containers. 3,799,601, Cl. 294-81.0sf.
John, Erwin Roy; and Laupheimer, Robert, to Neuro-Data, Inc. Hearing testing method and audiometer. 3,799,146, Cl. 128-2.10b.
Johns-Manville Corporation: *See—*
Kietzman, John H.; and Tocci, Mario P., 3,799,906.
Johnson, Albert D., to Systems Engineering Company. Machine for and method of automatically making partition assemblies from precut partition strips. 3,799,043, Cl. 93-37.00r.
Johnson, Charles Robert: *See—*
Moosavian, Seid Hossein; and Johnson, Charles Robert, 3,799,235.
Johnson, Ernest D., to Goodyear Tire & Rubber Company, The. High speed passenger conveyor. 3,799,060, Cl. 104-18.000.
Johnson, George R., to Ranpak Corporation, mesne. Cushioning dunnage mechanism and method. 3,799,039, Cl. 93-1.0wf.
Johnson, Gordon, Company: *See—*
Scheier, Donald J., 3,798,708.
Johnson, Howard, to Dow Chemical Company, The. Substituted aminohalo-pyridines. 3,799,935, Cl. 260-294.900.
Johnson, Joseph A., to Jomar Industries, Inc. Multiple injection blow molding machine. 3,799,722, Cl. 425-242.00b.
Johnson, Joseph L.: *See—*
Brown, Joe R.; and Johnson, Joseph L., 3,799,269.
Johnson, Lance H.: *See—*
Enger, Thomas A.; Evans, Charles W., Jr.; and Johnson, Lance H., 3,800,293.
Johnson, Lawrence D., to Keystone Consolidated Industries, Inc. Locking thread fastener. 3,799,229, Cl. 151-14.00r.
Johnson, Philip M.; and Dudevoir, Wilfrid G., to Sanders Associates, Inc. Direction determining system. 3,799,675, Cl. 356-152.000.
Johnson Products, Inc.: *See—*
Cornell, Richard D., 3,799,129.
Johnson Rubber Company, The: *See—*
Finefrock, Doanld W., 3,799,101.
Johnson Service Company: *See—*
Bailey, James R., 3,800,270.
Jomar Industries, Inc.: *See—*
Johnson, Joseph A., 3,799,722.
Jones, Alan Richardson, to Coulter Electronics, Inc. Automatic chemical analysis apparatus. 3,799,744, Cl. 23-253.00r.
Jones, Elwyn. Thin walled thermoplastic pressure vessels particularly for carbonated beverages and methods of making same. 3,799,821, Cl. 156-73.000.
Jones, Graham Robin Scott: *See—*
Bossons, Walter Howard; Lindstaedt, Horst Karl; and Jones, Graham Robin Scott, 3,799,038.
Jones, John P., Jr., to Mobil Oil Corporation. Tank liquid level determining apparatus. 3,798,969, Cl. 73-309.000.
Jones, Reuben G., to Lilly, Eli, and Company. Methods for controlling rodent populations using substituted diquinolydisulfides. 3,800,040, Cl. 424-258.000.
Jones, William Arthur Albert: *See—*
Fox, Austin Leslie; and Jones, William Arthur Albert, 3,799,040.
Jordan, Bill C. Fluorescent lamp handling device. 3,799,599, Cl. 294-20.000.
Jordan, Merrill E.; Burbine, William G.; and Williams, Frank R., to Cabot Corporation. Carbon black pigments. 3,799,788, Cl. 106-307.000.
Joubert, Raymond Jean Maurice: *See—*
Bouiller, Jean Georges; and Joubert, Raymond Jean Maurice, 3,799,476.
Joyce Bros. (W.A.) Pty. Limited: *See—*
McMinn, Joseph Ernest, 3,798,984.
Jozuka, Masao, to Brother Kogyo Kabushiki Kaisha. Repeat spacing mechanism for typewriters. 3,799,312, Cl. 187-82.000.
Julian, Ralph R.; and Collins, Larry L. Support means providing translational movement. 3,798,705, Cl. 16-94.00r.
Juncker, Friedrich, to Messer Griesheim GmbH. Fractionation of air to obtain oxygen of about 70% purity. 3,798,917, Cl. 62-14.000.
Jung, Anton L.: *See—*
Schmidt-Burbach, Gerhard; Jung, Anton L.; Hubert, Helmut; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Strauss, Heinz, 3,798,879.
Kabushiki Kaisha Aichidenkikosakusho: *See—*
Yamamoto, Osamo; and Niwa, Tatsuo, 3,798,764.
Kabushiki Kaisha Daini Seikosha: *See—*
Ippoushi, Masahiko, 3,798,893.
Kabushiki Kaisha Osaka Shinkuukiki Seisakusho: *See—*
Yamazoe, Masao, 3,799,519.
Kabushiki Kaisha Suwa Seikosha: *See—*
Kurita, Hirohisa; and Ota, Tomio, 3,798,890.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Hinachi, Matatoyo; and Mori, Toyoshi, 3,800,206.
Kabushikikaisha Aiden: *See—*
Kijimoto, Shigenori, 3,799,198.
Kachi, Kenjiro, to Elmo Company Limited. Tutorial learning apparatus. 3,798,793, Cl. 35-9.00a.
Kagarlitsky, Alfred Davydovich: *See—*
Suvorov, Boris Viktorovich; Kagarlitsky, Alfred Davydovich; Sembaev, Dauren Khamitovich; Kolodina, Ivetta Sergeevna; and Coiko, Aleftin, 3,799,888.
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche Inc. Process for isolating dopa. 3,799,975, Cl. 260-519.000.
Kaiser, Kent: *See—*
Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, 3,799,987.
Kaiser, Klaus: *See—*
Uth, Gerhard; Riedel, Rudolf; and Kaiser, Klaus, 3,799,219.
Kaji, Tetsunori: *See—*
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,800,186.
Kalamazoo Manufacturing Company, mesne: *See—*
Van Linder, Ronald C.; and Van Linder, Basil R., 3,799,322.
Kalen, Bodo, to Ducon Company, Inc., The. Granular bed filter apparatus and method. 3,798,882, Cl. 55-302.000.
Kamada, Harunori: *See—*
Hashimoto, Rikichi; Kamada, Harunori; Fujimoto, Kazuo; Kanaiwa, Tsutomu; and Iwasa, Kiyoshi, 3,799,380.
Kamada, Hidemoto: *See—*
Inagami, Kaoru; Kamada, Hidemoto; Ino, Kazuo; Terabayashi, Takeshi; Iio, Hiroki; and Yamamura, Hirosi, 3,800,052.
Kamei, Toshiaki: *See—*
Kikuchi, Takashi; Motoki, Toshitsune; Kobayashi, Hideo; and Kamei, Toshiaki, 3,799,064.
Kamen, Jack M. Tracheal tubes. 3,799,173, Cl. 128-351.000.
Kamena, Fred: *See—*
Sgambati, Anthony P.; Kamena, Fred; Barton, Robert L.; and Gliem, Donald J., 3,798,953.
Kamita, Tohru: *See—*
Komatsu, Youji; Kamita, Tohru; and Tanaka, Kazuo, 3,799,878.
Kampe, Dwight F. Method for harvesting baled crops. 3,799,378, Cl. 214-152.000.
Kanaiwa, Tsutomu: *See—*
Hashimoto, Rikichi; Kamada, Harunori; Fujimoto, Kazuo; Kanaiwa, Tsutomu; and Iwasa, Kiyoshi, 3,799,380.
Kanedo Ltd.: *See—*
Ishizawa, Kazutomo; Koide, Tohru; Kondo, Tamotsu; and Miyawaki, Katsumi, 3,800,160.
Kannari, Takehiko: *See—*
Shibata, Seiya; Kannari, Takehiko; and Mizuuchi, Junichi, 3,799,317.
Kanner, Rowland W.; and Smith, Clifford D., to Owens-Corning Fiberglas Corporation. Method and apparatus for applying a jacket to an elongated body. 3,798,870, Cl. 53-30.000.
Kansai Paint Co., Ltd.: *See—*
Shingai, Kiyozo; Watanabe, Tadashi; Murata, Koichiro; and Isqpaki, Osamo, 3,799,910.
Kanto Tar Products Co. Ltd.: *See—*
Kataoka, Hirobumi; Suzuki, Kazunari; Takayama, Yoshio; and Iwata, Yoshisuke, 3,800,062.
Kanz, John W.: *See—*
Harris, Norman H.; Thomas, John H.; Isaak, Harlan R.; and Kanz, John W., 3,798,762.
Karcher, Ralph E., Jr.; and Mac Kenzie, Fred T., to USM Corporation. Workpiece guidance mechanisms. 3,799,083, Cl. 112-47.000.
Karklys, Joseph, to Whirlpool Corporation. Programmable control circuit for cassette changer. 3,800,313, Cl. 360-69.000.
Karras, Thomas W., to General Electric Company. RF resonance electron excitation. 3,800,244, Cl. 331-94.5pc.
Kasemer, Andrew G. Finger carving tool. 3,798,689, Cl. 7-14.10r.

Kataoka, Hirobumi; Suzuki, Kazunari; Takayama, Yoshio; and Iwata, Yoshisuke, to Kanto Tar Products Co. Ltd. and Furukawa Denki Kogyo Co. Ltd. Cooling method for transmission cables. 3,800,062, Cl. 174-15.00c.
Katayama, Shigenari: *See—*
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,799,932.
Katayama, Shitomi; Horikawa, Hideichi; Takahashi, Yukio; and Masuda, Noboru, to Denki Onkyo Co., Ltd. Graft polymers from vinyl compounds with beta-propiolactone, epsilon-caprolactone and ethylene oxide. 3,800,006, Cl. 260-874.000.
Katz, Leonhard, to Astro Dynamics, Inc. Screw-nut and nut follower-controlled lift apparatus and components. 3,799,292, Cl. 187-25.000.
Kauer, Harald, to Pietzsch, Dr. Ludwig. Suspension system, in particular for vehicles capable of cross-country travel. 3,799,529, Cl. 267-64.00r.
Kaufman, Arne M., to Industrial Acoustics Company, Inc. Movable wall panel. 3,798,839, Cl. 49-127.000.
Kawaguchi, Iwakichi: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Kawaguchi, Iwakichi, 3,799,814.
Kawano, Suminori: *See—*
Fujimoto, Keimei; Mukai, Kunio; Hirano, Masachika; Tanaka, Katsutoshi; Takeda, Hisami; and Kawano, Suminori, 3,800,011.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Yamakawa, Eiichi, 3,799,695.
Kawasaki, Tsutomu: *See—*
Murao, Kunihiko; and Kawasaki, Tsutomu, 3,800,266.
Kay Pneumatics, mesne: *See—*
Douti, Kingsley A., 3,799,203.
Kayaba Kogyo Kabushiki Kaisha: *See—*
Kikuchi, Takashi; Motoki, Toshitsune; Kobayashi, Hideo; and Kamei, Toshiaki, 3,799,064.
Kayser, Allan J. Seal assembly for rotatable and axially movable shaft. 3,799,559, Cl. 277-41.000.
Keen, Bruce Henry: *See—*
Bonikowski, Zbigniew; and Keen, Bruce Henry, 3,799,719.
Keiner, Frederick G., to Motorola, Inc. High voltage solid state switching techniques. 3,800,166, Cl. 307-241.000.
Kelbinator, Inc.: *See—*
Griffiths, Leslie N., 3,799,831.
Keller, Anthony T., to Robertshaw Controls Company. Method and apparatus for welding bellows constructions and the like. 3,799,006, Cl. 74-815.000.
Keller, Anthony T., to Robertshaw Controls Company. Method and apparatus for welding bellows constructions and the like. 3,799,007, Cl. 74-815.000.
Keller, John A.: *See—*
Herrich, William A.; Pittenger, Francis H.; and Keller, John A., 3,799,375.
Keller, Rudolf; Hoffmann, Edmund; and Neugebauer, Walter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Sustained action nitrogen fertilizer. 3,799,756, Cl. 71-27.000.
Keller, Rudolf; Kruger, Manfred; Lussling, Theodor; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the preparation of epichlorohydrin for allychloride. 3,799,94, Cl. 260-348.50l.
Kelley, James B.: *See—*
Meister, Harry M.; Kelley, James B.; and Holmes, Gordon E., 3,799,402.
Kellner, Jackson M., to Smith International, Inc. Force applicator. 3,799,277, Cl. 175-94.000.
Kelly, Robert R.; and Tomashek James R., to Borg-Warner Corporation. Automatic racker board finger pivot system. 3,799,364, Cl. 214-2.500.
Kelly, William A.; Lander, Lynn H.; and Mlcoch, Frank C., Jr., to Lever Brothers Company. Spray dried controlled density detergent composition. 3,799,880, Cl. 252-110.000.
Kelp, Fritz, to Kraftwerk Union Aktiengesellschaft. Condensation system for low pressure gaseous media such as exhaust steam of steam power plant. 3,799,253, Cl. 165-111.000.
Kelton, William J.: *See—*
Shether, Tobias H. R.; and Kelton, William J., 3,799,379.
Kendall Company, The: *See—*
Collins, Robert F., 3,799,161.
Patel, Bhopendra C., 3,799,171.
Kenjesky, Raymond J., to U.S. Industries, Inc. Egg guard for poultry cages. 3,799,114, Cl. 119-17.000.
Kennedy, David C., to Rohm & Haas Company. Abatement of air pollution from organic compounds with polymeric adsorbents. 3,798,876, Cl. 55-59.000.
Kennedy, Maxine D. Cast sandal. 3,798,803, Cl. 36-11.500.
Kenney, Phillip E., to Ledex Inc. Contactless selector switch. 3,800,204, Cl. 318-480.000.
Kerr, Andrew Guy, to Ferranti Limited. Position measuring device. 3,799,678, Cl. 356-169.000.
Kersting, Emil Friedrich; and Deimann, Frank, to Machinenfabrik Sack GmbH. Bearing assembly for a roller. 3,799,636, Cl. 308-207.00r.
Keystone Consolidated Industries, Inc.: *See—*
Johnson, Lawrence D., 3,799,229.
Medelberg, Theodore Virgil, 3,799,460.
Keystone Industries, Inc.: *See—*
Hawthorne, Vaughn T., 3,799,359.
Kiel, Othar M., to Esso Production Research Company. Fracturing method using acid external emulsions. 3,799,266, Cl. 166-308.000.
Kienhofer, Klaus, to Gebr. Felss. Rotary and axial drive mechanism. 3,798,979, Cl. 74-22.00r.
Kieper, Hans W.: *See—*
Riethmuller, Lothar; Kieper, Hans W.; and Spreitzhofer, Ernst, 3,800,236.
Kierstead, Richard Wightman: *See—*
Guthrie, Robert William; and Kierstead, Richard Wightman, 3,799,951.
Kieserling, Th. & Albrecht: *See—*
Fangmeier, Ralf; Goeke, Alfons; Krafft, Erich; and Koch, Rolf Eckard, 3,798,948.
Kietzman, John H.; and Tocci, Mario P., to Johns-Manville Corporation. Heat stability of asbestos-filled polypropylene. 3,799,906, Cl. 260-42.450.
Kijimoto, Shigenori, to Kabushikikaisha Aiden and Itaru, Otsu. Electronic automatic faucet device. 3,799,198, Cl. 137-624.110.
Kikuchi, Takashi; Motoki, Toshitsune; Kobayashi, Hideo; and Kamei, Toshiaki, to Japanese National Railways and Kayaba Kogyo Kabushiki Kaisha. Retractable buffer stop. 3,799,064, Cl. 104-256.000.
Kilbane, James Anthony, Jr., 1/2 to Lund, Norman W. Traction cleat and drive belt with such aattached. 3,799,626, Cl. 305-35.000.
Kilstrom, Lars Gunnar; and Mattsson, Bo Gunnar, to Aktiebolaget Electrolux. Self-acting combination rug and floor vacuum cleaner nozzle. 3,798,704, Cl. 15-319.000.
Kim, Sung Soo. Flexible and expandable esophagoscope. 3,799,152, Cl. 128-6.000.
Kimberly-Clark Corporation: *See—*
Caple, Ira; Banks, Charles T.; and Voss, Jorg F., 3,799,468.
Kime, Donald L.; and Stogdill, Ronald G., to Chemineer, Inc. Intermediate right angle speed reducer. 3,798,991, Cl. 74-417.000.
Kinchev, Nikola Tsanov: *See—*
Entshev, Ivan Dimitrov; Kinchev, Nikola Tsanov; Haralampiev, Gueorgui Alexandrov; Alexandrov, Alexander Minchev; Smilenov, Todor Ivanov; and Stojanvo, Jossif Genchev, 3,799,850.
Kindler, Horst; Fischer, Hans-Gerhard; Antoni, Wilhelm; and Appel, Ewald, to Cassella Farbwerke Mainkur Aktiengesellschaft. Process for the production of sulfuric acid solutions of 2-amino-5-nitrothiazole. 3,799,941, Cl. 260-306.80r.
Kirby, Ralph W.: *See—*
Anderson, Robert D., Jr.; Hasler, Gerold B.; Kirby, Ralph W.; and White, Kraig R., 3,800,295.
Kirby, Robert Andrew, to Esso Production Research Company. Seismic energy source. 3,799,285, Cl. 181-5.0nc.
Kircher, Charles R.; and Kole, Richard L., to Kolmar Laboratories, Inc. Method for preparing pressed powder makeup sticks and product produced. 3,800,034, Cl. 424-63.000.
Kirk, Frederick Arthur, to Davy-Ashmore Limited. Method of extruding a porous compacted mass of metal powder having a sealed outer surface. 3,798,740, Cl. 29-420.500.
Kirn, Manfred: *See—*
Gotsch, Dieter; Hahner, Reinhard; Lederer, Hans; Kirn, Manfred; and Kuhlmann, Gerhard, 3,799,275.
Kirschmann, John D. Adjustable eccentric crankshaft. 3,798,996, Cl. 74-571.00m.
Kirschnek, Helmut; Kortmann, Wilfried; and Breyer, Karl-Heinz, to Bayer Aktiengesellschaft. Process for the finishing of textile materials. 3,799,801, Cl. 117-139.5cq.
Kiseleva, Nonna Viktorovna: *See—*
Varshavsky, Tury Sergeevich; and Kiseleva, Nonna Viktorovna, 3,799,961.
Kishi, Takao: *See—*
Nozawa, Takamitsu; and Kishi, Takao, 3,799,448.
Kishimoto, Toshio: *See—*
Suzuki, Satomi; Fujii, Osamu; Wakabayashi, Hirokazu; Kishimoto, Toshio; and Numabe, Masashi, 3,799,897.
Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, to Givaudan Corporation. 4-Aceto-6,8a-ethano-1,1,6-trimethyl-1,2,3,5,6,7,8,8a-octahydronaphthalene, process for making same and compositions containing same. 3,799,987, Cl. 260-586.00r.
Kiyono, Hiroshi; Nakashima, Junichi; Fujisaki, Yasuyuki; Ishigaki, Yukio; and Endo, Gen, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Apparatus for producing a thermoplastic resin sheet having a color band. 3,799,718, Cl. 425-131.000.
Klaas, Emil B. Pumping means. 3,799,690, Cl. 415-72.000.
Klein, Enrique J. Snap fastening device. 3,798,716, Cl. 24-233.000.
Kline, Norman D.; and Weinschenk, Russell J., to International Business Machines Corporation. Low power dissipation high voltage crystal driver. 3,800,170, Cl. 310-8.100.
Klinecky, Ladislav: *See—*
Stanislav, Krmela; and Klinecky, Ladislav, 3,799,212.
Klinecky, Ladislav; and Krmela, Stanislav, to Zbrojovka Vsetin, Narodni podnik and Vyzkumny ustav-Lykovych Vlaken. Method of and apparatus for preparing a weft supply in a magazine for weft insertion in shuttleless looms. 3,799,211, Cl. 139-122.00r.
Klose, George J.: *See—*
Bartok, Stephen; Klose, George J.; and Stewart, George W., 3,800,058.
Knappe, Wolfram; and Lindner, Adolf, to Siemens Aktiengesellschaft. Motor drive. 3,798,990, Cl. 74-411.000.

Knemeyer, Siegfried; and Fileccia, Genese L., to United States of America, Air Force. Vertical rate reference computer for control of a VTOL or STOL aircraft at a constant flight path angle. 3,800,127, Cl. 235-150.220.
Knight, Geoffrey Thomas: *See—*
Cain, Maurice Edward; Knight, Geoffrey Thomas; Gazeley, Keith Frederick; and Lewis, Peter McHugh, 3,799,954.
Knight, Robert K., to Union Oil Company of California. Method for reducing the flow of water through permeable earth strata. 3,799,262, Cl. 166-270.000.
Knize, Elmer J., to Lippy Can Co., Ltd. Can or container and the lid therefor. 3,799,388, Cl. 220-42.00c.
Knop, Frederick J. Massage type of portable vibrator. 3,799,154, Cl. 128-36.000.
Kobayashi, Herbert S., to United States of America, National Aeronautics and Space Administration. Pulse code modulated signal synchronizer. 3,800,227, Cl. 325-320.000.
Kobayashi, Hideo: *See—*
Kikuchi, Takashi; Motoki, Toshitsune; Kobayashi, Hideo; and Kamei, Toshiaki, 3,799,064.
Kobe Steel Company Ltd.: *See—*
Asari, Akira, 3,798,954.
Koch, Rolf Eckard: *See—*
Fangmeier, Ralf; Goeke, Alfons; Krafft, Erich; and Koch, Rolf Eckard, 3,798,948.
Koch, Wolfgang: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,799,975.
Koehler, Georg. Drum winch. 3,799,005, Cl. 74-812.000.
Koenig, Peter J.: *See—*
Bruderer, Werner; and Koenig, Peter J., 3,799,238.
Kohashi, Tadao; and Nakamura, Tadao, to Matsushita Electric Industrial Co., Ltd. Infrared image converting device. 3,800,156, Cl. 250-330.000.
Kohl, Karl. Sinker for warp knitting machine. 3,798,928, Cl. 66-109.000.
Kohler Company: *See—*
Milnes, Peter M.; and Muellenbach, Kevin D., 3,799,185.
Kohr, Horst, to Pyrotector Europe GmbH. Smoke detector. 3,799,670, Cl. 356-207.000.
Koide, Tohru: *See—*
Ishizawa, Kazutomo; Koide, Tohru; Kondo, Tamotsu; and Miyawaki, Katsumi, 3,800,160.
Koizumi, Yutaka, to Ricoh Co., Ltd. Electric discharge recording system having a dual scanning and recording head. 3,800,076, Cl. 178-6.60r.
Kojima, Kazutaka: *See—*
Nakamura, Yoshinobu; Ito, Riyuzi; Aman, Shunsuko; and Kojima, Kazutaka, 3,799,956.
Kole, Richard L.: *See—*
Kircher, Charles R.; and Kole, Richard L., 3,800,034.
Kolibas, James A., to Addressograph Multigraph Corporation. Field control development of electrostatic images. 3,799,791, Cl. 117-37.0le.
Kolic, Edwin S.; and Sigmund, Bereday, said Kolic assor. to said Sigmund, Bereday. Method for electrolytically coating anodized aluminum with polymers. 3,799,848, Cl. 204-38.00e.
Kollmai, Klaus E. Fluid flow wand assembly. 3,799,451, Cl. 239-444.000.
Kollmorgen Corporation: *See—*
Weisner, Ralph M., 3,799,680.
Kolmar Laboratories, Inc.: *See—*
Kircher, Charles R.; and Kole, Richard L., 3,800,034.
Kolodina, Ivetta Sergeevna: *See—*
Suvorov, Boris Viktorovich; Kagarlitsky, Alfred Davydovich; Sembaev, Dauren Khamitovich; Kolodina, Ivetta Sergeevna; and Coiko, Aleftin, 3,799,888.
Komatsu, Toshiaki: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; Nakashita, Mitsuo; Komatsu, Toshiaki; Izara, Akio; and Eda, Yasuko, 3,799,930.
Komatsu, Youji; Kamita, Tohru; and Tanaka, Kazuo, to Maruzen Oil Company Limited. Method of hydraulic transmission of power and hydraulic fluid compositions therefor. 3,799,878, Cl. 252-79.000.
Komline-Sanderson Engineering Corporation: *See—*
Schlegel, William L., 3,799,532.
Kommanditbolaget United Stirling Sweden AB & Co.: *See—*
Lewenhaurt, Carl Sixten, 3,798,901.
Kondo, Kaneichi: *See—*
Ishii, Akira; and Kondo, Kaneichi, 3,800,171.
Kondo, Tamotsu: *See—*
Ishizawa, Kazutomo; Koide, Tohru; Kondo, Tamotsu; and Miyawaki, Katsumi, 3,800,160.
Kondo, Yoshikazu: *See—*
Yamazaki, Harumichi; Nakamura, Kihei; and Kondo, Yoshikazu, 3,799,531.
Koninklijke Nederlandsche Hoogovens en Staalfabieken N.V.: *See—*
Beumer, Joseph A.; Jansen, Carl E.; and Radstake, Herman, 3,800,141.
Konishi, Nobukiyo: *See—*
Takano, Tadayoshi; Kurita, Masaru; Nikaido, Hiroo; Mera, Masashi; Konishi, Nobukiyo; and Okui, Ritsuko, 3,799,923.
Konishi, Yuichiro: *See—*
Taguchi, Tatsuya; and Konishi, Yuichiro, 3,800,304.
Konishiroku Photo Industry Co., Ltd.: *See—*
Suga, Tsuneo, 3,799,780.
Konkel, Edward Vernon: *See—*
Biggs, Dutton; and Konkel, Edward Vernon, 3,798,849.
Konno, Akira; and Mizuno, Hiroshi, to Pioneer Electronic Corporation. Telephone auto-answering device. 3,800,092, Cl. 179-6.00r.
Konzorr, Hubert, to Union, Sils, van de Loo & Co. Pedal for bicycles and the like. 3,798,997, Cl. 74-594.400.
Kopczynski, John F. Feed mechanism for combined bending and punching machine. 3,798,956, Cl. 72-420.000.
Kopczynski, John F. Straightening machine for elongated workpieces. 3,799,216, Cl. 140-147.000.
Koppers Company, Inc.: *See—*
Quintilian, Bartholomew Frank, 3,798,745.
Korpics, Frank Joseph: *See—*
Neuman, Otto Walter; and Korpics, Frank Joseph, 3,799,067.
Korteling, Aart Gerrit, to U.S. Phillips Corporation. Method of and apparatus for ignition timing in internal combustion engines. 3,799,136, Cl. 123-148.00e.
Kortmann, Wilfried: *See—*
Kirschnek, Helmut; Kortmann, Wilfried; and Breyer, Karl-Heinz, 3,799,801.
Kott, Herbert, to Perma Pack, Inc. Alarm system having a rechargeable power pack. 3,800,207, Cl. 320-13.000.
Kotula, Bruno S.: *See—*
Cole, William R.; Harrison, James W.; Kotula, Bruno S.; Mariich, Jovo S.; and Tahmisian, Theodore N., 3,799,029.
Kovats, Ferenc; and Pinter, Andor, to Chinoin Gyogyszeves Vegyeszeti Termekek Gyara RT. Process and apparatus for the treatment of moist materials. 3,798,784, Cl. 34-1.000.
Kowalewski, Rolf E., to Motorola, Inc. Radio frequency switch employing reed switches and a quarter wave line. 3,800,222, Cl. 325-23.000.
Krafft, Erich: *See—*
Fangmeier, Ralf; Goeke, Alfons; Krafft, Erich; and Koch, Rolf Eckard, 3,798,948.
Kraftwerk Union Aktiengesellschaft: *See—*
Kelp, Fritz, 3,799,253.
Kramer, Henry H.: *See—*
Arino, Hirofumi; Kramer, Henry H.; McGovern, James J.; and Thornton, Alfred K., 3,799,883.
Kramer, Walter W., to Fuller Company. Apparatus for dispersing pneumatically conveyed material. 3,799,621, Cl. 302-17.000.
Kraus, Herbert; and Breazeale, Billy H., to Texas Instruments, Incorporated. Surface passivation. 3,799,803, Cl. 117-212.000.
Krauss-Maffei Aktiengesellschaft: *See—*
Rumpff, Dieter, 3,799,199.
Kretschman, Heinz, to Ralfs, GmbH. Cable haulage installation. 3,799,326, Cl. 198-130.000.
Krimm, Heinrich: *See—*
Freitag, Dieter; Haberland, Ulrich; and Krimm, Heinrich, 3,799,953.
Kristoffer, Hans: *See—*
Arnegard, Bo Olof Roland; Emanuelsson, Kaj Bengt Ingemar; and Kristoffer, Hans, 3,799,712.
Kritzler, Gerhard: *See—*
Schluter, Siegfried Hans-Dietmer; and Kritzler, Gerhard, 3,799,241.
Krivdin, Boris Petrovich: *See—*
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Drekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,799,889.
Krmela, Stanislav: *See—*
Klinecky, Ladislav; and Krmela, Stanislav, 3,799,211.
Krock, Richard H.: *See—*
Zdanuk, Edward J.; Krock, Richard H.; and Shen, Yuan Shou, 3,799,772.
Kron, Martin W., to Eastman Kodak Company. Method for splicing webs. 3,799,826, Cl. 156-159.000.
Kruger, Manfred: *See—*
Keller, Rudolf; Kruger, Manfred; Lussling, Theodor; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,949.
Kruger, Manfred; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for preparing pure epichlorohydrin by extraction with a polyhydric alcohol. 3,799,948, Cl. 260-348.50.
Krutenat, Richard C., to United Aircraft Corporation. Apparatus for sputtering. 3,799,862, Cl. 204-298.000.
Kubicek, Donald H.: *See—*
Sherk, Fred T.; and Kubicek, Donald H., 3,799,989.
Kuck, Lloyd L., to General Motors Corporation. Washer pump assembly. 3,799,704, Cl. 417-319.000.
Kuharchuk, Phillip J., to Motorola, Inc. Record control circuit for multi-track cartridge tape player-recorder. 3,800,316, Cl. 360-74.000.
Kuhlmann, Gerhard: *See—*
Gotsch, Dieter; Hahner, Reinhard; Lederer, Hans; Kirn, Manfred; and Kuhlmann, Gerhard, 3,799,275.
Kuhlmann-Schafer, Wilhelm H.; Hagen, Klaus; Peters, Hans-Dieter; and Wolters, Gunther, to Preussag AG. Electrically heated furnace utilizing ceramic heating elements. 3,800,057, Cl. 13-25.000.
Kuhn, Karl Walter, to Societe d'Etudes de Machines Thermiques. Method and device for protecting the stem of an exhaust valve of an

internal combustion engine or the like against corrosion. 3,799,139, Cl. 123u188.0gc.
Kujawa, Francis M.: *See—*
Sherwood, Donald W.; Tideswell, Richard B.; and Kujawa, Francis M., 3,800,005.
Kulite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D.; and Mallon, Joseph R., Jr., 3,800,264.
Kumagai Gumi Company Limited: *See—*
Matsushita, Kunijiro; and Tanaka, Mineya, 3,799,276.
Kundo Kieninger & Obergfell: *See—*
Scheer, Erich, 3,800,163.
Kunst, Robert J.: *See—*
Szala, Norman M.; O'Neill, Thomas J.; and Kunst, Robert J., 3,799,069.
Kunststoffwerk Gebruder Auger GmbH & Co.: *See—*
Muller, Ludwig; and Schmitz, Hans, 3,799,484.
Kuntschik, Lawrence F.; and Edwards, Robert S., to Texaco Inc. Opolyalkoxylated high molecular weight n-alkanone and n-alkanal oximes. 3,799,984, Cl. 260-566.0ae.
Kuntz, Donald J. Boot and glove drying apparatus. 3,798,788, Cl. 34-104.000.
Kurita, Hirohisa; and Ota, Tomio, to Kabushiki Kaisha Suwa Seikosha. Coil construction for electronic timepieces. 3,798,890, Cl. 58-28.00a.
Kurita, Masaru: *See—*
Takano, Tadayoshi; Kurita, Masaru; Nikaido, Hiroo; Mera, Masashi; Konishi, Nobukiyo; and Okui, Ritsuko, 3,799,923.
Kurk, Thomas R., to United States of America, Navy. True wind speed computer. 3,800,128, Cl. 235-151.320.
Kurling, Lennart, to AB Volvo Penta. Hydraulic trim/tilt system for outboard propulsion units. 3,799,104, Cl. 115-41.0th.
Kuroda, Michro; and Asami, Hiroshi, to Izumi Denki Company Limited. Resistance welding monitor. 3,800,119, Cl. 219-109.000.
Kurtz, Anthony D.; and Mallon, Joseph R., Jr., to Kulite Semiconductor Products, Inc. High temperature transducers and housing including fabrication methods. 3,800,264, Cl. 338-2.000.
Kurz, Philip F.: *See—*
Dunnavant, William R.; Harris, Edward M.; Kurz, Philip F.; Markle, Richard A.; and Parker, Edward H., 3,799,915.
Kurze, Ulrich; and Wright, Hubert Arthur, Jr., to Allied Chemical Corporation. Protective device for vehicular passengers incorporating silencing apparatus. 3,799,575, Cl. 280-150.0ab.
Kusters, Eduard: *See—*
Kusters, Eduard; and Appenzeller, Valentin (said Appenzeller assor. to), 3,799,052.
Kusters, Eduard; and Appenzeller, Valentin, said Appenzeller assor. to Kusters, Eduard. Apparatus for the continuous pressure treatment of a web. 3,799,052, Cl. 100-93.0rp.
Kysor Industrial Corporation: *See—*
Babb, John H., Jr.; and Maurits, Orville C., 3,799,592.
La Bahn, William C.: *See—*
Baumann, Frederick W.; La Bahn, William C.; Mac Nary, Robert G.; and Smith, William R., 3,799,240.
La Barber, Joseph A., 1/3 to Wagner, Kurt J. Vibration dampening assembly. 3,799,619, Cl. 301-5.0ba.
La Cellophene: *See—*
Weber, Guy Paul; and Deshayes, Philippe Marie, 3,799,669.
La Rocca, Edward W., to Armament Systems, Inc. Controlled fragmentation explosive device. 3,799,054, Cl. 102-67.000.
La Salle Machine Tool, Inc.: *See—*
Richards, Robert W.; and Egbert, James, 3,798,981.
La Telemecanique: *See—*
Clement, Christian; and Blanchard, Christian, 3,800,261.
Label, Micheline: *See—*
Marie, Michel; Sabatie, Michele; and Label, Micheline, 3,799,385.
Labor Saving Devices, Inc.: *See—*
Walsh, John E., 3,800,124.
Laboratorio Prodotti Biologici Braglia S.p.A.: *See—*
De Marchi, Giovanni; and Scolastico, Carlo, 3,799,955.
Lachowicz, Donald R.; Saines, George S.; Michelson, Malvin J.; and Eckert, George W., to Texaco Inc. Motor fuel additives. 3,799,751, Cl. 44-62.000.
Lacy, Dennis: *See—*
Pates, Terence; and Lacy, Dennis, 3,799,426.
Laikin, Milton, to Photo-Sonics, Inc. High resolution reverse telephoto lens. 3,799,655, Cl. 350-220.000.
Laino, Nikolaus. Bearings with composite surfaces. 3,799,629, Cl. 308-9.000.
Lake Region Products Inc.: *See—*
Notermann, Dalles C.; Notermann, Walter F.; and Notermann, Ray M., 3,798,691.
Laker, Michael A. Board game apparatus. 3,799,549, Cl. 273-131.0ab.
Lakus, Eugene A. Cuff link lock. 3,798,713, Cl. 24-90.500.
Lally, William; Moore, Kenneth L.; Robbins, John E.; and Willbond, William F., to USM Corporation. Injection mold with a sprue plugging mechanism. 3,799,723, Cl. 425-245.00r.
Lalwanly, Narain S., to Du Pont de Nemours, E. I., and Company. Conversion-rolling of titanium/steel bonded composite products. 3,798,747, Cl. 29-475.000.
Lamb, Norman C., to Stauffer Chemical Company. Novel odor control method. 3,798,877, Cl. 55-79.000.
Lamb, Paul Wentworth, to duPont, Michael M. Electro-optical information conversion system using fiber optics. 3,800,149, Cl. 250-205.000.
Lambert, Alain: *See—*
Flambard, Christian; Lambert, Alain; and Pacreau, Michel, 3,798,961.
Lambert, Michael W.: *See—*
Schlitlin, George E.; Collins, Joseph B.; and Lambert, Michael W., 3,799,748.
Lamm, August Uno. Rotating piston engine. 3,799,035, Cl. 91-493.000.
Lamming, Ernest V. Transparent coin wrapper. 3,799,428, Cl. 229-87.200.
Lamont, John A.: *See—*
Hubble, David H.; and Lamont, John A., 3,799,526.
Lampe, John W., Jr.: *See—*
Brucker, Clarence E.; Uhlarik, Kenneth S.; Lampe, John W., Jr.; and Bush, John W., 3,800,045.
Lamph, Ara Norman: *See—*
Van Wagenen, Norman L.; and Lamph, Ara Norman, 3,798,808.
Lamplugh, Roland J.; and Triolo, Rocco P., to Scott Paper Company. Stable hydrophilic polyurethane foams prepared by using a surfactant soluble in the hydrophilic polyol reactant. 3,799,898, Cl. 260-2.5ad.
Lamport, Noah. Non-fouling sailing indicator. 3,799,106, Cl. 116-28.00r.
Lampus, Randy M. Lighted fishing float. 3,798,822, Cl. 43-17.500.
Land, Edwin H., to Polaroid Corporation. Method of operating a film handling cassette. 3,800,306, Cl. 354-78.000.
Land, Edwin H., to Polaroid Corporation. Exposure, viewing and focusing system. 3,800,309, Cl. 354-152.000.
Lander, Lynn H.: *See—*
Kelly, William A.; Lander, Lynn H.; and Mlcoch, Frank C., Jr., 3,799,880.
Landis, Franklin E.: *See—*
Skeen, Lawrence; Jewell, Jack; Landis, Franklin E.; and Mc Neil, William M., 3,799,461.
Landis, Phillip S.: *See—*
Nnadi, John C.; and Landis, Phillip S., 3,799,877.
Lang, Larry E. Centrifuge and method. 3,799,343, Cl. 210-78.000.
Langaard, Reidar: *See—*
Witnes, Odd; and Langaard, Reidar, 3,799,837.
Lange, Donald A., to General Mills, Inc. Process for preparing protein monofilaments. 3,800,053, Cl. 426-364.000.
Langsam, Michael, to Air Products and Chemicals, Inc. Vinyl chloride based polymers prepared by in-situ initiators in acid medium. 3,799,916, Cl. 260-87.100.
Lanier Electronic Laboratory, Inc.: *See—*
Bolick, Fred C., Jr., 3,800,321.
Lapczyna, Manfred: *See—*
Schmidt-Burbach, Gerhard; Jung, Anton L.; Hubert, Helmut; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Strauss, Heinz, 3,798,879.
Larroche, Claude: *See—*
Larroche, Jean; and Larroche, Claude, 3,800,049.
Larroche, Jean; and Larroche, Claude. Process for obtaining dried fruits, especially prunes. 3,800,049, Cl. 426-305.000.
Larson, Warren L.; and Wong, James, to Norton Company, mesne. Composite conductor containing superconductive wires. 3,800,061, Cl. 174-15.00c.
Latson, Harold A., to American Metal Climax, Inc. Frame corner construction. 3,798,863, Cl. 52-400.000.
Laupheimer, Robert: *See—*
John, Erwin Roy; and Laupheimer, Robert, 3,799,146.
Lavachy, Ardre G.; and Caldwell, John W., to Pennwalt Corporation. Centrifuge apparatus. 3,799,431, Cl. 233-3.000.
Lavaggi, Robert. Apparatus for removing feces of animals and method of manufacture of said apparatus. 3,799,598, Cl. 294-19.00r.
Lavely, Lloyd L., Jr.: *See—*
Hazzard, Noel D.; and Lavely, Lloyd L., Jr., 3,799,075.
Lavietes, Raymond P. Mulitple blade tool. 3,799,226, Cl. 145-50.00c.
Lavoie, Herve E.: *See—*
Halio, Leonard F.; and Lavoie, Herve E., 3,800,183.
Lawlor, Francis Daniel, to International Business Machines Corporation. System for improving the reliability of systems using dirty memories. 3,800,294, Cl. 340-172.500.
Lawrenz, Carl F.: *See—*
Strauss, Robert F.; and Lawrenz, Carl F., 3,799,244.
Laws, William Robert; and Hyde, Eric Ambrose, to British Iron and Steel Research Association, The. Apparatus for handling material. 3,799,602, Cl. 294-88.000.
Lawson, Gerald P.: *See—*
Carlson, John T. M.; and Lawson, Gerald P., 3,798,760.
Lawton, Charles A.: *See—*
Hennessey, Timothy W.; Lawton, Charles A.; and Buechler, Lester W., 3,798,757.
Le Chatelier, Jacques, to Societe Alsacienne de Constructions Mecaniques de Mulhouse. Apparatus for pinning non-continuous fibers in a rotary bowl. 3,798,887, Cl. 57-58.890.
Le Four Industriel: *See—*
Hermans, Fernand Victor Francois, 3,799,195.
Le Guillerm, Jacques: *See—*
Girard, Rene Fernand Victor; and Le Guillerm, Jacques, 3,799,804.

Le Men, Jean George; and Levy, Jean. Method of preparing new indolic derivatives usable for synthesising dextro-rotary vincamine. 3,799,933, Cl. 260-293.530.
Leddy, James J.: *See*—
Gritzner, Gerhard; and Leddy, James J., 3,799,860.
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Lederer, Hans: *See*—
Gotsch, Dieter; Hahner, Reinhard; Lederer, Hans; Kirn, Manfred; and Kuhlmann, Gerhard, 3,799,275.
Ledergerber, Alfred; and Crachy, Rudolf, to Werkzeugmaschinenfabrik Gildemeister & Comp. AG. Multiple-spindle machine tool. 3,798,720, Cl. 29-38.00b.
Ledex Inc.: *See*—
Kenney, Phillip E., 3,800,204.
Ledner, Albert C. Emergency descent apparatus. 3,799,287, Cl. 182-5.000.
Ledwon, Erhard: *See*—
Schmidt-Burbach, Gerhard; Jung, Anton L.; Hubert, Helmut; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Strauss, Heinz, 3,798,879.
Lee, Raymond, Organization, Inc., The: *See*—
Ahlgren, Ilmari, 3,799,412.
Tidd, Donald M., 3,799,415.
Lefevre, Andre; and Lefevre, Rosemary Loweth. Board game apparatus. 3,799,552, Cl. 273-134.0af.
Lefevre, Rosemary Loweth: *See*—
Lefevre, Andre; and Lefevre, Rosemary Loweth, 3,799,552.
Lefranc, Jean E.: *See*—
Brignard, Francois C.; and Lefranc, Jean E., 3,799,023.
Leitz, Ernst, G.m.b.H.: *See*—
Stankewitz, Hans-Werner, 3,799,645.
Lejon, Jean C. Method and apparatus for electron beam control. 3,800,072, Cl. 178-5.40h.
Lemelson, Jerome H. Heat sealing machine and method. 3,798,874, Cl. 53-241.000.
Lemkin, Jack L. Magnetic game. 3,799,548, Cl. 273-131.0ad.
Lengemann, Robert A., to Universal Oil Products Company. Hydrocarbon conversion process utilizing a moving bed reactor. 3,799,866, Cl. 208-139.000.
Lens, Leo: *See*—
De Fraeye, Dirk Jules Remi; and Lens, Leo, 3,800,180.
Lentine, Frank Nickolis; and Boggs, William Henry, to Sybron Corporation. Dental-type handpiece. 3,798,776, Cl. 32-26.000.
Leopold, Wilbert R., Jr., to Mueller Corporation. Rotary valve with anti-corrosion and torque controlling menas. 3,799,500, Cl. 251-297.000.
Leptien, Helmut, to Volkswagenwerk Aktiengesellschaft. Cooling arrangement for a combustion engine having a rotary type piston. 3,799,708, Cl. 418-83.000.
Les Applications Industrielles Vosgiennes Sapivog: *See*—
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Lesk, Israel A.: *See*—
Price, James B.; and Lesk, Israel A., 3,798,754.
Leslie, Brian R.: *See*—
Ross, Stuart T.; and Leslie, Brian R., 3,798,742.
Lester, Russell H., to Celotex Corporation, The. Cable drum brake. 3,799,296, Cl. 188-82.800.
Letourneux, Yvon. Wheeled stall for itinerant sale. 3,799,604, Cl. 296-21.000.
Lever Brothers Company: *See*—
Flawn, Richard Edwin; Nearn, Malcolm Richard; and Petter, Peter John, 3,800,033.
Francke, Andries; and Heinz, Karl Ludwig, 3,799,879.
Kelly, William A.; Lander, Lynn H.; and Mlcoch, Frank C., Jr., 3,799,880.
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Lewenhaurt, Carl Sixten, to Kommanditbolaget United Stirling Sweden AB & Co. Means and method for regulating fuel combustion in an external combustion engine. 3,798,901, Cl. 60-39.270.
Lewicki, Walter J., Jr.; and Welk, Kenneth L., to Armstrong Cork Company. Method of manufacturing a compressible surface printing rod. 3,799,822, Cl. 156-83.000.
Lewis, Charles T., Jr.: *See*—
Prescott, Gerald F.; Lewis, Charles T., Jr.; and Owens, William R., 3,800,001.
Lewis, John C., Jr., to Tucel Industries, Inc. Synthetic tufted constructions. 3,798,699, Cl. 15-179.000.
Lewis, John C., Jr., to Tucel Industries, Inc. Brush machinery and instant brush construction. 3,799,616, Cl. 300-2.000.
Lewis, Peter McHugh: *See*—
Cain, Maurice Edward; Knight, Geoffrey Thomas; Gazeley, Keith Frederick; and Lewis, Peter McHugh, 3,799,954.
Lewis, Richard Newton, to Stauffer Chemical Company, mesne. Alkoxysilosanols. 3,799,962, Cl. 260-448.8or.
Ley, Kurt: *See*—
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Liang, Charles C.: *See*—
Epstein, James; and Liang, Charles C., 3,799,959.
Liberman, Harvey W., to Carrier Corporation, mesne. Refuse compacting device. 3,799,051, Cl. 100-48.000.
Licentia Patent-Verwaltungs G.m.b.H.: *See*—
Bohm, Harald; and Louis, Gerhard, 3,799,809.
Lien, Wallace A.; and Pobog, Mathew, to Becton, Dickinson Electronics Company. Low profile keyboard switch assembly with snap action cantilever contact. 3,800,104, Cl. 200-5.00a.
Liggett & Myers Incorporated: *See*—
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Hall, Floyd Van, 3,799,041.
Lilienheim, Henry: *See*—
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Lilly, Eli, and Company: *See*—
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Jones, Reuben G., 3,800,040.
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Molloy, Bryan B.; Fuller, Ray W.; and Hauser, Kenneth L., 3,799,982.
Morin, Robert B.; Spry, Douglas O.; Hauser, Kenneth L.; and Mueller, Richard A., 3,799,967.
Limberger, Walter, to Lumoprint Zindler KG. Device for controlling one or more processes. 3,799,305, Cl. 192-33.000.
Lin, Frank W., to Caelus Memories, Inc. Servo system and method for positioning an element at precisely spaced positions. 3,800,317, Cl. 360-78.000.
Lind, Peter A.: *See*—
Anton, William J. E.; Collins, John E.; and Lind, Peter A., 3,800,185.
Lindar, Richard C. Register mark punch system and method. 3,798,782, Cl. 33-184.500.
Lindgren, John Ivar: *See*—
Wennerblom, Bengt Axel; Udden, Ruth Gunvor Anna Britt; Udden, Per Edward Carl; and Lindgren, John Ivar, 3,799,165.
Lindner, Adolf: *See*—
Knappe, Wolfram; and Lindner, Adolf, 3,798,990.
Lindsey, James M.; and Stell, Thomas W., to Sperry-Sun Well Surveying Company. Rotor tilt. 3,798,976, Cl. 74-5.60a.
Lindstaedt, Horst Karl: *See*—
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Linhardt, Hans D., to Air Reduction Company, Incorporated. Hot gas heat exchanger. 3,799,249, Cl. 165-60.000.
Linhari, Harry M., to Westinghouse Air Brake Company. Manually operable apparatus for cut-out of brake pipe pressure maintaining. 3,799,624, Cl. 303-66.000.
Lippincott, Ellwood B. Method of forming an illustration or picture. 3,799,819, Cl. 156-63.000.
Lippy Can Co., Ltd: *See*—
Knize, Elmer J., 3,799,388.
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Donne, Werner, 3,799,654.
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Perez, John M., 3,799,667.
Loethen, Walter Victor; Boekhuff, Jack H.; and Huggins, Clifford L. Semi-solid material dispensing including a power operated scoop. 3,799,407, Cl. 222-333.000.
Loev, Bernard, to Smithkline Corporation. Dibenzo(b,d)pyran compounds. 3,799,946, Cl. 260-345.300.
Loewenberg, Gustav: *See*—
Schoettle, Klaus; Hack, Joachim; Loewenberg, Gustav; and Hoffmann, Werner, 3,800,322.
Lomax, Harold R.; and Potts, Bobby K. Apparatus for trimming plumbing pipes below floor level. 3,799,688, Cl. 408-196.000.
Long, Darla; and Norland, Kenneth, to Polaroid Corporation. Process for purifying silver compounds. 3,800,030, Cl. 423-491.000.
Long, George M., to Institute of Gas Technology. Add-on stopper valve for existing piping. 3,799,182, Cl. 137-15.000.
Long, Marshall; Alley, Lewis F.; and Miller, Jack M., to Marlen Research Corporation. Block slicer and method. 3,799,013, Cl. 83-56.000.
Long, Marshall; Alley, Lewis F.; and Miller, Jack M. Block slicer and method. 3,799,019, Cl. 83-342.000.
Loomer, Weston R., to Hartman Metal Fabricators, Inc. Safety brake assembly for elevators and the like. 3,799,298, Cl. 188-189.000.
Lopez, Fernand Louis; Scheffer, Bela; Vulmiere, Huguette Nelly; and Vulmiere, Claude Jacques, to Etablissement Public: Agence Nationale de Valorisation de la Recherche Anvar, Regie dite: Regie Nationale des Usines Renault and Societe Anonyme: Automobiles Pugeot. Photometric head for measuring the diameters of hardness indentations. 3,799,677, Cl. 356-156.000.
Loranger, Denis R. Method of building construction. 3,798,868, Cl. 52-742.000.
Lord Corporation: *See*—
Schwemmer, Leonard J., 3,798,916.
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Morane, Bruno; Paoletti, Charles; Merrien, Louis; Maurelli, Manlo; and Sathicq, Robert, 3,799,398.
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Louzecky, Paul J., to General Motors Corporation. Self-cleaning spark plug. 3,800,179, Cl. 313-118.000.
Love, Fred S., to Badger Company Inc., The. Beer distillation. 3,799,845, Cl. 203-99.000.
Lowder, Dale E.; and Nise, Wilfred C., to Clarke-Gravely Corporation. Floor polisher. 3,798,697, Cl. 15-49.00r.
Lowe, Jack Bruner: *See*—
Gabby, John Lester; Corbin, Dennis Dale; and Lowe, Jack Bruner, 3,800,036.
Lowe, Roy E. Low-pollution trash incinerator. 3,799,077, Cl. 110-8.00r.
Lowrance, Carl J., to Lowrance Electronics Mfg. Corporation. Temperature differential sensor for gliders. 3,798,971, Cl. 73-342.000.
Lowrance, Darrell J., to Lowrance Electronics Mfg. Corporation. Pipeline including means of indicating the existence of and location of a leak. 3,800,217, Cl. 324-54.000.
Lowrance Electronics Mfg. Corporation: *See*—
Lowrance, Carl J., 3,798,971.
Lowrance, Darrell J., 3,800,217.
Lucas Aerospace Limited: *See*—
Gardner, Stanley Frank, 3,799,449.
Lucas Furnace Developments Limited: *See*—
Stribling, John Brian, 3,799,074.
Lucas, Georges, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine. Photochemical apparatus. 3,800,159, Cl. 250-527.000.
Lucas, Joseph, (Electrical) Limited: *See*—
Thornley, Derek, 3,800,105.
Luderssen, Hugo, to Bosch, Robert, Hausgeraete GmbH. Heat exchange unit. 3,799,255, Cl. 165-122.000.
Ludloff, Wolfgang, to Multiblitz Dr. Ing. D. A. Mannesmann GmbH & Co. KG. Flash lighting arrangement. 3,800,187, Cl. 315-241.00s.
Lueck, Arthur M.; and Youch, Edward A., to Quantum Sensing, Incorporated. Filament tension detector. 3,800,162, Cl. 250-572.000.
Luft, Victor, to Honeywell Inc. Constant visibility electro-optic display. 3,799,647, Cl. 350-150.000.
Lugo, John. Bagel forming machine. 3,799,726, Cl. 425-364.000.
Lukens, Victor. Clock mechanism. 3,798,892, Cl. 58-50.00r.
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Lummus Company, The: *See*—
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Lund, Norman W.: *See*—
Kilbane, James Anthony, Jr., 3,799,626.
Lundquist, Ingemar H., to Origo, Inc. Pump actuator including rotatable cams. 3,798,982, Cl. 74-53.000.
Lusk, George E., to G&W Electric Specialty Company. Universal power cable joint with closed-cell sponge stress relief element. 3,800,064, Cl. 174-73.00r.
Lussling, Theodor: *See*—
Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; Schreyer, Gerd; and Weigert, Wolfgang, 3,799,979.
Keller, Rudolf; Kruger, Manfred; Lussling, Theodor; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,949.
Lutke Cossmann, Theodor, to Polysius AG. Lifting wall construction for a tube mill or the like. 3,799,458, Cl. 241-70.000.
Lutz, Gilbert F., to Warner & Swasey Company, The. Coupling assembly. 3,798,722, Cl. 29-48.500.
Luzaich, Samuel: *See*—
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Lyons, Joseph B., Jr.; and Darreff, Francis P., to United States of America, Navy. Automatic sync detector. 3,800,086, Cl. 178-69.50r.
M&M Enterprises, Inc.: *See*—
Maahs, Jerry D., 3,800,123.
Maahs, Jerry D., to M&M Enterprises, Inc. Cooking and holding oven. 3,800,123, Cl. 219-407.000.
Mac Gunthard, Ernst. Internal combustion engine with rotary piston. 3,799,705, Cl. 418-61.00a.
Mac Kenzie, Fred T.: *See*—
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Mac Nary, Robert G.: *See*—
Baumann, Frederick W.; La Bahn, William C.; Mac Nary, Robert G.; and Smith, William R., 3,799,240.
Macchione, John M. Lamination stacking machines. 3,798,735, Cl. 29-203.00l.
Macco Oil Tool Co., Inc.: *See*—
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Macco Oil Tool Co., The: *See*—
Bauer, William V., 3,799,254.
MacGuire, Andrew E., to Ferry Cap & Set Screw Company, The. Valve device and system employing the same. 3,799,132, Cl. 123-119.00d.
Macharg, James Adrian. Battery chargers. 3,800,208, Cl. 320-20.000.
Machinenfabrik Sack GmbH: *See*—
Kersting, Emil Friedrich; and Deimann, Frank, 3,799,636.
MacKay, Kenneth D.; and Rogier, Edgar R., to General Mills Chemicals, Inc. Alicyclic diisocyanates. 3,799,965, Cl. 260-453.00a.
MacKay, Patrick W.: *See*—
Celada, Juan; Villarreal, David; and MacKay, Patrick W., 3,799,521.
MacMillan Bloedel Limited: *See*—
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Madalin, William A.; and Follis, Cecilia A., to American Hospital Supply Corporation, mesne. Insulated covered serving tray. 3,799,386, Cl. 220-16.000.
Maddren, Herbert J. Hot water supply system and method. 3,799,181, Cl. 137-1.000.
Madeley, Eugene H.: *See*—
Madeley, Harvey L., 3,798,692.
Madeley, Harvey L., 33 1/3 to Madeley, Eugene H. and 33 1/3 to Frost, A. C., Jr. Power supply and pressure switch assembly. 3,798,692, Cl. 9-313.000.
Madsen, Rud Frik, to Aktieselskabet de Danske Sukkerfabrikker. Process for the purification and clarification of sugar juices, involving ultrafiltration. 3,799,806, Cl. 127-54.000.
Maeder, Arthur: *See*—
Nachbur, Hermann; and Maeder, Arthur, 3,800,010.
Magnavox Company, The: *See*—
Close, Ernest Frederick, 3,800,226.
Maher, James Bernard; and Delahunty, Terry Wayne, to Chicago Bridge & Iron Company. Method and apparatus for purifying natural gas to be liquefied and stored. 3,798,918, Cl. 62-40.000.
Mahr, Rene, to Societe Anonyme des Anciench Etablissements Wurth, Paul. Double chamber charging device for a shaft. 3,799,369, Cl. 214-37.000.
Mailer, Hugh, to Halatron Corporation. Laser spatial coherence compensation in holography. 3,799,643, Cl. 350-3.500.
Mains, Harold E., to Emery Indistries, Inc. Process for producing aromatic aldehydes. 3,799,940, Cl. 260-340.500.
Malizio, Andrew B.; Rice, Martin A.; and Brooks, Harry F., to United States Pipe and Foundry Company. Process and alloy for making ductile iron. 3,799,767, Cl. 75-130.00a.
Mallinckrodt Chemical Works: *See*—
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Mallon, Joseph R., Jr.: *See*—
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Mallory, P. R., & Co., Inc.: *See*—
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Harada, Takeo; Moriya, Takeshi; and Wakasa, Rikichi, 3,799,770.
Harada, Takeo, 3,799,771.
Zdanuk, Edward J.; Krock, Richard H.; and Shen, Yuan Shou, 3,799,772.
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Malott, Richard C. Resistance locking mechanism. 3,799,533, Cl. 269-32.000.
Mandel, David J. Apparatus for synthesis and analysis of letter representations of speech sounds. 3,798,797, Cl. 35-35.00r.
Mandl, Gerhard, to Rieter Machine Works, Ltd. Spinning and twisting spindle. 3,798,888, Cl. 57-135.000.
Mankey, Harry S.: *See*—
Oswald, Norman Dean; and Mankey, Harry S., 3,799,362.
Mannesmannrohren-Werke Aktiengesellschaft: *See*—
Wimmer, Helmut; Feldmann, Wilhelm; Schauenburg, Wilhelm; and Heimerzheim, Reiner, 3,798,955.
Manolis, John. Machine for producing self-opening envelopes. 3,799,044, Cl. 93-76.000.
Manuel, Larry N., deceased (Manuel, Ruby L, administratrix of the estate of). Rotatable stair assembly adapted for attachment to a vehicle platform. 3,799,288, Cl. 182-91.000.
Manuel, Ruby L, administratrix of the estate of: *See*—
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Marathon Oil Company: *See*—
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Marcinkiewicz, Eugene J.: *See*—
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Marcona Corporation: *See*—
Robinson, Charles W.; Sims, Wilbert N.; and Archibald, William R., 3,799,620.
Marconi Company Limited: *See*—
Meares, David John, 3,800,225.
Marek, Alois, to BBC Brown, Boveri & Company, Limited. Cooling system for power semiconductor devices. 3,800,190, Cl. 317-234.00r.
Marforio, Nerino, to S.p.A. Virginio Rimoldi & Co. Apparatus for making up fabric pieces of a predetermined length generally on sewing machines. 3,799,088, Cl. 112-130.000.
Margotte, Werner; and Benner, Alfred, to Ciba-Geigy Corporation. Process for the manufacture of polyglycidyl ethers. 3,799,950, Cl. 260-348.600.
Marie, Michel; Sabatie, Michele; and Label, Micheline, to Societe Nationale Industriella Aerospatiale. Liquid-gas bottle. 3,799,385, Cl. 220-9.01f.
Mariich, Jovo S.: *See*—
Cole, William R.; Harrison, James W.; Kotula, Bruno S.; Mariich, Jovo S.; and Tahmisian, Theodore N., 3,799,029.

Marik, Charles J.; Shlachter, Bernard; and Slavik, William H., to Motorola, Inc. Automatic hue control and method. 3,800,073, Cl. 178-5.4he.
Mariner, William H. Dispensing nozzle with selectable automatic cut-off. 3,799,397, Cl. 222-21.000.
Marini, Manlio; Maritano, Oddino; and Foa, Franco, to Olivetti, Ing., C., & C., S.p.A. Method and apparatus for evaluating the lubricating characteristics of oils and greases. 3,798,958, Cl. 73-10.000.
Marino, Joseph J., to Pfizer Inc. Vertical remote-controlled refractor gunning apparatus. 3,799,445, Cl. 239-242.000.
Maritano, Oddino: *See—*
Marini, Manlio; Maritano, Oddino; and Foa, Franco, 3,798,958.
Mark, Victor, to Monsanto Company. Substituted polyhalogenated cyclopentadienes. 3,799,994, Cl. 260-648.00c.
Markle, Richard A.: *See—*
Dunnavant, William R.; Harris, Edward M.; Kurz, Philip F.; Markle, Richard A.; and Parker, Edward H., 3,799,915.
Marks, Alfred F., to Esso Research and Engineering Company. Metal complexes of dithiobiurets. 3,799,960, Cl. 260-429.00r.
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Marks, Hillard W.; and Molis, John P., to Marks Brothers Productions, Inc. Digital programmer for receivers. 3,800,230, Cl. 325-396.000.
Marlen Research Corporation: *See—*
Long, Marshall; Alley, Lewis F.; and Miller, Jack M., 3,799,013.
Marona Corporation: *See—*
Miscovich, John A.; and Gilbert, John J., 3,799,614.
Maroschak, Ernest J., to Plastic Tubing, Inc. Apparatus and method for positively feeding corrugated pipe. 3,799,418, Cl. 226-6.000.
Marquette Tool and Die Company: *See—*
Freber, Elmer C., 3,799,283.
Marquis, Norman R.; and Vigdahl, Roger L., to Mead Johnson & Company. Antithrombogenic process employing substituted 6,7-dialkoxyquinazolines. 3,800,039, Cl. 424-251.000.
Marriner, Cohn E. Flexible connection for articulating vessels. 3,799,100, Cl. 114-235.00a.
Marsan, Arthur E. Starch type gel seals for ostomy patients. 3,799,166, Cl. 128-283.000.
Marsh Stencil Machine Company, The: *See—*
Robelow, Harold H., 3,799,053.
Marshall, Duane: *See—*
Glidden, Roger C.; and Marshall, Duane, 3,800,091.
Marsheck, William; and Miyano, Masateru, to Searle, G. D., & Co. Microbiological reduction of 11-hydroxy-15-keto prostaglandin intermediates. 3,799,841, Cl. 195-30.000.
Martin, Henry; Duerr, Dieter; Hubele, Adolf; Pisstotas, Georg; Rohr, Otto; and Rufener, Jacques, to Ciba-Geigy AG. Aryl thiourea fruit abscission method. 3,799,759, Cl. 71-99.000.
Martin, Henry; Pissiotas, Georg; and Rohr, Otto, to Ciba-Geigy Corporation. Insecticidal and acaricidal substituted carbanilic acid esters. 3,800,037, Cl. 424-186.000.
Martin, Louis E., to Societe Anonyme: Poclain. Coupling device and centrifugal pump making use of same. 3,799,691, Cl. 415-104.000.
Martina, Jack A., to Weather Tec. Corporation. Shielded bearing construction. 3,799,631, Cl. 308-36.100.
Martinoli, Santa Tina. Wheel balancing systems. 3,799,618, Cl. 301-5.00b.
Martinson, Lloyd William; and Smith, Richard James, to RCA Corporation. Fast fourier transform stage using floating point numbers. 3,800,130, Cl. 235-156.000.
Martland, Wallace A.: *See—*
Curley, John L.; and Martland, Wallace A., 3,800,292.
Martus, Donald G. Universal coupling. 3,798,925, Cl. 64-17.0sp.
Maruscak, John; and Roy, Sanat K., to GTE Automatic Electric Laboratories, Incorporated. Bus system for interconnecting systems of a communication switching system. 3,800,097, Cl. 179-98.000.
Maruyama, Eiichi; Hirai, Tadaaki; Inao, Kiyohisa; and Goto, Naohiro, to Hitachi, Ltd. and Nippon Hoso Kyokai. Photoconductive target of an image tube. 3,800,194, Cl. 317-235.00r.
Maruyama, Isamu: *See—*
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,799,932.
Maruzen Oil Company Limited: *See—*
Komatsu, Youji; Kamita, Tohru; and Tanaka, Kazuo, 3,799,878.
Mason, Wylie A. Modular building section. 3,798,860, Cl. 52-285.000.
Masoneilan International, Inc.: *See—*
Gaul, Alan R.; and Villier, Raymond, 3,800,201.
Masserschmitt-Bolkow-GmbH: *See—*
Stocker, Horst, 3,799,062.
Massey-Ferguson, Inc.: *See—*
Van Dest, Jean Claude, 3,799,003.
Masson Scott Thrissell Engineering Limited: *See—*
Bossons, Walter Howard; Lindstaedt, Horst Karl; and Jones, Graham Robin Scott, 3,799,038.
Master, Ralph L.; Philipsen, Richard D.; Starr, Kenneth E.; and Unkrich, Herbert C., to Caterpillar Tractor Company. Reversible fan assemblies and integral blade and trunnion units. 3,799,699, Cl. 416-206.000.
Masuda, Noboru: *See—*
Katayama, Shitomi; Horikawa, Hideichi; Takahashi, Yukio; and Masuda, Noboru, 3,800,006.
Matena, Philip, to Bell Telephone Laboratories, Incorporated. Communication and telemetry arrangement. 3,800,090, Cl. 179-2.00a.
Mathewson Corporation: *See—*
Redman, Howard E., 3,799,082.
Matsui, Kazuma; and Tsubouchi, Hideo, to Nippondenso Kabushiki Kaisha. Fluidic pulse generator for internal combustion engines. 3,799,206, Cl. 137-830.000.
Matsumoto, Ryosu, to Oda Gosen Kogyo Kabushiki Kaisha. Electric conductive ceramic guide. 3,799,422, Cl. 226-96.000.
Matsumoto, Seiji: *See—*
Fukushima, Osammu; Matsumoto, Seiji; and Sato, Masamichi, 3,799,666.
Takimôto, Masaaki; and Matsumoto, Seiji, 3,799,827.
Matsumoto, Seiji, to Xerox Corporation. Multi color electrophotographic masking process. 3,799,774, Cl. 96-1.200.
Matsumoto, Seiji; Tezuka, Shigeru; and Tanaka, Shinichi, to Xerox Corporation. Electrophotography charging device. 3,800,153, Cl. 250-325.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Ishii, Akira; and Kondo, Kaneichi, 3,800,171.
Kohashi, Tadao; and Nakamura, Tadao, 3,800,156.
Matsushita Electric Works, Ltd.: *See—*
Mori, Tetsuo; Yuda, Takeshi; and Okahashi, Keiji, 3,800,250.
Usui, Yoshito; Shiojima, Kenji; Hatakeyama, Toshikatsu; and Sakau, Norio, 3,800,251.
Matsushita, Kunijiro; and Tanaka, Mineya, to Kumagai Gumi Company Limited. Fluid driven below ground motor for sinking a caisson. 3,799,276, Cl. 175-94.000.
Matthey Bishop, Inc.: *See—*
Hunter, James B., 3,799,796.
Mattsson, Alf Viktor. Device for cutting tubes. 3,798,765, Cl. 30-96.000.
Mattsson, Bo Gunnar: *See—*
Kilstrom, Lars Gunnar; and Mattsson, Bo Gunnar, 3,798,704.
Maurelli, Manlo: *See—*
Morane, Bruno; Paoletti, Charles; Merrien, Louis; Maurelli, Manlo; and Sathicq, Robert, 3,799,398.
Maurits, Orville C.: *See—*
Babb, John H., Jr.; and Maurits, Orville C., 3,799,592.
Maxted, Wesley R.: *See—*
Cutler, James F.; Maxted, Wesley R.; and Soderstrom, Edward C., 3,799,319.
May, Geoffrey Eric: *See—*
Weir, Alan; and May, Geoffrey Eric, 3,799,333.
Mayea, Lawrence E., to Arkey Packaging Corporation. Paperboard container having a three-dimensional curve handle. 3,799,424, Cl. 229-16.00r.
Mayfran Incorporated: *See—*
Ross, Thomas A., 3,799,363.
Mayr, Helmut; Pelte, Richard; and Huber, Theodor, to Agfa-Gevaert Aktiengesellschaft. Arrangement for decreasing the ready time in a motion picture camera. 3,799,661, Cl. 352-141.000.
Mazur, Robert H., to Searle, G. D., & Co. Alkyl esters of alpha-aspartyl alpha-alkyl aliphatic amino acid dipeptides. 3,799,918, Cl. 260-112.500.
Mazur, Stan T.: *See—*
Czopor, Edmund J.; Newton, Joseph; Cochrane, Ralph W.; and Mazur, Stan T., 3,798,723.
Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Device for the automatic balancing of washing and drying machines. 3,799,348, Cl. 210-144.000.
Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Positioning device for the pick-up arm of a record player. 3,799,558, Cl. 274-13.00r.
Mc Clone, Robert J.: *See—*
Ryburn, Kenneth D.; Mc Clone, Robert J.; and Fox, Charles E., 3,799,297.
Mc Lane, Douglas R., to Hydrill Company. Pineapple chunking apparatus. 3,799,050, Cl. 99-553.000.
Mc Neil, William M.: *See—*
Skeen, Lawrence; Jewell, Jack; Landis, Franklin E.; and Mc Neil, William M., 3,799,461.
McAda, Robert W.: *See—*
Gurgiolo, Arthur E.; and McAda, Robert W., 3,799,947.
McAvoy, Dennis J., to Sperry Rand Corporation. Power transmission. 3,799,202, Cl. 137-125.0cl.
McBain, Donald. Strap support means. 3,799,413, Cl. 224-5.00p.
McCann, Gordon D.; Dumitru, Earl L.; and Louch, James B., to Dow Chemical Company, The. Preparation of latexes by direct dispersion of acidic organic polymers into aqueous alkaline media. 3,799,901, Cl. 260-29.6rm.
McClive, Ralph T., to Clecon Incorporated. Dessicant device. 3,799,352, Cl. 210-282.000.
McCormack, John F.: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,802.
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,816.
McCulloch Corporation: *See—*
Bailey, Jay Richard, 3,798,769.
McCullough, Edward E.; and Desjardins, Stanley P., to Thiokol Chemical Corporation. Flexible bearing material. 3,799,637, Cl. 308-238.000.
McCullum, R. Gene, to Best Lock Corporation. Armored lock mechanism. 3,798,938, Cl. 70-417.000.
McDonald, Gerald J.: *See—*

Hill, Marion E.; Tolberg, Wesley E.; and McDonald, Gerald J., 3,799,993.
McDonald, Patrick G., to General Motors Corporation. Vehicle body occupant restraint cushion system. 3,799,573, Cl. 280-150.0ab.
McDonnell Douglas Corporation: *See—*
Brunkhorst, Lloyd E.; Carr, Theodore G.; and Dueker, James E., 3,800,146.
McDuffie, Thomas F. Bidirectional container for oil filter. 3,799,347, Cl. 210-134.000.
McFarlane, William: *See—*
Ammerman, George Edward; and McFarlane, William, 3,800,263.
McGovern, James J.: *See—*
Arino, Hirofumi; Kramer, Henry H.; McGovern, James J.; and Thornton, Alfred K., 3,799,883.
McGowan, Eric, to United Gas Industries Limited. Manual control for gas and electric controlled apparatus. 3,800,109, Cl. 200-61.860.
McGuire, Pendleton R. Gravel guard for vehicles. 3,799,580, Cl. 280-154.50r.
McIntire, Richard Kenneth, to Ballmor. Therapeutic genital device. 3,799,157, Cl. 128-79.000.
McKay, Robert Snyder: *See—*
Glass, Marvin I.; Breslow, Jeffrey Dale; and McKay, Robert Snyder, 3,799,544.
McKeehan, Rodger W. Motor driven ball toy. 3,798,835, Cl. 46-243.00m.
McKeen, Leighton R., to Farah Manufacturing Company, Inc. Reciprocating motion control device. 3,798,980, Cl. 74-40.000.
McLallen, Dewitt K., Jr.: *See—*
Burkhardt, Joseph A.; McLallen, Dewitt K., Jr.; and Childers, Thomas W., 3,799,191.
McLean, George F., Jr., to USM Corporation. Multi-cavity molds. 3,799,494, Cl. 249-119.000.
McMinn, Joseph Ernest, to Joyce Bros. (W.A.) Pty. Limited. Rotary clothes hoists. 3,798,984, Cl. 74-89.150.
McNeil, William D.; and Rohland, William S., to International Business Machines Corporation. Compensation for a scanning system. 3,800,079, Cl. 178-7.100.
McNerney, Richard P.: *See—*
Whitfill, William A., Jr.; and McNerney, Richard P., 3,800,066.
McPherson, Donald F.; and Wild, Albert F. Belt drive for linear play adapter for cassette tape recorder. 3,799,421, Cl. 226-181.000.
McVaugh, Arthur K. Mobile apparatus for salvaging underground and overhead electrical cable. 3,799,016, Cl. 83-167.000.
McVeigh, James H., to Xerox Corporation. Color standard and method of calibrating a multi-color electrophotographic printing machine. 3,799,668, Cl. 355-4.000.
Mead, David Geoffrey, to Imperial Chemical Industries, Limited. Manufacture of halogenated hydrocarbons. 3,799,998, Cl. 260-654.00a.
Mead, Hansel B., to Teltronic Systems, Inc. Audience survey system. 3,800,223, Cl. 325-31.000.
Mead Johnson & Company: *See—*
Marquis, Norman R.; and Vigdahl, Roger L., 3,800,039.
Mead, Robert B.: *See—*
Hurd, David D.; and Mead, Robert B., 3,798,987.
Meadowbrook Manufacturing Corporation: *See—*
Thompson, McKinley, 3,799,566.
Meares, David John, to Marconi Company Limited and Standard Telephones & Cables Limited. Differential pulse-code modulation. 3,800,225, Cl. 325-38.00b.
Medelberg, Theodore Virgil, to Keystone Consolidated Industries, Inc. Degating machine. 3,799,460, Cl. 241-102.000.
Mee, John D.: *See—*
Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., 3,799,786.
Mehta, Robert, to Jeumot-Schneider. Static switching system for instantaneously making various connections between two D.C. machines. 3,800,197, Cl. 318-93.000.
Meijer, Roelf Jan; Beukering, Henricus Cornelis Johannes; and Fokker, Herman, to U.S. Philips Corporation, mesne. Rolling diaphragm seal separating gas and liquid with means for removing and recovering gas diffused through said seal into the liquid. 3,798,95, Cl. 60-24.000.
Meiji Seika Kaisha, Ltd.: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Ehchi; and Nuda, Taro, 3,799,842.
Meister, Harry M.: *See—*
Meister, Harry M.; Kelley, James B.; and Holmes, Gordon E. (said Kelley and said Holmes assor. to), 3,799,402.
Meister, Harry M.; Kelley, James B.; and Holmes, Gordon E., said Kelley and said Holmes assor. to Meister, Harry M. Liquid proportioning system. 3,799,402, Cl. 222-129.200.
Memorex Corporation: *See—*
Nilson, Jay Brent; and Bailey, Earl N., 3,800,326.
Menu, Edouard, to Fives Lille-Cail. Cooling arrangement for converter vessel wall. 3,799,524, Cl. 266-35.000.
Mera, Masashi: *See—*
Takano, Tadayoshi; Kurita, Masaru; Nikaido, Hiroo; Mera, Masashi; Konishi, Nobukiyo; and Okui, Ritsuko, 3,799,923.
Mermet, Jean: *See—*
Therond, Jean-Francois; Mermet, Jean; Barret, Jean-Pierre; and Cretin, Jacques, 3,800,126.
Merrien, Louis: *See—*
Morane, Bruno; Paoletti, Charles; Merrien, Louis; Maurelli, Manlo; and Sathicq, Robert, 3,799,398.
Merritt Equipment Co.: *See—*
Hinchliff, Richard W., 3,799,562.
Mertens, Oswald; and Schulz, Helmut. Method and means for regulating the tensioning of workpieces in multi-pass cold-drawing apparatus. 3,798,939, Cl. 72-800.000.
Messa, Pietro. Anti-clogging means for automatic thread-knotting devices. 3,799,590, Cl. 289-3.000.
Messer Griesheim GmbH: *See—*
Juncker, Friedrich, 3,798,917.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Butter, Karl, 3,798,902.
Metal Box Company Limited, The: *See—*
Franek, Jozef Tadeusz; and Porucznik, Paul, 3,798,950.
Metallgesellschaft Aktiengesellschaft: *See—*
Schmalfeld, Paul; and Rammler, Roland, 3,799,747.
Metric, Inc.: *See—*
Shannon, Charles G.; Moroney, Bernard M.; and Neal, Jack R., 3,798,957.
Mettler Instrument AG: *See—*
Aarts, Matias L. C., 3,799,280.
Metzeler Aktiengesellschaft: *See—*
Hagen, Hans Werner, 3,799,729.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Farbenfabriken Bayer Aktiengesellschaft. Unsymmetrical esters of 1,4-dihydropyridine 3,5-dicarboxylic acid. 3,799,934, Cl. 260-294.80g.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, to Fabrenfabriken Bayer Aktiengesellschaft. Unsymmetrical esters of 1,4-dihydropyridine 3,5-dicarboxylates. 3,799,936, Cl. 260-295.50r.
Meyer, Paul C.: *See—*
Tancrell, Roger H.; and Meyer, Paul C., 3,800,247.
Meyer, Robert W.: *See—*
Richmond, Wendell E.; and Meyer, Robert W., 3,799,304.
Meyer, Wolfgang: *See—*
Eberle, Herbert; Meyer, Wolfgang; and Bartling, Helmut, 3,800,032.
Michelsen, Paul F., to RMC Research Corporation. Weapon aim evaluation system. 3,798,795, Cl. 35-25.000.
Michelson, Malvin J.: *See—*
Lachowicz, Donald R.; Saines, George S.; Michelson, Malvin J.; and Eckert, George W., 3,799,751.
Micro Devices Corp.: *See—*
Humphreys, Robert P., 3,800,259.
Microsystems International Limited: *See—*
Cowpland, Michael C. J., 3,800,095.
Panther, Gyles, 3,800,299.
Middleton, Carlisle A. Tobacco harvester. 3,798,884, Cl. 56-27.500.
Midland-Ross Corporation: *See—*
Huml, George E.; and Willison, Donald, 3,799,360.
Mignone, Giuseppe: *See—*
Cherio, Vittoria; and Mignone, Giuseppe, 3,798,872.
Milam, Joseph E., to PPG Industries, Inc. Method of removing organo-lead compounds from aquueous media by alternating current electrolysis. 3,799,851, Cl. 204-149.000.
Milam, Joseph E.; and Estep, Edward E., to PPG Industreis, Inc. Method of reducing the organo-lead content of aqueous solutions by electrolysis in a porous cathode electrolytic cell. 3,799,852, Cl. 204-149.000.
Milana, Rosalyn B.; and Glasser, Carol A. Educational board game apparatus. 3,799,550, Cl. 273-134.0ad.
Milani, Humbert. Hearing aid device. 3,800,101, Cl. 179-107.00e.
Miller, Alan H.; and Currie, Grover C., to Cellu-Products Company. Disposable absorbent pad. 3,799,167, Cl. 128-287.000.
Miller, Frederic I., to United States of America, Navy, mesne. Redundant logic circuit. 3,800,164, Cl. 307-204.000.
Miller, George T., to Hooker Chemical Corporation. Process of metal plating. 3,799,794, Cl. 117-47.00a.
Miller, Jack M.: *See—*
Long, Marshall; Alley, Lewis F.; and Miller, Jack M., 3,799,013.
Long, Marshall; Alley, Lewis F.; and Miller, Jack M., 3,799,019.
Miller, Joseph A., Jr., to Lilly, Eli, and Company. Analgesic compositions and methods. 3,800,041, Cl. 424-273.000.
Milnes, Peter M.; and Muellenbach, Kevin D., to Kohler Company. Breathing valve. 3,799,185, Cl. 137-102.000.
Mims, Powell O., to Tokheim Corporation. Liquid dispenser having solid state control. 3,799,310, Cl. 194-5.000.
Mincey, Everett K., to Mallinckrodt Chemical Works. Clinical competitive-binding test methods. 3,799,740, Cl. 23-230.00b.
Minear, James P. Battery charger circuit. 3,800,209, Cl. 320-25.000.
Minnesota Mining & Manufacturing Company: *See—*
Harrington, Joseph K.; and Robertson, Jerry E., 3,799,968.
Minnesota Mining and Manufacturing Company: *See—*
Anton, William J. E.; Collins, John E.; and Lind, Peter A., 3,800,185.
Burleigh, Malcolm B., 3,799,779.
Duffin, George Frank; and Hogg, James, 3,799,926.
Gavere, Harold K.; and Mix, Robert C., 3,799,470.
Oehmke, Richard W.; Ofstead, Ronald F.; and Janssen, Edward W., 3,798,837.
Minolta Camera Kabushiki Kaisha: *See—*
Umeda, Kaoru, 3,800,310.

Mischenko, Alexandr Petrovich: *See—*
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Drekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,799,889.
Miscovich, John A.; and Gilbert, John J., to Marona Corporation. Method and apparatus for excavating settled body of solids. 3,799,614, Cl. 299-17.000.
Mishcon, Lester; and Agulnek, Harry, to Singer Company, The. Stripping box actuating mechanism for circular knitting machines. 3,798,930, Cl. 66-138.000.
Misseroni, Giuseppe. Apparatus for immediate spotting of mechanical and electrical defects, in explosion engines. 3,798,964, Cl. 73-117.200.
Mitani, Toru: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; Nakashita, Mitsuo; Komatsu, Toshiaki; Izara, Akio; and Eda, Yasuko, 3,799,930.
Mitchell, Glenn A.; and Sanders, Bobby W., to United States of America, National Aeronautics and Space Administration. Airflow control system for supersonic inlets. 3,799,475, Cl. 244-53.00b.
Mitchell, Harry R.; Rice, Hal H.; and Abel, James R., to General Motors Corporation. Exhaust reactor manifold. 3,798,903, Cl. 60-282.000.
Mitchell, Jack H., Jr. Process for making peanut flakes. 3,800,056, Cl. 426-457.000.
Mitchell, John Pat. Repelling magnetic cutter teeth for dentures. 3,798,770, Cl. 32-2.000.
Mitchell, Lawrence C., to Ethyl Corporation. Ester synthesis for preparation of specific glycerides. 3,799,958, Cl. 260-410.700.
Mitchell, William S.; and James, Lloyd G., to Safeway Stores, Incorporated. Fire extinguishing apparatus and system with automatically lowering sprinkler heads. 3,799,271, Cl. 169-57.000.
Mitsubishi Petrochemical Company, Limited: *See—*
Takashi, Masanori; and Yoshiyasu, Mitsuo, 3,799,828.
Mitsui Toatsu Chemicals, Incorporated: *See—*
Omoto, Tsunehiko; Inoue, Tadashi; and Yazaki, Takanori, 3,800,029.
Miura, Isago. Apparatus of making wrapping material for annular goods. 3,799,715, Cl. 425-66.000.
Mix, Robert C.: *See—*
Gavere, Harold K.; and Mix, Robert C., 3,799,470.
Miyano, Masateru: *See—*
Marsheck, William; and Miyano, Masateru, 3,799,841.
Miyashita, Tsune: *See—*
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,800,186.
Miyauchi, Toshiyuki: *See—*
Takagi, Takeshi; Ishimaru, Wataru; and Miyauchi, Toshiyuki, 3,799,001.
Miyawaki, Katsumi: *See—*
Ishizawa, Kazutomo; Koide, Tohru; Kondo, Tamotsu; and Miyawaki, Katsumi, 3,800,160.
Miyazaki, Harunori: *See—*
Suetsugu, Yoshio; and Miyazaki, Harunori, 3,799,865.
Mizuno, Hiroshi: *See—*
Konno, Akira; and Mizuno, Hiroshi, 3,800,092.
Mizushima, Masashi: *See—*
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,800,186.
Mizuuchi, Junichi: *See—*
Shibata, Seiya; Kannari, Takehiko; and Mizuuchi, Junichi, 3,799,317.
Mlcoch, Frank C., Jr.: *See—*
Kelly, William A.; Lander, Lynn H.; and Mlcoch, Frank C., Jr., 3,799,880.
Moberg, Sigurd Manfred. Seal assembly machine. 3,798,737, Cl. 29-208.00d.
Mobil Oil Corporation: *See—*
Caldwell, Richard L., 3,800,145.
Givens, Wyatt W., 3,800,150.
Glass, John Richard, 3,798,960.
Heilweil, Israel J., 3,799,870.
Jones, John P., Jr., 3,798,969.
Nnadi, John C.; and Landis, Phillip S., 3,799,877.
Patton, Bobbie J.; Sexton, James H.; and Harrell, John W., 3,800,277.
Model, Ernst: *See—*
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, 3,799,952.
Model, Ernst; and Bindler, Jakob, to Ciba-Geigy Corporation. Composition of halogenated hydroxy-diphenyl ethers. 3,800,048, Cl. 424-304.000.
Modulus Corporation: *See—*
Mosow, Jack E., 3,799,108.
Moertel, George B., to Textron, Inc. Slider assembly for slide fastener. 3,798,715, Cl. 24-205.14k.
Moffat, Robert J.; Hunn, Bruce D.; and Galate, Joseph, to United States of America, Navy. Transpiration radiometer. 3,799,812, Cl. 136-213.000.
Mohr, Frederick H.; and Hoover, Donald R. Faller bar. 3,798,709, Cl. 19-129.00r.
Mohr, Paul, to Volkswagenwerk Aktiengesellschaft. Heating and ventilating plant for motor vehicles. 3,799,435, Cl. 237-12.30a.
Mohr, Robert G.; and Olree, Andrian R., to Steelcase Inc. Height adjusting mechanism. 3,799,486, Cl. 248-408.000.
Molex Incorporated: *See—*
Baumanis, Bruno, 3,800,110.
Molins Limited: *See—*
Fox, Austin Leslie; and Jones, William Arthur Albert, 3,799,040.
Molins Machine Company Limited: *See—*
Read, Alois Walter Harry, 3,799,444.
Molis, John P.: *See—*
Marks, Hillard W.; and Molis, John P., 3,800,230.
Molloy, Bryan B.; Fuller, Ray W.; and Hauser, Kenneth L., to Lilly, Eli, and Company. N-(β,β-difluoro,α-methylphenethyl)-formamide. 3,799,982, Cl. 260-562.00p.
Monett, Edward; and Monett, Jack L., to Roller Corporation of America. Method of manufacturing windshield wiper blades. 3,800,021, Cl. 264-177.000.
Monett, Jack L.: *See—*
Monett, Edward; and Monett, Jack L., 3,800,021.
Monroe Belgium N.V.: *See—*
Van Den Berg, J. Hans; and Van Fekelen, Alex Herman A. M., 3,798,703.
Monsanto Company: *See—*
Crutchfield, Marvin M.; and Rapko, John N., 3,799,970.
D'Amico, John Joseph, 3,799,945.
Dixon, William D.; and Becker, Maureen E., 3,799,757.
Franz, John E., 3,799,758.
Mark, Victor, 3,799,994.
Stephens, John A., 3,799,760.
Montagne, Jean Bernard, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. High-speed radial tire. 3,799,230, Cl. 152-209.000.
Montz, James R., to AMF Incorporated. Apparatus for detecting a ground connection on load side of neutral conductor. 3,800,189, Cl. 317-18.00d.
Moon, Clive D.; and Neumann, Robert F. K., to Phillips Petroleum Company. Hot-melt adhesives of polyamides containing oxime compounds or esters thereof. 3,799,908, Cl. 260-45.90r.
Moore, Alvin Edward. Light-weight, inflated-structure boat. 3,798,690, Cl. 9-6.000.
Moore, Kenneth L.: *See—*
Lally, William; Moore, Kenneth L.; Robbins, John E.; and Willbond, William F., 3,799,723.
Moos, Albert H.: *See—*
Probst, Richard O.; and Moos, Albert H., 3,799,403.
Moosavian, Seid Hossein; and Johnson, Charles Robert, to Firestone Tire & Rubber Company, The. Method and apparatus for desolventzing elastomers. 3,799,235, Cl. 159-3.000.
Morane, Bruno; Paoletti, Charles; Merrien, Louis; Maurelli, Manlo; and Sathicq, Robert, to L'Oreal. Method and apparatus for packaging products which are to be stored separately but dispensed simultaneously. 3,799,398, Cl. 222-39.000.
Morf, Victor. Process for the attachment of hour signs on time piece dials. 3,798,730, Cl. 29-177.000.
Morgan, George J., to Stauffer Chemical Company. Method for preparing sodium chloride brine. 3,800,026, Cl. 423-179.000.
Morgan, Robert D., to Carrier Corporation. Air conditioning system with provision for reheating. 3,798,920, Cl. 62-173.000.
Mori, Tetsuo; Yuda, Takeshi; and Okahashi, Keiji, to Matsushita Electric Works, Ltd. Electromagnetic relay. 3,800,250, Cl. 335-128.000.
Mori, Toshiyuki: *See—*
Fukaumi, Masaharu; and Mori, Toshiyuki, 3,799,151.
Mori, Toyoshi: *See—*
Hinachi, Matatoyo; and Mori, Toyoshi, 3,800,206.
Moriguti, Kazuo; Yokoi, Nobuyasu; and Yamaguchi, Yukio, to Hitachi, Ltd. Operating apparatus for guide vanes of hydraulic machine. 3,799,689, Cl. 415-26.000.
Morin, Robert B.; Spry, Douglas O.; Hauser, Kenneth L.; and Mueller, Richard A., to Lilly, Eli, and Company. Synthetic prostaglandins. 3,799,967, Cl. 260-468.00d.
Moriya, Takeshi: *See—*
Harada, Takeo; Moriya, Takeshi; and Wakasa, Rikichi, 3,799,770.
Moroney, Bernard M.: *See—*
Shannon, Charles G.; Moroney, Bernard M.; and Neal, Jack R., 3,798,957.
Morris, George Oswald, to Imperial Chemical Industries Limited. Recovery of hydrogen fluoride. 3,798,875, Cl. 55-22.000.
Morris, Jerome R.: *See—*
O'Keeffe, Terence W.; and Morris, Jerome R., 3,799,777.
Morris, Terence Roy; and Todd, Francis. Fishing line transfer device. 3,799,471, Cl. 242-84.10r.
Morse, Charles Ernest: *See—*
Evans, John Grover; and Morse, Charles Ernest, 3,800,098.
Morton, Herbert J.: *See—*
Gibbons, Edward J.; Morton, Herbert J.; and Busheee, Joseph J., 3,798,736.
Mosow, Jack E., to Modulus Corporation. Strain indicator and method. 3,799,108, Cl. 116-114.00r.
Moss, Ernest K., to Celotex Corporation, The. Polyisocyanurate. 3,799,896, Cl. 260-2.5aw.
Motoki, Toshitsune: *See—*
Kikuchi, Takashi; Motoki, Toshitsune; Kobayashi, Hideo; and Kamei, Toshiaki, 3,799,064.
Motorola, Inc.: *See—*
Davidsohn, Uryon S., 3,800,195.
Harlan, Alfred R.; and Petersen, Ronald E., 3,800,328.

Keiner, Frederick G., 3,800,166.
Kowalewski, Rolf E., 3,800,222.
Kuharchuk, Phillip J., 3,800,316.
Marik, Charles J.; Shlachter, Bernard; and Slavik, William H., 3,800,073.
Price, James B.; and Lesk, Israel A., 3,798,754.
Russ, Malcolm J., 3,800,177.
Moulds, John W.; and Storey, Edwin C., to General Motors Corporation. Pressure-inductance transducer. 3,800,258, Cl. 336-30.000.
Moyer, John R.; and Neipert, Marshall P., to Dow Chemical Company, The. Method of purifying NAOH solutions. 3,799,749, Cl. 23-302.000.
Muellenbach, Kevin D.: *See—*
Milnes, Peter M.; and Muellenbach, Kevin D., 3,799,185.
Mueller Corporation: *See—*
Leopold, Wilbert R., Jr., 3,799,500.
Mueller, Gilbert A., to Textron, Inc. Flange-lock slider. 3,798,714, Cl. 24-205.140.
Mueller, Richard A.: *See—*
Morin, Robert B.; Spry, Douglas O.; Hauser, Kenneth L.; and Mueller, Richard A., 3,799,967.
Muirhead, Hugh James: *See—*
Scherer, Carl A.; and Muirhead, Hugh James, 3,798,921.
Mukai, Kunio: *See—*
Fujimoto, Keimei; Mukai, Kunio; Hirano, Masachika; Tanaka, Katsutoshi; Takeda, Hisami; and Kawano, Suminori, 3,800,011.
Mullane, Joseph J.: *See—*
Selch, Howard I., 3,799,026.
Muller, Karl-Adolf: *See—*
Feinauer, Roland; and Muller, Karl-Adolf, 3,799,899.
Muller, Ludwig; and Schmitz, Hans, to Kunststoffwerk Gebruder Auger GmbH & Co. Adjustable resilient flow leveling device. 3,799,484, Cl. 248-188.200.
Multi-Contact: *See—*
Hardi-Kern, Ernst; Stager, Max Koch; and Neidecker, Rudolf, 3,800,103.
Multiblitz Dr. Ing. D. A. Mannesmann GmbH & Co. KG: *See—*
Ludloff, Wolfgang, 3,800,187.
Mumford, Michael Anthony, to Spalding Engineering Company, Limited. Apparatus for cutting lengths off a continuously moving strip of metal. 3,799,018, Cl. 83-298.000.
Mundy, Joseph L.; and Neugebauer, Constantine A., to General Electric Company. Non-volatile associative memory. 3,800,297, Cl. 340-173.0am.
Munn, John M. Wheel hub with improved adjustable eccentric mounting. 3,799,581, Cl. 280-229.000.
Munroe, Thomas. Demountable pallet and container assembly. 3,799,382, Cl. 217-12.00r.
Munson, Austin H., to Railway Engineering and Supply Company, Inc. Freight retaining bar. 3,799,070, Cl. 105-369.00b.
Munters, Carl Georg: *See—*
Sohlberg, Jan, 3,799,045.
Murakami, Hajime, to Alps Motorola, Inc. Temporary stop device for cartridge tape player-recorder. 3,800,320, Cl. 360-93.000.
Murao, Kunihiko; and Kawasaki, Tsutomu, to Teac Corporation. Variable resistor with linearly movable means for changing the resistance thereof. 3,800,266, Cl. 338-162.000.
Murata, Koichiro: *See—*
Shingai, Kiyozo; Watanabe, Tadashi; Murata, Koichiro; and Isqpaki, Osamo, 3,799,910.
Murayama, Seiichi: *See—*
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,800,186.
Murphy, Arthur J.: *See—*
Yang, Lien C.; and Murphy, Arthur J., 3,798,896.
Murphy, Robert A.: *See—*
Shaw, Harvey P.; and Murphy, Robert A., 3,799,838.
Mutschler, William E.: *See—*
Fishman, Jack B.; and Mutschler, William E., 3,800,143.
Myers, Edward J.: *See—*
Wright, Forrest S.; and Myers, Edward J., 3,798,934.
Myren, Rune L., to Svenska Dataregister AB. Method for identification of different time intervals between pulses in an electrical pulse train and a device for performing the method. 3,800,234, Cl. 328-112.000.
Nachbur, Hermann; and Maeder, Arthur, to Ciba-Geigy AG. Phosphonopropionic acid amide derivatives. 3,800,010, Cl. 260-943.000.
Nagano, Masashi. Anti-bolt rotation mechanism. 3,798,988, Cl. 74-240.000.
Nagata, Wataru; and Hayase, Yoshio, to Shionogi & Co., Ltd. 2-Phosphono-3-amino acrylic acid esters. 3,800,009, Cl. 260-941.000.
Nagel, Erich; Engelage, Guenter; Himmelsbach, Lothar; and Frankiewicz, Gerhard, to Agfa-Gevaert Aktiengesellschaft. Apparatus for severing paper sheets or the like. 3,799,022, Cl. 83-583.000.
Najvar, Daniel J., to Dow Chemical Company, The. Process for making macrospherical thermoset resin particules and product thereof. 3,799,903, Cl. 260-29.60m.
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; Nakashita, Mitsuo; Komatsu, Toshiaki; Izara, Akio; and Eda, Yasuko, to Sumitomo Chemical Co., Ltd. 1,4-Dihydro-1-substituted-4-oxo-3-quinolinecarboxylic acids and esters. 3,799,930, Cl. 260-287.00r.
Nakakita, Masaru: *See—*
Okita, Shin; and Nakakita, Masaru, 3,800,327.
Nakamichi, Niro, to Nakamichi Research Inc. Magnetic recording and reproducing apparatus. 3,800,324, Cl. 360-96.000.
Nakamichi Research Inc.: *See—*
Nakamichi, Niro, 3,800,324.
Nakamura, Kihei: *See—*
Yamazaki, Harumichi; Nakamura, Kihei; and Kondo, Yoshikazu, 3,799,531.
Nakamura, Tadao: *See—*
Kohashi, Tadao; and Nakamura, Tadao, 3,800,156.
Nakamura, Yoshinobu; Ito, Riyuzi; Aman, Shunsuko; and Kojima, Kazutaka, to Toho Chemical Industry Co., Ltd. Surface active agent and method of preparing the same. 3,799,956, Cl. 260-403.000.
Nakao, Masaru: *See—*
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,799,932.
Nakashima, Junichi: *See—*
Kiyono, Hiroshi; Nakashima, Junichi; Fujisaki, Yasuyuki; Ishigaki, Yukio; and Endo, Gen, 3,799,718.
Nakashita, Mitsuo: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; Nakashita, Mitsuo; Komatsu, Toshiaki; Izara, Akio; and Eda, Yasuko, 3,799,930.
Nakich, Robert B.: *See—*
United States of America, National Aeronautics and Space Administration, 3,800,074.
Nalco Chemical Company: *See—*
Anderson, Donald R., 3,799,902.
Nara, Kiyoshi; Ohta, Kazuhiko; Yamazaki, Osami; and Fukuda, Hideo, to Takeda Chemical Industries, Ltd. Process for producing citric acid. 3,799,980, Cl. 260-535.00p.
Nast, Roland; Oertel, Harald; and Ley, Kurt, to Bayer Aktiengesellschaft. Alkoxy substituted sterically hindered phenols. 3,799,990, Cl. 260-613.00r.
National Cash Register Company, The: *See—*
Janning, John L., 3,799,651.
National Distillers and Chemical Corporation: *See—*
Platz, Gerald M.; and Honn, James B., 3,799,042.
National Research Corporation: *See—*
Allen, Lloyd R., 3,799,830.
National Research Development Corporation: *See—*
Holloway, Maurice William; and Causton, Brian Edward, 3,799,905.
National Steel Corporation: *See—*
Blossey, Robert G.; and Ostrowski, Edward J., 3,799,410.
Natural Rubber Producers Research Association, The: *See—*
Cain, Maurice Edward; Knight, Geoffrey Thomas; Gazeley, Keith Frederick; and Lewis, Peter McHugh, 3,799,954.
Nayak, Ashok B., to Bell & Howell Company. Control mechanisms. 3,798,993, Cl. 74-435.000.
Neal, Jack R.: *See—*
Shannon, Charles G.; Moroney, Bernard M.; and Neal, Jack R., 3,798,957.
Nearn, Malcolm Richard: *See—*
Flawn, Richard Edwin; Nearn, Malcolm Richard; and Petter, Peter John, 3,800,033.
Nebesar, George C.; and Vickers, Robert V., to General Motors Corporation, mesne. Side housing for rotary piston engine and method of hardening a surface of the same. 3,799,711, Cl. 418-178.000.
Nedoh, Andrew R. Apparatus for applying, attaching and processing decorative facing to an article. 3,799,717, Cl. 425-125.000.
Neidecker, Rudolf: *See—*
Hardi-Kern, Ernst; Stager, Max Koch; and Neidecker, Rudolf, 3,800,103.
Neipert, Marshall P.: *See—*
Moyer, John R.; and Neipert, Marshall P., 3,799,749.
Neratoom, N. V.: *See—*
De Clercq, Willy J. C., 3,799,257.
Neugebauer, Constantine A.: *See—*
Mundy, Joseph L.; and Neugebauer, Constantine A., 3,800,297.
Neugebauer, Walter: *See—*
Keller, Rudolf; Hoffmann, Edmund; and Neugebauer, Walter, 3,799,756.
Neuman, Otto Walter; and Korpics, Frank Joseph, to Amsted Industries Incorporated. Dampened railway truck friction shoe shim. 3,799,067, Cl. 105-197.00d.
Neumann, James A.: *See—*
Cloots, Henry P.; and Neumann, James A., 3,799,713.
Neumann, Robert F. K.: *See—*
Moon, Clive D.; and Neumann, Robert F. K., 3,799,908.
Neuro-Data, Inc.: *See—*
John, Erwin Roy; and Laupheimer, Robert, 3,799,146.
Neville Chemical Company: *See—*
Wheeler, Harvey B.; Andrews, Anthony S.; and Schlademan, James A., 3,799,913.
New England Log Homes, Inc.: *See—*
Vizziello, Vito M.; and Bouteiller, Charles A., 3,799,224.
Newman, Neil F., to Esso Research and Engineering Company. N-methylenethiophosphate derivatives of 1,4-oxazines and 1,4-oxazines. 3,799,927, Cl. 260-247.100.
Newton, Alwin B., to Borg-Warner Corporation. Rotary compressor. 3,799,707, Cl. 418-77.000.
Newton, Alwin D., to Borg-Warner Corporation. Expandible pressure mounted semiconductor assembly. 3,800,191, Cl. 317-234.00r.
Newton, Joseph: *See—*

Czopor, Edmund J.; Newton, Joseph; Cochrane, Ralph W.; and Mazur, Stan T., 3,798,723.
NGZ Geldzahlmaschinen-Ges. mbH. & Company: *See—*
Frahm, Gerd Rainer, 3,798,873.
Nichols, Gordon W., to GAF Corporation. Web inspection apparatus. 3,800,157, Cl. 250-353.000.
Nicholson, George H., to UMF Systems Incorporated. Dual focus microfiche assembly and viewer. 3,799,664, Cl. 353-27.000.
Nicoll, Frank S., Jr. Building formed of precut, foldable site erected paper board panels. 3,798,852, Cl. 52-90.000.
Niedrach, Leonard W., to General Electric Company. Sensor and method of manufacture. 3,798,750, Cl. 29-570.000.
Nielsen, Otto Severen. Foldable table. 3,799,073, Cl. 108-113.000.
Nienburg, Hans-Juergen; Eisfeld, Wolfgang; and Wache, Harro, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Purification of terephthalic acid. 3,799,976, Cl. 260-525.000.
NIIZM: *See—*
Entshev, Ivan Dimitrov; Kinchev, Nikola Tsanov; Haralampiev, Gueorgui Alexandrov; Alexandrov, Alexander Minchev; Smilenov, Todor Ivanov; and Stojanvo, Jossif Genchev, 3,799,850.
Nikaido, Hiroo: *See—*
Takano, Tadayoshi; Kurita, Masaru; Nikaido, Hiroo; Mera, Masashi; Konishi, Nobukiyo; and Okui, Ritsuko, 3,799,923.
Nikitin, Jury Filipprovich: *See—*
Romanenko, Nikolai Trofimovich; and Nikitin, Jury Filipprovich, 3,798,894.
Niklasson, Rune John Valdemar: *See—*
Forsell, Bo Anders; and Niklasson, Rune John Valdemar, 3,800,024.
Nikles, Erwin, to Ciba-Geigy Corporation. Triazine derivatives. 3,799,925, Cl. 260-249.000.
Nikota, John P. Spring trolling or casting leader. 3,798,824, Cl. 43-43.150.
Nilson, Jay Brent; and Bailey, Earl N., to Memorex Corporation. Computer system disc drive access structure. 3,800,326, Cl. 360-98.000.
Ninomiya, Michikazu: *See—*
O'Hara, Takashi; Ninomiya, Michikazu; Yanagisawa, Isao; Ueshima, Michio; and Takata, Masahiro, 3,799,978.
Nipp, Ernst. Method of snap fitting channel members and foaming in place an interlock therebetween. 3,798,869, Cl. 52-743.000.
Nippon Electric Company, Limited: *See—*
Fujimoto, Syoji, 3,798,752.
Yoshioka, Takeshi; and Akiyama, Susumu, 3,800,265.
Nippon Hoso Kyokai: *See—*
Maruyama, Eiichi; Hirai, Tadaaki; Inao, Kiyohisa; and Goto, Naohiro, 3,800,194.
Nippon Kogaku K.K.: *See—*
Ikeda, Hideo, 3,799,653.
Nippon Kokan Kabushiki Kaisha: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Kawaguchi, Iwakichi, 3,799,814.
Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See—*
O'Hara, Takashi; Ninomiya, Michikazu; Yanagisawa, Isao; Ueshima, Michio; and Takata, Masahiro, 3,799,978.
Nippon Steel Corporation: *See—*
Seki, Masahiko, 3,799,523.
Nippondenso Kabushiki Kaisha: *See—*
Matsui, Kazuma; and Tsubouchi, Hideo, 3,799,206.
Nise, Wilfred C.: *See—*
Lowder, Dale E.; and Nise, Wilfred C., 3,798,697.
Nishizawa, Hideyuki. Pure water supply device. 3,799,344, Cl. 210-96.000.
Nissan Motor Company, Limited: *See—*
Hamasaki, Masafumi; and Haruna, Takashi, 3,799,578.
Takagi, Takeshi; Ishimaru, Wataru; and Miyauchi, Toshiyuki, 3,799,001.
Nittetsu Chemical Industrial Co., Ltd.: *See—*
Suetsugu, Yoshio; and Miyazaki, Harunori, 3,799,865.
Niwa, Tatsuo: *See—*
Yamamoto, Osamo; and Niwa, Tatsuo, 3,798,764.
Niwa, Tomizo: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Ehchi; and Nuda, Taro, 3,799,842.
Nnadi, John C.; and Landis, Phillip S., to Mobil Oil Corporation. Method of preparing hydrocarbyl-substituted heterocyclic nitrogen compounds, reaction products prepared thereby and compositions containing same. 3,799,877, Cl. 252-51.50r.
Nobuyuki, Koki: *See—*
Nozomu, Torii; and Nobuyuki, Koki, 3,799,596.
Noll, Ewald: *See—*
Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; Schreyer, Gerd; and Weigert, Wolfgang, 3,799,979.
Keller, Rudolf; Kruger, Manfred; Lussling, Theodor; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,949.
Kruger, Manfred; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,948.
Noren, Carl Anders: *See—*
Taylor, Nicholas Simon Hall; Hilden, Hakon Olavi; and Noren, Carl Anders, 3,799,615.
Norland, Kenneth: *See—*
Long, Darla; and Norland, Kenneth, 3,800,030.
North American Rockwell Corporation: *See—*
White, Stanley A., 3,800,131.
Northcutt, Michael E. Device for improving the alignment of the upper and lower sets of teeth with each other. 3,798,773, Cl. 32-14.00c.
Norton Company, mesne: *See—*
Larson, Warren L.; and Wong, James, 3,800,061.
Norton, Morrison Pai; and Timko, Lawrence Raymond, to Titan Trailer Corporation. Box hold down system. 3,799,612, Cl. 298-18.000.
Notermann, Dalles C.; Notermann, Walter F.; and Notermann, Ray M., to Lake Region Products Inc. Water ski foot binding. 3,798,691, Cl. 9-310.0aa.
Notermann, Ray M.: *See—*
Notermann, Dalles C.; Notermann, Walter F.; and Notermann, Ray M., 3,798,691.
Notermann, Walter F.: *See—*
Notermann, Dalles C.; Notermann, Walter F.; and Notermann, Ray M., 3,798,691.
Novak, David M. Wick tip holder. 3,799,731, Cl. 431-313.000.
Novak, William R.: *See—*
Peschke, Walter C.; and Novak, William R., 3,800,285.
Nozawa, Takamitsu; and Kishi, Takao, to Yoshino Kogyosho Co., Ltd. Liquid spraying device. 3,799,448, Cl. 239-321.000.
Nozomu, Torii; and Nobuyuki, Koki, to Aisin Seiki Kabushiki Kaisha. Safety apparatus for vehicle door latches. 3,799,596, Cl. 292-216.000.
NSM Apparatebau GmbH Kommanditgesellschaft: *See—*
Peschke, Walter C.; and Novak, William R., 3,800,285.
Nucleonics Development Company: *See—*
Fishman, Jack B.; and Mutschler, William E., 3,800,143.
Nuda, Taro: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Ehchi; and Nuda, Taro, 3,799,842.
Numabe, Masashi: *See—*
Suzuki, Satomi; Fujii, Osamu; Wakabayashi, Hirokazu; Kishimoto, Toshio; and Numabe, Masashi, 3,799,897.
Nutku, Ata. Toroidal chamber rotating piston machine. 3,798,897, Cl. 60-39.010.
Oakes, Eric J., to Gulf General Atomic Incorporated. Power Generating system. 3,798,909, Cl. 60-694.000.
Oakley, Roy C., Jr.: *See—*
Czech, James I.; and Oakley, Roy C., Jr., 3,798,931.
Oberg, Per Olof, to Sanera Projecting Aktiebolag. Floatable boom structure. 3,798,911, Cl. 61-1.00f.
O'Brien, Terence J., to Caelus Memorics, Inc. Disc drive for memory disc cartridge. 3,800,325, Cl. 360-98.000.
O'Brien, Tillman D., Jr.: *See—*
Shanks, Larry W.; and O'Brien, Tillman D., Jr., 3,798,676.
Ochodnicky, Samuel S.: *See—*
Shea, James J.; and Ochodnicky, Samuel S., 3,800,147.
Ochs, Eugene V., to Fluke, John, Mfg. Co., Inc. Voltage peak sampled amplitude controlled phase shift oscillator. 3,800,241, Cl. 331-45.000.
Oda Gosen Kogyo Kabushiki Kaisha: *See—*
Matsumoto, Ryosu, 3,799,422.
Oden Leather Design, Inc.: *See—*
Slaboden, Jeffrey K., 3,799,072.
Oehmke, Richard W.; Ofstead, Ronald F.; and Janssen, Edward W., to Minnesota Mining and Manufacturing Company. Bio-active silvicultural container. 3,798,837, Cl. 47-37.000.
Oertel, Harald: *See—*
Nast, Roland; Oertel, Harald; and Ley, Kurt, 3,799,990.
Office National d'Etudes et de Recherches Aerospatiales: *See—*
Daigne, Bernard M.; and Girard, Francois M., 3,800,152.
O'Flynn, J. Murray. Apparatus for testing energized and non-energized electrical circuits. 3,800,214, Cl. 324-51.000.
Ofstead, Ronald F.: *See—*
Oehmke, Richard W.; Ofstead, Ronald F.; and Janssen, Edward W., 3,798,837.
Oga, Toshisaburo; Yoshizuka, Kunio; Yoneda, Yoshiharu; Yanako, Shigehisa; Ishii, Yozo; and Watabe, Seiji, to Sumitomo Electric Industries Ltd. Method and apparatus for reeling tape. 3,799,469, Cl. 242-56.00a.
Ogasawara, Toyoji; and Yanagisawa, Hideo, to Sony Corporation. Urethane rubber composition. 3,799,904, Cl. 260-30.60r.
Ogiso, Mitsutoshi; and Takahashi, Kiyoshi, to Canon Kabushiki Kaisha. Exposure indicating device. 3,800,305, Cl. 354-60.000.
Ogura, Iwao; Onishi, Yoshihiro; and Arimoto, Akira, to Hitachi, Ltd. Holography memory with zero-order diffraction light removed. 3,800,298, Cl. 340-173.0lm.
O'Hara, Takashi; Ninomiya, Michikazu; Yanagisawa, Isao; Ueshima, Michio; and Takata, Masahiro, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Process for the preparation of unsaturated carbonyl compounds. 3,799,978, Cl. 260-533.00n.
Ohta, Kazuhiko: *See—*
Nara, Kiyoshi; Ohta, Kazuhiko; Yamazaki, Osami; and Fukuda, Hideo, 3,799,980.
Ohue, Shingo: *See—*
Ueda, Hiroyuki; Ohue, Shingo; and Sawano, Yukio, 3,799,662.
Okada, Katsushi: *See—*
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuki; and Fujii, Setsuro, 3,799,988.
Okahashi, Keiji: *See—*
Mori, Tetsuo; Yuda, Takeshi; and Okahashi, Keiji, 3,800,250.
Okcuoglu, Selahattin A.: *See—*
Davidge, Ronald V.; Davis, Clyton J.; Okcuoglu, Selahattin A.; and Schaefer, John O., 3,799,316.

O'Keeffe, Terence W.; and Morris, Jerome R., to Westinghouse Electric Corporation. Making of micro-miniature electronic components by double rejection. 3,799,777, Cl. 96-36.200.
Okita, Shin; and Nakakita, Masaru, to Sony Corporation. Magnetic recording and reproducing apparatus with erasing head and a tape guide mounted on a movable carriage. 3,800,327, Cl. 360-105.000.
Okui, Ritsuko: *See—*
Takano, Tadayoshi; Kurita, Masaru; Nikaido, Hiroo; Mera, Masashi; Konishi, Nobukiyo; and Okui, Ritsuko, 3,799,923.
Okura Yusoki Kabushiki Kaisha: *See—*
Suizu, Dairi, 3,799,377.
O'Laughlin, Joseph F. Candle mold. 3,799,492, Cl. 249-94.000.
Olin Corporation: *See—*
Adams, Pierrepont, 3,799,963.
Capuano, Italo A., 3,799,846.
Oliver, Don L., to Cities Service Oil Company. Well circulation tool. 3,799,278, Cl. 175-237.000.
Oliver, Roy N. Auxiliary locking system for motor vehicle. 3,798,936, Cl. 70-264.000.
Olivetti, Ing., C. & C., S.p.A.: *See—*
Guerrini, Gian Paolo; and Falconieri, Remo, 3,799,311.
Marini, Manlio; Maritano, Oddino; and Foa, Franco, 3,798,958.
Olree, Andrian R.: *See—*
Mohr, Robert G.; and Olree, Andrian R., 3,799,486.
Olsson, Kurt Ove, to Hasselbald, Fritz Victor. Self-developing sheet film magazine for use on a rollfilm camera. 3,800,311, Cl. 354-174.000.
Olympus Optical Co., Ltd.: *See—*
Fukaumi, Masaharu; and Mori, Toshiyuki, 3,799,151.
Omark Industries, Inc.: *See—*
Honeycutt, Don R., 3,799,032.
Omega Louis Brandt & Frere S.A.: *See—*
Sauthier, Pierre, 3,800,233.
Omelchuk, John, to MacMillan Bloedel Limited. Hot press loader apparatus and method. 3,799,366, Cl. 214-16.600.
Omori, Thomas T.: *See—*
Burtis, Wilson A.; and Omori, Thomas T., 3,799,565.
Omoto, Tsunehiko; Inoue, Tadashi; and Yazaki, Takanori, to Mitsui Toatsu Chemicals, Incorporated. Process for recovering sodium fluosilicate from wet process phosphoric acid. 3,800,029, Cl. 423-321.000.
O'Neill, Thomas J.: *See—*
Szala, Norman M.; O'Neill, Thomas J.; and Kunst, Robert J., 3,799,069.
Onishi, Yoshihiro: *See—*
Ogura, Iwao; Onishi, Yoshihiro; and Arimoto, Akira, 3,800,298.
Ono, Hisatake: *See—*
Watarai, Syu; Ono, Hisatake; Osada, Chiaki; Honjo, Satoru; and Tamai, Yasuo, 3,799,773.
Opie, William R.; and Coffin, Lamar D., to American Metal Climax, Inc. Roasting of copper sulfide concentrates combined with solid state segregation reduction to recover copper. 3,799,764, Cl. 75-72.000.
Opinel, Jacques. Folding pocket knife. 3,798,766, Cl. 30-161.000.
Opsonar Organ Corporation, mesne: *See—*
Bartok, Stephen; Klose, George J.; and Stewart, George W., 3,800,058.
Optical Coating Laboratory, Inc.: *See—*
Thelen, Alfred J.; Bergfelt, Nils H.; and Eufusia, Eugene A., 3,799,800.
Origo, Inc.: *See—*
Lundquist, Ingemar H., 3,798,982.
Ortloff, John E.: *See—*
Burkhardt, Joseph A.; Ortloff, John E.; Loth, William D.; and Hickox, Robert E., 3,798,915.
Osada, Chiaki: *See—*
Watarai, Syu; Ono, Hisatake; Osada, Chiaki; Honjo, Satoru; and Tamai, Yasuo, 3,799,773.
Osheroff, Gene W., to Fluidtech Corporation. Induction terminal unit for air-conditioning system. 3,799,246, Cl. 165-35.000.
Osiecki, Jeanne H.: *See—*
Boocock, David G. B.; Dorchai, Raphael O.; Osiecki, Jeanne H.; and Ullman, Edwin F., 3,799,942.
Oster, John, Manufacturing Co.: *See—*
Artin, Robert Lee; and Petroske, Robert Paul, 3,800,172.
Ostrowski, Edward J.: *See—*
Blossey, Robert G.; and Ostrowski, Edward J., 3,799,410.
Oswald, Joseph V. CEMF dependent regenerative braking for DC motor. 3,800,202, Cl. 318-302.000.
Oswald, Norman Dean; and Mankey, Harry S., to Standard Manufacturing Company Incorporated. Six wheel material handling vehicle. 3,799,362, Cl. 214-1.00d.
Ota, Tomio: *See—*
Kurita, Hirohisa; and Ota, Tomio, 3,798,890.
Outboard Marine Corporation: *See—*
Dahl, Binar S., 3,799,579.
Granholm, Lars E., 3,799,103.
Overman, Kenneth T.: *See—*
Anderson, Vernard C.; Cantaloupe, Francis A.; and Overman, Kenneth T., 3,799,178.
Overmeyer, James: *See—*
Ashar, Kanu G.; and Overmeyer, James, 3,800,193.
Owatonna Tool Company: *See—*
Anderson, Richard T., 3,799,687.
Owens, William R.: *See—*
Prescott, Gerald F.; Lewis, Charles T., Jr.; and Owens, William R., 3,800,001.
Owens-Corning Fiberglas Corporation: *See—*
Goerke, Ariste W., 3,799,409.
Kanner, Rowland W.; and Smith, Clifford D., 3,798,870.
Owens-Illinois, Inc.: *See—*
Crawford, James E.; and Russell, Richard H., 3,799,795.
Rathke, Philip P., 3,799,917.
Steiger, Edward L.; and Dietrich, Heinz J., 3,799,971.
Thomas, Ian M., 3,799,754.
Owles, Raymond I.: *See—*
Irish, Charles G., Jr.; Silva, Joseph W.; and Owles, Raymond I., 3,799,055.
Pace, Michael. Centering cutting apparatus. 3,799,014, Cl. 83-83.000.
Pacreau, Michel: *See—*
Flambard, Christian; Lambert, Alain; and Pacreau, Michel, 3,798,961.
Page, Charles E., to Hazeltine Corporation. Graphic arts process simulator modified for letterpress simulation. 3,800,075, Cl. 178-6.000.
Paine, David L.; Urch, Harvey M.; and Douglas, Daryl D., to Wenger Corporation. Ventilating unit for sound control room. 3,799,703, Cl. 417-312.000.
Palladino, Frank A., to Palladino, N., & Bros. Apparatus and method for browning and baking pies. 3,799,736, Cl. 432-124.000.
Palladino, N., & Bros.: *See—*
Palladino, Frank A., 3,799,736.
Palmer, David L. Squeeze grip closure and handle assembly for vacuum bottle. 3,799,408, Cl. 222-474.000.
Palmer, George W.: *See—*
Helpich, William A.; Park, Glenn S.; and Palmer, George W., 3,799,376.
Palmer Industries, Ltd.: *See—*
Palombella, Dominick P., 3,800,269.
Palmer-Shile Company: *See—*
Cassel, Harrison H., 3,799,057.
Palombella, Dominick P., to Palmer Industries, Ltd. Terminal block and connector assembly. 3,800,269, Cl. 339-198.00r.
Panther, Gyles, to Microsystems International Limited. Memory cell array with multiplexed column select lines. 3,800,299, Cl. 340-173.0ff.
Paoletti, Charles: *See—*
Morane, Bruno; Paoletti, Charles; Merrien, Louis; Maurelli, Manlo; and Sathicq, Robert, 3,799,398.
Pappo, Raphael: *See—*
Chorvat, Robert J.; and Pappo, Raphael, 3,799,931.
Papworth, Robert L. Mineral separation control system. 3,799,341, Cl. 209-172.500.
Parfet, A. James, to Cramer, Paul C., Company. Method of making a circuit board. 3,800,020, Cl. 264-104.000.
Park, Glenn S.: *See—*
Helpich, William A.; Park, Glenn S.; and Palmer, George W., 3,799,376.
Park, Jacob J. H. Rotary machines. 3,799,126, Cl. 123-8.010.
Parke, Davis & Company: *See—*
Prout, Wesley C., 3,798,680.
Parker, Derrick Douglas: *See—*
Hill, Joseph Henry; Walmsley, Robert Edwin; and Parker, Derrick Douglas, 3,799,632.
Parker, Edward H.: *See—*
Dunnavant, William R.; Harris, Edward M.; Kurz, Philip F.; Markle, Richard A.; and Parker, Edward H., 3,799,915.
Parker, Patrick N., to Atlantic Richfield Company. Well cementing. 3,799,874, Cl. 252-8.55r.
Parker-Ohio Industries, Inc.: *See—*
Cachat, John F., 3,800,115.
Parkland International Inc.: *See—*
Heath, Walter, 3,799,163.
Parsey, Michael Richard; and Campion, Alexander David, to Imperial Chemical Industries Limited. Process for producing rope structures. 3,800,019, Cl. 264-102.000.
Partch, Newell T.: *See—*
Fisher, Robert E.; and Partch, Newell T., 3,799,290.
Pasambegovic, Munir: *See—*
Hegemann, Karl-Rudolf; Finger, Gunther; and Pasambegovic, Munir, 3,799,520.
Patel, Bhopendra C., to Kendall Company, The. Inflation valve for catheter retention balloon. 3,799,171, Cl. 128-349.0bv.
Pates, Terence; and Lacy, Dennis. Container. 3,799,426, Cl. 229-44.00r.
Patterson, Arthur E., Jr.; and Barakauskas, Edward J., to Westinghouse Electric Corporation. Emergency buoyancy system. 3,799,092, Cl. 114-.50d.
Patton, Bobbie J.; Sexton, James H.; and Harrell, John W., to Mobil Oil Corporation. Method and apparatus for surface-to-downhole communication. 3,800,277, Cl. 340-18.01r.
Pausch, Josef, to General Resource Corporation. Filter cleaning apparatus. 3,798,878, Cl. 55-96.000.
Pause, Kurt. Continuous centrifuge. 3,799,353, Cl. 210-369.000.
Pavia, Leonard W. Enhancement equipment for connection to electronic musical instruments. 3,800,059, Cl. 84-1.240.
Peabody Engineering Corporation: *See—*
Arnold, Orlan M.; and Vancini, Carlo A., 3,798,880.
Arnold, Orlan M.; and Vancini, Carlo A., 3,799,508.
Peabody Galion Corporation: *See—*

Helpich, William A.; Park, Glenn S.; and Palmer, George W., 3,799,376.
Herrich, William A.; Pittenger, Francis H.; and Keller, John A., 3,799,375.
Peckhaus, Oscar: *See—*
Herzhoff, Peter; Gree, Hans; Schweicher, Wolfgang; Voss, Karl; Peckhaus, Oscar; Frenken, Hans; and Bussmann, Heinrich, 3,799,419.
Peckinpaugh, Frank Lee, to Allied Chemical Corporation. Ribbon breaking for high speed surface driven winders. 3,799,463, Cl. 242-18.100.
Pedersen, Niels P.; and Shabel, John M., to General Electric Company. Wave generation circuit in a motor control. 3,800,203, Cl. 318-345.000.
Pelta, Edmond R.; and Gold, Kenneth Stewart, to Autoscan, Inc. System for testing the ignition of an internal combustion engine. 3,798,965, Cl. 73-117.300.
Pelte, Richard: *See—*
Mayr, Helmut; Pelte, Richard; and Huber, Theodor, 3,799,661.
Pennsylvania Engineering Corporation: *See—*
Dortenzo, Alexander T., 3,799,525.
Dortenzo, Alexander T., 3,799,763.
Fisher, Howard M., 3,799,527.
Pennwalt Corporation: *See—*
Bafford, Richard Anthony, 3,800,007.
Lavachy, Ardre G.; and Caldwell, John W., 3,799,431.
Sanchez, Jose, 3,799,966.
Perelygina, Tatyana Fedorovna: *See—*
Buzhinskaya, Antonia Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Perelygina, Tatyana Fedorovna; and Bobrov, Anatoly Borisovich, 3,799,847.
Perez, John M., to Lockheed Missiles & Space Company, Inc. Xerographic reproportioning method and apparatus. 3,799,667, Cl. 355-3.000.
Perkin-Elmer Corporation, The: *See—*
Estey, Willard E., 3,798,973.
Roman, Walter A., 3,798,790.
Perkins, Gary. Device simultaneously displaying positions of both sides of an endless belt. 3,798,809, Cl. 40-43.000.
Perma Pack, Inc.: *See—*
Kott, Herbert, 3,800,207.
Perry, Cortes L.: *See—*
Rummel, John A.; and Perry, Cortes L., 3,799,149.
Peschke, Walter C.; and Novak, William R., to NSM Apparatebau GmbH Kommanditgesellschaft. Selecting and storage circuit for juke box. 3,800,285, Cl. 340-162.00r.
Peters, Hans-Dieter: *See—*
Kuhlmann-Schafer, Wilhelm H.; Hagen, Klaus; Peters, Hans-Dieter; and Wolters, Gunther, 3,800,057.
Peters, Rudolph W. Electro-surgical handle. 3,799,168, Cl. 128-303.140.
Petersen, Carl B.: *See—*
Ramsey, James W.; Schmidt, Roger N.; and Petersen, Carl B., 3,799,144.
Petersen, Donald J., to United States of America, Navy. Central igniter for rotatable combustion chamber. 3,798,900, Cl. 60-39.140.
Petersen, Ronald E.: *See—*
Harlan, Alfred R.; and Petersen, Ronald E., 3,800,328.
Peterson, Elizabeth A.: *See—*
Elmer, Richard L.; and Peterson, Elizabeth A., 3,799,798.
Peterson, M., & Sons A/S: *See—*
Witnes, Odd; and Langaard, Reidar, 3,799,837.
Petrolite Corporation: *See—*
Franse, Albert D., 3,799,855.
Franse, Albert D., 3,799,856.
Franse, Albert D., 3,799,857.
Quinlan, Patrick M., 3,799,893.
Petroske, Robert Paul: *See—*
Artin, Robert Lee; and Petroske, Robert Paul, 3,800,172.
Petrusek, Victor. Paddle mounted for reciprocating motion and ball tethered thereto. 3,799,545, Cl. 273-97.00r.
Petruzzella, Nicholas L., to Xerox Corporation. Xerographic system. 3,799,775, Cl. 96-1.500.
Petter, Peter John: *See—*
Flawn, Richard Edwin; Nearn, Malcolm Richard; and Petter, Peter John, 3,800,033.
Pfaff Industriemaschinen GmbH: *See—*
Schneider, Franz; and Wenz, Herbert, 3,799,091.
Pfizer Inc.: *See—*
Berreboom, John J.; Cameron, Donald P.; and Stephens, Charles R., Jr., 3,799,892.
Marino, Joseph J., 3,799,445.
Pharma Plastics, Incorporated: *See—*
Richards, Warren, 3,799,392.
Philipsen, Richard D.: *See—*
Master, Ralph L.; Philipsen, Richard D.; Starr, Kenneth E.; and Unkrich, Herbert C., 3,799,699.
Phillips Petroleum Company: *See—*
Blackwell, Jennings P., 3,799,454.
Cheng, Paul J., 3,799,745.
Fahey, Darryl R., 3,800,000.
Moon, Clive D.; and Neumann, Robert F. K., 3,799,908.
Rohde, Raymond, 3,799,875.
Sherk, Fred T.; and Kubicek, Donald H., 3,799,989.
Phillips, William; and Staebler, David Lloyd, to RCA Corporation. Holographic recording on photochromic lithium niobate. 3,799,642, Cl. 350-315.000.
Photo-Sonics, Inc.: *See—*
Laikin, Milton, 3,799,655.
Photocircuits Corporation: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,816.
Photon Sources, Inc.: *See—*
Dager, William A.; and Fredrick, William G., Jr., 3,799,657.
Picquendar, Jean Edgar; and Torguet, Roger, to Thomson-CSF. Electrically-controlled graphic reproduction system. 3,800,303, Cl. 95-4.50r.
Picut, Frederick R.: *See—*
Reick, Franklin G., 3,799,832.
Pierre-Louis, Jacques D.; and Sandmore, Donald K., to Western Electric Company, Incorporated. Method of tinning wire. 3,799,789, Cl. 117-4.000.
Pierron, Claude Raymond; and Zuccaro, Robert, to Les Applications Industrielles Vosgiennes Sapivog. Method of assembling extensible elements in particular through a continuous process on garment portions and articles obtained thereby. 3,798,678, Cl. 2-243.0r.
Pietro, Bruno, to Raptes Researches Applications and Trade Establishment. Electrical contact for equipment used in the electrolytical production of metals particularly copper. 3,799,861, Cl. 204-279.000.
Pietzsch, Dr. Ludwig: *See—*
Kauer, Harald, 3,799,529.
Pignatelli, Frank C. Oscillatory mirror device. 3,799,658, Cl. 350-289.000.
Pike, Walter E.: *See—*
Caras, Peter,; and Pike, Walter E., 3,799,586.
Pink, John J.; and Boldt, Melvin H., to Amana Refrigeration, Inc. Refrigerator with ice dispensing means. 3,798,923, Cl. 62-266.000.
Pinter, Andor: *See—*
Kovats, Ferenc; and Pinter, Andor, 3,798,784.
Pioneer Electronic Corporation: *See—*
Konno, Akira; and Mizuno, Hiroshi, 3,800,092.
Piret, Jean, to Automobiles Peugeot and Regie Nationale des Usines Renault. Transmission with gearbox output shaft and differential input shaft in different vertical planes. 3,799,000, Cl. 74-694.000.
Pissiotas, Georg: *See—*
Martin, Henry; Pissiotas, Georg; and Rohr, Otto, 3,800,037.
Pisstotas, Georg: *See—*
Martin, Henry; Duerr, Dieter; Hubele, Adolf; Pisstotas, Georg; Rohr, Otto; and Rufener, Jacques, 3,799,759.
Pitney-Bowes, Inc.: *See—*
Zucker, Fredric E.; Eckert, Alton B.; Hinman, Bruce E.; and Feinland, Seymour, 3,800,284.
Pittenger, Francis H.: *See—*
Herrich, William A.; Pittenger, Francis H.; and Keller, John A., 3,799,375.
Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. Fluorinated vinyl ethers and use thereof. 3,799,992, Cl. 260-614.00f.
Pitts, Robert A.: *See—*
Gleason, James M.; and Pitts, Robert A., 3,798,904.
Pizzotti, Ugo; Camosso, Domenico; and Pollastro, Giovanni, to S. K. F. Industrial Trading and Development Company B. V. Rolling bearing of small axial bulk adapted for supporting radial forces and moments. 3,799,633, Cl. 308-183.000.
Planche, Jean, to Schlumberger Technology Corporation. Well logging sonde having articulated centering and measuring shoes. 3,798,966, Cl. 73-151.000.
Plasser, Franz; and Theurer, Josef. Track tamping and leveling machine. 3,799,058, Cl. 104-7.00r.
Plastic Tubing, Inc.: *See—*
Maroschak, Ernest J., 3,799,418.
Platt International Limited: *See—*
Chisholm, Andrew Alexander, 3,799,630.
Platz, Gerald M.; and Honn, James B., to National Distillers and Chemical Corporation. Flat-bottom plastic bags and method for production thereof. 3,799,042, Cl. 93-35.50b.
Plauda, Lynn D., to Wood, Eugene R. Mechanical action paint remover. 3,798,702, Cl. 15-236.00r.
Plotscher, Hans; and Gerber, Hermann, to SAIA AG., Fabrik elektrischer apparate. Reversible synchronous motor. 3,800,175, Cl. 310-164.000.
Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
Champleboux, Jacques; and Delaux, Robert, 3,799,825.
Pobog, Mathew: *See—*
Lien, Wallace A.; and Pobog, Mathew, 3,800,104.
Poehler, Guenther: *See—*
Corr, Hubert; Friedrichsen, Wilhelm; and Poehler, Guenther, 3,799,983.
Pohl, Ulrich: *See—*
Grewer, Rudolf; and Pohl, Ulrich, 3,799,367.
Poittevin, Andre: *See—*
Rousseau, Genevieve; Allais, Andre; and Poittevin, Andre, 3,799,974.
Polaroid Corporation: *See—*
Brandt, Edison R., 3,800,312.
Fitzgerald, Maurice J., 3,799,781.

Fitzgerald, Maurice J., 3,799,782.
Hill, Ruth Linda; and Rosenoff, Alan E., 3,799,783.
Land, Edwin H., 3,800,306.
Land, Edwin H., 3,800,309.
Long, Darla; and Norland, Kenneth, 3,800,030.
Polichette, Joseph: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,802.
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,816.
Polkinghorn, Melvin W.: *See—*
Burgess, James Patton; Polkinghorn, Melvin W.; and Brzozowski, Stephen J., 3,800,267.
Pollastro, Giovanni: *See—*
Pizzotti, Ugo; Camosso, Domenico; and Pollastro, Giovanni, 3,799,633.
Pollmann, Horst: *See—*
Bosch, Berthold; Pollmann, Horst; and Schickle, Gerhard, 3,800,246.
Pollution Free Power Corporation: *See—*
Swain, Michael R., 3,799,124.
Polyakova, Viktoria Petrovna: *See—*
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Drekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,799,889.
Polysius AG: *See—*
Lutke Cossmann, Theodor, 3,799,458.
Popeil Brothers, Inc.: *See—*
Popeil, Samuel J., 3,798,700.
Popeil, Samuel J., 3,798,825.
Popeil, Samuel J., to Popeil Brothers, Inc. Molded mop head. 3,798,700, Cl. 15-228.000.
Popeil, Samuel J., to Popeil Brothers, Inc. Self threading casting bobber. 3,798,825, Cl. 43-44.900.
Popel, Gene T. Preparation of a puffed, starch containing food product. 3,800,050, Cl. 426-343.000.
Poppelsdorf, Fedor, to Union Carbide Corporation. Mono- and tris(amino-loweralkoxy)-(alkyl)-polyoxyalkylene compounds and method of preparation. 3,799,986, Cl. 260-584.00b.
Porret, Daniel; Habermeier, Juergen; and Batzer, Hans, to Ciba-Geigy AG. Adducts, containing epoxide groups, from polyepoxide compounds and binuclear N-heterocyclic compounds. 3,799,894, Cl. 260-2.0ep.
Porsche, Ferdinand Anton Ernst; Binder, Robert; and Weyersberg, Ernst Rudolf, to Dr.-Ing. h.c.F. Porsche KG. Cold starting installation for internal combustion engines. 3,799,138, Cl. 123-179.00g.
Porter, Earl C. Apparatus for protecting agricultural crops from pests. 3,799,105, Cl. 116-22.00a.
Porucznik, Paul: *See—*
Franek, Jozef Tadeusz; and Porucznik, Paul, 3,798,950.
Postal, Robert H., to American Cyanamid Company. Novel chemical lighting device. 3,800,132, Cl. 240-2.250.
Potenza, Franco. Automatic used banknotes selecting machine. 3,800,155, Cl. 250-557.000.
Potgieter, Jacobus Daniel. Starting blocks for athletets. 3,799,542, Cl. 727-59.00a.
Potts, Bobby K.: *See—*
Lomax, Harold R.; and Potts, Bobby K., 3,799,688.
Pout, Christopher Ronald: *See—*
Cardwell, Joseph Robin; and Pout, Christopher Ronald, 3,799,867.
Power Technology Corporation: *See—*
Hill, Charles C., 3,798,899.
PPG Industreis, Inc.: *See—*
Milam, Joseph E.; and Estep, Edward E., 3,799,852.
PPG Industries, Inc.: *See—*
Carlin, William Worth, 3,799,853.
Jarabek, Robert D., 3,799,854.
Milam, Joseph E., 3,799,851.
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Prab Conveyors, Inc.: *See—*
Fitzpatrick, Daniel T., 3,799,329.
Pratt, John Harry. Doppler tracker receiver. 3,800,231, Cl. 325-420.000.
Pratt, Roy E.: *See—*
Bonn, Dorrance P., Jr.; and Pratt, Roy E., 3,799,864.
Prescott, Gerald F.; Lewis, Charles T., Jr.; and Owens, William R., to Texaco Inc. Ethyl chloride pyrolysis and use of ethylene and hydrogen chloride in alkylation. 3,800,001, Cl. 260-683.530.
Preussag AG: *See—*
Kuhlmann-Schafer, Wilhelm H.; Hagen, Klaus; Peters, Hans-Dieter; and Wolters, Gunther, 3,800,057.
Priarone, Paul: *See—*
St. John Peter A.; and Priarone, Paul, 3,799,406.
Price, James B.; and Lesk, Israel A., to Motorola, Inc. Semiconductor strain gage and method of fabricating same. 3,798,754, Cl. 29-583.000.
Prillieux, Marcel; and Tirtiaux, Robert, to Esso Production Research Company, mesne. Enhancing the recovery of oil from subterranean formations. 3,799,263, Cl. 166-275.000.
Pringle, William L., to Pullman Incorporated. Railway car. 3,799,068, Cl. 105-368.00r.
Pritchard, Edgar B., to United State of America, National Aeronautics and Space Administration. Orbital and entry tracking accessory for globes. 3,798,778, Cl. 33-1.0sa.
Probst, Richard O.; and Moos, Albert H., to Ransburg Corporation. Plural component dispensing device and method. 3,799,403, Cl. 222-135.000.
Proctor & Gamble Company, The: *See—*
Gallagher, William E., 3,800,055.
Progil: *See—*
Delahaye, Jean, 3,798,898.
Proserpi, Ivan. Folding door construction. 3,799,237, Cl. 160-199.000.
Prout, Wesley C., to Parke, Davis & Company. Universal wrist system. 3,798,680, Cl. 3-12.400.
Pruvot, Francois C., to Regie Nationale des Usiness Renault. Output reversing valves with by-pass position. 3,799,033, Cl. 91-482.000.
Pugin, Andre; Burdeska, Kurt; and Model, Ernst, to Ciba-Geigy AG. Salicyloylamino-anthraquinone pigments. 3,799,952, Cl. 260-377.000.
Pulley, Arden O., to American Potato Company. Process for producing dehydrated potato products fortified with stable vitamin C. 3,800,047, Cl. 426-302.000.
Pullman Incorporated: *See—*
Pringle, William L., 3,799,068.
Szala, Norman M.; O'Neill, Thomas J.; and Kunst, Robert J., 3,799,069.
Purdom, Clyde H.; Allom, Kenneth W.; and Shackelford, Harold D., to Cleo Wrap Corporation. Packaging machine. 3,798,871, Cl. 53-59.00r.
Purtell, Rufus J., to Tri-Matic, Inc. Mushroom valve stuffer. 3,798,738, Cl. 29-213.000.
Putnam, Alvin A., to Zachry, H.B., Company. Helicopter tail rotor device. 3,799,358, Cl. 212-59.00r.
Pyrotector Europe GmbH: *See—*
Kohr, Horst, 3,799,670.
Quantum Sensing, Incorporated: *See—*
Lueck, Arthur M.; and Youch, Edward A., 3,800,162.
Quester Corporation: *See—*
Bentley, David R., 3,799,301.
Quinlan, Patrick M., to Petrolite Corporation. Methylene phosphonates of glycidyl reacted polyamines. 3,799,893, Cl. 260-2.0bd.
Quintilian, Bartholomew Frank, to Koppers Company, Inc. Precipitator plate production system with low level bundling and transport. 3,798,745, Cl. 29-464.000.
Rack, David. Process for the manufacture of a plant substrate body. 3,799,755, Cl. 71-24.000.
Rader Companies, Inc.: *See—*
Breitholtz, Claes; and Lingberg, Gunnar, 3,799,339.
Rado, Andrei Gheorghe E., to Institutul Pentra Creatie Stiuntifica Si Teknica. Two-section rubber for a vehicle with hydrodynamic or aerodynamic propulsion. 3,799,446, Cl. 239-265.190.
Radstake, Herman: *See—*
Beumer, Joseph A.; Jansen, Carl E.; and Radstake, Herman, 3,800,141.
Railway Engineering and Supply Company, Inc.: *See—*
Munson, Austin H., 3,799,070.
Rain Bird Sprinkler Mfg. Corporation: *See—*
Hart, Dennis L., 3,799,453.
Rajnoha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, to Elitex, Zavody textilniho Strojirenstvi. Self-cleaning spinning arrangement for use with textile machines. 3,798,886, Cl. 57-56.000.
Ralfs, GmbH: *See—*
Kretschman, Heinz, 3,799,326.
Rammler, Roland: *See—*
Schmalfeld, Paul; and Rammler, Roland, 3,799,747.
Ramsey, Charles W., to General Motors Corporation. Fiber optic display panel illuminator. 3,800,135, Cl. 240-8.160.
Ramsey, James W.; Schmidt, Roger N.; and Petersen, Carl B., to United States of America, Air Force. Solar heat source and receiver system. 3,799,144, Cl. 126-270.000.
Randall, Francis R., to Harsso Corporation. Valve actuator & safety hook mechanism for vertical closing tailgate. 3,799,373, Cl. 214-77.00p.
Random, George A., Jr., to Sanders Associates, Inc. Scatterplate interferometer. 3,799,673, Cl. 356-109.000.
Ranpak Corporation, mesne: *See—*
Johnson, George R., 3,799,039.
Ransburg Corporation: *See—*
Probst, Richard O.; and Moos, Albert H., 3,799,403.
Rapee, George: *See—*
Evrard, Jean Claude, 3,798,963.
Rapistan, Incorporated: *See—*
Cutler, James F.; Maxted, Wesley R.; and Soderstrom, Edward C., 3,799,319.
Sullivan, Norman M.; and Fitzgerald, Francis J., Jr., 3,799,365.
Rapko, John N.: *See—*
Crutchfield, Marvin M.; and Rapko, John N., 3,799,970.
Rapoport, Henry, to University of California, The Regents of the. Certain 6-carboxy-4-thia-1-azabicyclo[3.2.0] heptane compounds. 3,799,939, Cl. 260-306.700.
Raptes Researches Applications and Trade Establishment: *See—*
Pietro, Bruno, 3,799,861.
Rathke, Philip P., to Owens-Illinois, Inc. Vinyl polymerization by bulk method. 3,799,917, Cl. 260-92.80r.

Rathmell, Richard K. Ski boot with latchable guided heel holder. 3,798,800, Cl. 36-2.5al.
Rau G.: *See—*
Schneider, Friedrich, 3,799,432.
Ravin, Abe. Blood pressure teacher. 3,798,794, Cl. 35-17.000.
Raybon, Charles L., to Echols, Bruce E. Gas-liquid mixing apparatus. 3,799,512, Cl. 261-29.000.
Raytheon Company: *See—*
Das, Nalini R.; and Strain, Edwin H., 3,799,730.
Tancrell, Roger H.; and Meyer, Paul C., 3,800,247.
RCA Corporation: *See—*
Alphonse, Gerard Argant; and Bodeep, George Edward, 3,798,746.
Del Rio, Eddy Humberto, 3,799,539.
Farina, Patrick Louis, 3,800,178.
Gross, Josef; and Barkow, William Henry, 3,800,176.
Martinson, Lloyd William; and Smith, Richard James, 3,800,130.
Phillips, William; and Staebler, David Lloyd, 3,799,642.
Shidlovsky, Igal, 3,799,881.
Read, Alois Walter Harry, to Molins Machine Company Limited. Swarf removal. 3,799,444, Cl. 239-186.000.
Reale, Salvatore J.; Eich, Clarence C.; Van Dyke, Walter J.; Dave, Rajnikant P.; Whitney, Gilbert C.; deceased; and (by Whitney, Virginia E.; executrix), said Reale, Eich, Van Dyke, and Dave, assors. to Foster Wheeler Corporation. Device for connecting a oiler to a penthouse. 3,799,123, Cl. 122-494.000.
Reddick, Willis C., to International Telephone and Telegraph Corporation. Hands-free emergency telephone system. 3,800,089, Cl. 179-1.0hf.
Reddy, Komatireddy Narashimha, to Colt Industries Operating Corporation. Pulser rotor for ignition systems. 3,799,137, Cl. 123-149.00r.
Rederiaktiebolaget Nordstjernan: *See—*
Forsell, Bo Anders; and Niklasson, Rune John Valdemar, 3,800,024.
Redman, Howard E., to Mathewson Corporation. Machine for simultaneously sewing the opposite edges of strip material. 3,799,082, Cl. 112-3.00r.
Redman, Robert Frederick, to Rolls-Royce (1971) Limited. Cooled vane or blade for a gas turbine engine. 3,799,696, Cl. 416-97.000.
Reeber, Nicholas J., to Hazeltine Corporation. Graphic arts process simulation system. 3,800,071, Cl. 178-5.20a.
Reed, David M. Vehicle battery changing device. 3,799,063, Cl. 104-34.000.
Reed Tool Company: *See—*
Frost, Frank E., 3,799,585.
Regie Nationale des Usines Renault: *See—*
Piret, Jean, 3,799,000.
Regie Nationale des Usiness Renault: *See—*
Pruvot, Francois C., 3,799,033.
Regie Nationalees Usines Renault: *See—*
Giordano, Jean Louis; and Touchard, Jacques, 3,799,570.
Reick, Franklin G.: *See—*
Reick, Franklin G., 3,799,832.
Reick, Franklin G., 15% to Ebert, Michael, 35% to Picut, Frederick R. and 50% to Reick, Franklin G. Technique for bonding tetrafluoroethylene sheet to metal substrate. 3,799,832, Cl. 156-330.000.
Reiter, Gabriel. Dental handpiece. 3,798,777, Cl. 32-27.000.
Reitz, Johannes; Fresne, Hans-Jurgen; Bedenbender, Rainer; and Heim, Josef, to Schmidt, Karl, G.m.b.H. Radial seal for rotary engine pistons. 3,799,709, Cl. 418-91.000.
Reliance Electric Company: *See—*
Downey, Holmes A., 3,798,924.
Remington Arms Company, Inc., mesne: *See—*
Hillberg, Robert Lee, 3,798,819.
Remyet, E.P., et Cie: *See—*
Berry, Jean-Luc; and Darlaine, Edgar D., 3,799,220.
Reno, Woodrow James: *See—*
Hilliard, Lewis; and Reno, Woodrow James, 3,799,885.
Research Corporation: *See—*
Sieke, Helmut E.; and Sieke, Rainer W., 3,799,059.
Research Frontiers Incorporated: *See—*
Saxe, Robert L., 3,799,650.
Rey, Michel, to Creusot-Loire. Apparatus for rotatably supporting a workpiece during tempering. 3,799,361, Cl. 214-1.0gc.
Reynard, Remi: *See—*
Chevalier, Andre; Grolet, Pierre; and Reynard, Remi, 3,799,587.
Reynolds Metals Company: *See—*
Cudzik, Daniel F., 3,799,390.
Gvacho, Daniel S., 3,799,423.
Ribback, Erich. Machine tool for shaping articles. 3,798,945, Cl. 72-76.000.
Rice, Hal H.: *See—*
Mitchell, Harry R.; Rice, Hal H.; and Abel, James R., 3,798,903.
Rice, Martin A.: *See—*
Malizio, Andrew B.; Rice, Martin A.; and Brooks, Harry F., 3,799,767.
Richards, Elmer A., to Eaton Corporation. Transmission with resiliently loaded main shaft gears. 3,799,002, Cl. 74-745.000.
Richards, Robert W.; and Egbert, James, to La Salle Machine Tool, Inc. Mechanical transfer bar drive assembly. 3,798,981, Cl. 74-40.000.
Richards, Warren, to Pharma Plastics, Incorporated. Locking cap for a container. 3,799,392, Cl. 220-60.000.
Richardson, William D.; and Zurawski, Ronald A., to Tuthill Pump Company. Quick attachable enclosure for conduits. 3,799,207, Cl. 138-89.000.
Richmond, Wendell E.; and Meyer, Robert W., to Twin Disc Incorporated. Hydraulic control system for power transmission having a modulated friction clutch. 3,799,304, Cl. 192-3.570.
Ricoh Co., Ltd.: *See—*
Fuwa, Jyoichi, 3,800,080.
Koizumi, Yutaka, 3,800,076.
Suzuki, Shigeru, 3,799,538.
Riedel, Rudolf: *See—*
Uth, Gerhard; Riedel, Rudolf; and Kaiser, Klaus, 3,799,219.
Rieter Machine Works, Ltd.: *See—*
Mandl, Gerhard, 3,798,888.
Riethmuller, Lothar; Kieper, Hans W.; and Spreitzhofer, Ernst, to Bodenseewerk Perkin-Elmer & Co., GmbH. Circuit arrangement for base line compensation. 3,800,236, Cl. 328-162.000.
Rigel Mfg., Inc.: *See—*
Hannaman, Donald K., 3,798,844.
Riiter, Urs: *See—*
Bellati, Hans; and Riiter, Urs, 3,799,482.
Rishell, George T., to United States of America, Navy. Acoustic image conversion tube. 3,800,276, Cl. 340-5.0mp.
Rist, Michel Theophile, to Societe Anonyme Francaise du Ferodo. Free-wheel mechaiisms and free wheels incorporating such mechanisms. 3,799,306, Cl. 192-45.000.
Rizer, Brooks; and Hayes, Haskel Douglas, to Textile & Industrial Sales, Inc. Apparatus for cutting flexible material. 3,798,767, Cl. 30-206.000.
Rizzo, Rudolph R. Roadway barrier. 3,799,507, Cl. 256-64.000.
RMC Research Corporation: *See—*
Michelsen, Paul F., 3,798,795.
Robbins & Meyers, Inc.: *See—*
Hennessey, Timothy W.; Lawton, Charles A.; and Buechler, Lester W., 3,798,757.
Robbins, John E.: *See—*
Lally, William; Moore, Kenneth L.; Robbins, John E.; and Willbond, William F., 3,799,723.
Robelow, Harold H., to Marsh Stencil Machine Company, The. Hand printer. 3,799,053, Cl. 101-125.000.
Roberts, Arthur H. Process for manufacturing a rigid plastics tile with textured surface. 3,800,016, Cl. 264-45.000.
Roberts, Thomas: *See—*
Greenwood, Roger; and Roberts, Thomas, 3,799,193.
Robertshaw Controls Company: *See—*
Bauer, Frederick T.; Cairo, Anthony C.; and Holkeboer, Ronald E., 3,799,433.
Keller, Anthony T., 3,799,006.
Keller, Anthony T., 3,799,007.
Robertson, Gerald L., to Fluor Corporation. Vessel anchoring apparatus. 3,799,097, Cl. 114-206.00r.
Robertson, Jerry E.: *See—*
Harrington, Joseph K.; and Robertson, Jerry E., 3,799,968.
Robillard, Howard George; and Uhtenwoltd, Herbert Rudolph, to Cincinnati Milacron-Heald Corporation. Grinding machine with a cam-controlled dressing apparatus. 3,798,840, Cl. 51-5.000.
Robinson, Charles W.; Sims, Wilbert N.; and Archibald, William R., to Marcona Corporation. Apparatus for transporting and handling bulk material. 3,799,620, Cl. 302-15.000.
Robota, Stephen; and Lloyd, Vernon J., to Hooker Chemical Corporation. Formation of highly reactive form of phosphorus pentasulfide. 3,800,028, Cl. 423-303.000.
Robroy Industries: *See—*
Slocum, Fred H., 3,799,584.
Rock, Wilfried: *See—*
Schmidt-Burbach, Gerhard; Jung, Anton L.; Hubert, Helmut; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Strauss, Heinz, 3,798,879.
Rock-Ola Manufacturing Corporation: *See—*
Rockola, Donald C., 3,798,811.
Rockola, Donald C., to Rock-Ola Manufacturing Corporation. Program for automatic phonograph. 3,798,811, Cl. 40-77.700.
Roeder, Jean; and Cerne, Gerd, to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung. Loading and unloading equipment for aircraft. 3,799,479, Cl. 244-137.00r.
Rogers, Kenneth Arthur: *See—*
Buckman, Kenneth Ernest; and Rogers, Kenneth Arthur, 3,799,354.
Rogers, Philip Sydney; and Williamson, James. Devitrified glass with fibrous crystals in parallel relationship. 3,799,836, Cl. 161-1.000.
Rogier, Edgar R.: *See—*
MacKay, Kenneth D.; and Rogier, Edgar R., 3,799,965.
Rohde, Raymond, to Phillips Petroleum Company. Cutting oil compositions. 3,799,875, Cl. 252-48.800.
Rohland, William S.: *See—*
McNeil, William D.; and Rohland, William S., 3,800,079.
Rohm & Haas Company: *See—*
Kennedy, David C., 3,798,876.
Rohr, Otto: *See—*
Martin, Henry; Duerr, Dieter; Hubele, Adolf; Pisstotas, Georg; Rohr, Otto; and Rufener, Jacques, 3,799,759.
Martin, Henry; Pissiotas, Georg; and Rohr, Otto, 3,800,037.

Roland, George W.; Feichtner, John D.; and Gotilieb, Milton, to Westinghouse Electric Corporation. Ti_3 AsSa crystals and acousto-optical systems. 3,799,659, Cl. 350-321.000.
Rolle, Albert L., to United States of America, Navy. Portable sonar system. 3,800,273, Cl. 340-3.00r.
Roller Corporation of America: *See—*
Monett, Edward; and Monett, Jack L., 3,800,021.
Rolligon Corporation: *See—*
Holland, John G., Sr., 3,799,617.
Rollins, Richard R., to Du Pont de Nemours, E. I., and Company. Analgesic apparatus. 3,799,164, Cl. 128-206.000.
Rolls-Royce (1971) Limited: *See—*
Redman, Robert Frederick, 3,799,696.
Roman, Walter A., to Perkin-Elmer Corporation, The. Heat processor for photographic films. 3,798,790, Cl. 34-155.000.
Romanenko, Nikolai Trofimovich; and Nikitin, Jury Filipprovich. Drive, preferably for the movable member of valves. 3,798,894, Cl. 60-23.000.
Romero-Sierra, Cesru Aurelio; and Tanner, Joseph A., to Canadian Patents and Development Limited. Method of producing collagenic material for the closure of lesions. 3,799,162, Cl. 128-172.100.
Rorden, Louis H., to Develco, Inc. Three axis toroidal fluxgate type magnetic sensor. 3,800,213, Cl. 324-43.00r.
Rorer, William H., Inc.: *See—*
Douglas, George H.; Diamond, Julius; and Burns, Bernard J., 3,800,043.
Rosemount Inc.: *See—*
Carlson, John T. M.; and Lawson, Gerald P., 3,798,760.
Rosenberry, George M., Jr., to General Electric Company. Dynamoelectric machine having improved ventilation. 3,800,173, Cl. 310-59.000.
Rosenoff, Alan E.: *See—*
Hill, Ruth Linda; and Rosenoff, Alan E., 3,799,783.
Ross, Stuart T.; and Leslie, Brian R., to Crucible Inc. Method for hot working. 3,798,742, Cl. 29-423.000.
Ross, Thomas A., to Mayfran Incorporated. Bar feeder. 3,799,363, Cl. 214-1.200.
Rothman, Edward A., to United Aircraft Corporation. Composite fan blade and method of construction. 3,799,701, Cl. 416-226.000.
Rotter, Erhard F., to Arendt, Hans F. Wringer. 3,798,933, Cl. 68-248.000.
Rousseau, Genevieve; Allais, Andre; and Poittevin, Andre, to Roussel-UCLAF. Novel hydrobicyclic aromatic compounds. 3,799,974, Cl. 260-515.00r.
Roussel-UCLAF: *See—*
Rousseau, Genevieve; Allais, Andre; and Poittevin, Andre, 3,799,974.
Rowell, Ross F. Garment frame. 3,799,175, Cl. 128-476.000.
Rowen, David M., to St. Mary's Hospital. TNO Recorder apparatus for monitoring heart action. 3,799,148, Cl. 128-2.06a.
Rower, Ernst. Moldboard plow. 3,799,274, Cl. 172-759.000.
Roy, Sanat K.: *See—*
Maruscak, John; and Roy, Sanat K., 3,800,097.
Rubbermaid Commercial Products Inc.: *See—*
Brescia, Anthony J., 3,799,391.
Rubens, Louis C.; and Clarke, Donald H., to Dow Chemical Company, The. Hydroponic bed for growing plants. 3,798,836, Cl. 47-1.200.
Rucker Company, The: *See—*
Duncan, Anthony Bruce, 3,799,505.
Rudel, Harry W., to Biological Concepts, Inc. Uterine administration of eutectic solid solutions of steroid hormones in a steroidal liquid carrier. 3,800,038, Cl. 424-239.000.
Rufener, Jacques: *See—*
Martin, Henry; Duerr, Dieter; Hubele, Adolf; Pisstotas, Georg; Rohr, Otto; and Rufener, Jacques, 3,799,759.
Rummel, John A.; and Perry, Cortes L., to United States of America, National Aeronautics and Space Administration. Metabolic analyzer. 3,799,149, Cl. 128-2.070.
Rumpff, Dieter, to Krauss-Maffei Aktiengesellschaft. Device for mixing two components. 3,799,199, Cl. 137-625.400.
Runge, Wilhelm: *See—*
Dickopp, Gerhard; Berlin, Helmut Batsch; and Runge, Wilhelm, 3,800,099.
Runge, Wilhelm, to TED Bildplatten Aktiengesellschaft. Method for storing and playing back signals on a carrier. 3,800,100, Cl. 179-100.40c.
Russ, Malcolm J., to Motorola, Inc. Integrated light emitting diode display device with housing. 3,800,177, Cl. 313-108.00d.
Russell, Douglas D.; and George, Henry A., to Foxboro Company, The. Computer-directed process control system with CRT display. 3,800,288, Cl. 340-172.500.
Russell, Richard H.: *See—*
Crawford, James E.; and Russell, Richard H., 3,799,795.
Rutledge, Thomas F., to ICI America Inc. Oxidation of glycols. 3,799,977, Cl. 260-531.00r.
Rybak, Boris. Deformable electronic components and circuits. 3,800,087, Cl. 179-1.00r.
Ryburn, Kenneth D.; Mc Clone, Robert J.; and Fox, Charles E., to Honeywell Inc. Pneumatic brake system. 3,799,297, Cl. 188-170.000.
Ryng, Stanley, to Texas Instruments, Incorporated. Vapor deposition method. 3,799,792, Cl. 117-43.000.
S. K. F. Industrial Trading and Development Company B. V.: *See—*
Pizzotti, Ugo; Camosso, Domenico; and Pollastro, Giovanni, 3,799,633.
Sabatie, Michele: *See—*
Marie, Michel; Sabatie, Michele; and Label, Micheline, 3,799,385.
Sachs, Melvin H. Method of forming a block to be used in the construction of a wall. 3,800,015, Cl. 264-45.000.
Sadamatsu, Shigeru: *See—*
Tamai, Yasuo; and Sadamatsu, Shigeru, 3,799,340.
Sadwith, Howard M., to Industrial Washing Machine Corporation. Automatic case washing system. 3,799,807, Cl. 134-32.000.
Safeway Stores, Incorporated: *See—*
Mitchell, William S.; and James, Lloyd G., 3,799,271.
SAIA AG., Fabrik elektrischer apparate: *See—*
Plotscher, Hans; and Gerber, Hermann, 3,800,175.
Saines, George S.: *See—*
Lachowicz, Donald R.; Saines, George S.; Michelson, Malvin J.; and Eckert, George W., 3,799,751.
Saint-Gobain: *See—*
Charpentier, Maurice, 3,800,018.
Cheron, Jean Paul Robert, 3,799,752.
Sakakibara, Ryuki: *See—*
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuki; and Fujii, Setsuro, 3,799,988.
Sakau, Norio: *See—*
Usui, Yoshito; Shiojima, Kenji; Hatakeyama, Toshikatsu; and Sakau, Norio, 3,800,251.
Sale, Howard James; Delgado, Alberto; and Doyle, Carroll Francis, to Grace, W. R., & Co. Process for preparing silica hydrogel. 3,800,031, Cl. 423-338.000.
Salts, Thomas R., to Crowe-Gulde, Inc. Apparatus for manufacture of coated bricks. 3,799,716, Cl. 425-104.000.
Salyer, Ival O.; Bump, Donald D.; and Weesner, Willaim E., to United States of America Health Education and Welfare, mesne. Dialysis membranes and manufacture. 3,799,355, Cl. 210-500.000.
Salyer, Ivan O.; Tapp, James S.; and Weesner, William E., to United States of America Health Education and Welfare, mesne. Dialysis hollow fiber membranes and manufacture. 3,799,356, Cl. 210-500.000.
Salzdetfurth AG: *See—*
Eberle, Herbert; Meyer, Wolfgang; and Bartling, Helmut, 3,800,032.
Sampson, Ronald N.; and Chottiner, Jacob, to Westinghouse Electric Corporation. Hydrophobic mats for gas diffusion electrodes. 3,799,811, Cl. 136-120.0fc.
Samuel, Alfred F. Flying disc having impact protected electric signaling device therein. 3,798,834, Cl. 46-228.000.
Sanchez, Jose, to Pennwalt Corporation. Di(2-phenoxyethyl)peroxydicarbonate. 3,799,966, Cl. 260-463.000.
Sandefur, Herbert G. Insect exterminating drum and hanger therefor. 3,799,118, Cl. 119-106.000.
Sanders Associates, Inc.: *See—*
Gropper, John L., 3,800,283.
Johnson, Philip M.; and Dudevoir, Wilfrid G., 3,799,675.
Random, George A., Jr., 3,799,673.
Stillman, Stephen L., Jr., 3,800,271.
Sanders, Bobby W.: *See—*
Mitchell, Glenn A.; and Sanders, Bobby W., 3,799,475.
Sandiford, Burton B.: *See—*
Hashimoto, Saburo; and Sandiford, Burton B., 3,798,838.
Sandmore, Donald K.: *See—*
Pierre-Louis, Jacques D.; and Sandmore, Donald K., 3,799,789.
Sandstrom, James P., to Bissett-Berman Corporation, The. Electrolytic cell manufacture. 3,798,755, Cl. 29-592.000.
Sanera Projecting Aktiebolag: *See—*
Oberg, Per Olof, 3,798,911.
Sanford, Donald. Musical greeting card. 3,798,806, Cl. 40-28.100.
Sanymetal Products Co., Inc., The: *See—*
Dielman, Harold J., 3,799,593.
Sargent Industries of Michigan, Inc.: *See—*
Beisch, Hans R., 3,798,728.
Sarkes Tarzian, Inc.: *See—*
Badger, Joe G.; and Valdettaro, Alarico A., 3,798,978.
Sasajima, Kikuo: *See—*
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,799,932.
Sasaki, Seiya: *See—*
Tanaka, Tohachiro; Ishii, Kenichi; Sasaki, Seiya; and Shiraishi, Hiromi, 3,800,116.
Sathicq, Robert: *See—*
Morane, Bruno; Paoletti, Charles; Merrien, Louis; Maurelli, Manlo; and Sathicq, Robert, 3,799,398.
Sato, Masamichi: *See—*
Fukushima, Osammu; Matsumoto, Seiji; and Sato, Masamichi, 3,799,666.
Sato, Seiji, to Sony Corporation. Magnetic recording and/or reproducing apparatus. 3,800,314, Cl. 360-5.000.
Saunders, Brian James: *See—*
Dean, Michael Gordon Ellis; and Saunders, Brian James, 3,800,121.
Saunders, Kenneth W. Combination shoe and shoehorn. 3,798,802, Cl. 36-2.50y.
Sauthier, Pierre, to Omega Louis Brandt & Frere S.A. Adjustable frequency pulse generator. 3,800,233, Cl. 328-49.000.
Savall, Vincent; and Treille, Pierre, to Degremont Societe Generale d'Epuration & d'Assainissement. Flotation apparatus. 3,799,350, Cl. 210-221.000.

Savitsky, Evgeny Mikhailovich: *See—*
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Drekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,799,889.
Sawano, Yukio: *See—*
Ueda, Hiroyuki; Ohue, Shingo; and Sawano, Yukio, 3,799,662.
Saxe, Robert L., to Research Frontiers Incorporated. One-way mirror light valve. 3,799,650, Cl. 350-160.01r.
Scanner, Inc.: *See—*
Acker, Norbert K., 3,800,282.
Schaefer, Hans: *See—*
Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; Schreyer, Gerd; and Weigert, Wolfgang, 3,799,979.
Schaefer, John O.: *See—*
Davidge, Ronald V.; Davis, Clyton J.; Okcuoglu, Selahattin A.; and Schaefer, John O., 3,799,316.
Schaerli, Otto: *See—*
Eisele, Dieter; Weimann, Klaus; and Schaerli, Otto, 3,800,192.
Schalles, Erhard, to Werkzeugmaschinenfabrik Gildemeister & Comp. Aktiengesellschaft. Indexible tool turret assembly. 3,798,721, Cl. 29-42.000.
Scharzler, Hans-Jurgen, to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschiankter Haftung. Bi-directional deflectible control flap for airfoils. 3,799,474, Cl. 244-42.0da.
Schauenburg, Wilhelm: *See—*
Wimmer, Helmut; Feldmann, Wilhelm; Schauenburg, Wilhelm; and Heimerzheim, Reiner, 3,798,955.
Scheer, Erich, to Kundo Kieninger & Obergfell. Electronic programmer for automated equipment. 3,800,163, Cl. 307-115.000.
Scheer, Marcel: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,799,975.
Scheffer, Bela: *See—*
Lopez, Fernand Louis; Scheffer, Bela; Vulmiere, Huguette Nelly; and Vulmiere, Claude Jacques, 3,799,677.
Scheier, Donald J., to Johnson, Gordon, Company. Poultry eviscerating machine. 3,798,708, Cl. 17-52.000.
Scheitlin, George Edward; and Hardin, Leonard Jack, to Arvin Industries, Inc. Exhaust gas manifold. 3,799,196, Cl. 137-608.000.
Scherbaum, Helmut, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Assembly for securing a rail to a rail carrier. 3,799,437, Cl. 238-349.000.
Scherer, Carl A.; and Muirhead, Hugh James, to General Motors Corporation. Air conditioning system with freeze throttling valve. 3,798,921, Cl. 62-217.000.
Schickle, Gerhard: *See—*
Bosch, Berthold; Pollmann, Horst; and Schickle, Gerhard, 3,800,246.
Schlachet, Hugo: *See—*
Schwarz, Gerald L.; and Schlachet, Hugo, 3,798,881.
Schlademan, James A.: *See—*
Wheeler, Harvey B.; Andrews, Anthony S.; and Schlademan, James A., 3,799,913.
Schlager, Ludwig H. 3-Amino alkyl-4-phenyl-2(1H)-quinolone derivatives. 3,799,928, Cl. 260-268.0bq.
Schlanzky, Manfred P. H.; and Creager, John E., to General Motors Corporation. Fuel level sender for a vehicle fuel tank. 3,798,970, Cl. 73-313.000.
Schlatter, James M., to Searle, G. D., & Co. Artificially sweetened consumable products. 3,800,046, Cl. 426-168.000.
Schlegel, William L., to Komline-Sanderson Engineering Corporation. Articulated coil spring connector. 3,799,532, Cl. 276-148.000.
Schlitlin, George E.; Collins, Joseph B.; and Lambert, Michael W., to Arvin Industries, Inc. Catalytic converter. 3,799,748, Cl. 23-288.00f.
Schlumberger Technology Corporation: *See—*
Planche, Jean, 3,798,966.
Whitfill, William A., Jr.; and McNerney, Richard P., 3,800,066.
Young, David E., 3,799,192.
Schluter, Siegfried Hans-Dietmer; and Kritzler, Gerhard, to Apparatebau Rothemahle Brandt & Kritzler. Regenerative air preheater. 3,799,241, Cl. 165-4.000.
Schmalfeld, Paul; and Rammler, Roland, to Metallgesellschaft Aktiengesellschaft. Fuel burner system for a fluidized bed. 3,799,747, Cl. 23-277.00r.
Schmaltz, Leo. Hand grip clothes carrier. 3,799,416, Cl. 224-45.00t.
Schmerling, Louis, to Universal Oil Products Company. Preparation of alkenynes. 3,799,997, Cl. 260-654.00d.
Schmidt, Helmut: *See—*
Schmidt, Helmut, 3,799,037.
Schmidt, Helmut, to Schmidt, Helmut and Feitz, Edwin H. Valve attachment. 3,799,037, Cl. 92-98.00r.
Schmidt, Karl, G.m.b.H.: *See—*
Reitz, Johannes; Fresne, Hans-Jurgen; Bedenbender, Rainer; and Heim, Josef, 3,799,709.
Schmidt, Karl Otto, to Gebruder Schmidt Metallwarenfabrik O. H. G. Spring balance. 3,799,282, Cl. 177-230.000.
Schmidt, Roger N.: *See—*
Ramsey, James W.; Schmidt, Roger N.; and Petersen, Carl B., 3,799,144.
Schmidt-Burbach, Gerhard; Jung, Anton L.; Hubert, Helmut; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Strauss, Heinz, to Buderus'sche Eisenwerke. Air filter with electrostatic particle collection. 3,798,879, Cl. 55-102.000.
Schmit, Justin M.; and Cushman, Robert D., to Jeno's Inc. Standable flexible container with straw. 3,799,914, Cl. 426-85.000.
Schmitt, Clifford G., to Bicron Electronics Company. Multicoil solenoid assembly. 3,800,257, Cl. 335-259.000.
Schmitz, Hans: *See—*
Muller, Ludwig; and Schmitz, Hans, 3,799,484.
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph. Plated through hole printed circuit boards. 3,799,802, Cl. 117-212.000.
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, to Photocircuits Corporation. Metallizing insulating bases. 3,799,816, Cl. 156-3.000.
Schneider, Erich. Conveyor assembly for transporting conveyor containers along horizontal and vertical conveyor paths. 3,799,323, Cl. 198-38.000.
Schneider, Franz; and Wenz, Herbert, to Pfaff Industriemaschinen GmbH. Slide for protection of an opening in the base plate of a sewing machine. 3,799,091, Cl. 112-260.000.
Schneider, Friedrich, to Rau G. Temperature responsive valves. 3,799,432, Cl. 236-48.000.
Schnell, Hermann: *See—*
Darsow, Gerhard; and Schnell, Hermann, 3,799,944.
Schnurle, Werner, to Eisen-und Drahtwerke Erlau Aktiengesellschaft. Wear link for tire chains. 3,799,232, Cl. 152-231.000.
Schoettle, Klaus; Hack, Joachim; Loewenberg, Gustav; and Hoffmann, Werner, to Badische Anilin- und Soda-Fabrik Aktiengesellschaft. Tape recorder and magnetic tape cassette with movable tensioning and brake means. 3,800,322, Cl. 360-96.000.
Schott, Charles M., Jr., to Gloucester Engineering Co., Inc. Extrusion of plastic and the like. 3,799,510, Cl. 259-191.000.
Schottel-Werft Josef Becker KG: *See—*
Becker, Josef, 3,799,291.
Schrader, Victor H. Drive mechanism for yarn winder. 3,798,719, Cl. 28-1.700.
Schreyer, Gerd: *See—*
Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; Schreyer, Gerd; and Weigert, Wolfgang, 3,799,979.
Keller, Rudolf; Kruger, Manfred; Lussling, Theodor; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,949.
Kruger, Manfred; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,948.
Schroter, Hans O. Brake operating lever system. 3,798,995, Cl. 74-512.000.
Schubert, Ludwig, to Forst, Oswald, GmbH. Apparatus for producing grooves by means of broaching tools. 3,799,030, Cl. 90-73.000.
Schulenberg, Heinrich; and Seien, Guenter, to Gea Luftkuehlergesellschaft Happel GmbH & Co. KG. Apparatus for applying fins to stationarily held pipes without subjecting the fins to vibrations. 3,798,732, Cl. 29-202.00r.
Schulenberg, Heinrich, to Gea Luftkuehlergesellschaft Happel GmbH & Co. KG. Apparatus for applying fins to pipes with means for preventing bending of the fins during application. 3,798,733, Cl. 29-202.00r.
Schultz, Ronald B.: *See—*
Dissen, Israel J.; Schultz, Ronald B.; and Amin-Madani, Manoucher, 3,799,911.
Schulz, David Arthur; and Turner, Charles Lamar, to Granted to the United States Atomic Energy Commission under the Provisions of 42 U.S.C. 2182. Metal carbide spherules encapsulated within a pyrolytic carbon shell. 3,799,790, Cl. 117-37.00r.
Schulz, Floyd R., to Schulz, Floyd R., Associates Inc. Conveyor system and dog. 3,799,327, Cl. 198-170.000.
Schulz, Floyd R., Associates Inc.: *See—*
Schulz, Floyd R., 3,799,327.
Schulz, Helmut: *See—*
Mertens, Oswald; and Schulz, Helmut, 3,798,939.
Schuna, John E.: *See—*
Brisson, Claude F.; and Schuna, John E., 3,798,810.
Schutz, Siegismund: *See—*
Zellerhoff, Knut; Schutz, Siegismund; and Stendel, Wilhelm, 3,799,921.
Schwartz, Gerald L. Fence. 3,799,506, Cl. 256-24.000.
Schwarz, Gerald L.; and Schlachet, Hugo, to Bessam Manufacturing, Inc. Liquid sprayer. 3,798,881, Cl. 55-230.000.
Schwarzer, Michael, to Telefonbau und Normalzeit GmbH. Centrally controlled telephone system having means for sensing and evaluating changes of the states of loops. 3,800,094, Cl. 179-18.0fg.
Schwarzrock, Karl, to Dynamit Nobel Aktiengesellschaft. Seal for a horizontally disposed blow molding apparatus. 3,799,725, Cl. 425-326.00b.
Schweicher, Wolfgang: *See—*
Herzhoff, Peter; Gree, Hans; Schweicher, Wolfgang; Voss, Karl; Peckhaus, Oscar; Frenken, Hans; and Bussmann, Heinrich, 3,799,419.
Schweizer, Bottfried: *See—*
Smolka, Thomas Gordon; and Schweizer, Bottfried, 3,799,563.
Schweizer, John, to Hasler, AG. Recording head for an optical correlation velocity meter. 3,799,671, Cl. 356-28.000.
Schwemmer, Leonard J., to Lord Corporation. Articulated energy absorbing marine fender assembly. 3,798,916, Cl. 61-48.000.
SCM Corporation: *See—*
Stewart, Durwood, 3,799,315.
Scolastico, Carlo: *See—*

De Marchi, Giovanni; and Scolastico, Carlo, 3,799,955.
Scott, Charles D.; and Collins, Eddie L., to United States of America, Atomic Energy Commission. Portable dynamic multistation photometer-fluorometer. 3,800,161, Cl. 250-564.000.
Scott, Charles M., to United States of America, Health, Education and welfare. Hydraulic flexion control device. 3,799,159, Cl. 128-80.00c.
Scott, David H., mesne: *See—*
Glidden, Roger C.; and Marshall, Duane, 3,800,091.
Glidden, Roger C., 3,800,096.
Scott Paper Company: *See—*
Lamplugh, Roland J.; and Triolo, Rocco P., 3,799,898.
Searle, G. D., & Co.: *See—*
Chorvat, Robert J.; and Pappo, Raphael, 3,799,931.
Marsheck, William; and Miyano, Masateru, 3,799,841.
Mazur, Robert H., 3,799,918.
Schlatter, James M., 3,800,046.
Sears, Roebuck and Co.: *See—*
Fiffer, William L., 3,799,414.
Sedlmeier, Josef: *See—*
Felice, Klaus; Sedlmeier, Josef; Gierer, Walter; Frey, Werner; and Wiedemann, Otto, 3,799,886.
Seemauo, James M.: *See—*
Stearns, Burdett K.; Graham, David A.; Seemauo, James M.; and Zink, George, 3,799,560.
Sehnal, Frantisek: *See—*
Jarolim, Vaclav; Sehnal, Frantisek; and Sorm, Frantisek, 3,799,957.
Seien, Guenter: *See—*
Schulenberg, Heinrich; and Seien, Guenter, 3,798,732.
Seitz-Werke G.m.b.H.: *See—*
Uth, Gerhard; Riedel, Rudolf; and Kaiser, Klaus, 3,799,219.
Seki, Masahiko, to Nippon Steel Corporation. Molten metal stirring device with clamping means. 3,799,523, Cl. 266-34.00a.
Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Kiyono, Hiroshi; Nakashima, Junichi; Fujisaki, Yasuyuki; Ishigaki, Yukio; and Endo, Gen, 3,799,718.
Seko, Tsuyoshi: *See—*
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,800,186.
Selch, Howard I., 5% to Selch, James I., 5% to Mullane, Joseph J. and 10% to Copeland, Thomas D., Jr. Machine tool construction. 3,799,026, Cl. 85-33.000.
Selch, James I.: *See—*
Selch, Howard I., 3,799,026.
Sellers, John: *See—*
Wood, William; Sellers, John; Carroll, Michael; and Griffiths, Mary, 3,799,213.
Sembaev, Dauren Khamitovich: *See—*
Suvorov, Boris Viktorovich; Kagarlitsky, Alfred Davydovich; Sembaev, Dauren Khamitovich; Kolodina, Ivetta Sergeevna; and Coiko, Aleftin, 3,799,888.
Sequeira, Avilino, Jr., to Texaco Inc. Means and method for optimizing refined oil yield from a solvent refining unit. 3,799,871, Cl. 208-324.000.
Sergeev, Leonid Alexandrovich: *See—*
Buzhinskaya, Antonia Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Perelygina, Tatyana Fedorovna; and Bobrov, Anatoly Borisovich, 3,799,847.
Sernetz, Heinz; and Hirschler, Josef. Bearing arrangement. 3,799,634, Cl. 308-187.100.
Service Dynamics, Inc.: *See—*
Strauss, Robert F.; and Lawrenz, Carl F., 3,799,244.
Sexton, James H.: *See—*
Patton, Bobbie J.; Sexton, James H.; and Harrell, John W., 3,800,277.
Seybold, Rolf; Evertz, Egon; and Stadler, Siegfried. Long-arm grinding machine. 3,798,842, Cl. 51-32.000.
Sgambati, Anthony P.; Kamena, Fred; Barton, Robert L.; and Gliem, Donald J., to Wean United Inc. Extrusion presses. 3,798,953, Cl. 72-255.000.
Shabel, John M.: *See—*
Pedersen, Niels P.; and Shabel, John M., 3,800,203.
Shackelford, Harold D.: *See—*
Purdom, Clyde H.; Allom, Kenneth W.; and Shackelford, Harold D., 3,798,871.
Shadwick, Jan, to Holophane Company, Inc. Positive prismatic light shield. 3,800,138, Cl. 240-106.00r.
Shaffer, Walter M., to Towmotor Corporation. Long load-narrow aisle truck. 3,799,372, Cl. 214-75.00g.
Shakespear, Horacio, to General Motors Corporation. Vehicle body construction. 3,799,607, Cl. 296-155.000.
Shanks, Larry W.; and O'Brien, Tillman D., Jr. Protective garment. 3,798,676, Cl. 2-69.500.
Shannon, Charles G.; Moroney, Bernard M.; and Neal, Jack R., to Metric, Inc. Meter prover apparatus. 3,798,957, Cl. 73-3.000.
Shannon, Thomas D.: *See—*
Ambats, Maris; Shannon, Thomas D.; and Demaria, Walter Joseph, 3,800,085.
Shaw, Harvey P.; and Murphy, Robert A., to General Electric Company. Cleaner and primer composition for metal surfaces. 3,799,838, Cl. 161-207.000.
Shea, James J.; and Ochodnicky, Samuel S., to Gam Rad, Inc. Turbidimeter with formed flow chamber. 3,800,147, Cl. 250-564.000.
Shea, Philip J.: *See—*
Barnhart, James W.; and Shea, Philip J., 3,800,051.
Sheahan, Robert E., to J-B-T Instruments, Inc. Panel mounted bezel for electrical switches. 3,800,113, Cl. 200-295.000.
Shekel, Jacob, to Jerrold Electronics Corporation. R.F. impedance bridge for measuring reflection coefficient. 3,800,218, Cl. 324-57.00r.
Shelby William Industries, Inc.: *See—*
Steinfeld, Manfred, 3,799,611.
Shell, Melvin E. Load transferring apparatus. 3,799,370, Cl. 214-38.00c.
Shen, Yuan Shou: *See—*
Zdanuk, Edward J.; Krock, Richard H.; and Shen, Yuan Shou, 3,799,772.
Sherk, Fred T.; and Kubicek, Donald H., to Phillips Petroleum Company. Cleavage of aromatic thioether. 3,799,989, Cl. 260-609.00d.
Sheroff, Melvin S. Needle bar. 3,799,090, Cl. 112-221.000.
Sherritt Gordon Mines Limited: *See—*
Hancock, Herbert A., 3,799,808.
Sherwood, Donald W.; and Siconolfi, Carmine A., to Hooker Chemical Corporation. Phenolic based unsaturated polyester resin. 3,800,004, Cl. 260-848.000.
Sherwood, Donald W.; Tideswell, Richard B.; and Kujawa, Francis M., to Hooker Chemical Corporation. Polymerizates of hydroxyetherified phenolic resin esterified with unsaturated polycarboxylic acid and laminates therefrom. 3,800,005, Cl. 260-848.000.
Shether, Tobias H. R.; and Kelton, William J. Fork lift. 3,799,379, Cl. 214-515.000.
Shevick, Barry L., to Teletype Corporation. Adjustable sprocket assembly. 3,799,313, Cl. 197-133.00p.
Shibata, Seiya; Kannari, Takehiko; and Mizuuchi, Junichi, to Tsubakimoto Chain Co., Ltd. Article transferring apparatus. 3,799,317, Cl. 198-20.00r.
Shidlovsky, Igal, to RCA Corporation. Cathodochromic cathode ray tube and method for preparing cathodochromic sodalite for said tube. 3,799,881, Cl. 252-300.000.
Shields, J. Rodger, to Carrier Corporation. Anti-reverse rotation structure for rotary gas compressors. 3,799,692, Cl. 415-118.000.
Shimokawa, Shinichi: *See—*
Chikatsu, Tatsusuke; Yoshida, Yoshinori; Shimokawa, Shinichi; and Akimoto, Toshio, 3,800,002.
Shinada, Shinichi: *See—*
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, 3,800,186.
Shingai, Kiyozo; Watanabe, Tadashi; Murata, Koichiro; and Isqpaki, Osamo, to Kansai Paint Co., Ltd. Compositions of polyol etherified methylol acrylamide monomers. 3,799,910, Cl. 260-78.50l.
Shiojima, Kenji: *See—*
Usui, Yoshito; Shiojima, Kenji; Hatakeyama, Toshikatsu; and Sakau, Norio, 3,800,251.
Shionogi & Co., Ltd.: *See—*
Nagata, Wataru; and Hayase, Yoshio, 3,800,009.
Shiraishi, Hiromi: *See—*
Tanaka, Tohachiro; Ishii, Kenichi; Sasaki, Seiya; and Shiraishi, Hiromi, 3,800,116.
Shlachter, Bernard: *See—*
Marik, Charles J.; Shlachter, Bernard; and Slavik, William H., 3,800,073.
Shockey, William E., to Baxter Laboratories, Inc. Dispensing and spraying apparatus and method. 3,799,438, Cl. 239-8.000.
Shoichi Ohshima, to Toyota Jidosha Kogyo Kabushiki Kaisha. Governor valve assembly for an automatic transmission. 3,799,183, Cl. 137-56.000.
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Ehchi; and Nuda, Taro, to Meiji Seika Kaisha, Ltd. Process for the production of a new antibiotic SP-733 substance. 3,799,842, Cl. 195-80.00r.
Shore, Frank. Frame-selection picture frame simulator. 3,798,798, Cl. 35-53.000.
Short, Doris Marie. Sleep-inducing device. 3,799,153, Cl. 128-33.000.
Shur, Ira, to Flair Manufacturing Corporation. Fluid flow isolation/regulation valve. 3,799,499, Cl. 251-290.000.
Siconolfi, Carmine A.: *See—*
Sherwood, Donald W.; and Siconolfi, Carmine A., 3,800,004.
Sieke, Helmut E.; and Sieke, Rainer W., to Research Corporation. Packing apparatus for railroad track packing machines. 3,799,059, Cl. 104-12.000.
Sieke, Rainer W.: *See—*
Sieke, Helmut E.; and Sieke, Rainer W., 3,799,059.
Siemens Aktiengesellschaft: *See—*
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Knappe, Wolfram; and Lindner, Adolf, 3,798,990.
Weigand, Wolfgang, 3,800,199.
Siemens Electrogerate GmbH: *See—*
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Sigmund, Bereday: *See—*
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Signetics Corporation: *See—*
Camenzind, Hans R.; and Allison, David F., 3,798,753.
Silva, Joseph W.: *See—*
Irish, Charles G., Jr.; Silva, Joseph W.; and Owles, Raymond I., 3,799,055.
Silva, Melvin W. Storage unit for pickup trucks. 3,799,605, Cl. 246-23.0mc.

Simko, Gabriel, to PPG Industries, Inc. Glass destortion scanning system. 3,799,679, Cl. 356-200.000.
Simmer, Eugene B. Charcoal starter structure. 3,799,141, Cl. 126-25.00b.
Simmons, James. Knife blade switch assembly with adjustable conducting blades. 3,800,106, Cl. 200-15.000.
Simons, Leonard B. Cube shaped playing device with adjacent faces displaying adjacent countable indicia. 3,799,554, Cl. 273-146.000.
Simplex Time Recorder Co.: *See—*
Danke, Rudolph B., 3,800,301.
Sims, Wilbert N.: *See—*
Robinson, Charles W.; Sims, Wilbert N.; and Archibald, William R., 3,799,620.
Singer Company, The: *See—*
Mishcon, Lester; and Agulnek, Harry, 3,798,930.
Singer, Joseph G.: *See—*
Harris, David A.; Burbach, Henry E.; and Singer, Joseph G., 3,799,242.
Siphar S.A.: *See—*
Ferrari, Iorgio; and Casagrande, Cesare, 3,799,920.
Skeen, Lawrence; Jewell, Jack; Landis, Franklin E.; and Mc Neil, William M., to Bauer Bros, Co., The. Refiner base. 3,799,461, Cl. 241-251.000.
Skeen, Lawrence E.: *See—*
Jewell, Jack D.; and Skeen, Lawrence E., 3,799,456.
Skidmore, Richard H., to Welding Engineers, Inc. Countercurrent vapor stripping in screw devolatilizer. 3,799,234, Cl. 159-2.00e.
Skogsholm, Einar Aasen: *See—*
Graf, Carlton Eugene; and Skogsholm, Einar Aasen, 3,800,198.
Slaboden, Jeffrey K., to Oden Leather Design, Inc. Suspended wall shelving assembly. 3,799,072, Cl. 108-107.000.
Slaughter, R. Kemp. Self-locking fluid operated cylinder. 3,799,036, Cl. 92-14.000.
Slavik, William H.: *See—*
Marik, Charles J.; Shlachter, Bernard; and Slavik, William H., 3,800,073.
Slifer Manufacturing Company, Incorporated: *See—*
Conlee, George D., 3,799,184.
Slocum, Fred H., to Robroy Industries. Corrosion resistant seal for compression cuplings. 3,799,584, Cl. 285-45.000.
Small, Robert C., to General Motors Corporation. Engine cooling system radiator and fan shroud. 3,799,128, Cl. 123-41.490.
Smernoff, Ronald B., to Analytical Products, Inc. Variable computing resistor. 3,799,681, Cl. 356-223.000.
Smidth, F. L., & Co.: *See—*
Jensen, Flemming E., 3,799,735.
Smilenov, Todor Ivanov: *See—*
Entshev, Ivan Dimitrov; Kinchev, Nikola Tsanov; Haralampiev, Gueorgui Alexandrov; Alexandrov, Alexander Minchev; Smilenov, Todor Ivanov; and Stojanvo, Jossif Genchev, 3,799,850.
Smirnov, Viktor Sergeevich: *See—*
Gryaznov, Vladimir Mikhailovich; Smirnov, Viktor Sergeevich; Mischenko, Alexandr Petrovich; Drekhova, Natalia Vsevolodovna; Krivdin, Boris Petrovich; Polyakova, Viktoria Petrovna; and Savitsky, Evgeny Mikhailovich, 3,799,889.
Smith, Baynard R. Composition and method of bonding gold to a ceramic substrate and a bonded gold article. 3,799,890, Cl. 252-514.000.
Smith, Baynard R. Gold composition for bonding gold to a ceramic substrate utilizing copper oxide and cadmium oxide. 3,799,891, Cl. 252-514.000.
Smith, Charles C.: *See—*
Connors, John J.; and Smith, Charles C., 3,798,998.
Smith, Clifford D.: *See—*
Kanner, Rowland W.; and Smith, Clifford D., 3,798,870.
Smith, Clyde W., to Columbia Broadcasting System, Inc. Automatic sharpness-enhancing equipment for television picture signals. 3,800,077, Cl. 178-6.800.
Smith, Edward A.; and Day, Robert L. Frame connector structure. 3,799,685, Cl. 403-298.000.
Smith, George O., to General Motors Corporation. Procedure for charging an oleo-pneumatic shock absorber. 3,798,744, Cl. 29-436.000.
Smith, Horace L., Jr., to Smitherm Industries, Inc. Apparatus for producing soluble coffee concentrates. 3,799,049, Cl. 99-470.000.
Smith, Hubert Stacy: *See—*
Best, John S.; and Smith, Hubert Stacy, 3,798,912.
Smith International, Inc.: *See—*
Kellner, Jackson M., 3,799,277.
Smith, Joseph E., to Wolverine-Pentronix, Inc. Boat propulsion system. 3,799,102, Cl. 115-18.00r.
Smith, Leslie Harold. 1-(Phenoxy)-3-alkylamino-2-propanols and the salts thereof. 3,799,973, Cl. 260-501.170.
Smith, R. M., Inc.: *See—*
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Smith, Richard James: *See—*
Martinson, Lloyd William; and Smith, Richard James, 3,800,130.
Smith, Roderick L. Method of grinding. 3,798,846, Cl. 51-281.00r.
Smith, Stephen Clifford, to International Computers Limited. Circuits for producing controlled pulses. 3,800,167, Cl. 307-265.000.
Smith, Wade O.; and Toft, Albert R., to United States of America, National Aeronautics and Space Administration. Formation of star tracking reticles. 3,799,793, Cl. 117-45.000.
Smith, William E. Process for making diaryl methanes. 3,799,991, Cl. 260-613.00r.
Smith, William F. Adaptable gear housing for linear actuator construction. 3,798,983, Cl. 74-89.150.
Smith, William R.: *See—*
Baumann, Frederick W.; La Bahn, William C.; Mac Nary, Robert G.; and Smith, William R., 3,799,240.
Smitherm Industries, Inc.: *See—*
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Smithkline Corporation: *See—*
Craig, Paul N.; and Zirkle, Charles L., 3,800,044.
Goore, Moshe, 3,800,035.
Jen, Timothy Yu-Wen; and Weisbach, Jerry A., 3,799,922.
Loev, Bernard, 3,799,946.
Smolka, Thomas Gordon; and Schweizer, Bottfried, to Gertsch AG, mesne. Sole support apparatus. 3,799,563, Cl. 280-11.35c.
Smtih, Jack E., to International Business Machines Corporation. Platen brake and paper blousing eliminator. 3,799,314, Cl. 197-133.00r.
Smutny, Frank D.; and Hassen-Plug, Maurice M. Portable blind. 3,799,608, Cl. 297-184.000.
Snyder, Daniel J.: *See—*
Cook, Edward H., Jr.; and Snyder, Daniel J., 3,799,849.
Sobel, Jay E., to Universal Oil Products Company. Butenes isomerization, separation and alkylation. 3,800,003, Cl. 260-683.490.
Societe Alsacienne de Constructions Mecaniques de Mulhouse: *See—*
Le Chatelier, Jacques, 3,798,887.
Societe Anonyme des Anciench Etablissements Wurth, Paul: *See—*
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Societe Anonyme dite: Aquitaine-Total Organico: *See—*
Hebert, Remy, 3,799,912.
Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine: *See—*
Lucas, Georges, 3,800,159.
Societe Anonyme Francaise du Ferodo: *See—*
Rist, Michel Theophile, 3,799,306.
Societe Anonyme: Automobiles Peugeot: *See—*
Lopez, Fernand Louis; Scheffer, Bela; Vulmiere, Huguette Nelly; and Vulmiere, Claude Jacques, 3,799,677.
Societe Anonyme: Poclain: *See—*
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Societe d'Etudes de Machines Thermiques: *See—*
Kuhn, Karl Walter, 3,799,139.
Societe Industrielle Honeywell Bull: *See—*
Girard, Rene Fernand Victor; and Le Guillerm, Jacques, 3,799,804.
Societe Nationale d' Etude et de Construction de Moteurs d' Aviation: *See—*
Bouiller, Jean Georges; and Joubert, Raymond Jean Maurice, 3,799,476.
Societe Nationale Industriella Aerospatiale: *See—*
Marie, Michel; Sabatie, Michele; and Label, Micheline, 3,799,385.
Soderstrom, Edward C.: *See—*
Cutler, James F.; Maxted, Wesley R.; and Soderstrom, Edward C., 3,799,319.
Sohlberg, Jan, to Munters, Carl Georg. Method of air conditioning. 3,799,045, Cl. 98-32.000.
Soll, Wilhelm. Feeding device for a roller drier or the like. 3,799,252, Cl. 165-91.000.
Sollerud, Soren Elof Mauritz. Process of manufacturing open or closed packagings of foam plastics, preferably foam polystyrene. 3,799,820, Cl. 156-69.000.
Somers, Gerardus Henricus Johannus: *See—*
Gieles, Antonius Cornelis Maria; and Somers, Gerardus Henricus Johannus, 3,798,967.
Somip: *See—*
Huteaux, Andre, 3,799,112.
Sony Corporation: *See—*
Ogasawara, Toyoji; and Yanagisawa, Hideo, 3,799,904.
Okita, Shin; and Nakakita, Masaru, 3,800,327.
Sato, Seiji, 3,800,314.
Sorm, Frantisek: *See—*
Jarolim, Vaclav; Sehnal, Frantisek; and Sorm, Frantisek, 3,799,957.
Soss, John B.; and Stachowiak, John E., to American Aero Industries, Inc. Safety apparatus. 3,799,440, Cl. 239-120.000.
Souillard, Michel, to Compteurs Schlumberger. Method and apparatus for localizing phase-to-phase and phase-to-ground faults in power lines. 3,800,215, Cl. 324-52.000.
Sovenyhazi, Josef. Electromechanical clock. 3,798,891, Cl. 58-29.000.
S.p.A. Luigi Franchi: *See—*
Zanoni, Ernesto, 3,798,817.
S.p.A. Virginio Rimoldi & Co.: *See—*
Marforio, Nerino, 3,799,088.
Spalding Engineering Company, Limited: *See—*
Mumford, Michael Anthony, 3,799,018.
Speiser, Jeffrey M.; and Whitehouse, Harper John, to United States of America, Navy. Unidirectional surface wave transducer device. 3,800,248, Cl. 333-30.00r.
Spence, Douglas Roy: *See—*
Ingram, Brian; and Spence, Douglas Roy, 3,799,300.
Spencer, James M., Jr., to Sperry Rand Corporation. Cathode ray tube high speed electromagnetic deflection flyback circuit. 3,800,181, Cl. 315-27.0td.

Sperry Rand Corporation: *See—*
Glass, Emmett F.; and Young, Robert G., 3,798,885.
McAvoy, Dennis J., 3,799,202.
Spencer, James M., Jr., 3,800,181.
Sperry-Sun Well Surveying Company: *See—*
Lindsey, James M.; and Stell, Thomas W., 3,798,976.
Speshyock, Reuben F.: *See—*
Walti, Wilbert M.; and Speshyock, Reuben F., 3,798,828.
Spitzley, Henry A.: *See—*
Willems, Donald J.; and Spitzley, Henry A., 3,798,707.
Spreitzhofer, Ernst: *See—*
Riethmuller, Lothar; Kieper, Hans W.; and Spreitzhofer, Ernst, 3,800,236.
Spry, Douglas O.: *See—*
Morin, Robert B.; Spry, Douglas O.; Hauser, Kenneth L.; and Mueller, Richard A., 3,799,967.
SSP Industries,: *See—*
Caras, Peter,; and Pike, Walter E., 3,799,586.
St. John Peter A.; and Priarone, Paul, to Baxter Laboratories, Inc. Liquid injection apparatus for successive injection of equal metered volumes. 3,799,406, Cl. 222-309.000.
St. Mary's Hospital: *See—*
Rowen, David M., 3,799,148.
Stachowiak, John E.: *See—*
Soss, John B.; and Stachowiak, John E., 3,799,440.
Stadler, Siegfried: *See—*
Seybold, Rolf; Evertz, Egon; and Stadler, Siegfried, 3,798,842.
Staebler, David Lloyd: *See—*
Phillips, William; and Staebler, David Lloyd, 3,799,642.
Stager, Max Koch: *See—*
Hardi-Kern, Ernst; Stager, Max Koch; and Neidecker, Rudolf, 3,800,103.
Stamers, Kenneth; and Case, Derek Frank, to International Computers Limited. Methods of making a core for a magnetic recording and reproducing head with narrow track width. 3,798,758, Cl. 29-603.000.
Standard Manufacturing Company Incorporated: *See—*
Oswald, Norman Dean; and Mankey, Harry S., 3,799,362.
Standard Telephones & Cables Limited: *See—*
Meares, David John, 3,800,225.
Standum, Inc.: *See—*
Holman, Lee B., 3,799,336.
Stanislav, Krmela; and Klinecky, Ladislav, to Zbrojovka Vsetin, Narodni podnik and Vyzkumny ustav Lykovych Vlaken. Yarn feeding device for textile machines. 3,799,212, Cl. 139-122.00r.
Stankewitz, Hans-Werner, to Leitz, Ernst, G.m.b.H. Illumination equipment for microscopes. 3,799,645, Cl. 350-87.000.
Stanley Work, The: *See—*
Govang, James A., 3,799,357.
Starks, Charles M.: *See—*
Gordon, Ronnie D.; and Starks, Charles M., 3,799,999.
Starkweather, Howard W., Jr., to Du Pont de Nemours, E. I., and Company. Oriented polymer strip. 3,800,008, Cl. 260-897.00b.
Starling, Benjamin F. Structural method and apparatus. 3,798,867, Cl. 52-724.000.
Starr, Kenneth E.: *See—*
Master, Ralph L.; Philipsen, Richard D.; Starr, Kenneth E.; and Unkrich, Herbert C., 3,799,699.
Statz, Robert G. Suspension system for snow vehicle. 3,799,625, Cl. 305-24.000.
Stauff, Emile; and Collette, Hubert. Method and equipment for training personnel in the optical tracking of a moving target. 3,798,796, Cl. 35-25.000.
Stauffer Chemical Company: *See—*
Feneziani, George, 3,799,223.
Lamb, Norman C., 3,798,877.
Morgan, George J., 3,800,026.
Stauffer Chemical Company, mesne: *See—*
Lewis, Richard Newton, 3,799,962.
Stavropoulos, William S.; and Crouch, Robert D., to Dow Chemical Company, The. Determination of acid phosphatase. 3,799,843, Cl. 195-103.50r.
Ste Pernod: *See—*
Hemard, Jean, 3,799,394.
Ste. TRANSITUBE Technique: *See—*
Taupin, Andre, 3,799,404.
Stearns, Burdett K.; Graham, David A.; Seemauo, James M.; and Zink, George, to General Electric Company. Firearm chamber seal. 3,799,560, Cl. 277-212.000.
Steelcase Inc.: *See—*
Faiks, Frederick S., 3,799,638.
Mohr, Robert G.; and Olree, Andrian R., 3,799,486.
Wolters, Richard H., 3,799,485.
Steele, James A.: *See—*
Haglund, Robert J.; and Steele, James A., 3,799,034.
Steele, Joseph R., Jr. Basket ball deflector. 3,799,543, Cl. 273-1.50a.
Steiger, Edward L.; and Dietrich, Heinz J., to Owens-Illinois, Inc. N(p-n-alkanoyloxybenzylidene)-p'-aminophenyl acetate. 3,799,971, Cl. 260-479.00r.
Steinfeld, Manfred, to Shelby William Industries, Inc. Knick-down upholstered furniture. 3,799,611, Cl. 297-440.000.
Stell, Thomas W.: *See—*
Lindsey, James M.; and Stell, Thomas W., 3,798,976.
Stembridge, Harold E. Hydraulic cushion mechanism. 3,799,530, Cl. 267-130.000.
Stendel, Wilhelm: *See—*
Zellerhoff, Knut; Schutz, Siegismund; and Stendel, Wilhelm, 3,799,921.
Stephens, Charles R., Jr.: *See—*
Berreboom, John J.; Cameron, Donald P.; and Stephens, Charles R., Jr., 3,799,892.
Stephens, John A., to Monsanto Company. Method for inhibiting plant growth. 3,799,760, Cl. 71-103.000.
Stephens, John F., III: *See—*
Adolph, Robert J.; and Stephens, John F., III, 3,799,147.
Sterling Drug Inc.: *See—*
Bell, Malcolm R.; and Zalay, Andrew W., 3,799,943.
Steveling, Robert C.: *See—*
Helton, Donald C.; and Steveling, Robert C., 3,800,120.
Stevens, Peter S. Multiple hand tool. 3,798,687, Cl. 7-5.100.
Stevens, Thomas F., to Warner & Swasey Company, The, mesne. Grinding wheel truing control apparatus. 3,798,845, Cl. 51-165.870.
Stewart, Durwood, to SCM Corporation. Ribbon guide for typewriter ribbon cartridge. 3,799,315, Cl. 197-151.000.
Stewart, Felix I. Apparatus for cleaning muddy water. 3,799,349, Cl. 210-154.000.
Stewart, George W.: *See—*
Bartok, Stephen; Klose, George J.; and Stewart, George W., 3,800,058.
Stewart, James R.: *See—*
Waksman, David; and Stewart, James R., 3,799,833.
Stewart, Wilton A. Light table film or sheet spool peripheral drive. 3,798,807, Cl. 40-31.000.
Stillman, Stephen L., Jr., to Sanders Associates, Inc. Underwater signalling system. 3,800,271, Cl. 340-2.000.
Stoakes, Richard Lewis. Structural assemblies. 3,798,862, Cl. 52-397.000.
Stocker, Horst, to Masserschmitt-Bolkow-GmbH. Railway vehicle with a guide switching apparatus. 3,799,062, Cl. 104-105.000.
Stoepel, Kurt: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,799,934.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,799,936.
Stogdill, Ronald G.: *See—*
Kime, Donald L.; and Stogdill, Ronald G., 3,798,991.
Stojanvo, Jossif Genchev: *See—*
Entshev, Ivan Dimitrov; Kinchev, Nikola Tsanov; Haralampiev, Gueorgui Alexandrov; Alexandrov, Alexander Minchev; Smilenov, Todor Ivanov; and Stojanvo, Jossif Genchev, 3,799,850.
Stoltman, Donald D., to General Motors Corporation. Brake system controlled choke valve. 3,799,303, Cl. 192-3.00m.
Stop-Motion Devices Corporation: *See—*
Balgalvis, Arnis, 3,798,929.
Storey, Edwin C.: *See—*
Moulds, John W.; and Storey, Edwin C., 3,800,258.
Strain, Edwin H.: *See—*
Das, Nalini R.; and Strain, Edwin H., 3,799,730.
Strauss, Heinz: *See—*
Schmidt-Burbach, Gerhard; Jung, Anton L.; Hubert, Helmut; Lapczyna, Manfred; Ledwon, Erhard; Rock, Wilfried; and Strauss, Heinz, 3,798,879.
Strauss, Robert F.; and Lawrenz, Carl F., to Service Dynamics, Inc. Service vehicle for manhole operation. 3,799,244, Cl. 165-23.000.
Street, Eric: *See—*
Ward, James Lawrence; and Street, Eric, 3,799,457.
Street, Graham Stewart Brandon. Light-beam steering apparatus. 3,799,644, Cl. 350-7.000.
Stribling, John Brian, to Lucas Furnace Developments Limited. Furnaces for burning sewage and like residues. 3,799,074, Cl. 110-7.00r.
Strobel, Albert, to I-T-E Imperial Corporation. Force transfer means for operation of a circuit breaker including rollers on an auxiliary operator and the circuit breaker handle. 3,800,114, Cl. 200-330.000.
Stryker Corporation: *See—*
Warfield, Wayne; and Barnett, John E., 3,799,491.
Stuart, Charles E. Mandibular movement recorder. 3,798,774, Cl. 32-19.000.
Stutzke, Robert E.: *See—*
Cowley, William C.; and Stutzke, Robert E., 3,798,768.
Subramaniam, Coimbatore V. Coloring of aluminum and its alloys. 3,799,815, Cl. 148-6.270.
Sudberry, Ellis P. Overload spring. 3,799,571, Cl. 280-124.000.
Suetsugu, Yoshio; and Miyazaki, Harunori, to Nittetsu Chemical Industrial Co., Ltd. and Lummus-Japan Company, Ltd. Process for producing needle-shaped coal pitch coke. 3,799,865, Cl. 208-131.000.
Suga, Tsuneo, to Konishiroku Photo Industry Co., Ltd. Process for obtaining a high contrast silver halide photographic image. 3,799,780, Cl. 96-66.00r.
Sugimoto, Kaname, to Hayashibara Company. Process for the production of dextrins. 3,799,805, Cl. 127-38.000.
Suizu, Dairi, to Okura Yusoki Kabushiki Kaisha. Stacking crane. 3,799,377, Cl. 214-89.000.
Sullivan, Norman M.; and Fitzgerald, Francis J., Jr., to Rapistan Incorporated. Cargo handling system. 3,799,365, Cl. 214-11.00r.
Sulzberger, Johann: *See—*
Weigele, Gebhard; and Sulzberger, Johann, 3,798,695.

Sumino, Yasuhiro: *See—*
Fukuda, Hideo; Suzuki, Takashi; Akiyama, Shunichi; and Sumino, Yasuhiro, 3,799,840.
Sumitomo Chemical Co., Ltd.: *See—*
Nakagome, Takenari; Agui, Hideo; Mitani, Toru; Nakashita, Mitsuo; Komatsu, Toshiaki; Izara, Akio; and Eda, Yasuko, 3,799,930.
Sumitomo Chemical Company, Limited: *See—*
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, 3,799,932.
Sumitomo Chemical Company, Ltd.: *See—*
Fujimoto, Keimei; Mukai, Kunio; Hirano, Masachika; Tanaka, Katsutoshi; Takeda, Hisami; and Kawano, Suminori, 3,800,011.
Hashimoto, Rikichi; Kamada, Harunori; Fujimoto, Kazuo; Kanaiwa, Tsutomu; and Iwasa, Kiyoshi, 3,799,380.
Sumitomo Electric Industries Ltd.: *See—*
Oga, Toshisaburo; Yoshizuka, Kunio; Yoneda, Yoshiharu; Yanako, Shigehisa; Ishii, Yozo; and Watabe, Seiji, 3,799,469.
Sumitomo Metal Industries Limited: *See—*
Tanaka, Tohachiro; Ishii, Kenichi; Sasaki, Seiya; and Shiraishi, Hiromi, 3,800,116.
Sumner, Orbie L. Positive fluid flow indicator. 3,799,107, Cl. 116-70.000.
Suvorov, Boris Viktorovich; Kagarlitsky, Alfred Davydovich; Sembaev, Dauren Khamitovich; Kolodina, Ivetta Sergeevna; and Coiko, Aleftin. Method of preparing a catalyst of vanadlum-titanum oxides for vapor-phase oxidation and oxidizing ammonolysis of aromatc and heterocyclic compounds. 3,799,888, Cl. 252-469.000.
Suzuki, Kazunari: *See—*
Kataoka, Hirobumi; Suzuki, Kazunari; Takayama, Yoshio; and Iwata, Yoshisuke, 3,800,062.
Suzuki, Satomi; Fujii, Osamu; Wakabayashi, Hirokazu; Kishimoto, Toshio; and Numabe, Masashi, to Toyo Rubber Chemical Industrial Corporation. Process for manufacturing self-extinguishing polyurethane foams. 3,799,897, Cl. 260-2.5aj.
Suzuki, Shigeru, to Ricoh Co., Ltd. Copy sheet cassette mounting device for copying apparatus. 3,799,538, Cl. 271-162.000.
Suzuki, Takashi: *See—*
Fukuda, Hideo; Suzuki, Takashi; Akiyama, Shunichi; and Sumino, Yasuhiro, 3,799,840.
Svantesson, Sven Elis Ake, to Aktiebolaget Electrolux. Apparatus for effecting purification of liquids by flotation. 3,799,345, Cl. 210-109.000.
Svantesson, Sven Elis Ake, to Aktiebolaget Electrolux. Method of forming a solution of gas and liquid and introducing such solution into a body of liquid. 3,799,511, Cl. 261-29.000.
Svenska Cellulosa Aktiebolaget: *See—*
Wennerblom, Bengt Axel; Udden, Ruth Gunvor Anna Britt; Udden, Per Edward Carl; and Lindgren, John Ivar, 3,799,165.
Svenska Dataregister AB: *See—*
Myren, Rune L., 3,800,234.
Svensson, Hugo Ragnvald, to Abu Aktiebolag Gvangsta. Deep sea fishing reel. 3,799,472, Cl. 242-217.000.
Swain, Michael R., to Pollution Free Power Corporation. Hydrogen engine and method of fueling same. 3,799,124, Cl. 123-1.00a.
Swett, James B.: *See—*
Beck, Harold R.; and Swett, James B., 3,799,493.
Swirsky, B. D.: *See—*
United States of America, National Aeronautics and Space Administration, 3,798,741.
Swiss Aluminium Ltd.: *See—*
Bloeck, Siegfried, 3,799,389.
Swiss Aluminum Ltd.: *See—*
Brackow, Joachim, 3,798,942.
Sybron Corporation: *See—*
Lentine, Frank Nickolis; and Boggs, William Henry, 3,798,776.
Symmons, Edger B.; and Coad, George L., to Applied Radiation Corporation. Brake for rotatable shaft. 3,799,294, Cl. 188-67.000.
Syracuse University Research Corporation: *See—*
Howells, Paul W.; and Lederer, Edwin H., 3,799,293.
Sysk, Gerald R. Time lock case. 3,798,937, Cl. 70-269.000.
Systems Engineering Company: *See—*
Johnson, Albert D., 3,799,043.
Syva Corporation: *See—*
Boocock, David G. B.; Dorchai, Raphael O.; Osiecki, Jeanne H.; and Ullman, Edwin F., 3,799,942.
Szala, Norman M.; O'Neill, Thomas J.; and Kunst, Robert J., to Pullman Incorporated. Automobile wheel chock. 3,799,069, Cl. 105-368.00r.
Szegvari, Andrew. Method for reacting materials. 3,799,455, Cl. 241-27.000.
Szpur, Roman. Retention catheter. 3,799,172, Cl. 128-349.00r.
Taguchi, Tatsuya; and Konishi, Yuichiro, to Canon Kabushiki Kaisha. Electric shutter device having an exposure indicating circuit. 3,800,304, Cl. 354-52.000.
Tahmisian, Theodore N.: *See—*
Cole, William R.; Harrison, James W.; Kotula, Bruno S.; Mariich, Jovo S.; and Tahmisian, Theodore N., 3,799,029.
Taiho Pharmaceutical Company, Limited: *See—*
Hashimoto, Sadao; Okada, Katsushi; Sakakibara, Ryuki; and Fujii, Setsuro, 3,799,988.
Takagi, Takeshi; Ishimaru, Wataru; and Miyauchi, Toshiyuki, to Nissan Motor Company, Limited. Control system for an automotive automatic power transmission. 3,799,001, Cl. 74-731.000.
Takahashi, Kiyoshi: *See—*
Ogiso, Mitsutoshi; and Takahashi, Kiyoshi, 3,800,305.
Takahashi, Yukio: *See—*
Katayama, Shitomi; Horikawa, Hideichi; Takahashi, Yukio; and Masuda, Noboru, 3,800,006.
Takano, Hiroshi: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Kawaguchi, Iwakichi, 3,799,814.
Takano, Tadayoshi; Kurita, Masaru; Nikaido, Hiroo; Mera, Masashi; Konishi, Nobukiyo; and Okui, Ritsuko, to Fujisawa Pharmaceutical Co., Ltd. 3-Thiolated cephalosporin derivatives and production of same. 3,799,923, Cl. 260-243.00c.
Takashi, Masanori; and Yoshiyasu, Mitsuo, to Mitsubishi Petrochemical Company, Limited. Synthetic papers and the method of making the same. 3,799,828, Cl. 156-229.000.
Takata, Masahiro: *See—*
O'Hara, Takashi; Ninomiya, Michikazu; Yanagisawa, Isao; Ueshima, Michio; and Takata, Masahiro, 3,799,978.
Takayama, Yoshio: *See—*
Kataoka, Hirobumi; Suzuki, Kazunari; Takayama, Yoshio; and Iwata, Yoshisuke, 3,800,062.
Takeda Chemical Industries, Ltd.: *See—*
Fukuda, Hideo; Suzuki, Takashi; Akiyama, Shunichi; and Sumino, Yasuhiro, 3,799,840.
Nara, Kiyoshi; Ohta, Kazuhiko; Yamazaki, Osami; and Fukuda, Hideo, 3,799,980.
Takeda, Hisami: *See—*
Fujimoto, Keimei; Mukai, Kunio; Hirano, Masachika; Tanaka, Katsutoshi; Takeda, Hisami; and Kawano, Suminori, 3,800,011.
Takeda, Kuichi. Card-retrieving method and apparatus. 3,799,335, Cl. 209-80.500.
Takeuchi, Syozo, to Fuji Photo Film Co., Ltd. Ultrasonic delay line glass. 3,799,784, Cl. 106-53.000.
Takimoto, Masaaki; and Matsumoto, Seiji, to Xerox Corporation. Process for protecting the surface of an image. 3,799,827, Cl. 156-219.000.
Talty, Robert D.; and Arnold, Lionel C., to Tee-Pak, Inc. Method for splicing collagen casing. 3,799,823, Cl. 156-86.000.
Tamai, Yasuo: *See—*
Watarai, Syu; Ono, Hisatake; Osada, Chiaki; Honjo, Satoru; and Tamai, Yasuo, 3,799,773.
Tamai, Yasuo; and Sadamatsu, Shigeru, to Fuji Photo Film Co., Ltd. Refining photoconductive particle. 3,799,340, Cl. 209-127.00r.
Tamm, Walther Johann. Method for air moistening. 3,799,517, Cl. 261-128.000.
Tanaka, Katsutoshi: *See—*
Fujimoto, Keimei; Mukai, Kunio; Hirano, Masachika; Tanaka, Katsutoshi; Takeda, Hisami; and Kawano, Suminori, 3,800,011.
Tanaka, Kazuo: *See—*
Komatsu, Youji; Kamita, Tohru; and Tanaka, Kazuo, 3,799,878.
Tanaka, Mineya: *See—*
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Tanaka, Shinichi: *See—*
Matsumoto, Seiji; Tezuka, Shigeru; and Tanaka, Shinichi, 3,800,153.
Tanaka, Shoichi. Process for the manufacture of a highly resilient and pliant expandable band. 3,798,729, Cl. 29-160.600.
Tanaka, Susumu. Method and apparatus for forming a uniform surface potential on photosensitive member. 3,800,154, Cl. 250-326.000.
Tanaka, Tohachiro; Ishii, Kenichi; Sasaki, Seiya; and Shiraishi, Hiromi, to Sumitomo Metal Industries Limited and Construction Company Limited. Apparatus for automatically welding pipe joints for cylindrical members such as steel pipe piles. 3,800,116, Cl.219-60.00a.
Tancrell, Roger H.; and Meyer, Paul C., to Raytheon Company. Surface wave structure. 3,800,247, Cl. 333-50.00r.
Taniyama, Mitsumasa, to Goal Lock Company. Latch lock. 3,799,591, Cl. 292-71.000.
Tanner, Herbert: *See—*
Keller, Rudolf; Kruger, Manfred; Lussling, Theodor; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,949.
Kruger, Manfred; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,948.
Tanner, Joseph A.: *See—*
Romero-Sierra, Cesru Aurelio; and Tanner, Joseph A., 3,799,162.
Tanner, Theodore F., to General Portland Cement Co. Colored cement. 3,799,785, Cl. 106-101.000.
Tansky, John L.: *See—*
Bruckner, Richard; and Tansky, John L., 3,800,268.
Tapp, James S.: *See—*
Salyer, Ivan O.; Tapp, James S.; and Weesner, William E., 3,799,356.
Tappan Company, The: *See—*
Connors, John J.; and Smith, Charles C., 3,798,998.
Tarshis, Lemuel A.; and Buchanan, Edward R., to General Electric Company. Method of making monocarbide fiber-reinforced cobalt-base superalloy composite eutectic castings. 3,799,768, Cl. 75-171.000.
Tarshis, Lemuel A.; and Buchanan, Edward R., to General Electric Company. Method of making monocarbide fiber-reinforced nickel-base superalloy composite eutectic castings. 3,799,769, Cl. 75-171.000.
Tate, Harry R. Torque applying and torque limiting tool. 3,799,307, Cl. 192-956.00f.
Taube, Otto H.: *See—*
Irwin, Waverly G.; and Taube, Otto H., 3,798,701.

Taupin, Andre, to Ste. TRANSITUBE Technique. Device for feeding particulate products such as powdered or granular materials from a container. 3,799,404, Cl. 222-168.000.
Tausch, Gilbert H., to Camco Incorporated. Subsurface well safety valve. 3,799,258, Cl. 166-72.000.
Taylor, David G.: *See—*
Beamish, Bernard D.; and Taylor, David G., 3,799,087.
Taylor, Gordon Lee: *See—*
Taylor, Hiram Rex; and Taylor, Gordon Lee, 3,799,098.
Taylor, Hiram Rex; and Taylor, Gordon Lee. Combination boat anchor and fender. 3,799,098, Cl. 114-206.00r.
Taylor, Nicholas Simon Hall; Hilden, Hakon Olavi; and Noren, Carl Anders, to Atlas Copo Aktiebolag. Tunneling machine having generator means for liquid jets carried on cutterhead. 3,799,615, Cl. 299-59.000.
Taylor, Robert S., to Hexcel Corporation. Method of curing epoxy resins using N-aminoalkylphthalamides. 3,799,909, Cl. 260-47.0en.
Teac Corporation: *See—*
Murao, Kunihiko; and Kawasaki, Tsutomu, 3,800,266.
Ted Bildplatten Aktiengesellschaft: *See—*
Dickopp, Gerhard; Berlin, Helmut Batsch; and Runge, Wilhelm, 3,800,099.
Runge, Wilhelm, 3,800,100.
Tee-Pak, Inc.: *See—*
Talty, Robert D.; and Arnold, Lionel C., 3,799,823.
Teleflex Limited: *See—*
Wilson, Anthony Ian, 3,798,992.
Telefonbau und Normalzeit GmbH: *See—*
Schwarzer, Michael, 3,800,094.
Telefunken Patenverwertungsgesellschaft m.b.H.: *See—*
Bosch, Berthold; Pollmann, Horst; and Schickle, Gerhard, 3,800,246.
Telesco Brophey Limited: *See—*
Weber, Heinz, 3,799,180.
Teletype Corporation: *See—*
Derenski, David J.; and Wiater, Kenneth W., 3,800,069.
Shevick, Barry L., 3,799,313.
Teltronic Systems, Inc.: *See—*
Mead, Hansel B., 3,800,223.
Tennis, Francis H., to Hydraulic Industries, Inc. Power assisted brake control device. 3,798,905, Cl. 60-555.000.
Terabayashi, Takeshi: *See—*
Inagami, Kaoru; Kamada, Hidemoto; Ino, Kazuo; Terabayashi, Takeshi; Iio, Hiroki; and Yamamura, Hirosi, 3,800,052.
Terry, Stephen P.: *See—*
Barre, Sheridan F.; Abbott, Terry C., Jr.; and Terry, Stephen P., 3,799,663.
Terzian, Rouben T., to Glass, Marvin, & Associates. Toy vehicle and associated conditioning means therefor. 3,798,832, Cl. 46-206.000.
Tewes, Alvin C.; and Tewes, Fred A. Quick change filtering machine. 3,799,351, Cl. 210-232.000.
Tewes, Fred A.: *See—*
Tewes, Alvin C.; and Tewes, Fred A., 3,799,351.
Texaco Inc.: *See—*
Bonn, Dorrance P., Jr.; and Pratt, Roy E., 3,799,864.
Cardenas, Ricardo L.; Carlin, Joseph T.; and Flournoy, Kenoth H., 3,799,264.
Hughes, James W., 3,799,797.
Kuntschik, Lawrence F.; and Edwards, Robert S., 3,799,984.
Lachowicz, Donald R.; Saines, George S.; Michelson, Malvin J.; and Eckert, George W., 3,799,751.
Prescott, Gerald F.; Lewis, Charles T., Jr.; and Owens, William R., 3,800,001.
Sequeira, Avilino, Jr., 3,799,871.
White, James A.; and Chesluk, Ralph P., 3,799,876.
Texas Instruments Incorporated: *See—*
Callahan, Michael James, Jr., 3,800,239.
Kraus, Herbert; and Breazeale, Billy H., 3,799,803.
Ryng, Stanley, 3,799,792.
Wrobel, Joseph S.; and Bate, Robert Thomas, 3,800,243.
Textile & Industrial Sales, Inc.: *See—*
Rizer, Brooks; and Hayes, Haskel Douglas, 3,798,767.
Textron Inc.: *See—*
Broekhuizen, Willem; and Covington, Cecil E., 3,799,700.
Moertel, George B., 3,798,715.
Mueller, Gilbert A., 3,798,714.
Tezuka, Shigeru: *See—*
Matsumoto, Seiji; Tezuka, Shigeru; and Tanaka, Shinichi, 3,800,153.
Thamasett, Eberhard, to Wieland-Werke AG. Device for the conical tapering of elongated workpieces having a circular cross section. 3,798,946, Cl. 72-84.000.
Thelen, Alfred J.; Bergfelt, Nils H.; and Eufusia, Eugene A., to Optical Coating Laboratory, Inc. Coating method utilizing two coating materials. 3,799,800, Cl. 117-106.00r.
Thermal Science Corporation: *See—*
Wenig, Norman B., 3,799,248.
Therond, Jean-Francois; Mermet, Jean; Barret, Jean-Pierre; and Cretin, Jacques, to Institut Francais du Petrole des Carburants et Lubrifiants. Automatic electronic device of universal use. 3,800,126, Cl. 235-150.500.
Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef, 3,799,058.
Thiokol Chemical Corporation: *See—*
Elmer, Richard L.; and Peterson, Elizabeth A., 3,799,798.
McCullough, Edward E.; and Desjardins, Stanley P., 3,799,637.
Thoma, Josef, to Hellige, Fritz, & Co., G.m.b.H. Automatic apparatus for counting suspended particles in liquids. 3,800,220, Cl. 324-71.0cp.
Thomas, Gertrude L. Processing apparatus with precisely controlled agitation. 3,799,179, Cl. 134-95.000.
Thomas, Ian M., to Owens-Illinois, Inc. Method for producing glass precursor compositions and glass compositions therefrom. 3,799,754, Cl. 65-134.000.
Thomas, John H.: *See—*
Harris, Norman H.; Thomas, John H.; Isaak, Harlan R.; and Kanz, John W., 3,798,762.
Thompson, Herbert L. Auto-anti-theft system. 3,800,279, Cl. 340-65.000.
Thompson, Maurice J. Bumper system for automotive vehicles. 3,799,597, Cl. 293-86.000.
Thompson, McKinley, to Meadowbrook Manufacturing Corporation. Sectional toboggan. 3,799,566, Cl. 280-18.000.
Thompson, Stanley P. Flighting for dehydrator drum and method. 3,798,789, Cl. 34-108.000.
Thomson, Wade D. Floating prestressed concrete wharf. 3,799,093, Cl. 114-.50f.
Thomson-CSF: *See—*
Carre, Roland; and Constant, Marcel, 3,800,235.
Francois, Peynaud, 3,800,274.
Picquendar, Jean Edgar; and Torguet, Roger, 3,800,303.
Torguet, Roger, 3,799,652.
Thornley, Derek, to Lucas, Joseph, (Electrical) Limited. Rotary switch assembly with conductive elastomeric medium bridging fixed contacts. 3,800,105, Cl. 200-11.00c.
Thornton, Alfred K.: *See—*
Arino, Hirofumi; Kramer, Henry H.; McGovern, James J.; and Thornton, Alfred K., 3,799,883.
Thorpe, Donald H.; and Hopkins, George C., to Hooker Chemical Corporation. Process for the preparation of nitrilotriacetamides. 3,799,981, Cl. 260-561.00a.
Thyssen-Niederrhein AG: *See—*
Grewer, Rudolf; and Pohl, Ulrich, 3,799,367.
Tickell, Arthur J., Sr. Oil burner. 3,799,733, Cl. 431-350.000.
Tidd, Donald M., 20% to Lee, Raymond, Organization, Inc., The. Sluice pack. 3,799,415, Cl. 224-25.00a.
Tideswell, Richard B.: *See—*
Sherwood, Donald W.; Tideswell, Richard B.; and Kujawa, Francis M., 3,800,005.
Timken Company, The: *See—*
Weigel, Charles P., 3,799,766.
Timko, Lawrence Raymond: *See—*
Norton, Morrison Pai; and Timko, Lawrence Raymond, 3,799,612.
Tiner, Robert L.: *See—*
Ely, John W.; and Tiner, Robert L., 3,799,267.
Tinnerman, George A. Sheet metal panel fastener. 3,798,710, Cl. 24-73.00b.
Tipton, Joe D., to Gardner-Denver Company. Flow and pressure regulating control for hydraulic motors. 3,799,200, Cl. 137-625.600.
Tirtiaux, Robert: *See—*
Prillieux, Marcel; and Tirtiaux, Robert, 3,799,263.
Titan Trailer Corporation: *See—*
Norton, Morrison Pai; and Timko, Lawrence Raymond, 3,799,612.
Tocci, Mario P.: *See—*
Kietzman, John H.; and Tocci, Mario P., 3,799,906.
Toda, Tokuzo, to Tokyo Baby Inc. Collapsible baby cart. 3,799,567, Cl. 280-36.00b.
Todd, Francis: *See—*
Morris, Terence Roy; and Todd, Francis, 3,799,471.
Toft, Albert R.: *See—*
Smith, Wade O.; and Toft, Albert R., 3,799,793.
Toho Chemical Industry Co., Ltd.: *See—*
Nakamura, Yoshinobu; Ito, Riyuzi; Aman, Shunsuko; and Kojima, Kazutaka, 3,799,956.
Tokheim Corporation: *See—*
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Mims, Powell O., 3,799,310.
Tokyo Baby Inc.: *See—*
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Tokyo Shibaura Electric Co., Ltd.: *See—*
Inagawa, Takashi, 3,800,108.
Tolberg, Wesley E.: *See—*
Hill, Marion E.; Tolberg, Wesley E.; and McDonald, Gerald J., 3,799,993.
Tolle, Gunter. Swingable hook carrier arm. 3,799,089, Cl. 112-217.300.
Tomashek James R.: *See—*
Kelly, Robert R.; and Tomashek James R., 3,799,364.
Tonka Corporation: *See—*
Higashi, Kisaburo, 3,798,831.
Tool Steel Gear & Pinion Co., The: *See—*
Hoelmer, Karl H., 3,799,020.
Torgerson, Duane E., to Belden Corporation. Strain relief. 3,800,068, Cl. 174-135.000.
Torguet, Roger: *See—*
Picquendar, Jean Edgar; and Torguet, Roger, 3,800,303.

Torguet, Roger, to Thomson-CSF. Optical deflection system with acousto optical cell and associates prisms. 3,799,652, Cl. 350-161.000.
Touchard, Jacques: *See—*
Giordano, Jean Louis; and Touchard, Jacques, 3,799,570.
Towmotor Corporation: *See—*
Shaffer, Walter M., 3,799,372.
Toyo Rubber Chemical Industrial Corporation: *See—*
Suzuki, Satomi; Fujii, Osamu; Wakabayashi, Hirokazu; Kishimoto, Toshio; and Numabe, Masashi, 3,799,897.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Shoichi Ohshima, 3,799,183.
Trachet, John R.: *See—*
Blackmore, Fred N.; Blackmore, Fred N., Jr.; and Trachet, John R., 3,799,078.
Tractel S.A.: *See—*
Desplats, Andre, 3,799,503.
Tracy, John Gaylord, to General Electric Company. Parallel operation of plural PWM inverters. 3,800,211, Cl. 321-9.00a.
Trailigaz: *See—*
Caussin, Georges, 3,800,210.
Transcal, Inc.: *See—*
Heatwole, Edward G., 3,799,829.
Treille, Pierre: *See—*
Savall, Vincent; and Treille, Pierre, 3,799,350.
Tri-Matic, Inc.: *See—*
Purtell, Rufus J., 3,798,738.
Tribbey, Billy F. Livestock headgate. 3,799,117, Cl. 119-98.000.
Trifunovic, Alexander L., to Bancroft, Joseph, & Sons Company. Apparatus for striffer-crimping yarn. 3,798,718, Cl. 28-1.600.
Triolo, Rocco P.: *See—*
Lamplugh, Roland J.; and Triolo, Rocco P., 3,799,898.
Trofimov, Vladimir Ivanovich: *See—*
Buzhinskaya, Antonia Vladimirovna; Sergeev, Leonid Alexandrovich; Trofimov, Vladimir Ivanovich; Perelygina, Tatyana Fedorovna; and Bobrov, Anatoly Borisovich, 3,799,847.
Troiani, Sergio: *See—*
Zimatore, Carmelo; and Troiani, Sergio, 3,800,232.
Tromblee, Jon D., to Whirlpool Corporation. Siphoned vortex liquid dispenser for automatic washers. 3,798,932, Cl. 68-17.00r.
Tseng, Sheng-Tsai; and Hsien, Tao Yuan, to Hwa Te Rotary Engine Company. Pistonless rotary engine. 3,799,127, Cl. 123-8.270.
Tsubakimoto Chain Co., Ltd.: *See—*
Shibata, Seiya; Kannari, Takehiko; and Mizuuchi, Junichi, 3,799,317.
Tsubouchi, Hideo: *See—*
Matsui, Kazuma; and Tsubouchi, Hideo, 3,799,206.
Tsunoda, Kenneth, 1/2 to Garbo, Paul W. Vibration-damped rotatable cutting disk. 3,799,025, Cl. 83-835.000.
Tsuruoka, Takashi: *See—*
Shomura, Takashi; Ezaki, Norio; Tsuruoka, Takashi; Niwa, Tomizo; Akita, Ehchi; and Nuda, Taro, 3,799,842.
Tsutsumi, Shigeru. Injection molding apparatus for synthetic resin. 3,800,027, Cl. 425-243.000.
Tucel Industries, Inc.: *See—*
Lewis, John C., Jr., 3,798,699.
Lewis, John C., Jr., 3,799,616.
Tucker, Raymon Z. Multi-spindle rolling machine. 3,798,949, Cl. 72-181.000.
Turner, Charles Lamar: *See—*
Schulz, David Arthur; and Turner, Charles Lamar, 3,799,790.
Turner, Charles R., to Advance Concrete and Asphalt Company. Dwelling construction. 3,798,858, Cl. 52-237.000.
Tuthill Pump Company: *See—*
Richardson, William D.; and Zurawski, Ronald A., 3,799,207.
Twin Disc Incorporated: *See—*
Richmond, Wendell E.; and Meyer, Robert W., 3,799,304.
Ty-Lok Assembly Systems, Inc.: *See—*
Countryman, Albert J., 3,799,214.
U. S. Medical Research & Development, Inc.: *See—*
Greenspan, Doanld J., 3,799,342.
Udden, Per Edward Carl: *See—*
Wennerblom, Bengt Axel; Udden, Ruth Gunvor Anna Britt; Udden, Per Edward Carl; and Lindgren, John Ivar, 3,799,165.
Udden, Ruth Gunvor Anna Britt: *See—*
Wennerblom, Bengt Axel; Udden, Ruth Gunvor Anna Britt; Udden, Per Edward Carl; and Lindgren, John Ivar, 3,799,165.
Ueda, Hiroyuki; Ohue, Shingo; and Sawano, Yukio, to Fuji Photo Film Co., Ltd. Image projecting device. 3,799,662, Cl. 353-23.000.
Ueshima, Michio: *See—*
O'Hara, Takashi; Ninomiya, Michikazu; Yanagisawa, Isao; Ueshima, Michio; and Takata, Masahiro, 3,799,978.
Uhlarik, Kenneth S.: *See—*
Brucker, Clarence E.; Uhlarik, Kenneth S.; Lampe, John W., Jr.; and Bush, John W., 3,800,045.
Uhtenwoltd, Herbert Rudolph: *See—*
Robillard, Howard George; and Uhtenwoltd, Herbert Rudolph, 3,798,840.
Ullman, Edwin F.: *See—*
Boocock, David G. B.; Dorchai, Raphael O.; Osiecki, Jeanne H.; and Ullman, Edwin F., 3,799,942.
Umec-Boydell (Belting) Limited: *See—*
Harvey, George Arthur, 3,799,328.
Umeda, Kaoru, to Minolta Camera Kabushiki Kaisha. Electrically driven camera mechanisms. 3,800,310, Cl. 354-171.000.
UMF Systems Incorporated: *See—*
Barre, Sheridan F.; Abbott, Terry C., Jr.; and Terry, Stephen P., 3,799,663.
Nicholson, George H., 3,799,664.
Umstattd, Richard H., to Electronic Arrays, Inc. MOS desk calculator. 3,800,129, Cl. 235-156.000.
Under Sea Industries, Inc.: *See—*
Christianson, Raymond A., 3,799,189.
Underwood, Harris, Jr. Apparatus for manufacturing anhydrous aluminum chloride. 3,799,746, Cl. 23-263.000.
Uni-Cardan AG: *See—*
Girguis, Sobhy Larib, 3,798,927.
Uni-Mist, Inc.: *See—*
Boelkins, Wallace G., 3,799,589.
Union Carbide Corporation: *See—*
Arino, Hirofumi; Kramer, Henry H.; McGovern, James J.; and Thornton, Alfred K., 3,799,883.
Fox, Joseph S., 3,800,025.
Poppelsdorf, Fedor, 3,799,986.
Union Oil Company of California: *See—*
Hashimoto, Saburo; and Sandiford, Burton B., 3,798,838.
Knight, Robert K., 3,799,262.
Young, Donald C., 3,799,884.
Union, Sils, van de Loo & Co.: *See—*
Konzorr, Hubert, 3,798,997.
Unique Machine Tool Co., Inc.: *See—*
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Uniroyal, Inc.: *See—*
Arnau, Matthew H.; and Grecco, Leonard J., 3,799,824.
Cantor, Stephen E., 3,799,895.
United Aircraft Corporation: *See—*
Krutenat, Richard C., 3,799,862.
Rothman, Edward A., 3,799,701.
United Binding Company, Inc.: *See—*
Brisson, Claude F.; and Schuna, John E., 3,798,810.
United Gas Industries Limited: *See—*
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United Kingdom Atomic Energy Authority: *See—*
Holland, Walter Philip, 3,799,882.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Haworth, Lionel, 3,799,698.
United State of America, National Aeronautics and Space Administration: *See—*
Pritchard, Edgar B., 3,798,778.
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Agriculture: *See—*
Pittman, Allen G.; and Wasley, William L., 3,799,992.
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Chatterton, Edward J., 3,799,676.
Knemeyer, Siegfried; and Fileccia, Genese L., 3,800,127.
Ramsey, James W.; Schmidt, Roger N.; and Petersen, Carl B., 3,799,144.
Army: *See—*
Fisher, Evan D.; and Campagnuolo, Carl J., 3,799,205.
Army, mesne: *See—*
Hill, Marion E.; Tolberg, Wesley E.; and McDonald, Gerald J., 3,799,993.
Atomic Energy Commission: *See—*
Cole, William R.; Harrison, James W.; Kotula, Bruno S.; Mariich, Jovo S.; and Tahmisian, Theodore N., 3,799,029.
Dibley, Leland L.; Zaslawsky, Maurice; and Blake, Alexander, 3,798,962.
Garwin, Richard L., 3,800,256.
Haas, Paul A., 3,800,023.
Scott, Charles D.; and Collins, Eddie L., 3,800,161.
Health, Education and Welfare: *See—*
Campbell, Jeptha E.; and Gilchrist, James E., 3,799,844.
Scott, Charles M., 3,799,159.
Vurek, Gerald G., 3,799,672.
Health Education and Welfare, mesne: *See—*
Salyer, Ival O.; Bump, Donald D.; and Weesner, Willaim E., 3,799,355.
Salyer, Ivan O.; Tapp, James S.; and Weesner, William E., 3,799,356.
National Aeronautics and Space Administration: *See—*
Danchenko, Vitaly, 3,799,813.
Fish, Raymond M., 3,800,082.
Holko, Kenneth H., 3,798,748.
Kobayashi, Herbert S., 3,800,227.
Mitchell, Glenn A.; and Sanders, Bobby W., 3,799,475.
Rummel, John A.; and Perry, Cortes L., 3,799,149.
Smith, Wade O.; and Toft, Albert R., 3,799,793.
Yang, Lien C.; and Murphy, Arthur J., 3,798,896.
National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Christopher, P. A.; Gross, W. J.; Henley, W. H.; Swirsky, B. D.; Christopher, P. A.; Gross, W. J.; Henley, W. H.; and Swirsky, B. D. Method of fabricating an object with a thin wall having a precisely shaped slit. 3,798,741, Cl. 29-423.000.

Honnell, Martial A. Automatic frequency control for F.M. transmitter. 3,800,224, Cl. 325-148.000.
Nakich, Robert B.; and Woodbury, Raymond C. Apparatus for scanning the surface of a cylindrical body. 3,800,074, Cl. 178-6.000.
Woodbury, Raymond C. Gated compressor, distorionless signal limiter. 3,800,237, Cl. 328-168.000.
National Aeronautics and Space Administration Administrator: *See—*
Bryant, Wayne H., 3,800,253.
Navy: *See—*
Cleary, Edward J., Jr., 3,800,125.
Hagemann, Julius, 3,800,275.
Hershner, Carlton H., Sr., 3,798,919.
Hill, Freeman K., 3,799,094.
Hitchcock, Robert D.; and Malloy, Richard J., 3,800,272.
Kurk, Thomas R., 3,800,128.
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Universal Dynamics Corporation: *See—*
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Bloch, Herman S., 3,799,996.
Brennan, John F., 3,799,887.
Gantt, James E., 3,799,868.
Lengemann, Robert A., 3,799,866.
Schmerling, Louis, 3,799,997.
Sobel, Jay E., 3,800,003.
University of California, The Regents of the: *See—*
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University of Illinois Foundation: *See—*
Weber, Larry, 3,800,296.
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Up-Right, Inc.: *See—*
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Urch, Harvey M.: *See—*
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U.S. Philips Corporation: *See—*
Gieles, Antonius Cornelis Maria; and Somers, Gerardus Henricus Johannus, 3,798,967.
Van Daalen, Jan Johannes; and Daams, Jasper, 3,799,964.
Van Dijk, Jan; and Zwagemakers, Johannes Maria Antonius, 3,800,042.
Van Oostrum, Karel Jan, 3,800,081.
Willems, Gerardus Antonius Maria, 3,799,215.
U.S. Philips Corporation, mesne: *See—*
Meijer, Roelf Jan; Beukering, Henricus Cornelis Johannes; and Fokker, Herman, 3,798,895.
U.S. Phillips Corporation: *See—*
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USM Corporation: *See—*
Karcher, Ralph E., Jr.; and Mac Kenzie, Fred T., 3,799,083.
Lally, William; Moore, Kenneth L.; Robbins, John E.; and Willbond, William F., 3,799,723.
McLean, George F., Jr., 3,799,494.
Usui, Yoshito; Shiojima, Kenji; Hatakeyama, Toshikatsu; and Sakau, Norio, to Matsushita Electric Works, Ltd. Small electro-magnetic contactor. 3,800,251, Cl. 335-131.000.
Utahara, Mutoo. Arched structure. 3,798,851, Cl. 52-86.000.
Uth, Gerhard; Riedel, Rudolf; and Kaiser, Klaus, to Seitz-Werke G.m.b.H. Filling unit for counter-pressure filling machines. 3,799,219, Cl. 141-39.000.
V. d. Bilt, Pieter Arnoldus. Turn table device. 3,799,320, Cl. 198-239.0ab.
Vaillant, Joh, K.G.: *See—*
Hein, Georg, 3,799,452.
Valdettaro, Alarico A.: *See—*
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Van Daalen, Jan Johannes; and Daams, Jasper, to U.S. Philips Corporation. Urea derivatives a method of producing them and preparations which contain the new substances as active ingredients. 3,799,964, Cl. 260-453.00r.
Van Den Berg, J. Hans; and Van Fekelen, Alex Herman A. M., to Monroe Belgium N.V. Windshield wiper assembly. 3,798,703, Cl. 15-250.420.
Van Dest, Jean Claude, to Massey-Ferguson, Inc. Multi-ratio transmission and controls therefor. 3,799,003, Cl. 74-740.000.
Van Dijk, Jan; and Zwagemakers, Johannes Maria Antonius, to U.S. Philips Corporation. (Thenylidene amino)oxy) alkyl carboxylic acids and salts and esters thereof as analgesic and anti-inflammatory agents. 3,800,042, Cl. 424-275.000.
Van Dyk Research Corporation: *See—*
Erny, Daniel Richard, 3,799,465.
Van Dyke, Walter J.: *See—*
Reale, Salvatore J.; Eich, Clarence C.; Van Dyke, Walter J.; Dave, Rajnikant P.; Whitney, Gilbert C.; and , 3,799,123.
Van Fekelen, Alex Herman A. M.: *See—*
Van Den Berg, J. Hans; and Van Fekelen, Alex Herman A. M., 3,798,703.
Van Gaasbeek, Peter Hakkenberg; and Hebner, Theodore J., to Caterpillar Tractor Company. Hydrostatic button bearing with attitude control. 3,799,628, Cl. 308-5.00r.
Van Laethem, Robert, to Glaverbel S.A. Glass laminate and method of manufacture. 3,799,817, Cl. 156-3.000.
Van Linder, Basil R.: *See—*
Van Linder, Ronald C.; and Van Linder, Basil R., 3,799,322.
Van Linder, Ronald C.; and Van Linder, Basil R., to Kalamazoo Manufacturing Company, mesne. Grid feeder. 3,799,322, Cl. 198-35.000.
Van Oosterhout, Jack T., to Ball Corporation. Condition responsive signal producing device. 3,800,300, Cl. 340-207.00r.
Van Oostrum, Karel Jan, to U.S. Philips Corporation. Device for recording diffraction images. 3,800,081, Cl. 178-7.200.
Van Wagenen, Norman L.; and Lamph, Ara Norman. Rotating sign structure. 3,798,808, Cl. 40-33.000.
Vancini, Carlo A.: *See—*
Arnold, Orlan M.; and Vancini, Carlo A., 3,798,880.
Arnold, Orlan M.; and Vancini, Carlo A., 3,799,508.
Vanderpool, Charles C. Garment hanger feeder apparatus. 3,799,395, Cl. 221-289.000.
Vandervell Products Limited: *See—*
Hill, Joseph Henry; Walmsley, Robert Edwin; and Parker, Derrick Douglas, 3,799,632.
Vanmark Corporation: *See—*
Wallace, Joseph E., 3,799,405.
Vargo, James Francis. Football downs marker. 3,799,109, Cl. 116-133.000.
Varian Associates: *See—*
Wilczek, Andrew S., 3,800,182.
Varshavsky, Tury Sergeevich; and Kiseleva, Nonna Viktorovna. Process for producing palladium (O) and platinum (O) complex compounds with triphenylphosphine. 3,799,961, Cl. 260-429.00r.
Vassar, Jack K.; and Henigman, Boby J. Hitching assembly. 3,799,583, Cl. 280-473.000.
Vater, Wulf: *See—*
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,799,934.
Meyer, Horst; Bossert, Friedrich; Vater, Wulf; and Stoepel, Kurt, 3,799,936.
Vaughen, Jack F. Pneumatically operated lift device. 3,799,504, Cl. 254-93.00h.
Vedda, Louis: *See—*
Dumont-Fillon, Jacques; and Vedda, Louis, 3,799,239.
Vendo Company, The: *See—*
Baxendale, John W., 3,799,393.
Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschiankter Haftung: *See—*
Scharzler, Hans-Jurgen, 3,799,474.
Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung: *See—*
Roeder, Jean; and Cerne, Gerd, 3,799,479.
Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Scherbaum, Helmut, 3,799,437.
Verfahrenstechnik Dr.-Ing. Kurt Baum: *See—*
Baum, Jorg Peter, 3,799,502.
Vermont American Corporation: *See—*
Cowley, William C.; and Stutzke, Robert E., 3,798,768.
Verne, Stefan: *See—*
Williams, Albert Leslie; and Verne, Stefan, 3,800,017.
Vetovitz, William H. Mortar applicator. 3,799,714, Cl. 425-63.000.
Vickers, Robert V.: *See—*
Nebesar, George C.; and Vickers, Robert V., 3,799,711.
Viessmann, Hans. Water heating unit for gas-heated water boiler. 3,799,122, Cl. 122-225.00r.
Vigdahl, Roger L.: *See—*
Marquis, Norman R.; and Vigdahl, Roger L., 3,800,039.
Villarreal, David: *See—*
Celada, Juan; Villarreal, David; and MacKay, Patrick W., 3,799,521.
Villier, Raymond: *See—*
Gaul, Alan R.; and Villier, Raymond, 3,800,201.
Vincent, Clifford A., to Consolidated Rock Products, Company. Dust collection system. 3,799,221, Cl. 141-93.000.

Vizziello, Vito M.; and Bouteiller, Charles A., to New England Log Homes, Inc. Rafter beam notching apparatus. 3,799,224, Cl. 144-133.000.
Vogelsang, Gustav; and Geiger, Istvan, to Volkswagenwerk Aktiengesellschaft. Cylinder arrangement for combustion engines having a pre-combustion or ante-chamber and a combustion chamber. 3,799,140, Cl. 123-191.00s.
Volkswagenwek Aktiengesellschaft: *See—*
Griese, Wolfgang, 3,799,134.
Volkswagenwerk Aktiengesellschaft: *See—*
Fiala, Ernst, 3,799,576.
Leptien, Helmut, 3,799,708.
Mohr, Paul, 3,799,435.
Vogelsang, Gustav; and Geiger, Istvan, 3,799,140.
Vongrey, Michael L., Jr.: *See—*
Davis, William A., 3,799,787.
Voss, Jorg F.: *See—*
Caple, Ira; Banks, Charles T.; and Voss, Jorg F., 3,799,468.
Voss, Karl: *See—*
Herzhoff, Peter; Gree, Hans; Schweicher, Wolfgang; Voss, Karl; Peckhaus, Oscar; Frenken, Hans; and Bussmann, Heinrich, 3,799,419.
Vrenko, Erik, to Iskra-Zavod Za Avtomatizacijo v Zdruzenem podjetju Iskra. System for scanning planar images with coherent light for facsimile reproduction via telephone connection. 3,800,084, Cl. 178-7.600.
Vulmiere, Claude Jacques: *See—*
Lopez, Fernand Louis; Scheffer, Bela; Vulmiere, Huguette Nelly; and Vulmiere, Claude Jacques, 3,799,677.
Vulmiere, Huguette Nelly: *See—*
Lopez, Fernand Louis; Scheffer, Bela; Vulmiere, Huguette Nelly; and Vulmiere, Claude Jacques, 3,799,677.
Vurek, Gerald G., to United States of America, Health, Education and Welfare. Oximeter for monitoring oxygen saturation in blood. 3,799,672, Cl. 356-41.000.
Vyzkumny ustav Lykovych Vlaken: *See—*
Stanislav, Krmela; and Klinecky, Ladislav, 3,799,212.
Vyzkumny ustav-Lykovych Vlaken: *See—*
Klinecky, Ladislav; and Krmela, Stanislav, 3,799,211.
Wache, Harro: *See—*
Nienburg, Hans-Juergen; Eisfeld, Wolfgang; and Wache, Harro, 3,799,976.
Wacker-Chemie G.m.b.H.: *See—*
Felice, Klaus; Sedlmeier, Josef; Gierer, Walter; Frey, Werner; and Wiedemann, Otto, 3,799,886.
Wagner, George M., to Hooker Chemical Corporation. Flame retardant process for cellulosics. 3,799,738, Cl. 8-181.000.
Wagner, Kurt J.: *See—*
La Barber, Joseph A., 3,799,619.
Wahlert, Franklyn G. Gate tightener. 3,799,595, Cl. 292-246.000.
Wakabayashi, Hirokazu: *See—*
Suzuki, Satomi; Fujii, Osamu; Wakabayashi, Hirokazu; Kishimoto, Toshio; and Numabe, Masashi, 3,799,897.
Wakasa, Rikichi: *See—*
Harada, Takeo; Moriya, Takeshi; and Wakasa, Rikichi, 3,799,770.
Waksman, David; and Stewart, James R., to Certain-Teed Products Corporation, mesne. Apparatus for jacketing fibrous ducts. 3,799,833, Cl. 156-443.000.
Walker, Ronald W. Display device. 3,798,855, Cl. 52-103.000.
Wallace, Joseph E., to Vanmark Corporation. Discharge rollers for a hopper bottom. 3,799,405, Cl. 222-238.000.
Wallace, Richard A. Fast activation reserve battery. 3,799,810, Cl. 136-112.000.
Wallace-Murray Corporation: *See—*
Woollenweber, William B., 3,798,906.
Wallin, Edwin M., to Xerox Corporation. Electroforming system. 3,799,859, Cl. 204-216.000.
Walmsley, Robert Edwin: *See—*
Hill, Joseph Henry; Walmsley, Robert Edwin; and Parker, Derrick Douglas, 3,799,632.
Walsh, John E., to Labor Saving Devices, Inc. Envelope for mutilated checks. 3,800,124, Cl. 235-61.12r.
Walsh, Michael Adrian; and Costigan, Edward F. Therapeutic dilator, disposable or reusable. 3,799,170, Cl. 128-344.000.
Walti, Wilbert M.; and Speshyock, Reuben F. Insect killing device. 3,798,828, Cl. 43-137.000.
Walton, Beverly Ann; d/b/b/ under the firm name and style of Infopat: *See—*
Gower-Rees, Christopher David; and Walton, John Noel, 3,799,546.
Walton, John Noel: *See—*
Gower-Rees, Christopher David; and Walton, John Noel, 3,799,546.
Wandel & Goltermann: *See—*
Harzer, Peter; and Benzel, Karl, 3,800,184.
Warburton, Charles D., to Eastman Kodak Company. Method of analyzing for cholesterol. 3,799,739, Cl. 23-230.00b.
Ward, James Lawrence; and Street, Eric, to British Titan Limited. Milling apparatus. 3,799,457, Cl. 241-46.170.
Ward, Richard H. Retaining device for picture frames. 3,798,815, Cl. 40-156.000.
Warfield, Wayne; and Barnett, John E., to Stryker Corporation. Apparatus for making a cushion. 3,799,491, Cl. 249-83.000.
Warner & Swasey Company, The: *See—*
Lutz, Gilbert F., 3,798,722.
Warner & Swasey Company, The, mesne: *See—*
Stevens, Thomas F., 3,798,845.
Wasley, William L.: *See—*
Pittman, Allen G.; and Wasley, William L., 3,799,992.
Wasson, William G. Double edge blade scalpel. 3,798,688, Cl. 7-14.10r.
Watabe, Seiji: *See—*
Oga, Toshisaburo; Yoshizuka, Kunio; Yoneda, Yoshiharu; Yanako, Shigehisa; Ishii, Yozo; and Watabe, Seiji, 3,799,469.
Watanabe, Katsumi. Toy phonograph. 3,799,556, Cl. 274-2.000.
Watanabe, Tadashi: *See—*
Shingai, Kiyozo; Watanabe, Tadashi; Murata, Koichiro; and Isqpaki, Osamo, 3,799,910.
Watarai, Syu; Ono, Hisatake; Osada, Chiaki; Honjo, Satoru; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Electrophotographic process employing a photochromic compound and transparent toner. 3,799,773, Cl. 96-1.00r.
Watermann, Hans-Dieter, to Arn. Kiekert Sohne. Vehicle door latch. 3,799,594, Cl. 292-213.000.
Watkins, Fred E.; and Dietz, William H., to Camco Incorporated. Equalizing means for well safety valve. 3,799,204, Cl. 137-629.000.
Watson, Douglas M. Six and eight row cultivator and planter frame. 3,799,272, Cl. 172-126.000.
Watterlohn, Roy H.: *See—*
Badalich, Frank C.; and Watterlohn, Roy H., 3,799,420.
Watters, Edward E.: *See—*
Watters, Robert S.; and Watters, Edward E., 3,798,823.
Watters, Robert S.; and Watters, Edward E. Fishing apparatus. 3,798,823, Cl. 43-23.000.
Waukesha Foundry Company, Inc.: *See—*
Cloots, Henry P.; and Neumann, James A., 3,799,713.
Waverly, Irwin G.: *See—*
Irwin, Waverly G.; and Taube, Otto H. (said Taube assor. to said), 3,798,701.
Wean United Inc.: *See—*
Sgambati, Anthony P.; Kamena, Fred; Barton, Robert L.; and Gliem, Donald J., 3,798,953.
Weather Tec. Corporation: *See—*
Martina, Jack A., 3,799,631.
Weatherell, James W., to Clair Mfg. Co., Inc. Automatic buff pressure setting. 3,798,843, Cl. 51-33.00r.
Weaver, Sheldon H. Trash compactor container. 3,799,374, Cl. 214-82.000.
Webb, Thomas O., to Marathon Oil Company. Use of micellar solution as an emulsion breaker. 3,799,265, Cl. 166-305.00r.
Webber, Edward Hulton. Automatic control of a workpiece under the needle of a sewing machine. 3,799,085, Cl. 112-121.120.
Weber, Guy Paul; and Deshayes, Philippe Marie, to La Cellophene. Method and system for varying the positions of image-forming surfaces on an elongate flexible electrophotographic support belt for different runs thereof. 3,799,669, Cl. 355-17.000.
Weber, Heinz, to Telesco Brophey Limited. Umbrella handle. 3,799,180, Cl. 135-20.00r.
Weber, Larry, to University of Illinois Foundation. Optical write inmethod and apparatus for a plasma display panel. 3,800,296, Cl. 340-173.0pl.
Webster, Kenneth E.: *See—*
Alden, John W., Jr.; and Webster, Kenneth E., 3,799,121.
Wechsler, Robert M. Three dimensional autostereoscopic production of selector screen images formed of perspectives taken from discrete points of view. 3,800,307, Cl. 354-112.000.
Weesner, Willaim E.: *See—*
Salyer, Ival O.; Bump, Donald D.; and Weesner, Willaim E., 3,799,355.
Weesner, William E.: *See—*
Salyer, Ivan O.; Tapp, James S.; and Weesner, William E., 3,799,356.
Wefers, Johann Karl; and Becker, Otto Alfred, said Wefers assor. to said Becker, Otto Alfred. Resistance welding of sheet metal covered with non-metallic layers. 3,800,118, Cl. 219-91.000.
Weible, Warren W., to Zeller Corporation, The. Universal joint construction. 3,798,926, Cl. 64-17.00a.
Weigand, Wolfgang, to Siemens Aktiengesellschaft. Apparatus for the electric damping of oscillations in rotating field machines. 3,800,199, Cl. 318-227.000.
Weigel, Charles P., to Timken Company, The. Low-cost hypereutectoid bearing steel containing molybdenum and chromium. 3,799,766, Cl. 75-126.00c.
Weigele, Gebhard; and Sulzberger, Johann. Washing device for through-passing motor vehicles. 3,798,695, Cl. 15-21.00e.
Weigert, Wolfgang: *See—*
Hensel, Jorg; Lussling, Theodor; Noll, Ewald; Schaefer, Hans; Schreyer, Gerd; and Weigert, Wolfgang, 3,799,979.
Keller, Rudolf; Kruger, Manfred; Lussling, Theodor; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,949.
Kruger, Manfred; Noll, Ewald; Schreyer, Gerd; Tanner, Herbert; and Weigert, Wolfgang, 3,799,948.
Weimann, Klaus: *See—*
Eisele, Dieter; Weimann, Klaus; and Schaerli, Otto, 3,800,192.
Weinberg, Jerome; Geise, Harold Eugene; and Andrews, Thomas Warren. Dental-surgical drill. 3,798,775, Cl. 32-26.000.
Weinrich, Erwin, to Henkel & Cie GmbH. Process for the preparation of modified glycidyl isocyanurate resins. 3,799,900, Cl. 260-18.0ep.
Weinschenk, Russell J.: *See—*

Kline, Norman D.; and Weinschenk, Russell J., 3,800,170.
Weir, Alan; and May, Geoffrey Eric. Assembling of a predetermined number of containers for conveyance as a unit. 3,799,333, Cl. 206-65.00c.
Weisbach, Jerry A.: *See—*
Jen, Timothy Yu-Wen; and Weisbach, Jerry A., 3,799,922.
Weishaar, Egon Georg. Apparatus for draining blood from a surgical wound and transmission to a heart-lung machine. 3,799,702, Cl. 417-38.000.
Weishaut, Max, GmbH, Firma: *See—*
Brodlin, Wilhelm, 3,799,732.
Weisner, Ralph M., to Kollmorgen Corporation. Photometer optical system having viewing magnification and light attenuation means. 3,799,680, Cl. 356-225.000.
Weiss, Alexander C. H. Wall construction module and system. 3,798,861, Cl. 52-306.000.
Welding Engineers, Inc.: *See—*
Skidmore, Richard H., 3,799,234.
Welk, Kenneth L.: *See—*
Lewicki, Walter J., Jr.; and Welk, Kenneth L., 3,799,822.
Wells Manufacturing Corporation: *See—*
Alexander, Carl J., 3,799,024.
Wenger Corporation: *See—*
Paine, David L.; Urch, Harvey M.; and Douglas, Daryl D., 3,799,703.
Wenig, Norman B., to Thermal Science Corporation. Damper construction. 3,799,248, Cl. 165-55.000.
Wennerblom, Bengt Axel; Udden, Ruth Gunvor Anna Britt; Udden, Per Edward Carl; and Lindgren, John Ivar, to Svenska Cellulosa Aktiebolaget. Menstrual-liquid absorption tampon with insertion tool. 3,799,165, Cl. 128-263.000.
Wenz, Herbert: *See—*
Schneider, Franz; and Wenz, Herbert, 3,799,091.
Werkzeugmaschinenfabrik Gildemeister & Comp. AG: *See—*
Ledergerber, Alfred; and Crachy, Rudolf, 3,798,720.
Werkzeugmaschinenfabrik Gildemeister & Comp. Aktiengesellschaft: *See—*
Schalles, Erhard, 3,798,721.
Wernitz, Peter, to Boekels, Hans, Dr., & Co. Device for electromechanically weighing. 3,799,281, Cl. 177-210.000.
Werstein, Frank A., to International Telephone and Telegraph Corporation, mesne. Hanger insert for steel floor deck and the like. 3,798,866, Cl. 52-707.000.
Western Automation Corporation: *See—*
Dekoekkoek, John W., 3,799,318.
Western Electric Company, Incorporated: *See—*
Pierre-Louis, Jacques D.; and Sandmore, Donald K., 3,799,789.
Western Litho Plate & Supply Co.: *See—*
Dunnavant, William R.; Harris, Edward M.; Kurz, Philip F.; Markle, Richard A.; and Parker, Edward H., 3,799,915.
Westerwalder Eisenwerk, Dr. Paul Gerhard KG: *See—*
Gerhard, Helmut, 3,799,383.
Westinghouse Air Brake Company: *See—*
Clark, Thomas D., 3,800,139.
Linhari, Harry M., 3,799,624.
Westinghouse Brake and Signal Company Limited: *See—*
Wickham, David John; and Hall, John Lewis, 3,799,498.
Wickham, David John; and Coleman, John Dale, 3,799,623.
Westinghouse Electric Corporation: *See—*
Fox, Richard Q., 3,798,941.
O'Keeffe, Terence W.; and Morris, Jerome R., 3,799,777.
Patterson, Arthur E., Jr.; and Barakauskas, Edward J., 3,799,092.
Roland, George W.; Feichtner, John D.; and Gotilieb, Milton, 3,799,659.
Sampson, Ronald N.; and Chottiner, Jacob, 3,799,811.
Weyersberg, Ernst Rudolf: *See—*
Porsche, Ferdinand Anton Ernst; Binder, Robert; and Weyersberg, Ernst Rudolf, 3,799,138.
Wheeler, Harvey B.; Andrews, Anthony S.; and Schlademan, James A., to Neville Chemical Company. Production of hydrocarbon resin compositions from alpha-methyl styrene, indene and vinyl toluene. 3,799,913, Cl. 260-80.780.
Whirlpool Corporation: *See—*
Czech, James I.; and Oakley, Roy C., Jr., 3,798,931.
Karklys, Joseph, 3,800,313.
Tromblee, Jon D., 3,798,932.
Zenz, Fred J., 3,799,387.
White, Frederick G. Golfers's pocket kit. 3,799,331, Cl. 206-38.00r.
White, James A.; and Chesluk, Ralph P., to Texaco Inc. Corrosion inhibiting lubrication method. 3,799,876, Cl. 252-51.50r.
White, Kraig R.: *See—*
Anderson, Robert D., Jr.; Hasler, Gerold B.; Kirby, Ralph W.; and White, Kraig R., 3,800,295.
White, Stanley A., to North American Rockwell Corporation. Hilbert transformer. 3,800,131, Cl. 235-197.000.
Whited, Charles A., to Xerox Corporation. Hybrid development of electrostatic latent image. 3,799,113, Cl. 118-637.000.
Whitehouse, Harper John: *See—*
Speiser, Jeffrey M.; and Whitehouse, Harper John, 3,800,248.
Whitfill, William A., Jr.; and McNerney, Richard P., to Schlumberger Technology Corporation. Gas blocked logging cable. 3,800,066, Cl. 174-116.000.
Whitley, Robert K.: *See—*
Hull, Charles W.; and Whitley, Robert K., 3,800,151.
Whitney, Gilbert C.: *See—*
Reale, Salvatore J.; Eich, Clarence C.; Van Dyke, Walter J.; Dave, Rajnikant P.; Whitney, Gilbert C.; and , 3,799,123.
Whitney, Virginia E.: *See—*
Reale, Salvatore J.; Eich, Clarence C.; Van Dyke, Walter J.; Dave, Rajnikant P.; Whitney, Gilbert C.; and , 3,799,123.
Wiater, Kenneth W.: *See—*
Derenski, David J.; and Wiater, Kenneth W., 3,800,069.
Wickham, David John; and Hall, John Lewis, to Westinghouse Brake and Signal Company Limited. Valve means. 3,799,498, Cl. 251-129.000.
Wickham, David John; and Coleman, John Dale, to Westinghouse Brake and Signal Company, Limited. Controlling railway vehicle brakes. 3,799,623, Cl. 303-204.000.
Wieczorek, Julien. Loading system for blast-furnace. 3,799,368, Cl. 214-35.00r.
Wiedemann, Otto: *See—*
Felice, Klaus; Sedlmeier, Josef; Gierer, Walter; Frey, Werner; and Wiedemann, Otto, 3,799,886.
Wieland-Werke AG: *See—*
Thamasett, Eberhard, 3,798,946.
Wilczek, Andrew S., to Varian Associates. Heat transfer duct. 3,800,182, Cl. 315-3.500.
Wild, Albert F.: *See—*
McPherson, Donald F.; and Wild, Albert F., 3,799,421.
Wild, Robert W.: *See—*
Foster, William F.; and Wild, Robert W., 3,799,443.
Wilder, Richard P., Jr.: *See—*
Brown, James L.; and Wilder, Richard P., Jr., 3,800,286.
Wilke, Richard. Controllable electric disconnection device for the protection of under-and over revolutions of a shaft. 3,800,188, Cl. 317-9.00r.
Wilkes Pool Corporation: *See—*
Barrera, Salvatore E., 3,798,857.
Willard, Stephen F.: *See—*
Hallenbeck, Norman P.; and Willard, Stephen F., 3,799,031.
Willbond, William F.: *See—*
Lally, William; Moore, Kenneth L.; Robbins, John E.; and Willbond, William F., 3,799,723.
Willems, Donald J.; and Spitzley, Henry A. Stunning tool. 3,798,707, Cl. 17-1.00b.
Willems, Gerardus Antonius Maria, to U.S. Philips Corporation. Welding wire driving and straighening device. 3,799,215, Cl. 140-147.000.
Williams, Albert Leslie; and Verne, Stefan, to British Insulated Callender's Cables Limited. Method of manufacturing electric cables in a dielectric material saturated with cable gas. 3,800,017, Cl. 264-46.000.
Williams, Bruno R. Tape dispenser attachment. 3,799,417, Cl. 225-7.000.
Williams, Clarence. Marker posts. 3,799,686, Cl. 404-10.000.
Williams, Frank R.: *See—*
Jordan, Merrill E.; Burbine, William G.; and Williams, Frank R., 3,799,788.
Williams, Herman, Jr., to WTC Chemical Corporation. Pharmaceutical screening test composition. 3,799,741, Cl. 23-230.00b.
Williams, Michael: *See—*
Force, Earl; and Williams, Michael, 3,798,780.
Williamson, James: *See—*
Rogers, Philip Sydney; and Williamson, James, 3,799,836.
Williamson, John Duff: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,802.
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,816.
Willison, Donald: *See—*
Huml, George E.; and Willison, Donald, 3,799,360.
Wilson, Anthony Ian, to Teleflex Limited. Rack and pinion drives. 3,798,992, Cl. 74-422.000.
Wilson, Geoffrey: *See—*
Foster, John; and Wilson, Geoffrey, 3,798,944.
Wilson, H. F., Engineering Company: *See—*
Bent, John H., 3,798,910.
Wilson, Joseph G. Garden seeder. 3,799,081, Cl. 111-96.000.
Wilson, Kenneth R. A.: *See—*
Bonn, Clifford; and Wilson, Kenneth R. A., 3,799,574.
Wimmer, Helmut; Feldmann, Wilhelm; Schauenburg, Wilhelm; and Heimerzheim, Reiner, to Mannesmannrohren-Werke Aktiengesellschaft. Tube expander. 3,798,955, Cl. 72-393.000.
Wingard Limited: *See—*
Cummingham, Douglas James, 3,799,609.
Winton, Gordon R. Humidifier. 3,799,513, Cl. 261-19.00r.
Witnes, Odd; and Langaard, Reidar, to Billeruds Aktiebolag and Peterson, M., & Sons A/S. Fluting, and corrugated cardboard containing such fluting. 3,799,837, Cl. 161-135.000.
Wochnowski, Waldemar, to Hauni-Werke, Korber & Co. KG. Method and apparatus for conditioning tobacco. 3,799,176, Cl. 131-135.000.
Wolcke, Uwe: *See—*
Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, 3,799,975.
Wolf, Alfred A. Method of designing orthogonal filters. 3,800,093, Cl. 179-15.0bc.
Wolf, John P., III: *See—*

Ashmead, Howard L.; Byrne, Sydnor H., Jr.; and Wolf, John P., III, 3,799,396.
Wolfe, Esther J. Back trouser pocket template. 3,798,781, Cl. 33-180.00r.
Wolfson, Jerome T.; Lilienheim, Henry; and Gear, John, to Business Builders International, Inc. Detechable handle. 3,798,706, Cl. 16-114.00a.
Wolters, Gunther: *See—*
Kuhlmann-Schafer, Wilhelm H.; Hagen, Klaus; Peters, Hans-Dieter; and Wolters, Gunther, 3,800,057.
Wolters, Richard H., to Steelcase Inc. Height adjusting mechanism. 3,799,485, Cl. 248-406.000.
Wolverine-Pentronix, Inc.: *See—*
Smith, Joseph E., 3,799,102.
Wong, James: *See—*
Larson, Warren L.; and Wong, James, 3,800,061.
Wong, John: *See—*
Di Maggio, Vincent H.; and Wong, John, 3,800,063.
Wonn, Quinby E., to General Motors Corporation. Fluid control having a bi-metal actuating member. 3,799,495, Cl. 251-11.000.
Wood, Eugene R.: *See—*
Plauda, Lynn D., 3,798,702.
Wood, William; Sellers, John; Carroll, Michael; and Griffiths, Mary, to French, Thomas, & Sons, Limited. Curtain heading tape. 3,799,213, Cl. 139-387.00a.
Woodbury, Raymond C.: *See—*
United States of America, National Aeronautics and Space Administration, 3,800,074.
United States of America, National Aeronautics and Space Administration, 3,800,237.
Woodger, Frederick Noel, to Cutler Hammer Inc. Electric switches. 3,800,260, Cl. 337-49.000.
Woodhams, Raymond T.; and Golemba, Frank J., to Fiberglas Canada Limited. Coating of mica reinforcement for composite materials. 3,799,799, Cl. 117-100.00s.
Woodward Governor Company: *See—*
Barrett, William J.; and Ahlgren, Joseph R., 3,798,907.
Woodward, Robert Burns: *See—*
Heusler, Karl; and Woodward, Robert Burns, 3,799,938.
Woollenweber, William B., to Wallace-Murray Corporation. Apparatus for reducing pollutants in engine exhaust gases. 3,798,906, Cl. 60-598.000.
Workman, Lawrence H.; and Bos, John R., to Gardner-Denver Company. Manual and fluid pressure brake release for hoists. 3,799,302, Cl. 192-3.00r.
Worley, Ray. Educational toy parachute. 3,798,829, Cl. 46-86.00r.
Worrix, Matthew L., to Allis-Chalmers Corporation. Universal bearing assembly. 3,799,635, Cl. 308-189.000.
Wright, Allen C., to Haws Drinking Fountain Company. Recessed drinking fountain and bubbler therefor. 3,799,439, Cl. 239-29.000.
Wright, Arden Bernard, to Bell Telephone Laboratories, Incorporated. Voltage cutoff circuit for improper picture tube. 3,800,083, Cl. 178-7.50r.
Wright, Forrest S.; and Myers, Edward J. Helmet lock structure. 3,798,934, Cl. 70-59.000.
Wright, Hubert Arthur, Jr.: *See—*
Kurze, Ulrich; and Wright, Hubert Arthur, Jr., 3,799,575.
Wrobel, Joseph S.; and Bate, Robert Thomas, to Texas Instruments, Incorporated. Diode laser. 3,800,243, Cl. 331-94.500.
WTC Chemical Corporation: *See—*
Williams, Herman, Jr., 3,799,741.
Xerox Corporation: *See—*
Carreira, Leonard M., 3,800,302.
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Matsumoto, Seiji; Tezuka, Shigeru; and Tanaka, Shinichi, 3,800,153.
McVeigh, James H., 3,799,668.
Petruzzella, Nicholas L., 3,799,775.
Takimoto, Masaaki; and Matsumoto, Seiji, 3,799,827.
Wallin, Edwin M., 3,799,859.
Whited, Charles A., 3,799,113.
Yamagishi, Hidehisa; Takano, Hiroshi; and Kawaguchi, Iwakichi, to Nippon Kokan Kabushiki Kaisha. Chromate treated metal sheet. 3,799,814, Cl. 148-6.200.
Yamaguchi, Yukio: *See—*
Moriguti, Kazuo; Yokoi, Nobuyasu; and Yamaguchi, Yukio, 3,799,689.
Yamakawa, Eiichi, to Kawasaki Jukogyo Kabushiki Kaisha. Control devices of rotorcrafts. 3,799,695, Cl. 416-40.000.
Yamamoto, Hisao; Nakao, Masaru; Sasajima, Kikuo; Maruyama, Isamu; and Katayama, Shigenari, to Sumitomo Chemical Company, Limited. Gamma-piperidinobutyrophenones. 3,799,932, Cl. 260-293.600.
Yamamoto, Osamo; and Niwa, Tatsuo, to Kabushiki Kaisha Aichidenkikosakusho. Electrically powered can opener. 3,798,764, Cl. 30-4.00r.
Yamamura, Hirosi: *See—*
Inagami, Kaoru; Kamada, Hidemoto; Ino, Kazuo; Terabayashi, Takeshi; Iio, Hiroki; and Yamamura, Hirosi, 3,800,052.
Yamane, Mikiya; Murayama, Seiichi; Seko, Tsuyoshi; Kaji, Tetsunori; Mizushima, Masashi; Shinada, Shinichi; and Miyashita, Tsune, to Hitachi, Ltd. Display device. 3,800,186, Cl. 315-169.0tv.
Yamazaki, Harumichi; Nakamura, Kihei; and Kondo, Yoshikazu, to Bridgestone Tire Company Limited. Buffering device. 3,799,531, Cl. 267-140.000.
Yamazaki, Osami: *See—*
Nara, Kiyoshi; Ohta, Kazuhiko; Yamazaki, Osami; and Fukuda, Hideo, 3,799,980.
Yamazoe, Masao, to Kabushiki Kaisha Osaka Shinkuukiki Seisakusho. Piping system in a vacuum degassing apparatus for molten metal. 3,799,519, Cl. 226-13.000.
Yanagisawa, Hideo: *See—*
Ogasawara, Toyoji; and Yanagisawa, Hideo, 3,799,904.
Yanagisawa, Isao: *See—*
O'Hara, Takashi; Ninomiya, Michikazu; Yanagisawa, Isao; Ueshima, Michio; and Takata, Masahiro, 3,799,978.
Yanako, Shigehisa: *See—*
Oga, Toshisaburo; Yoshizuka, Kunio; Yoneda, Yoshiharu; Yanako, Shigehisa; Ishii, Yozo; and Watabe, Seiji, 3,799,469.
Yang, Lien C.; and Murphy, Arthur J., to United States of America, National Aeronautics and Space Administration. Optically actuated two position mechanical mover. 3,798,896, Cl. 60-25.000.
Yazaki, Takanori: *See—*
Omoto, Tsunehiko; Inoue, Tadashi; and Yazaki, Takanori, 3,800,029.
Yokoi, Nobuyasu: *See—*
Moriguti, Kazuo; Yokoi, Nobuyasu; and Yamaguchi, Yukio, 3,799,689.
Yoneda, Yoshiharu: *See—*
Oga, Toshisaburo; Yoshizuka, Kunio; Yoneda, Yoshiharu; Yanako, Shigehisa; Ishii, Yozo; and Watabe, Seiji, 3,799,469.
Yoshida, Yoshinori: *See—*
Chikatsu, Tatsusuke; Yoshida, Yoshinori; Shimokawa, Shinichi; and Akimoto, Toshio, 3,800,002.
Yoshikawa, Yoshio: *See—*
Fujimoto, Eisuke; and Yoshikawa, Yoshio, 3,800,319.
Yoshino Kogyosho Co., Ltd.: *See—*
Nozawa, Takamitsu; and Kishi, Takao, 3,799,448.
Yoshioka, Takeshi; and Akiyama, Susumu, to Nippon Electric Company, Limited. Active type group-delay equalizer. 3,800,265, Cl. 333-28.00r.
Yoshiyasu, Mitsuo: *See—*
Takashi, Masanori; and Yoshiyasu, Mitsuo, 3,799,828.
Yoshizuka, Kunio: *See—*
Oga, Toshisaburo; Yoshizuka, Kunio; Yoneda, Yoshiharu; Yanako, Shigehisa; Ishii, Yozo; and Watabe, Seiji, 3,799,469.
Youch, Edward A.: *See—*
Lueck, Arthur M.; and Youch, Edward A., 3,800,162.
Young, David E., to Schlumberger Technology Corporation. Velocity sensitive safety valve. 3,799,192, Cl. 137-498.000.
Young, Donald C., to Union Oil Company of California. Preparation of sulfur suspensions. 3,799,884, Cl. 252-313.00r.
Young, James E. Method and materials for photographic color imaging. 3,799,776, Cl. 96-2.000.
Young, Robert G.: *See—*
Glass, Emmett F.; and Young, Robert G., 3,798,885.
Yuasa Battery Company Limited: *See—*
Agui, Eizo, 3,799,321.
Yuda, Takeshi: *See—*
Mori, Tetsuo; Yuda, Takeshi; and Okahashi, Keiji, 3,800,250.
Zachry, H.B., Company: *See—*
Putnam, Alvin A., 3,799,358.
Zalar, David R., to Cutler-Hammer, Inc. Sump pump control system. 3,800,205, Cl. 318-482.000.
Zalay, Andrew W.: *See—*
Bell, Malcolm R.; and Zalay, Andrew W., 3,799,943.
Zanoni, Ernesto, to S.p.A. Luigi Franchi. Gun. 3,798,817, Cl. 42-42.000.
Zaslawsky, Maurice: *See—*
Dibley, Leland L.; Zaslawsky, Maurice; and Blake, Alexander, 3,798,962.
Zbrojovka Vsetin, Narodni podnik: *See—*
Klinecky, Ladislav; and Krmela, Stanislav, 3,799,211.
Stanislav, Krmela; and Klinecky, Ladislav, 3,799,212.
Zdanuk, Edward J.; deceased (by Zdanuk, Theresa R.; administratrix); Krock, Richard H.; and Shen, Yuan Shou, to Mallory, P. R., & Co., Inc. Silver-cadmium oxide type material. 3,799,772, Cl. 75-173.00a.
Zdanuk, Theresa R.: *See—*
Zdanuk, Edward J.; Krock, Richard H.; and Shen, Yuan Shou, 3,799,772.
Zeblisky, Rudolph J.: *See—*
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,802.
Schneble, Frederick W., Jr.; McCormack, John F.; Zeblisky, Rudolph J.; Williamson, John Duff; and Polichette, Joseph, 3,799,816.
Zeineh, Rashid A. Electrophoresis and electrofocusing apparatus. 3,799,863, Cl. 204-299.000.
Zelenz, Martin L., to GTE Sylvania Incorporated. Automatic gain control circuitry and filter. 3,800,240, Cl. 330-52.000.
Zeller Corporation, The: *See—*
Weible, Warren W., 3,798,926.
Zellerhoff, Knut; Schutz, Siegismund; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. N1-acyl-2-phe nylhydrazino-2-imidazolines and processes for their preparation and use. 3,799,921, Cl. 260-240.00j.
Zenz, Fred J., to Whirlpool Corporation. Electric heating unit for clothes dryers. 3,799,387, Cl. 220-18.000.
Zeuner, Kenneth W., to Control Concepts, Inc. Two stage solenoid operated valve. 3,799,497, Cl. 251-30.000.

Zimatore, Carmelo; and Troiani, Sergio. Automatic tuning devices. 3,800,232, Cl. 325-420.000.
Zimmerman, Carl W.; and Copland, George V. Temperature compensated liquid metering system and method. 3,800,242, Cl. 331-66.000.
Zimmermann, Ernest F., to Ampex Corporation. Electronic constant-tension tape-handling system. 3,800,196, Cl. 318-6.000.
Zink, George: *See—*
Stearns, Burdett K.; Graham, David A.; Seemauo, James M.; and Zink, George, 3,799,560.
Zirkle, Charles L.: *See—*
Craig, Paul N.; and Zirkle, Charles L., 3,800,044.
Zuccaro, Robert: *See—*
Pierron, Claude Raymond; and Zuccaro, Robert, 3,798,678.
Zucker, Fredric E.; Eckert, Alton B.; Hinman, Bruce E.; and Feinland, Seymour, to Pitney-Bowes, Inc. Electronic combination lock and lock system. 3,800,284, Cl. 340-149.00r.
Zurawski, Ronald A.: *See—*
Richardson, William D.; and Zurawski, Ronald A., 3,799,207.
Zwagemakers, Johannes Maria Antonius: *See—*
Van Dijk, Jan; and Zwagemakers, Johannes Maria Antonius, 3,800,042.
Zwieg, Arvin E. Cross rod repair for snowmobile tracks. 3,799,627, Cl. 305-38.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 26TH DAY OF MARCH, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Airco, Inc.: *See*—
Hunt, Charles D. A., and DeHaven. Re. 27,945.
Babst, Dean V. Fish-catching apparatus with snap-actuatable hooks. Re. 27,948, 3–26–74, Cl. 43—35.
Block Engineering, Inc.: *See*—
Mertz, Lawrence N. Re. 27,947.
Bogley, S. Walter: *See*—
Botte, David A., Lampshire, Diemer, Schriever, and Bogley. Re. 27,952.
Bogley, S. Walter: *See*—
Pollacco, William F. Re. 27,952.
Botte, David A.: *See*—
Pollacco, William F. Re. 27,952.
Diemer, Robert A.: *See*—
Pollacco, William F. Re. 27,952.
Lampshire, Harvey R.: *See*—
Pollacco, William F. Re. 27,952.
Schriever, Bernard A.: *See*—
Pollacco, William F. Re. 27,952.
Crandall, Richard N., and C. H. Nordell, to Nordell Assoc., to said Crandall. Selective comminution. Re. 27,946, 3–26–74, Cl. 210—174.
DeHaven, Reese R., Jr.: *See*—
Hunt, Charles D. A., and DeHaven. Re. 27,945.
Frisch, Erling, to Westinghouse Electric Corp. Fuel arrangement for a nuclear reactor. Re. 27,950, 3–26–74, Cl. 176—78.
Karlson, Karl: *See*—
Demarest, Philip C., and Karlson. Re. 27,949.
Koury, Frederic: *See*—
Gungle, Warren C., Koury, and Waymouth. Re. 27,953.
McKenna, Richard P.: *See*—
Ayres, Robert U., and McKenna. Re. 27,944.
Mertz, Lawrence N., to Block Engineering, Inc. Interference technique and apparatus for spectrum analysis. Re. 27,947, 3–26–74, Cl. 356—106.
Nordell, Carl H.: *See*—
Crandall, Richard N., and Nordell. Re. 27,946.
Pollacco, William F., assignors to D. A. Botte, H. R. Lampshire, B. A. Diemer, B. A. Schriever, and S. W. Bogley, fractional part interest to each. Visual control system. Re. 27,952, 3–26–74, Cl. 40—63.
Refac Technology Development Corp.: *See*—
Demarest, Philip C., and Karlson. Re. 27,949.
Sangster, Frederik L. J.: *See*—
Teer, Kees, and Sangster. Re. 27,951.
Sylvania Electric Products Inc.: *See*—
Gungle, Warren C., Koury, and Waymouth. Re. 27,953.
U.S. Philips Corp.: *See*—
Teer, Kees, and Sangster. Re. 27,951.
Waymouth, John F.: *See*—
Gungle, Warren C., Koury, and Waymouth. Re. 27,953.
Westinghouse Electric Corp.: *See*—
Frisch, Erling. Re. 27,950.

LIST OF PLANT PATENTEES

Barberet, Alexandre, to Laboratoire de Physiologie Vegetale de La Londe. Carnation plant. 3,532, 3–26–74, Cl. 73.
Barberet, Alexandre, to Laboratoire de Physiologie Vegetale de La Londe. Carnation plant. 3,533, 3–26–74, Cl. 70.
Barberet, Alexandre, to Laboratoire de Physiologie Vegetale de La Londe. Carnation plant. 3,534, 3–26–74, Cl. 71.
Kerrigan, Howard. Azalea plant. 3,531, 3–26–74, Cl. 55.
Laboratoire de Physiologie Vegetale de La Londe: *See*—
Barberet, Alexandre. 3,532.
Barberet, Alexandre. 3,533.
Barberet, Alexandre. 3,534.

LIST OF DESIGN PATENTEES

AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See*—
Kollesberger, Wilhelm, Jr. 230,990.
Allnder, Gilbert L.: *See*—
Anderson, Lloyd E., and Allnder. 230,968.
American Can Co.: *See*—
Gilling, Donald A., and Walbrun. 231,018.
Gilling, Donald A., and Walbrun. 231,019.
Gilling, Donald A., and Walbrun. 231,020.
Gilling, Donald A., and Walbrun. 231,021.
American Yazaki Corp.: *See*—
Hill, John N. 230,966.
Ammondson, Clayton J.: *See*—
Williams, Clayton G., and Ammondson. 230,942.
Andrus, William G., to Steelcase Inc. Article of seating. 230,918, 3–26–74, Cl. D6—26.
Anonima Castelle S.p.A.: *See*—
Piretti, Giancarlo. 230,923.
Avrich, Charles, to Casual Togs Inc. Pants. 230,909, 3–26–74, Cl. D2—28.
Avrich, Charles, to Casual Togs Inc. Pants. 230,910, 3–26–74, Cl. D2—28.
Bair, Sydney L., Jr., to Merritt Foods Co. Frozen confection. 230,907, 3–26–74, Cl. D1—22.
Bair, Sydney L., Jr., to Merritt Foods Co. Frozen confection. 230,908, 3–26–74, Cl. D1—22.
Baker, John C.: *See*—
Mansur, Fred E., Salisbury and Baker. 230,982.
Mansur, Fred E., Salisbury, and Baker. 230,983.
Baribeau & Fils Inc.: *See*—
Baribeau, Herve. 230,930.
Baribeau, Herve, to Baribeau & Fils Inc. Combined carving board and meat holder. 230,930, 3–26–74, Cl. D7—46.
Barnes, John R., to Sunline, Inc. Candy tablet. 230,903, 3–26–74, Cl. D1—12.
Barnett, Arthur A. C. Handle for canes, umbrellas, or the like. 231,043, 3–26–74, Cl. D88—4.
Bartasevich, William E., to Disston, Inc. Drive unit for a barbeque rotisserie spit. 230,937, 3–26–74, Cl. D7—129.
Bauer, Alfred F., to N L Industries, Inc. Bicycle frame. 230,963, 3–26–74, Cl. D12—111.
Beckman, Melvin H., to Keystone-Consolidated Industries, Inc. Flush mounted latch. 230,945, 3–26–74, Cl. D8—109.
Berkeley Pump Co.: *See*—
Rhoda, Ralph A. 231,030.
Berkey-Coloratan, Inc.: *See*—
Hartz, George R., and Wasserman. 231,010.
Blackmore, Cecil N., to General Motors Corp. Drain pan. 230,964, 3–26–74, Cl. D12—155.
Blaney, Frank J., II. Bumper bowl game board. 231,000, 3–26–74, Cl. D34—5.
Blease, Wilfred J., to Pioneer Plastics, Inc. Lettuce crisper. 230,933, 3–26–74, Cl. D7—76.
Boorum & Pease Co.: *See*—
Ivory, Henry B. 230,947.
Bombardier Ltd.: *See*—
Scott, Thomas. 230,972.
Bonatti, Silvio: *See*—
Bonatti, Adelaide, Bonatti, de Munari, and Federspiel. 231,013.
Brainerd, Kent H.: *See*—
Brainerd, Andrew W., K. H., and S. W. 231,036–231,041.
Brainerd, Stuart W.: *See*—
Brainerd, Andrew W., K. H., and S. W. 231,036–231,041.
Brestos, Marcel G. Chaise lounge. 230,919, 3–26–74. Cl. D6—38.
Bretos, Marcel G. Arm chair. 230,925, 3–26–74, Cl. D6—70.
Brightbill, Keith E., to The Murray Ohio Mfg. Co. Velocipede. 231,004, 3–26–74, Cl. D34—15.
Carlson, William B. Fishing rod handle. 230,975, 3–26–74, Cl. D22—23.
Carter, Donald J., ½ to Frank Esposito. Bowling glove. 230,913, 3–26–74, Cl. D2—361.
Casual Togs Inc.: *See*—
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Avrich, Charles. 230,910.
Caterpillar Tractor Co.: *See*—
Sitton, Ellis A., Shields, Smart, and Streitmatter. 230,973.
Chaim, Amos R. Reclining chair. 230,924, 3–26–74, Cl. D6—65.
Chalabian, Jack S., to K-Jack Engineering Co., Inc. Newspaper vending machine. 231,015, 3–26–74, Cl. D52—3.
Chavez, Jose J. C. Toy dog. 230,999, 3–26–74, Cl. D34—2.
Compagnie Industrielle des Piles Electriques "CIPEL": *See*—
Vic, Raymond. 231,011.
Continental Can Co., Inc.: *See*—
Katzenmeyer, James H. 230,955.
Bystedt, Dexter M., and Stanley. 230,956.
Cornwall Corp.: *See*—
Lloveras, George. 230,935.
De Munari, Enrico: *See*—
Bonatti, Adelaide, Bonatti and de Munari. 231,013.

Detjen, Edgar W., to Gilson Bros., Co. Cart. 230,962, 3–26–74, Cl. D12—88.
Diegel, Herbert F. Combined agitator and photo print carrier. 231,025, 3–26–74, Cl. D61—1.
Dillingham, Dick. Tie and belt rack. 230,926, 3–26–74. Cl. D6—118.
Disston, Inc.: *See*—
Bartasevich, William E. 230,937.
Dupler, Anna G. C.: *See*—
Dupler, Raymond R. 230,981.
Dupler, Raymond R., deceased, by Anna G. C. Dupler, executrix. Furnace. 230,981, 3–26–74, Cl. D23—72.
Edwards, Bryant, to Illinois Tool Works Inc. Jar or the like. 230,953, 3–26–74, Cl. D9—140.
Egland, Ordean E. Wheel clock. 230,967, 3–26–74, Cl. D12—217.
Empire Scientific Corp.: *See*—
Shannon, John C. 230,997.
Environmental Advertising Systems, Inc.: *See*—
Williams, Clayton G., and Ammondson. 230,942.
Esposito, Frank: *See*—
Carter, Donald J. 230,913.
Estell, Harden. Lamp. 231,009, 3–26–74, Cl. D48—20.
Etud S.A.: *See*—
Marrie, Paul. 230,941.
Fisher, Morris F., to Mohasco Industries, Inc. Chair. 230,920, 3–26–74, Cl. D6—39.
Fowler, Ann R. Sewing thimble. 230,915, 3–26–74, Cl. D3—19.
Funahashi, Takaji. Stamper. 231,027, 3–26–74, Cl. D64—10.
Funahashi, Takaji. Circular stamp. 231,028, 3–26–74, Cl. D64—10.
General Motors Corp.: *See*—
Blackmore, Cecil N. 230,964.
Gessin, Frederick. Trading stamp. 231,024, 3–26–74, Cl. D59—6
Gillette Co., The: *See*—
Gray, Michael J. 231,050.
Gilson Bros., Co.: *See*—
Detjen, Edgar W. 230,962.
Girard, Peter F.: *See*—
Ryan, T., Claude, and Girard. 230,961.
Goletski, Bert J. Wheelchair handgrip. 230,927, 3–26–74, Cl. D6—191.
Gray, Michael J., to The Gillette Co. Safety razor. 231,050, 3–26–74, Cl. D95—3.
Gregorletti, Salvatore. Combined bottle and closure therefor. 230,954, 3–26–74, Cl. D9—145.
Gross, Brett L., and J. R., to Harold Leonard & Co., Inc. of California. Holder for table tennis paddles. 231,001, 3–26–74, Cl. D34—5.
Gross, Jesse R.: *See*—
Gross, Brett L., and J. R. 231,001.
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Lewis, Marilyn. 230,922.
Harrell, Bob O., to The Jackes-Evans Mfg. Co. Access control handle. 230,946, 3–26–74, Cl. D8—148.
Harris, Ewell J. Fish lure. 230,977, 3–26–74, Cl. D22—28.
Harris, Ewell J. Fish lure. 230,978, 3–26–74, Cl. D22—29.
Heltzen, John H. Motorcycle luggage carrier. 230,965, 3–26–74, Cl. D12—158.
Herrick, Donald G. Cigarette holder. 231,035, 3–26–74, Cl. D85—8.
Hildebrandt, Robert A.: *See*—
Marchese, Louie J., and Hildebrandt. 230,951.
Hill, John N., to American Yazaki Corp. Instrument panel unit to be mounted in the glove compartment opening of a vehicle. 230,966, 3–26–74, Cl. D12—192.
Hinnenkamp, Arthur J., to Medical Plastics, Inc. Active cautery electrode holder. 231,031, 3–26–74, Cl. D83—1.
Hoehn, Harold J.: *See*—
Klotz, Jon W., Oster, and Hoehn. 230,985.
Oster, Eugene, Hoehn, and Klotz. 230,984.
Horiguchi, Mineo: *See*—
Noma, Seiya, Yamasaki, Yoshida, Orito, and Horiguchi. 231,005.
Howlett, Henry R. Pair of stocks for semi-automatic pistols. 230,974, 3–26–74, Cl. D22—1.
Hullender, Bob J. Combined aquarium and lamp base. 231,008, 3–26–74, Cl. D48—20.
Hunting World, Inc.: *See*—
Lee, Robert M. 231,042.
Iida, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Speaker box. 230,994, 3–26–74, Cl. D26—14.
Illinois Tool Works Inc.: *See*—
Edwards, Bryant. 230,953.
Iseki Agricultural Machinery Mfg. Co., Ltd.: *See*—
Noma, Seiya, Yamasaki, Yoshida, Orito, and Horiguchi. 231,005.
Ispas, Alex, Jr., to Royal Dynamics Corp. Helmet. 230,911, 3–26–74, Cl. D2—232.
Itoh, Yasuji, to Kabushiki Kaisha Kyobundoh. Label. 231,051, 3–26–74, Cl. D96—8.
Ivory, Henry B., to Boorum & Pease Co. Loose leaf post binder hanger and carrier. 230,947, 3–26–74, Cl. D8—154.
Izumi, John. Wine rack. 230,932, 3–26–74, Cl. D7—71.
Jackes-Evans Mfg. Co., The: *See*—
Harrell, Bob O. 230,946.
Jacuzzi Research, Inc.: *See*—
Jacuzzi, Roy A., and Kosta. 231,032.
Jacuzzi, Roy A., and P. L. Kosta, to Jacuzzi Research, Inc. Hydromassage unit for a bathtub. 231,032, 3–26–74, Cl. D83—1.
K-Jack Engineering Co., Inc.: *See*—
Chalabian, Jack S. 231,015.
Kabushiki Kaisha Kyobundoh: *See*—
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Katzenmeyer, James H., to Continental Can Co., Inc. Carton. 230,955, 3–26–74, Cl. D9—180.
Kellogg, Charles W., Jr. Plastic case for transformers, switches and other electrical equipment. 230,998, 3–26–74, Cl. D26—15.
Keystone-Consolidated Industries, Inc.: *See*—
Beckman, Melvin H. 230,945.
Kimberly-Clark Corp.: *See*—
Thomas, Gordon D. 231,022.
Thomas, Gordon D. 231,023.
Klotz, Jon W.: *See*—
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Klotz, Jon W., E. A. Oster, H. J. Hoehn, and R. A. Martel, to Owens-Illinois, Inc. Light emitting gas discharge matrix display panel. 230,985, 3–26–74, Cl. D26—5.
Kobayashi, Kazuki, to Kabushiki Kaisha Ricoh. Film reel. 231,026, 3–26–74, Cl. D61—1.
Kollesberger, Wilhelm, Jr., to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Microphone. 230,990, 3–26–74, Cl. D26—14.
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Bair, Sydney L., Jr., and Korchak. 230,906.
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Jacuzzi, Roy A., and Kosta. 231,032.
Krupsky, Michael R.: *See*—
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Lamb, Thomas. Handle for steak knives. 230,938, 3–26–74, Cl. D7—152.
Lamb, Thomas. Handle for a kitchen tool or similar article. 230,939, 3–26–74, Cl. D7—152.
Lamb, Thomas. Handle for cutlery. 230,940, 3–26–74, Cl. D7—152.
Lansing, James B., Sound, Inc.: *See*—
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Lax, Michael. Combined cheese slicer and board. 230,928, 3–26–74, Cl. D7—43.
Lee, Robert M., to Hunting World, Inc. Carrying bag. 231,042, 3–26–74, Cl. D87—5.
Leonard, Harold & Co., Inc. of California: *See*—
Gross, Brett L., and J. R. 231,001.
Levine, Irving. Finial for drapery hardware. 230,949, 3–26–74. Cl. D8—212.
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Lloveras, George, to Cornwall Corp. Combined electric cooking base and vessel. 230,935, 3–26–74, Cl. D7—94.
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2 3,799,776
36.2 3,799,777
66R 3,799,780
76C 3,799,778
82 3,799,779
113 3,799,781
3,799,782
124 3,799,783

CLASS 98
32 3,799,045
41AV 3,799,046

CLASS 99
332 3,799,047
415 3,799,048
470 3,799,049
553 3,799,050

CLASS 100
48 3,799,051
93RP 3,799,052

CLASS 101
125 3,799,053

CLASS 102
67 3,799,054
100 3,799,055
105 3,799,056

CLASS 104
1R 3,799,057
7R 3,799,058
12 3,799,059
18 3,799,060
23FS 3,799,061
25 Re.27,944
105 3,799,062

134 3,799,063
256 3,799,064

CLASS 105

182E 3,799,065
182R 3,799,066
197D 3,799,067
368R 3,799,068
3,799,069
369B 3,799,070

CLASS 106

53 3,799,784
101 3,799,785
125 3,799,786
287SS 3,799,787
307 3,799,788

CLASS 108

46 3,799,071
107 3,799,072
113 3,799,073

CLASS 110

7R 3,799,074
8A 3,799,075
8R 3,799,076
3,799,077
10 3,799,081

CLASS 111

2 3,799,078
7 3,799,079
3,799,080

CLASS 112

3R 3,799,082
47 3,799,083
121.11 3,799,084
121.12 3,799,085
121.15 3,799,086
121.29 3,799,087
130 3,799,088
217.3 3,799,089
221 3,799,090
260 3,799,091

CLASS 114

.5D 3,799,092
.5F 3,799,093
20R 3,799,094
67A 3,799,095
150 3,799,096
206R 3,799,097
3,799,098
221 3,799,099
235A 3,799,100
3,799,101

CLASS 115

18R 3,799,102
34R 3,799,103
41HT 3,799,104

CLASS 116

22A 3,799,105
28R 3,799,106
70 3,799,107
114R 3,799,108
133 3,799,109

CLASS 117

4 3,799,789
37LE 3,799,791
37R 3,799,790
43 3,799,792
45 3,799,793
47A 3,799,794
54 3,799,795
70A 3,799,796
72 3,799,797
3,799,798
100S 3,799,799
106R 3,799,800
139.5CQ 3,799,801
212 3,799,802
3,799,803
231 3,799,804

CLASS 118

49 3,799,110
63 3,799,111
629 3,799,112
637 3,799,113

CLASS 119

17 3,799,114
20 3,799,115
51R 3,799,116
98 3,799,117
106 3,799,118
157 3,799,119

CLASS 122

11 3,799,120
32 3,799,121
225R 3,799,122
494 3,799,123

CLASS 123

1A 3,799,124
3 3,799,125
8.01 3,799,126
8.27 3,799,127
41.49 3,799,128
90.36 3,799,129
119A 3,799,130
3,799,131
3,799,133
3,799,134
119D 3,799,132
146.5A 3,799,135
148E 3,799,136
149R 3,799,137
179G 3,799,138
188GC 3,799,139
191S 3,799,140

CLASS 126

25B 3,799,141
39J 3,799,142
246 3,799,143
270 3,799,144
271 3,799,145

CLASS 127

38 3,799,805
54 3,799,806

CLASS 128

2.05S 3,799,147
2.06A 3,799,148
2.07 3,799,149
2.1B 3,799,146
6 3,799,150
3,799,151
3,799,152
33 3,799,153
36 3,799,154
44 3,799,155
75 3,799,156
79 3,799,157
80C 3,799,158
3,799,159
81A 3,799,160
132D 3,799,161
172.1 3,799,162
191A 3,799,163
206 3,799,164
263 3,799,165
283 3,799,166
287 3,799,167
303.14 3,799,168
339 3,799,169
344 3,799,170
349BV 3,799,171
349R 3,799,172
351 3,799,173
464 3,799,174
476 3,799,175

CLASS 131

135 3,799,176

CLASS 132

92 3,799,177

CLASS 134

32 3,799,807
58R 3,799,178
95 3,799,179

CLASS 135

20R 3,799,180

CLASS 136

29 3,799,808
86R 3,799,809
112 3,799,810
120FC 3,799,811
213 3,799,812

CLASS 137

1 3,799,181
15 3,799,182
56 3,799,183
94 3,799,184
102 3,799,185
204 3,799,186
246.22 3,799,187
271 3,799,188
316 3,799,189
405 3,799,190
454.2 3,799,191
498 3,799,192
525 3,799,193
539.5 3,799,194
553 3,799,195
608 3,799,196
615 3,799,197
624.11 3,799,198
625.21 3,799,201
625.4 3,799,199
625.6 3,799,200
625.61 3,799,202
625.65 3,799,203
629 3,799,204
826 3,799,205
830 3,799,206

CLASS 138

89 3,799,207
175 3,799,208

CLASS 139

11 3,799,209
100 3,799,210
122R 3,799,211
3,799,212
387A 3,799,213

CLASS 140

93.2 3,799,214
147 3,799,215
3,799,216

CLASS 141

1 3,799,217
18 3,799,218
39 3,799,219
46 3,799,220
93 3,799,221
291 3,799,222
388 3,799,223

CLASS 144

133 3,799,224

CLASS 145

46 3,799,225
50C 3,799,226

CLASS 148

1.5 3,799,813
6.2 3,799,814
6.27 3,799,815

CLASS 150

1.5R 3,799,227
49 3,799,228

CLASS 151

14R 3,799,229

CLASS 152

209R 3,799,230
209 3,799,231
231 3,799,232
361R 3,799,233

CLASS 156

3 3,799,816
3,799,817
62.2 3,799,818
63 3,799,819
69 3,799,820
73 3,799,821
83 3,799,822
86 3,799,823
139 3,799,824
144 3,799,825
159 3,799,826
219 3,799,827
229 3,799,828
235 3,799,829
249 3,799,830
297 3,799,831
330 3,799,832
443 3,799,833
481 3,799,834
580 3,799,835

CLASS 159

2E 3,799,234
3 3,799,235

CLASS 160

178C 3,799,236
199 3,799,237

CLASS 161

1 3,799,836
135 3,799,837
207 3,799,838

CLASS 164

82 3,799,238
87 3,799,239
250 Re.27,945
298 3,799,240

CLASS 165

4 3,799,241
7 3,799,242
19 3,799,243
23 3,799,244
29 3,799,245
35 3,799,246
49 3,799,247
55 3,799,248
60 3,799,249
61 3,799,250
68 3,799,251
91 3,799,252
111 3,799,253
3,799,254
122 3,799,255
145 3,799,256
171 3,799,257

CLASS 166

72 3,799,258
117.5 3,799,259
185 3,799,260
250 3,799,261
270 3,799,262
275 3,799,263
3,799,264
305R 3,799,265
308 3,799,266
3,799,267
313 3,799,268
315 3,799,269

CLASS 169

28 3,799,270
57 3,799,271

CLASS 172

126 3,799,272
754 3,799,273
759 3,799,274

CLASS 173

48 3,799,275

CLASS 174

15C 3,800,061
3,800,062
38 3,800,063
73R 3,800,064
115 3,800,065
116 3,800,066
120R 3,800,067
135 3,800,068

CLASS 175

94 3,799,276
3,799,277
237 3,799,278
325 3,799,279

CLASS 176

68 3,799,839
78 Re.27,950

CLASS 177

53 3,799,280
210 3,799,281
230 3,799,282

CLASS 178

4.1 3,800,069
5.2A 3,800,070
3,800,071
5.4HE 3,800,073
5.4H 3,800,072
6 3,800,074
3,800,075
6.6R 3,800,076
6.8 3,800,077
7.1 3,800,078
3,800,079
3,800,080
7.2 3,800,081
3,800,082
7.5R 3,800,083
7.6 3,800,084
7.91 3,800,085
69.5R 3,800,086

CLASS 179

1HF 3,800,089
1J 3,800,088
1R 3,800,087
2A 3,800,090
4 3,800,091
6R 3,800,092
15BC 3,800,093
18FG 3,800,094
77 3,800,095
84VF 3,800,096
98 3,800,097
99 3,800,098
100.1A 3,800,099
100.4C 3,800,100
107E 3,800,101
111R 3,800,102

CLASS 180

56 3,799,283
65A 3,799,284

CLASS 181

.5NC 3,799,285
31B 3,799,286

CLASS 182

5 3,799,287
91 3,799,288
145 3,799,289
148 3,799,290

CLASS 184

6.18 3,799,291

CLASS 187

25 3,799,292

CLASS 188

5 3,799,293
67 3,799,294
79.5GC 3,799,295
82.8 3,799,296
170 3,799,297
189 3,799,298
282 3,799,299

CLASS 192

3M 3,799,303
3R 3,799,300
3,799,301
3,799,302
3.57 3,799,304
33 3,799,305
45 3,799,306
56F 3,799,307
87.13 3,799,308
106.2 3,799,309

CLASS 194

5 3,799,310

CLASS 195

28R 3,799,840
30 3,799,841
80R 3,799,842
103.5R 3,799,843
127 3,799,844

CLASS 197

18 3,799,311
82 3,799,312
133P 3,799,313
133R 3,799,314
151 3,799,315
181 3,799,316

CLASS 198

20R 3,799,317
26 3,799,318
29 3,799,319
35 3,799,321
3,799,322
38 3,799,323
45 3,799,324
127R 3,799,325
130 3,799,326
170 3,799,327
195 3,799,328
221 3,799,329
224 3,799,330
239 3,799,320

CLASS 200

1V 3,800,103
5A 3,800,104
11C 3,800,105
15 3,800,106
16D 3,800,107
61.62 3,800,108
61.86 3,800,109
67C 3,800,110
144C 3,800,111
161 3,800,112
295 3,800,113
330 3,800,114

CLASS 203

99 3,799,845

CLASS 204

1T 3,799,846
13 3,799,847
38E 3,799,848
95 3,799,849
119 3,799,850
149 3,799,851
3,799,852
3,799,853
181 3,799,854
188 3,799,855
3,799,856
3,799,857
213 3,799,858
216 3,799,859
258 3,799,860
279 3,799,861
298 3,799,862
299 3,799,863

CLASS 206

38R 3,799,331
44R 3,799,332
482 3,799,333

CLASS 208

80 3,799,864
131 3,799,865
139 3,799,866
3,799,867
153 3,799,868
211 3,799,869
251 3,799,870
324 3,799,871

CLASS 209

11 3,799,334
80.5 3,799,335
85 3,799,336
111.7 3,799,337
114 3,799,338
115 3,799,339
127R 3,799,340
172.5 3,799,341

CLASS 210

21 3,799,872
22 3,799,873
73 3,799,342
78 3,799,343
96 3,799,344
109 3,799,345
124 3,799,346
134 3,799,347
144 3,799,348
154 3,799,349
174 Re.27,946
221 3,799,350
232 3,799,351
282 3,799,352
369 3,799,353
493 3,799,354
500 3,799,355
3,799,356

CLASS 211

59 3,799,357

CLASS 212

59R 3,799,358

CLASS 213

8 3,799,359
22 3,799,360

CLASS 214

1QC 3,799,361
1D 3,799,362
1.2 3,799,363
2.5 3,799,364
11R 3,799,365
16.6 3,799,366
23 3,799,367
35R 3,799,368
37 3,799,369
38CC 3,799,370
44R 3,799,371
75G 3,799,372
77P 3,799,373
82 3,799,374
83.3 3,799,375
3,799,376
89 3,799,377
152 3,799,378
515 3,799,379

CLASS 215

40 3,799,380
254 3,799,381

CLASS 217

12R 3,799,382

CLASS 219

10.43 3,800,115
60A 3,800,116
69V 3,800,117
91 3,800,118
109 3,800,119
146 3,800,120
202 3,800,121
239 3,800,122
407 3,800,123

CLASS 220

1.5 3,799,383
6 3,799,384
9LG 3,799,385
16 3,799,386
18 3,799,387
42C 3,799,388
49 3,799,389
54 3,799,390
55K 3,799,391
60 3,799,392

CLASS 221

67 3,799,393
251 3,799,394
289 3,799,395

CLASS 222

1 3,799,396
21 3,799,397
39 3,799,398
83.5 3,799,399
3,799,400
109 3,799,401
129.2 3,799,402
135 3,799,403
168 3,799,404
238 3,799,405
309 3,799,406
333 3,799,407
474 3,799,408
561 3,799,409
566 3,799,410
567 3,799,411

CLASS 223

88 3,799,412

CLASS 224

5P 3,799,413
6 3,799,414
25A 3,799,415
45T 3,799,416

CLASS 225

7 3,799,417

CLASS 226

6 3,799,418
11 3,799,419
102 3,799,420
181 3,799,421
196 3,799,422

CLASS 229

14B 3,799,423
16R 3,799,424
39R 3,799,425
44R 3,799,426
62.5 3,799,427
87.2 3,799,428

CLASS 231

2R 3,799,429

CLASS 232

43.2 3,799,430

CLASS 233

3 3,799,431

CLASS 235

61.12R 3,800,124
150.2 3,800,125
150.22 3,800,127
150.5 3,800,126
151 3,800,253
151.32 3,800,128
156 3,800,129
3,800,130
197 3,800,131

CLASS 236

48R 3,799,432
68B 3,799,433
101 3,799,434

CLASS 237

12.3A 3,799,435

CLASS 238

122 3,799,436
349 3,799,437

CLASS 239

8 3,799,438
29 3,799,439
120 3,799,440
145 3,799,441
3,799,442
163 3,799,443
186 3,799,444
242 3,799,445
265.19 3,799,446
288.5 3,799,447
321 3,799,448
403 3,799,449
428.5 3,799,450
444 3,799,451
553.3 3,799,452
600 3,799,453

CLASS 240

2.25 3,800,132
6.4W 3,800,133
6.45P 3,800,134
8.16 3,800,135
10.6SD 3,800,136
41R 3,800,137
106R 3,800,138

CLASS 241

16 3,799,454
27 3,799,455
37 3,799,456
46.17 3,799,457
70 3,799,458
101.5 3,799,459
102 3,799,460
251 3,799,461

CLASS 242

4B 3,799,462
18.1 3,799,463
43 3,799,464
55.2 3,799,465
3,799,466
3,799,467
56A 3,799,469
56R 3,799,468
68.5 3,799,470
84.1R 3,799,471
217 3,799,472

CLASS 244

17.19 3,799,473
42DA 3,799,474
53B 3,799,475
60 3,799,476
110C 3,799,477
137R 3,799,478
3,799,479
147 3,799,480

CLASS 246

182C 3,800,139

CLASS 248

15 3,799,481
19 3,799,482
27 3,799,483
188.2 3,799,484
406 3,799,485
3,799,486
441 3,799,487
452 3,799,488
480 3,799,489

CLASS 249

18 3,799,490
83 3,799,491
94 3,799,492
104 3,799,493
119 3,799,494

CLASS 250

205 3,800,149
211 3,800,146
253 3,800,145
262 3,800,150
283 3,800,151
299 3,800,140
310 3,800,152
325 3,800,153
326 3,800,154
330 3,800,156
337 3,800,142
353 3,800,157
362 3,800,144
363 3,800,143
391 3,800,141
515 3,800,158
527 3,800,159
557 3,800,155
562 3,800,148
563 3,800,160
564 3,800,147
3,800,161
572 3,800,162

CLASS 251

11 3,799,495
30 3,799,496
3,799,497
124 3,799,502
129 3,799,498
290 3,799,499
297 3,799,500
306 3,799,501

CLASS 252

8.55R 3,799,874
48.8 3,799,875
51.5R 3,799,876
3,799,877
79 3,799,878
89 3,799,879
110 3,799,880
300 3,799,881
301.1R 3,799,882
3,799,883
313R 3,799,884
408 3,799,885
461 3,799,886
463 3,799,887
469 3,799,888
470 3,799,889
514 3,799,890
3,799,891
522 3,799,892

CLASS 254

73 3,799,503
93HP 3,799,504
173 3,799,505

CLASS 256

24 3,799,506
64 3,799,507

CLASS 259

4 3,799,508
3,799,509
191 3,799,510

CLASS 260

2BP 3,799,893
2EP 3,799,894
2A 3,799,895
2.5AD 3,799,898
2.5AJ 3,799,897
2.5AW 3,799,896
18EP 3,799,900
18N 3,799,899
18S 3,799,919
29.6NR 3,799,902
29.6PM 3,799,901
29.6M 3,799,903
30.6R 3,799,904
37EP 3,799,905
42.45 3,799,906
45.9R 3,799,908
45.95R 3,799,907
47EN 3,799,909
78L 3,799,912
78.5UA 3,799,910
78.5R 3,799,911
80.78 3,799,913
86.1R 3,799,915
87.1 3,799,916
92.8R 3,799,917
112.5 3,799,918
239.3D 3,799,920
240J 3,799,921
243C 3,799,922
3,799,923
3,799,924
247.1 3,799,927
249.8 3,799,925
256.5 3,799,926
268BQ 3,799,928
287R 3,799,929
3,799,930
289AZ 3,799,931
293.53 3,799,933
293.6 3,799,932
294.8G 3,799,934
294.9 3,799,935
295.5R 3,799,936
297R 3,799,937
306.7 3,799,938
3,799,939
306.8R 3,799,941
309.6 3,799,942
326.16 3,799,943
340.3 3,799,944
340.5 3,799,940
345.3 3,799,946
345.9 3,799,945
348R 3,799,947
348.5L 3,799,949
348.5 3,799,948
348.6 3,799,950
349 3,799,951
377 3,799,952
395 3,799,953
396N 3,799,954
397.45 3,799,955
403 3,799,956
410.7 3,799,958
410.9R 3,799,957
429R 3,799,959
3,799,960
3,799,961
448.8R 3,799,962
453SP 3,799,963
453A 3,799,965
453R 3,799,964
463 3,799,966
468D 3,799,967
470 3,799,968
471R 3,799,969
473G 3,799,970
479R 3,799,971
486R 3,799,972
501.17 3,799,973
515R 3,799,974
519 3,799,975
525 3,799,976
531R 3,799,977
533N 3,799,978
3,799,979
535P 3,799,980
561A 3,799,981
3,799,988
562R 3,799,982
563D 3,799,983
566AE 3,799,984
573 3,799,985
584B 3,799,986
586R 3,799,987
609D 3,799,989
613R 3,799,990
3,799,991
614F 3,799,992
645 3,799,993
648C 3,799,994
653 3,799,995
653.3 3,799,996
654A 3,799,998
654D 3,799,997
658R 3,799,999
666PY 3,800,000
681.5R 3,800,002
683.49 3,800,003
683.53 3,800,001
848 3,800,004
3,800,005
874 3,800,006
877 3,800,007
897B 3,800,008
940 3,800,011
941 3,800,009
943 3,800,010

CLASS 261

29 3,799,511
3,799,512
39 3,799,513
78R 3,799,514
92 3,799,515
111 3,799,516
128 3,799,517

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3R 3,800,012
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45 3,800,015
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46 3,800,017
52 3,800,013
53 3,800,018
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177 3,800,021
210R 3,800,022

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131AD 3,799,548
131B 3,799,547
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134AD 3,799,550
134AF 3,799,552
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179A 3,799,555

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45 3,799,584
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CLASS 300

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3,800,199
228 3,800,200
283 3,800,201
302 3,800,202
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20 3,800,208
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28 3,800,212

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396 3,800,230
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CLASS 331

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66 3,800,242
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D48—	20 231,009
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3,800,166	3,799,092	3,799,619	3,800,278	3,799,648	3,798,846
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3,798,716	3,799,177	3,799,680	3,799,310	3,799,124	3,799,065
3,798,731	3,799,189	3,799,681	3,799,450	3,799,156	3,799,066
3,798,734	3,799,191	3,799,685	3,799,559	3,799,228	3,799,067
3,798,743	3,799,193	3,799,721	3,800,020	3,799,338	3,799,070
3,798,751	3,799,197	3,799,727	3,800,058	3,799,539	3,799,079
3,798,753	3,799,221	3,799,728	3,800,144	3,799,553	3,799,103
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3,798,762	3,799,249	3,799,737	9 : 3,798,684	3,799,890	3,799,161
3,798,769	3,799,262	3,799,743	3,798,790	3,799,891	3,799,163
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3,798,860	3,799,483	3,800,101	3,799,658	3,799,218	3,799,388
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3,798,896	3,799,492	3,800,122	3,799,701	3,800,124	3,799,420
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